SCRs & TRIACS

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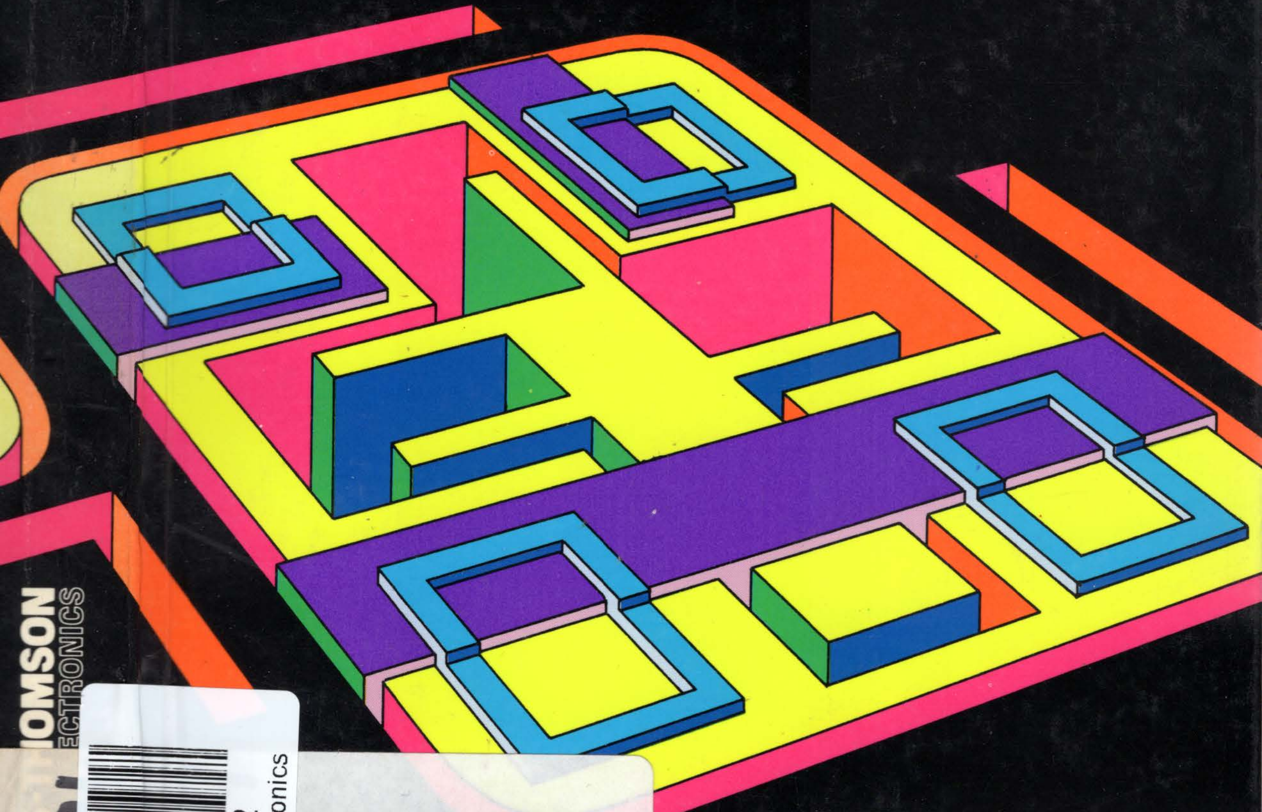
DATABOOK

2nd EDITION



SGS-THOMSON
MICROELECTRONICS

SCR'S & TRIACS

DATABOOK

2^{nd} EDITION

OCTOBER 1991

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QUALITY AND RELIABILITY

1. INTRODUCTION :

. Using its technological know how in the field and its historic position of leader, SGS-THOMSON will extend its products port-folio through new technologies and packages. This strategy will closely associate product performance and high reliability objective.

. All our working methods meet these requirements and result from an awareness at all levels of the necessity to design and produce quality. In particular, a training along these lines is systematically given to all our personnel.

. The effort to strengthen our quality culture has given a new emphasis to the application of S.P.C (Statistical Process Control) techniques. In addition to this training, technical improvements are done regularly. All these actions are due to the fact that the continuous drive for progress is our main theme and we count on it to remain leader.

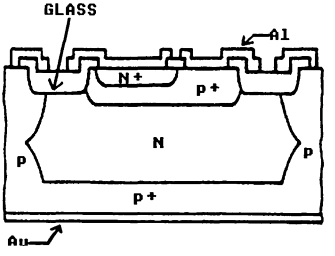
2. DEVICE TECHNOLOGY / MAIN FUNCTION :

Three kinds of die technologies are used by SGS-THOMSON :

Each technology has its own features and is associated to :
- Power application
- Products performances and cost

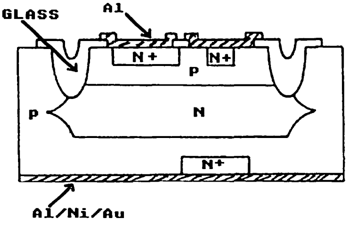
- LOW POWER : 0.8 to 2A / TO92 - SOT223

P . WELL PLANAR :



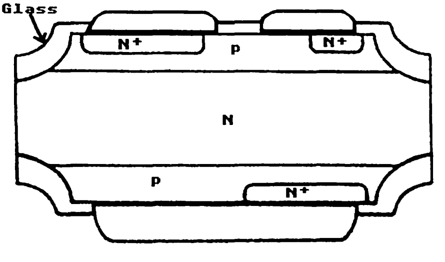
- MEDIUM POWER : 4A to 10A / SOT82 - SOT194 - TO220

P . WELL MESA :



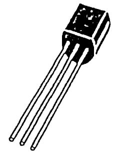
- HIGH POWER : 4A to 70A / TO220 - TOP3 - RD91 - ISOTOP

MESA GLASS :



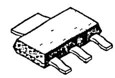
TO 92 :

Sensitive SCR'S - TRIACS
$I_{T(RMS)}$ = 0.8 A



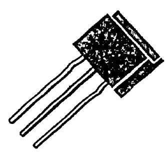
SOT 223 :

Sensitive SCR'S - TRIACS
$I_{T(RMS)}$ = 1 A
SMD application



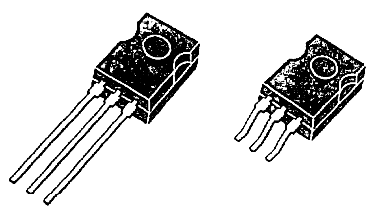
TOPLESS :

Sensitive and standard
SCR'S - TRIACS
$I_{T(RMS)}$ = 3 A



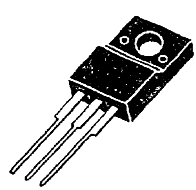
SOT 82 / SOT 194 :

Snubberless and sensitive TRIACS
with small outline
$I_{T(RMS)}$ = 4 A to 8 A
SOT 194 : SMD application

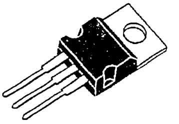


ISOWATT220 :

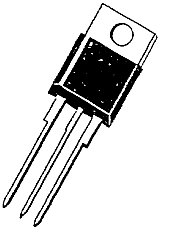
Snubberless and sensitive TRIACS
full insulated package
$I_{T(RMS)}$ = 4 A to 8 A



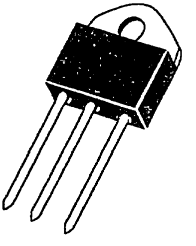
TO 220 AB : (wire bond)
Snubberless and sensitive TRIACS
Uninsulated version
$I_{T(RMS)}$ = 4 A to 8 A



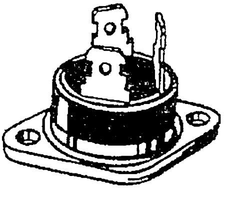
TO 220 AB : (bridge bond)
All SCR'S - TRIACS families
Insulated and uninsulated version
$I_{T(RMS)}$ = 4 A to 25 A



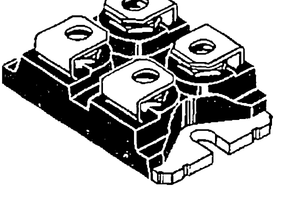
TOP 3 :
Standard SCR'S - TRIACS
Insulated and uninsulated version
$I_{T(RMS)}$ = 25 A to 55 A



RD 91 :
Standard SCR'S - TRIACS
Insulated version
Faston version
$I_{T(RMS)}$ = 25 A to 40 A



ISOTOP :
HIGH POWER THYRISTOR MODULE
Insulated version



3. PACKING / BAR CODE AND TRACEABILITY :

3.1. PACKING :

PACKAGE	PACKING TYPE	BASE QTY
TO 92	CARDBOARD BOX	1000
SOT 223	TAPE AND REEL	1000
TOPLESS	CARDBOARD BOX	250
SOT 82 / SOT 194	TUBES	50
ISOWATT	TUBES	50
TO220 (wire bond)	TUBES	50
TO220 (bridge bond)	CARDBOARD BOX (1)	250
TOP 3	CARDBOARD BOX (2)	125
RD 91	CARDBOARD BOX	25
ISOTOP	TUBES	10

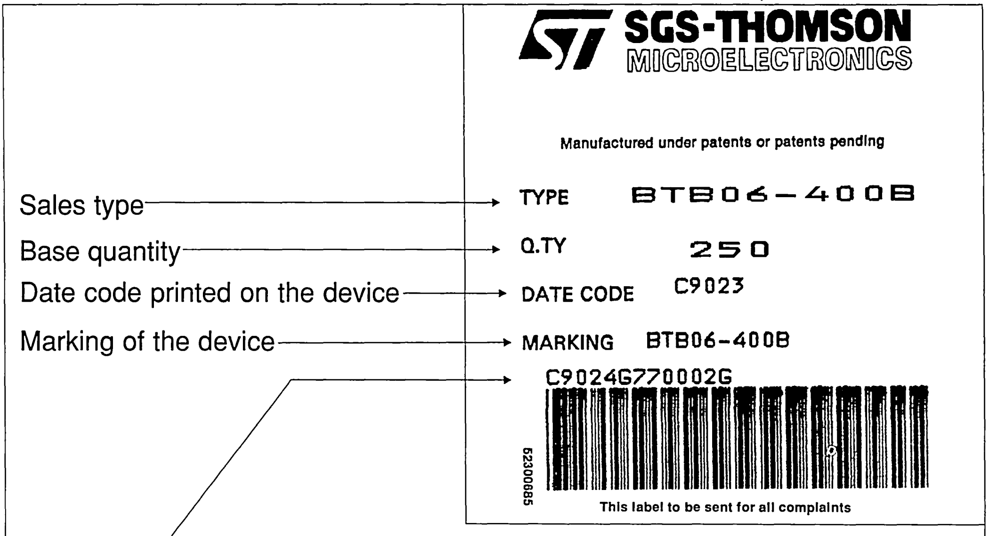
(1) Tube delivery with 50p / tube on request
(2) Tube delivery with 30p / tube on request

3.2. BAR CODE :

The bar code system is applied to our shipments with the main following objectives :
- Moving shipment errors toward zero defect by avoiding human errors.

- To read, with QA number key, the quantity sent or still in store. In case of quantity sent, the computer indicates to which customer they have been sent.

With QA number or with lot number (refer to drawing), full process traceability is provided especially outgoing inspection results.



Quality acceptance number : This number is calculated by the computer.
* 1st character : Plant depositing to store
* YY : Year
* WW : Progressive week in the year.
* 3 characters : Progressive number of the QA.
* 4 characters : (1 to XX) progressive number of the bulk.
* Last character: It is a code for the system.

- Label is Stuck on each boxes (qty of box = base qty).
- With QA number, we can track the production lot number for traceability.

4. QUALITY BY DESIGN :

4.1. QUALIFICATION OF A NEW PRODUCT :

- Requested for all new products.

- Qualification plan according to internal specification.

- Main documents requested are :
  . Design rules manual
  . Development report
  . Characterization report on 3 manufacturing lots
  . Reliability report on 3 manufacturing lots
  . Product specifications

- Requested internal approvals are :
  . Originator
  . Product manager
  . Division QA manager

4.2. QUALIFICATION FOR A CHANGE OF TECHNOLOGY :

- Requested for :
  . All major new process (either wafer fab and assembly).
  . Critical change of process step.
  . Change of manufacturing location.

- Qualification plan according to internal specification.

- Main documents requested are :
  . Characterization report on 3 manufacturing lots.
  . Reliability report on 3 manufacturing lots.

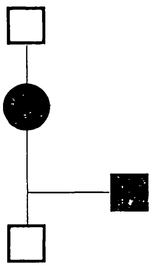
- Requested internal approvals are :
  . Originator
  . Product manager
  . Division QA manager

- Technology change notification to customers.

5. QUALITY ASSURANCE ORGANIZATION :

5.1. IN PROCESS CONTROL FLOW CHART :

Wafer Fab standard production process flow chart



Material inspection

Wafer fabrication

In process control

Finished wafer inspection

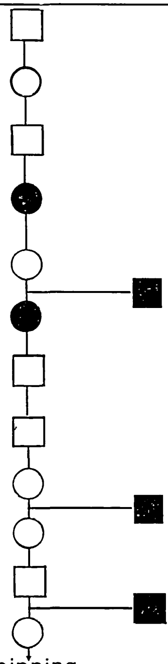
100% Operation or screening

100% Operation with SPC

In process control (Monitor)

Q.A. Gate inspection (Sample Accept)

Assembly standard production process Flow chart



Material inspection

Die electrical tests and visual inspection

Quality inspection

Assembly

Moulding and stabilization bake
In process control
Lead finish

Solderability inspection

Rawline inspection

Testing and finishing
In process control
Packing

Outgoing quality inspection
Reliability tests
Packaging

5.2. OUTGOING QUALITY INSPECTION :

- All product is submitted to the outgoing QC inspection.
- All rejected lots should be 100% rescreened and resummited to the OQI.

PARAMETERS	MINIMUM SAMPLE SIZE	ACCEPTANCE NUMBER
Visual and mechanical inspection	315	0
Cumulative electrical and inoperative mechanical failures	315	0

5.3. RELIABILITY ASSURANCE :

ABSTRACT OF SURE 6.
RELIABILITY ASSURANCE.

. The reliability approach:

In a customer's finished product,semiconductor devices, must function normally in stable manner under the given operational conditions throughout the specified life of the product.

SGS-THOMSON, therefore exercices meticulous care in the design and manufacturing stages and studies the various factors that affect the reliability of semiconductors such as operational and environmental conditions.

. Reliability testing:

Reliability testing is an ongoing process adopted to identify and then improve reliability performance.

. Accelerated tests are an important tool for evaluating long term reliability and stability of process and product parameters.

. SGS-THOMSON performs rigorous tests throughout production to ensure that production devices have the properly designed reliability.

Two major actions are developped to monitor reliability performances :

. Real time control (RTC tests)

. Periodical reliability tests.

5.3.1. Real time control (RTC test) :

This program requests to the assembly plants to perform sampling in manufacturing flow (after OQI acceptation) every week, on each technological family.

The tests are performed on assembly plants.

Corrective actions have to be taken by local Q and R department when the failures overstep the target, and in a second time, if failures are confirmed, information is sent to Q and R division in order to receive instructions.

5.3.2. Periodical reliability test :

On each technological family, for data acquisition and quality monitoring, SGS-THOMSON performs long term reliability test by periodical sampling after OQI acceptation.

These tests are performed either on assembly location or on Q.A division.

6. RELIABILITY TESTS DESCRIPTION :

TEST	CONDITIONS	DURATION	FREQUENCY
Thermal fatigue	Tj max = 110°C ΔTcase = 50°C	2000 cyc. 10000 cyc.	Weekly Quarterly
High temp.reverse bias	Ta = 110°C V = 0.8 Vr	168 Hrs 1000 Hrs	Weekly Quarterly
Temp. cycling	- 40°C / +150°C	100 cyc. 1000 cyc.	Weekly Quarterly
Storage	Tamb = 150°C	168 Hrs 1000 Hrs	Weekly Quarterly
Humidity test	85°C / 85 RH V = 220 volts	1000 Hrs	Quarterly
Salt atmosphere	10/50g NACL/M^2/ DAY Tamb = 35°C	24 Hrs	Twice/year
Pressure pot	121°C / 2 bars	168 Hrs	Weekly
Solderability test	245°C ± 5°C for 5 sec.	N.A	Weekly
Marking permanency	1 mn immersion in solvent solution followed by 10 with strokes with a soft brush	3 times	Weekly
Resistance to surface mounting (for SMD)	- 85°C/85% RH - Solder dipping 260°C/10s - Pressure pot.	24 Hrs 168 Hrs	Quarterly

6.1. THERMAL FATIGUE :

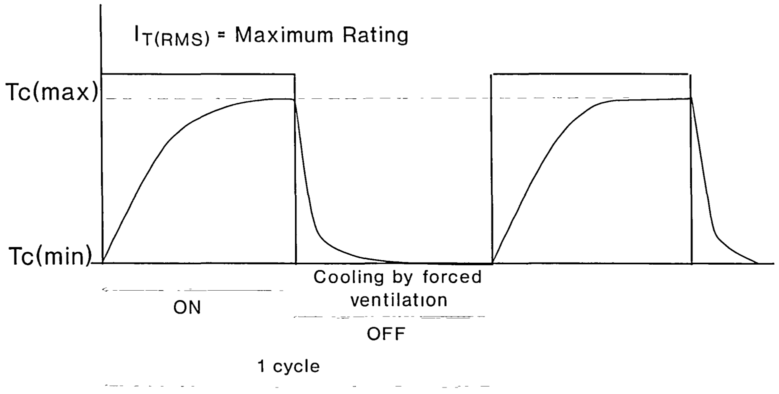
. In the application,Scr's and Triacs are repeatedly cycled from the off state to the on state which induces considerable thermal variations and can damage the solders used for assembly.

. The purpose of this test is to produce accelerated aging by thermal variations resulting from the conducting and cooling phases.

. During the conducting phase the Tj max is reached with $I_{T(RMS)}$ = maximum rating.

. This test is important to determine the quality of the die attach.

. The most important parameters to check after this test are R_{TH} and V_{TM}.



Typical values are: Tc(max)= 80°C
Tc(min)= 30°C
ON= 3 minutes
OFF= 3 minutes

6.2. HIGH TEMP. REVERSE BIAS :

. The leakage current of the junction increases with the temperature. It is an indicator of the quality of the die passivation.

. The test is performed at high temperature (Tj max) and high reverse voltage (0.8 rated voltage).

. The drift of the leakage current can be used as a quality indicator.

6.3. TEMPERATURE CYCLING / THERMAL SHOCKS :

In the application, devices are submitted to temperature variations.

Excessive variations can induce mechanical stress between silicon and passivation, between chip and package as well as die metallization.

6.3.1. Air to air (temperature cycling) :

To evaluate the capability of the devices to whistand to extrem temperatures.

6.3.2. Liquid to liquid (thermal shocks) :

The change of temperature is very fast, it is a good indicator for the package integrity.

These tests can affect the V_{TM}, the leakage current and the insulating voltage (for insulated devices).

6.4. STORAGE :

The purpose of this test is to accelerate failure mechanism due to the high temperature : molding - passivation - die metallization.

V_{TM} and leakage current are the parameters to check after this test.

6.5. HUMIDITY TEST / PRESSURE COOKER TEST :

Recent improvement in plastic resins used for electronic packaging has led to a large use of plastic package as an alternative to costly hermetic cases.

The purpose of these tests is to give a good indicator on the adherence between resin / heatsink and resin / leads.

The leakage current is the main parameter to check after this test.

7. EFFICIENCY OF RELIABILITY TESTS :

Since the high cost and availability of test facilities are major factors, it is necessary to optimize the reliability tests mainly for qualification of new product and change of technology.

This efficiency of the test is summarized in the table below.

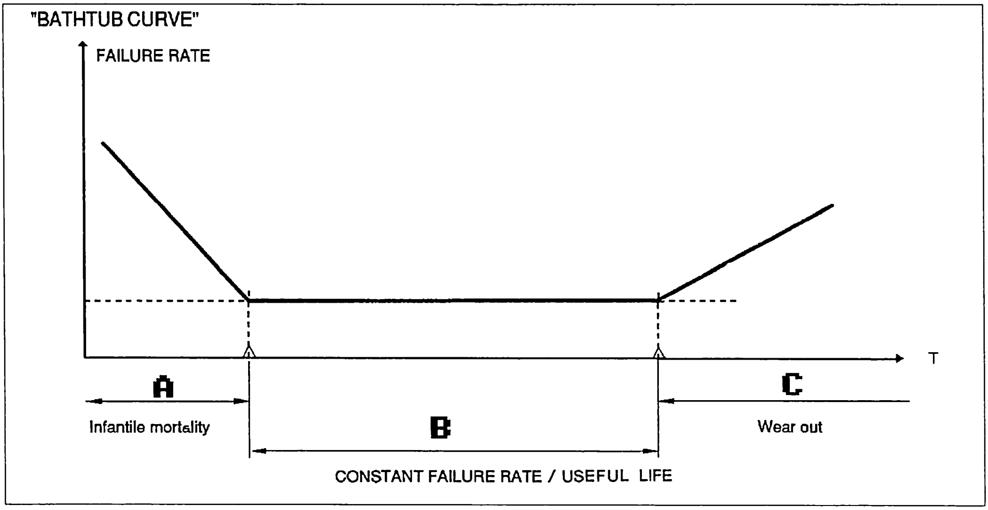
RELIABILITY TEST	FAILURE MODE POSSIBILITY					
	DIFFUSION	PASSIVATION	DIE SEPARATION	DIE METALLIZATION DIE ATTACH	MOLDING	INSULATING VOLTAGE
THERMAL FATIGUE	0	0	0	++	0	+
HIGH TEMP. REVERSE BIAS	+	++	++	0	+	0
TEMP. CYCLING	0	++	++	+	+	++
STORAGE	+	+	0	+	+	0
HUMIDITY TEST	0	+	+	0	++	+
THERMAL SHOCKS	0	+	+	0	++	++

KEY : ++ High probability to detect a fault
+ Medium probability to detect a fault
0 low probability to detect a fault

8. RELIABILITY RESULTS :

8.1. DEFINITIONS :

. Bath tub curve.
The failure rate distribution follows the familiar bath tube curve shown below :



- Zone A covers the infant mortality period, the predominant failure mechanism are usually related to assembly defects.

- Zone B covers the random failure portion of the distribution curve related to the device's useful life. This time duration is generally very long, it depends on the stress in the application.

- Failures in zone C are wearout failures consisting of catastrophic failures.

. Arrhenius law :
- The temperature is one of the main factor affecting the reliability.
- The failure rate increases rapidly with the junction temperature following the Arrhenius law :

$$\lambda = \lambda_o e^{- Ea/k (Tj-To)}$$

When : λ = failure rate at Tj
λ_o = failure rate at To
K = Boltzmann's constant = $8.62\ 10^{-5}$ ev/°K
Ea = activation energy

The typical activation energy for random failure on Scr's and Triacs is 1eV.

. FIT (failure in time) :

In zone B of the bathtub curve, the failure rate (λ) is given in FIT.

1 FIT = 1 failure in 10^9 devices x hours

. LTPD :

Lot Tolerance Percent Defectives.

In respect to the limited sample size and failure quantity involved in the corresponding test, the LTPD value defines with a 90% confidence level the max. percent defectives which is expected when the test is reproduced.

LTPD values are calculated with the MIL - S - 19500.

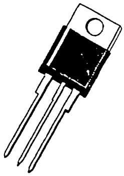
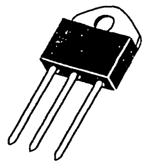
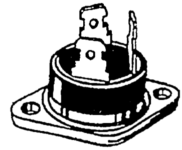
8.2. RESULTS :

Yearly results are given, on request, for each Scr's and Triacs family.

PRODUCT GUIDE

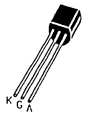
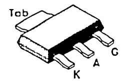
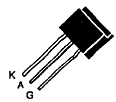
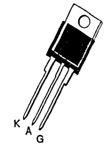
LIST OF SYMBOLS

dI/dt	Critical rate of rise of on-state current
$(dI/dt)_C$	Critical rate of decrease of commutating on-state current of a triac
dV/dt	Critical rate of rise of off-state voltage
$(dV/dt)_C$	Critical rate of rise of commutating off-state voltage of a triac
Ep	Energy per pulse
I_B	Leakage current for a diac
I_{BO}	Breakover current
I_{DRM}/I_{RRM}	Maximum forward and reverse leakage current
I_{FGM}	Peak forward gate current of a SCR
I_{GM}	Peak gate current of a triac
I_{GT}	Gate trigger current
I_H	Holding current
I_L	Latching current
$I_{T(AV)}$	Average on-state current of a SCR
I_{TM}	Peak on-state current
I_{TRM}	Repetitive peak on-state current
$I_{T(RMS)}$	RMS on-state current
I_{TSM}	Non repetitive surge peak on-state current
I^2t	Thermal constraint for fuse calibration (IEC STD)
$P_{G(AV)}$	Average gate power dissipation
P_{GM}	Peak gate power
Rt	Dynamic on-state resistance
Rth(c-h)	Contact thermal resistance
Rth(j-a)	Junction - ambient thermal resistance
Rth(j-c)	Junction - case thermal resistance
Rth(j-c)AC	Junction - case thermal resistance for alternative current
Rth(j-c)DC	Junction - case thermal resistance for direct current
Rth(j-l)	Junction - leads thermal resistance
Tamb	Ambient temperature
Tcase, Tc	Case temperature
tgt	Turn on time
Tj	Junction temperature
Tl	Leads temperature
tp	Pulse width
tq	Turn-off time of a SCR
tr	Rise time
Tstg	Storage temperature
V_{BO}	Breakover voltage
V_{DRM}/V_{RRM}	Repetitive forward and reverse off-state voltage
V_{FGM}	Peak forward gate voltage of a SCR
V_{GD}	Gate non-trigger voltage
V_{GM}	Peak gate voltage
V_{GT}	Gate trigger voltage
V_{RGM}	Peak reverse gate voltage of a SCR
V_{TM}	Peak on-state voltage drop
Vto	Threshold voltage
Zth	Thermal impedance

CASE / TYPE	TO220 AB 	TOP 3 	RD 91 
SCR'S	TXN058 ---> 1008,G TXN0512 ---> 1012	BTW68-200 ---> 1200 BTW69-200 ---> 1200	BTW66-200 ---> 1200 BTW67-200 ---> 1200
TRIACS	**Logic level triacs**		
	BTA06-400 ---> 700 SW BTA06-400 ---> 700 TW BTA08-400 ---> 700 SW BTA08-400 ---> 700 TW BTA12-400 ---> 700 SW		
	Snubberless triacs		
	BTA06-400 ---> 800 BW,CW BTA08-400 ---> 800 BW,CW BTA10-400 ---> 800 BW,CW BTA12-400 ---> 800 BW,CW BTA16-400 ---> 800 BW,CW BTA20-400 ---> 800 BW	BTA26-400 ---> 800 BW	
	Sensitive gate triacs		
	BTA04-400 ---> 700 A,D,S,T BTA06-400 ---> 700 A,D,S,T BTA08-400 ---> 700 A,S		
	Standard triacs		
	BTA06-400 ---> 800 B,C BTA08-400 ---> 800 B,C BTA10-400 ---> 800 B,C BTA12-400 ---> 800 B,C BTA16-400 ---> 800 B	BTA26-400 ---> 800 A,B BTA41-400 ---> 800 A,B	BTA25-400 ---> 800 A,B BTA40-400 ---> 800 A,B
	Special triacs for light dimmers		
	BTA06-400 ---> 600 GP BTA10-400 ---> 600 GP		
	Alternistors		
	TXDV408 ---> 808 TXDV412 ---> 812	TPDV625 ---> 1225 TPDV640 ---> 1240	TODV625 ---> 1225 TODV640 ---> 1240

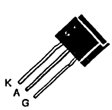
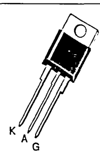
UL registration number : E81734

SENSITIVE GATE PLASTIC CASE SCR'S

Case	 TO 92			 SOT 223	 TL	 TO220 AB	
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	0.8			1	4	4	6
	(1)	(2)	(3)	(3)	(3)	(3)	(3)
50					TLS106-05	TYS406-05	TYS606-05
100	TS0802-10	TS0805-10	TS0820-10		TLS106-1	TYS406-1	TYS606-1
200	TS0802-20	TS0805-20	TS0820-20		TLS106-2	TYS406-2	TYS606-2
400	TS0802-40	TS0805-40	TS0820-40	TS120-400F	TLS106-4	TYS406-4	TYS606-4
600	TS0802-60	TS0805-60	TS0820-60	TS120-600F	TLS106-6	TYS406-6	TYS606-6
800			TS0820-80	TS120-800F		TYS406-8	TYS606-8

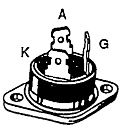
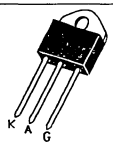
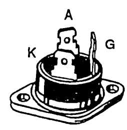
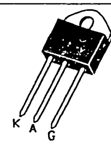
(1) I_{GT} = 0.02 mA
(2) I_{GT} = 0.05 mA
(3) I_{GT} = 0.2 mA

STANDARD PLASTIC CASE SCR'S

Case	 TL	 TO220 AB							
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	3	4	6	8	10	12	16	20	25
	$I_{GT} \leq$ 15mA	$I_{GT} \leq$ 15mA	$I_{GT} \leq$ 15mA	$I_{GT} \leq$ 15mA (1) (2)	$I_{GT} \leq$ 15mA	$I_{GT} \leq$ 15mA (2)	$I_{GT} \leq$ 25mA	$I_{GT} \leq$ 25mA	$I_{GT} \leq$ 40mA
50			TYN056	TYN058	TYN0510	TYN0512	TYN0516	TYN682	
100	TL1006		TYN106	TYN108	TYN110	TYN112	TYN116	TYN683	
200	TL2006	TYN204	TYN206	TYN208	TYN210	TYN212	TYN216	TYN685	TYN225
400	TL4006	TYN404	TYN406	TYN408	TYN410	TYN412	TYN416	TYN688	TYN425
600	TL6006	TYN604	TYN606	TYN608	TYN610	TYN612	TYN616	TYN690	TYN625
800	TL8006	TYN804	TYN806	TYN808	TYN810	TYN812	TYN816	TYN692	TYN825
1000		TYN1004	TYN1006	TYN1008	TYN1010	TYN1012			TYN1025

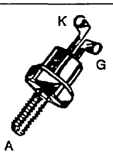
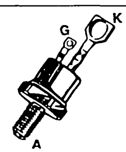
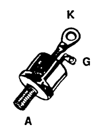
(1) Suffix G : I_{GT} max = 25mA
(2) Insulated version available. Insulating voltage 2500 $V_{(RMS)}$: ordering information TXN . Example TXN 058

STANDARD PLASTIC CASE SCR'S (Continued)

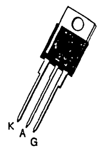
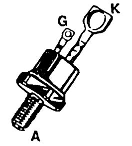
Case	 RD 91	 TOP 3		 RD 91	 TOP 3	
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	30 (1) (3)	30 (1) (3)	35 (1)	40 (2) (3)	50 (2) (3)	55 (2)
200	BTW66-200	BTW68-200		BTW67-200	BTW69-200	
400	BTW66-400	BTW68-400		BTW67-400	BTW69-400	
600	BTW66-600	BTW68-600	BTW68-600 N	BTW67-600	BTW69-600	BTW69-600 N
800	BTW66-800	BTW68-800	BTW68-800 N	BTW67-800	BTW69-800	BTW69-800 N
1000	BTW66-1000	BTW68-1000	BTW68-1000 N	BTW67-1000	BTW69-1000	BTW69-1000 N
1200	BTW66-1200	BTW68-1200	BTW68-1200 N	BTW67-1200	BTW69-1200	BTW69-1200 N

(1) I_{GT} max = 50 mA
(2) I_{GT} max = 80 mA
(3) Insulated . Insulating voltage : 2500 $V_{(RMS)}$

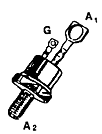
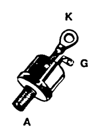
STANDARD METAL CASE SCR'S

Case	 TO 64	 TO48				 TO 65
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	7.5 Tcase = 90°C	30 Tcase = 75°C	25 Tcase = 70°C	35 Tcase = 75°C	50 Tcase = 85°C	63 Tcase = 105°C
50	2N1771		2N682			
100	2N1772	BTW39-100	2N683			
200	2N1774	BTW39-200	2N685		BTW48-200	BTW50-200
400	2N1777	BTW39-400	2N688		BTW48-400	BTW50-400
600	2N2619	BTW39-600	2N690	2N5204	BTW48-600	BTW50-600
800		BTW39-800	2N692	2N5205	BTW48-800	BTW50-800
1000		BTW39-1000		2N5206		BTW50-1000
1200		BTW39-1200		2N5207	BTW48-1200	BTW50-1200

OVERVOLTAGE PROTECTION SCR'S

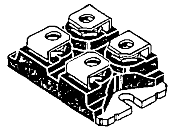
Case	 TO220 AB	 T0 48
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**12** I_{TSM} = 750 A (1ms expo)	**25** I_{TSM} = 145 A (250 ms)
25	TYP212	TSP225
50	TYP512	TSP525
100	TYP1012	TSP1025
200	TYP2012	

FAST SWITCHING SCR'S

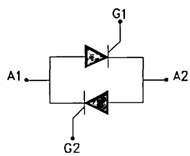
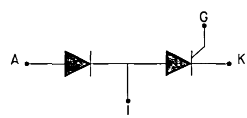
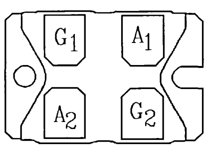
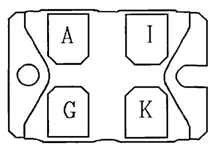
Case	 T0 48			 T0 65	
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**25** (1)	**35** tq ≤ 10 μs	**35** tq ≤ 15 μs	**63** tq ≤ 20 μs	**63** tq ≤ 40 μs
100		2N3655	2N3650		
200		2N3656	2N3651	TGF149-200 A	
400		2N3658	2N3653	TGF149-400 A	
600	BTW30-600			TGF149-600 A	TGF148-600 B
800	BTW30-800				TGF148-800 B
1000	BTW30-1000				TGF148-1000 B
1200	BTW30-1200				TGF148-1200 B

(1) V_{DRM} ≤ 800 V - tq ≤ 12 μs / V_{DRM} ≥ 1000 V - tq ≤ 20 μs

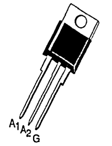
MODULE

Case	 ISOTOP			
V_{DRM} (V)	$I_{T(RMS)}$ (A)		$I_{T(AV)}$ (A)	
	55	70	50	70
800	MSS40-800	MSS50-800	MDS35-800	MDS50-800
1000			MDS35-1000	MDS50-1000
1200	MSS40-1200	MSS50-1200	MDS35-1200	MDS50-1200

I_{GT} = 50 mA (All MSS / MDS versions)

	MSS	MDS
Structure		
Pin connection		

HIGH SWITCHING PERFORMANCE TRIACS
Logic Level Triacs / H.C.T. Family

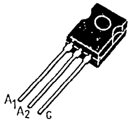
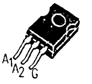
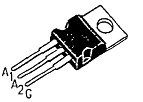
Case	 TO220 AB					
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	6 (1) (2)	8 (1) (2)	12 (2) (3)	5 (4) (5)	8 (4) (6)	12 (4) (6)
400	BTA06-400	BTA08-400	BTA12-400	AVS08CB	AVS10CB	AVS12CB
600	BTA06-600	BTA08-600	BTA12-600			
700	BTA06-700	BTA08-700	BTA12-700			

(1) With suffixes : TW , SW
(2) Non isolated type available. Designation BTB
(3) With suffix : SW only
(4) Isolated type available. Designation CBI
(5) KIT with AVS1BCP08
(6) KIT with AVS1ACP08

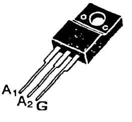
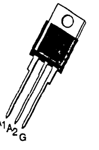
Suffix I_{GT}	Quadrants		
	Q I	Q II	Q III
TW	5 mA	5 mA	5 mA
SW	10 mA	10 mA	10 mA

HIGH SWITCHING PERFORMANCE TRIACS (Continued)

Snubberless Triacs / H.C.T. Family

Case	 SOT 82		 SOT 194		 TO220 AB	
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**4**	**4**	**4**	**4**	**4**	**4**
400 600 700 800	T410-400 D T410-600 D T410-700 D T410-800 D	T435-400 D T435-600 D T435-700 D T435-800 D	T410-400 K T410-600 K T410-700 K T410-800 K	T435-400 K T435-600 K T435-700 K T435-800 K	T410-400 T T410-600 T T410-700 T T410-800 T	T435-400 T T435-600 T T435-700 T T435-800 T

Snubberless Triacs / H.C.T. Family

Case	 ISOWATT220		 TO220 AB
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**4**	**4**	**6** (1) (2)
400 600 700 800	T410-400 W T410-600 W T410-700 W T410-800 W	T435-400 W T435-600 W T435-700 W T435-800 W	BTA06-400 BTA06-600 BTA06-700 BTA06-800

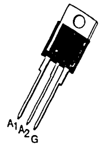
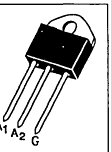
(1) With suffixes : BW , CW

Suffix I_{GT}	Quadrants		
	Q I	**Q II**	**Q III**
BW	50 mA	50 mA	50 mA
CW	35 mA	35 mA	35 mA

I_{GT}	Quadrants		
	Q I	**Q II**	**Q III**
T410 *	10 mA	10 mA	10 mA
T435 *	35 mA	35 mA	35 mA

* T4 family

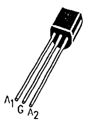
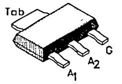
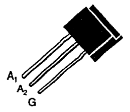
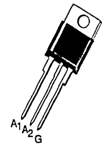
Snubberless Triacs / H.C.T. Family

Case	 TO220 AB						 TOP 3
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**8** (1) (2)	**10** (1) (2)	**12** (1) (2)	**16** (1) (2)	**20** (1) (2)	**25** (1)	**25** (1)
400	BTA08-400	BTA10-400	BTA12-400	BTA16-400	BTA20-400	BTB24-400	BTA26-400
600	BTA08-600	BTA10-600	BTA12-600	BTA16-600	BTA20-600	BTB24-600	BTA26-600
700	BTA08-700	BTA10-700	BTA12-700	BTA16-700	BTA20-700	BTB24-700	BTA26-700
800	BTA08-800	BTA10-800	BTA12-800	BTA16-800	BTA20-800	BTB24-800	BTA26-800

(1) With suffixes : BW , CW
(2) Non isolated type available. Designation BTB

Suffix I_{GT}	Quadrants		
	Q I	**Q II**	**Q III**
BW	50 mA	50 mA	50 mA
CW	35 mA	35 mA	35 mA

SENSITIVE GATE TRIACS

Case	 TO 92	 SOT 223	 TL	 TO220 AB		
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**0.8**	**1**	**3** (1)	**4** (1) (3)	**6** (1) (3)	**8** (2) (3)
200	T08-2 A		TLC 116			
400	T08-4 A	T110-400 F	TLC 226	BTA04-400	BTA06-400	BTA08-400
600	T08-6 A	T110-600 F	TLC 336	BTA04-600	BTA06-600	BTA08-600
700			TLC 386	BTA04-700	BTA06-700	BTA08-700

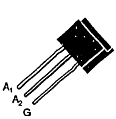
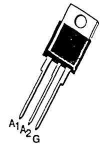
(1) With suffixes : T , S , D , A
(2) With suffixes : S , A
(3) Non isolated type available. Designation BTB

Suffix I_{GT}	Quadrants			
	Q I	Q II	Q III	Q IV
T	5 mA	5 mA	5 mA	5 mA
D	5 mA	5 mA	5 mA	10 mA
S	10 mA	10 mA	10 mA	10 mA
A	10 mA	10 mA	10 mA	25 mA

I_{GT}	Quadrants			
	Q I	Q II	Q III	Q IV
T110 *	10 mA	10 mA	10 mA	25 mA

* T1 family

STANDARD PLASTIC CASE TRIACS

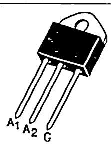
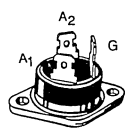
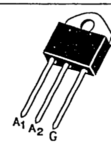
Case	 TL	 TO220 AB					
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	3 (1)	6 (2) (3)	8 (2) (3)	10 (2) (3)	12 (2) (3)	16 (1) (3)	25 (1)
200	TLC 116						
400	TLC 226	BTA06-400	BTA08-400	BTA10-400	BTA12-400	BTA16-400	BTB24-400
600	TLC 336	BTA06-600	BTA08-600	BTA10-600	BTA12-600	BTA16-600	BTB24-600
700	TLC 386	BTA06-700	BTA08-700	BTA10-700	BTA12-700	BTA16-700	BTB24-700
800		BTA06-800	BTA08-800	BTA10-800	BTA12-800	BTA16-800	BTB24-800

(1) With suffix : B
(2) With suffixes : B , C
(3) Non isolated type available. Designation BTB

Suffix I_{GT}	Quadrants			
	Q I	Q II	Q III	Q IV
B	50 mA	50 mA	50 mA	100 mA
C / B*	25 mA	25 mA	25 mA	50 mA

* TLC family

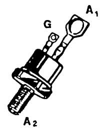
STANDARD PLASTIC CASE TRIACS

Case	 TOP 3		 RD 91		 TOP 3	
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	25 (1)	30	30 (1)	40 (1)	40 (1)	45
400	BTA26-400 B, A	BTB26-400 B	BTA25-400 B, A	BTA40-400 B, A	BTA41-400 B, A	BTB41-400 B
600	BTA26-600 B, A	BTB26-600 B	BTA25-600 B, A	BTA40-600 B, A	BTA41-600 B, A	BTB41-600 B
700	BTA26-700 B, A	BTB26-700 B	BTA25-700 B, A	BTA40-700 B, A	BTA41-700 B, A	BTB41-700 B
800	BTA26-800 B, A	BTB26-800 B	BTA25-800 B, A	BTA40-800 B, A	BTA41-800 B, A	BTB41-800 B

(1) Insulated case - Insulating voltage 2500 $V_{(RMS)}$

Suffix I_{GT}	Quadrants			
	Q I	Q II	Q III	Q IV
A	100 mA	100 mA	100 mA	150 mA
B	50 mA	50 mA	50 mA	100 mA

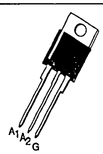
STANDARD METAL CASE TRIACS



Case	TO 48		TO 65
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	25 (1)	35 (1)	60 (2)
200	TRAL 1125 D	TRAL 1135 D	
400	TRAL 2225 D	TRAL 2235 D	TGAL 604
600	TRAL 3325 D	TRAL 3335 D	TGAL 606
700	TRAL 3825 D	TRAL 3835 D	
800			TGAL 608
1000			TGAL 610

Note I_{GT}	Quadrants			
	Q I	Q II	Q III	Q IV
(1)	100 mA	100 mA	100 mA	150 mA
(2)	100 mA	150 mA	100 mA	150 mA

SPECIAL TRIACS FOR LIGHT DIMMERS

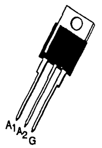
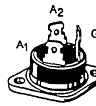
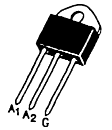
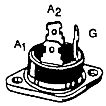
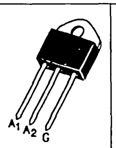


Case	TO220 AB	
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	6 (1)	10 (1)
400	BTA06-400 GP	BTA10-400 GP
600	BTA06-600 GP	BTA10-600 GP

Note I_{GT}	Quadrants			
	Q I	Q II	Q III	Q IV
(1)	50 mA	50 mA	50 mA	75 mA

Insulated case - Insulating voltage 2500 $V_{(RMS)}$

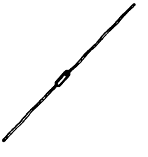
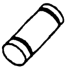
ALTERNISTORS

Case	 TO220 AB		 RD 91	 TOP 3	 RD 91	 TOP 3	 TO 65
$I_{T(RMS)}$ (A) / V_{DRM} (V) ±	**8** (1) (4)	**12** (1) (4)	**25** (2) (4)	**25** (2) (4)	**40** (3) (4)	**40** (3) (4)	**60** (3)
400	TXDV 408	TXDV 412					
600	TXDV 608	TXDV 612	TODV 625	TPDV 625	TODV 640	TPDV 640	TGDV 606
800	TXDV 808	TXDV 812	TODV 825	TPDV 825	TODV 840	TPDV 840	TGDV 608
1000			TODV 1025	TPDV 1025	TODV 1040	TPDV 1040	TGDV 610
1200			TODV 1225	TPDV 1225	TODV 1240	TPDV 1240	TGDV 612

Note I_{GT}	Quadrants		
	Q I	**Q II**	**Q III**
(1)	100 mA	100 mA	100 mA
(2)	150 mA	150 mA	150 mA
(3)	200 mA	200 mA	200 mA

(4) Insulated case - Insulating voltage 2500 $V_{(RMS)}$

TRIGGER DIODES (DIACS)

Case			 DO 35	 Minimelf
Breakover voltage			Types	
Min	**Typ**	**Max**		
28	32	36	DB 3	TMMDB 3
35	40	45	DB 4	
30	34	38	DC 34	

HIGH COMMUTATION TECHNOLOGY (H.C.T.)

The SGS-THOMSON "SNUBBERLESS™" and LOGIC LEVEL generation of triac devices are designed for high switching performance applications. We offer standard and high sensitivity devices, giving "SNUBBERLESS" and "LOGIC LEVEL" options.

THE "SNUBBERLESS H.C.T."

These triacs combine an exceptionally high switching commutation performance with standard gate sensitivity and other static parameters. These devices are available with maximum current ratings from 4 A to 25 A, each with a choice of 35 mA or 50 mA gate sensitivities with static dV/dt min of 250 and 500 V/µs respectively.

- T435 / T635* / T835* and BTA / BTB series with "CW" suffix for 35 mA I_{GT}
- BTA / BTB series with "BW" suffix for 50 mA I_{GT}.

In most cases the "SNUBBERLESS H.C.T." doesn't need external RC network (snubber).

THE "LOGIC LEVEL H.C.T."

These triacs are based on the same high performance technology as the "SNUBBERLESS H.C.T." family, but have gate sensitivities as low as 5 mA / 10 mA. They can therefore be directly driven by logic IC's. These parts are available with maximum current ratings from 4 A to 12 A, each with a choice of 5 mA or 10 mA gate sensitivities with static dV/dt min of 20 and 50 V/µs respectively.

- T405* and BTA / BTB series with "TW" suffix for 5 mA I_{GT}.
- T410 / T610* / T810* and BTA / BTB series with "SW" suffix for 10 mA I_{GT}.

Thanks to the "H.C.T.", the designer now has available devices with a commutating behaviour which is compatible with all applications in the 50 or 60 Hz ranges. This includes phase control and static commutation for loads going from a few watts to several kilowatts.

Note : * IN DEVELOPMENT

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
2N6071	T435-400D	
2N6071A		T410-400D
2N6073	T435-400D	
2N6073A		T410-400D
2N6075	T435-600D	
2N6075A		T410-600D
2N6342	BTB08-400BW	
2N6342A	BTB12-400BW	
2N6343	BTB08-400BW	
2N6343A	BTB12-400BW	
2N6344	BTB08-600BW	
2N6344A	BTB12-600BW	
2N6345	BTB08-800BW	
2N6345A	BTB12-800BW	
2N6346	BTB08-400B	
2N6346A	BTB12-400B	
2N6347	BTB08-400B	
2N6347A	BTB12-400B	
2N6348	BTB08-600B	
2N6348A	BTB12-600B	
2N6349	BTB08-800B	
2N6349A	BTB12-800BW	
2N6394	TYN0512	
2N6395	TYN112	
2N6396	TYN212	
2N6397	TYN412	
2N6398	TYN612	
2N6399	TYN812	
2N6400	TYN0516	
2N6401	TYN116	
2N6402	TYN216	
2N6403	TYN416	
2N6404	TYN616	
2N6405	TYN816	
2N6504	TYN225	
2N6505	TYN225	
2N6506	TYN225	
2N6507	TYN425	
2N6508	TYN625	
2N6509	TYN825	
BCR3AM12		T410-600D
BCR3AM8		T410-400D
BCR4AM12	T410-600T	
BCR4AM8	T410-400T	
BCR5AM12		T435-600T
BCR5AM8		T435-400T
BCR5AS12		T435-600D
BCR5AS8		T435-400D
BR100/03	DB3	
BT134W-500		T110-600F
BT134W-600		T110-600F
BT134-500	T435-600D	
BT134-500D		T410-600D
BT134-500E	T410-600D	
BT134-500F	T410-600D	

INDUSTRY PART NUMBER.	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
BT134-500G	T435-600D	
BT134-600	T435-600D	
BT134-600D		T410-600D
BT134-600E	T410-600D	
BT134-600F	T410-600D	
BT134-600G	T435-600D	
BT134-700	T435-700D	
BT134-700E	T410-700D	
BT134-700F	T410-700D	
BT134-700G	T435-700D	
BT134-800	T435-800D	
BT134-800E	T410-800D	
BT134-800F	T410-800D	
BT134-800G	T435-800D	
BT136F-500	T435-600W	
BT136F-500D		T410-600W
BT136F-500E	T410-600W	
BT136F-500F	T410-600W	
BT136F-500G	T435-600W	
BT136F-600	T435-600W	
BT136F-600D		T410-600W
BT136F-600E	T410-600W	
BT136F-600F	T410-600W	
BT136F-600G	T435-600W	
BT136F-700	T435-700W	
BT136F-700E	T410-700W	
BT136F-700F	T410-700W	
BT136F-700G	T435-700W	
BT136F-800	T435-800W	
BT136F-800E	T410-800W	
BT136F-800F	T410-800W	
BT136F-800G	T435-800W	
BT136-500	T435-600T	
BT136-500D		T410-600T
BT136-500E	T410-600T	
BT136-500F	T410-600T	
BT136-500G	T435-600T	
BT136-600	T435-600T	
BT136-600D		T410-600T
BT136-600E	T410-600T	
BT136-600F	T410-600T	
BT136-600G	T435-600T	
BT136-700	T435-700T	
BT136-700E	T410-700T	
BT136-700F	T410-700T	
BT136-700G	T435-700T	
BT136-800	T435-800T	
BT136-800E	T410-800T	
BT136-800F	T410-800T	
BT136-800G	T435-800T	
BT137F500		BTA08-600CW
BT137F500D		BTA08-600TW
BT137F500E		BTA08-600A
BT137F500F		BTA08-600C
BT137F500G		BTA08-600B

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
BT137F600		BTA08-600CW
BT137F600E		BTA08-600A
BT137F600F		BTA08-600C
BT137F600G		BTA08-600B
BT137-500	BTB08-600C	
BT137-500D		BTB08-600TW
BT137-500E	BTB08-600A	
BT137-500F	BTB08-600C	
BT137-500G	BTB08-600B	
BT137-600	BTB08-600C	
BT137-600D		BTB08-600TW
BT137-600E	BTB08-600A	
BT137-600F	BTB08-600C	
BT137-600G	BTB08-600B	
BT137-700	BTB08-700C	
BT137-700D		BTB08-700TW
BT137-700E	BTB08-700A	
BT137-700F	BTB08-700C	
BT137-700G	BTB08-700B	
BT137-800	BTB08-800C	
BT137-800F	BTB08-800C	
BT137-800G	BTB08-800B	
BT138F500		BTA12-600CW
BT138F500E		BTA12-600SW
BT138F500F		BTA12-600C
BT138F500G		BTA12-600B
BT138F600		BTA12-600CW
BT138F600F		BTA12-600C
BT138F600G		BTA12-600B
BT138F700		BTA12-700CW
BT138F700E		BTA12-700SW
BT138F700F		BTA12-700C
BT138F700G		BTA12-700B
BT138F800		BTA12-800CW
BT138F800F		BTA12-800C
BT138F800G		BTA12-800B
BT138-500	BTB12-600C	
BT138-500E		BTB12-600SW
BT138-500F	BTB12-600C	
BT138-500G	BTB12-600B	
BT138-600	BTB12-600C	
BT138-600F	BTB12-600C	
BT138-600G	BTB12-600B	
BT138-700	BTB12-700C	
BT138-700E		BTB12-700SW
BT138-700F	BTB12-700C	
BT138-700G	BTB12-700B	
BT138-800	BTB12-800C	
BT138-800F	BTB12-800C	
BT138-800G	BTB12-800B	
BT139F500		BTA16-600CW
BT139F500F		BTA16-600CW
BT139F500G		BTA16-600B
BT139F600		BTA16-600CW
BT139F600F		BTA16-600CW

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
BT139F600G		BTA16-600B
BT139F700		BTA16-700CW
BT139F700F		BTA16-700CW
BT139F700G		BTA16-700B
BT139F800		BTA16-800CW
BT139F800F		BTA16-800CW
BT139F800G		BTA16-800B
BT139-500		BTB16-600CW
BT139-500F		BTB16-600CW
BT139-500G	BTB16-600B	
BT139-600		BTB16-600CW
BT139-600F		BTB16-600CW
BT139-600G	BTB16-600B	
BT139-700		BTB16-700CW
BT139-700F		BTB16-700CW
BT139-700G	BTB16-700B	
BT139-800		BTB16-800CW
BT139-800F		BTB16-800CW
BT139-800G	BTB16-800B	
BT145-500R	TYN625	
BT145-600R	TYN625	
BT145-800R	TYN825	
BT148W-400R	TS120-400F	
BT148W-500R	TS120-600F	
BT148W-600R	TS120-600F	
BT149-B	TS082020	
BT149-D	TS082040	
BT149-E	TS082060	
BT149-G	TS082060	
BT150	TYS406-6	
BT151F500		TXN608
BT151F650		TXN808
BT151F800		TXN808
BT151-500R	TYN610	
BT151-650R	TYN810	
BT151-800R	TYN810	
BT152-400R	TYN688	
BT152-600R	TYN690	
BT152-800R	TYN692	
BT169-B		TS082020
BT169-D		TS082040
BT169-E		TS082060
BT169-G		TS082060
BTA140-500	BTB24-600B	
BTA140-600	BTB24-600B	
BTA140-700	BTB24-700B	
BTA140-800	BTB24-800B	
C106A		TLS106-1
C106B		TLS106-2
C106D		TLS106-4
C106F		TLS106-05
C106M		TLS106-6
C228A		2N5204
C228B		2N5204
C228D		2N5204

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
C228M		2N5204
C35A		2N5204
C35B		2N5204
C35D		2N5204
C35M		2N5204
C35N		2N5205
EC103A	TS082010	
EC103A2	TS080510	
EC103B	TS082020	
EC103B2	TS080520	
EC103C	TS082030	
EC103C2	TS080530	
EC103D	TS082040	
EC103D2	TS080540	
EC103E	TS082060	
EC103E2	TS080560	
EC103M	TS082060	
ES103M2	TS080560	
HT32	DB3	
HT35	DC34	
HT40	DC38	
L2004F51		T410-400T
L2004F71		T410-400T
L2004F91		T435-400T
L2004L3	BTA04-400T	
L2004L5	BTA04-400T	
L2004L7	BTA04-400S	
L2004L9	BTA04-400A	
L2006L6	BTA06-400TW	
L2006L7	BTA06-400SW	
L2006L9	BTA06-400A	
L2008L6	BTA08-400TW	
L2008L7	BTA08-400SW	
L2008L9	BTA08-400A	
L201E7		T08-2A
L201E9		T08-2A
L4004F51		T410-400T
L4004F71		T410-400T
L4004F91		T435-400T
L4004L3	BTA04-400T	
L4004L5	BTA04-400T	
L4004L7	BTA04-400S	
L4004L9	BTA04-400A	
L4006L6	BTA06-400TW	
L4006L7	BTA06-400SW	
L4006L9	BTA06-400A	
L4008L6	BTA08-400TW	
L4008L7	BTA08-400SW	
L4008L9	BTA08-400A	
L401E7		T08-4A
L401E9		T08-4A
L6004F31		BTB04-600T
L6004F51		BTB04-600T
L6004F71		T410-600T
L6004F91		T435-600T

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
L6004L3	BTA04-600T	
L6004L5	BTA04-600T	
L6004L7	BTA04-600S	
L6004L9	BTA04-600A	
L6006L6	BTA06-600TW	
L6006L7	BTA06-600SW	
L6006L9	BTA06-600A	
L6008L6	BTA08-600TW	
L6008L7	BTA08-600SW	
L6008L9	BTA08-600A	
L601E5		TO8-6A
L601E7		TO8-6A
L601E9		TO8-6A
MAC15A10	BTB16-800B	
MAC15A10FP		BTA16-800B
MAC15A4	BTB16-400B	
MAC15A4FP		BTA16-400B
MAC15A6	BTB16-400B	
MAC15A6FP		BTA16-400B
MAC15A8	BTB16-600B	
MAC15A8FP		BTA16-600B
MAC15-10	BTB16-800BW	
MAC15-10FP		BTA12-800BW
MAC15-4	BTB16-400BW	
MAC15-4FP		BTA12-400BW
MAC15-6	BTB16-400BW	
MAC15-6FP		BTA12-400BW
MAC15-8	BTB16-600BW	
MAC15-8FP		BTA12-600BW
MAC210A10	BTB10-800B	
MAC210A10FP		BTA10-800B
MAC210A4	BTB10-400B	
MAC210A4FP		BTA10-400B
MAC210A6	BTB10-400B	
MAC210A6FP		BTA10-400B
MAC210A8	BTB10-600B	
MAC210A8FP		BTA10-600B
MAC210-10	BTB10-800BW	
MAC210-10FP		BTA10-800BW
MAC210-4	BTB10-400BW	
MAC210-4FP		BTA10-400BW
MAC210-6	BTB10-400BW	
MAC210-6FP		BTA10-400BW
MAC210-8	BTB10-600BW	
MAC210-8FP		BTA10-600BW
MAC212A10	BTB12-800B	
MAC212A10FP		BTA12-800B
MAC212A4	BTB12-400B	
MAC212A4FP		BTA12-400B
MAC212A6	BTB12-400B	
MAC212A6FP		BTA12-400B
MAC212A8	BTB12-600B	
MAC212A8FP		BTA12-600B
MAC212-10	BTB12-800BW	
MAC212-10FP		BTA12-800BW

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
MAC212-4	BTB12-400BW	
MAC212-4FP		BTA12-400BW
MAC212-6	BTB12-400BW	
MAC212-6FP		BTA12-400BW
MAC212-8	BTB12-600BW	
MAC212-8FP		BTA12-600BW
MAC213-10		TXDV-812
MAC213-4		TXDV-412
MAC213-6		TXDV-412
MAC213-8		TXDV-612
MAC218A10	BTB08-800B	
MAC218A10FP		BTA08-800B
MAC218A4	BTB08-400B	
MAC218A4FP		BTA08-400B
MAC218A6	BTB08-400B	
MAC218A6FP		BTA08-400B
MAC218A8	BTB08-600B	
MAC218A8FP		BTA08-600B
MAC218-10	BTB08-800BW	
MAC218-10FP		BTA08-800BW
MAC218-4	BTB08-400BW	
MAC218-4FP		BTA08-400BW
MAC218-6	BTB08-400BW	
MAC218-6FP		BTA08-400BW
MAC218-8	BTB08-600BW	
MAC218-8FP		BTA08-600BW
MAC219-10		TXDV-808
MAC219-4		TXDV-408
MAC219-6		TXDV-408
MAC219-8		TXDV-608
MAC223A10		BTB24-800B
MAC223A4		BTB24-400B
MAC223A6		BTB24-400B
MAC223A8		BTB24-600B
MAC223-10	BTB24-800BW	
MAC223-4	BTB24-400BW	
MAC223-6	BTB24-400BW	
MAC223-8	BTB24-600BW	
MAC228A10		BTB08-700D
MAC228A10FP		BTA08-700D
MAC228A4	BTB08-400D	
MAC228A4FP		BTA08-400D
MAC228A6	BTB08-400D	
MAC228A6FP		BTA08-400D
MAC228A8	BTB08-600D	
MAC228A8FP		BTA08-600D
MAC228-10	BTB08-700TW	
MAC228-10FP		BTA08-700TW
MAC228-4	BTB08-400TW	
MAC228-4FP		BTA08-400TW
MAC228-6	BTB08-400TW	
MAC228-6FP		BTA08-400TW
MAC228-8	BTB08-600TW	
MAC228-8FP		BTA08-600TW
MAC229A10		BTB08-700A

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
MAC229A10FP		BTA08-700A
MAC229A4	BTB08-400A	
MAC229A4FP		BTA08-400A
MAC229A6	BTB08-400A	
MAC229A6FP		BTA08-400A
MAC229A8	BTB08-600A	
MAC229A8FP		BTA08-600A
MAC229-10		BTB08-700SW
MAC229-10FP		BTA08-700SW
MAC229-4	BTB08-400SW	
MAC229-4FP		BTA08-400SW
MAC229-6	BTB08-400SW	
MAC229-6FP		BTA08-400SW
MAC229-8	BTB08-600SW	
MAC229-8FP		BTA08-600SW
MAC3010-15	BTB16-400CW	
MAC3010-25	BTB24-400CW	
MAC3010-4	T435-400D	
MAC3010-8	BTB08-400CW	
MAC3020-15	BTB16-400CW	
MAC3020-25	BTB24-400CW	
MAC3020-4	T435-400D	
MAC3020-8	BTB08-400CW	
MAC3030-15	BTB16-400CW	
MAC3030-25	BTB24-400CW	
MAC3030-4	T435-400D	
MAC3030-8	BTB08-400CW	
MAC3040-15	BTB16-400CW	
MAC3040-25	BTB24-400CW	
MAC3040-4	T435-400D	
MAC3040-8	BTB08-400CW	
MAC3060-15	BTB16-600CW	
MAC3060-25	BTB24-600CW	
MAC3060-4	T435-600D	
MAC3060-8	BTB08-600CW	
MAC310-4		BTA12-400SW
MAC310-6		BTA12-400SW
MAC310-8		BTA12-600SW
MAC320A10	BTB24-800B	
MAC320A4	BTB24-400B	
MAC320A6	BTB24-400B	
MAC320-10	BTB20-800BW	
MAC320-10FP		BTA20-800BW
MAC320-4	BTB20-400BW	
MAC320-4FP		BTA20-400BW
MAC320-6	BTB20-400BW	
MAC320-6FP		BTA20-400BW
MAC320-8	BTB20-600BW	
MAC320-8FP		BTA20-600BW
MAC625-4		BTA25-400B
MAC625-6		BTA25-400B
MAC625-8		BTA25-600B
MAC635-4		BTA40-400B
MAC635-6		BTA40-400B
MAC635-8		BTA40-600B

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
MAC97-4	T08-2A	
MAC97-6	T08-4A	
MAC97-8	T08-6A	
MCR100-3	TS082010	
MCR100-4	TS082020	
MCR100-5	TS082030	
MCR100-6	TS082040	
MCR100-7	TS082060	
MCR100-8	TS082080	
MCR106-2		TLS106-05
MCR106-3		TLS106-1
MCR106-4		TLS106-2
MCR106-6		TLS106-4
MCR106-8		TLS106-6
MCR218-10	TYN808G	
MCR218-2	TYN058G	
MCR218-3	TYN108G	
MCR218-4	TYN208G	
MCR218-6	TYN408G	
MCR218-8	TYN608G	
MCR64-10	BTW48-800	
MCR64-2	BTW48-200	
MCR64-3	BTW48-200	
MCR64-4	BTW48-200	
MCR64-6	BTW48-400	
MCR64-8	BTW48-600	
MCR68-2		TYN0512
MCR68-3		TYN112
MCR68-6		TYN412
P0100AA	TS080210	
P0100BA	TS080220	
P0100CA	TS080230	
P0100DA	TS080240	
P0102AA	TS082010	
P0102BA	TS082020	
P0102CA	TS082030	
P0102DA	TS082040	
P0104AA	TS080510	
P0104BA	TS080520	
P0104CA	TS080530	
P0104DA	TS080540	
Q2004F31		T410-400T
Q2004F41		T435-400T
Q2004L3	BTA04-400S	
Q2004L4	BTA04-400A	
Q2006F41		BTB06-400CW
Q2006L4	BTA06-400CW	
Q2006R4	BTB06-400CW	
Q2008F41		BTA08-400CW
Q2008L4	BTA08-400CW	
Q2008R4	BTB08-400CW	
Q2010F51		BTB10-400BW
Q2010L5	BTA10-400BW	
Q2010R5	BTB10-400BW	
Q2015L5	BTA16-400BW	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
Q2015R5	BTB16-400BW	
Q201E3		T08-2A
Q201E4		T08-2A
Q2025J6		BTA26-400BW
Q2025K6	BTA26-400BW	
Q2025P		BTA25-400B
Q2025R6	BTB24-400BW	
Q2040J7		BTA41-400A
Q2040K7	BTA41-400A	
Q2040P		BTA40-400A
Q2040W7		BTA41-400A
Q4004F31		T410-400T
Q4004F41		T435-400T
Q4004L3	BTA04-400S	
Q4004L4	BTA04-400A	
Q4006F41		BTB06-400CW
Q4006L4	BTA06-400CW	
Q4006R4	BTB06-400CW	
Q4008F41		BTB08-400CW
Q4008L4	BTA08-400CW	
Q4008R4	BTB08-400CW	
Q4010F51		BTB10-400BW
Q4010L5	BTA10-400BW	
Q4010R5	BTB10-400BW	
Q4015L5	BTA16-400BW	
Q4015R5	BTB16-400BW	
Q401E3		T08-4A
Q401E4		T08-4A
Q4025J6		BTA26-400BW
Q4025K6	BTA26-400BW	
Q4025R6	BTB24-400BW	
Q4040J7		BTA41-400A
Q4040K7	BTA41-400A	
Q4040P		BTA40-400A
Q4040W7		BTA41-400A
Q5004F31		T410-600T
Q5004F41		T435-600T
Q5004L3	BTA04-600S	
Q5004L4	BTA04-600A	
Q5006F41		BTB06-600CW
Q5006L4	BTA06-600CW	
Q5006R4	BTB06-600CW	
Q5008F41		BTB08-600CW
Q5008L4	BTA08-600CW	
Q5008R4	BTA08-600CW	
Q5010F51		BTB10-600BW
Q5010L5	BTA10-600BW	
Q5010R5	BTB10-600BW	
Q5015L5	BTA16-600BW	
Q5015R5	BTB16-600BW	
Q501E3		TO8-6A
Q501E4		TO8-6A
Q5025J6		BTA26-600BW
Q5025K6	BTA26-600BW	
Q5025P		BTA25-600B

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
Q5025R6	BTB24-600BW	
Q5040J7		BTA41-600A
Q5040K7	BTA41-600A	
Q5040P		BTA40-600A
Q5040W7		BTA41-600A
Q6004F31		T410-600T
Q6004F41		T435-600T
Q6004L3	BTA04-600S	
Q6004L4	BTA04-600A	
Q6006F51		BTB06-600BW
Q6006L5	BTA06-600BW	
Q6006R5	BTB06-600BW	
Q6008F51		BTB08-600BW
Q6008L5	BTA08-600BW	
Q6008R5	BTB08-600BW	
Q6010F51		BTB10-600BW
Q6010L5	BTA10-600BW	
Q6010R5	BTB10-600BW	
Q6015L5	BTA16-600BW	
Q6015R5	BTB16-600BW	
Q601E3		TO8-6A
Q601E4		TO8-6A
Q6025J6		BTA26-600BW
Q6025K6	BTA26-600BW	
Q6025P		BTA25-600B
Q6025R6	BTB24-600BW	
Q6040J7		BTA41-600A
Q6040K7	BTA41-600A	
Q6040P		BTA40-600A
Q6040W7		BTA41-600A
Q7004L4	BTA04-700A	
Q7006L5	BTA06-700BW	
Q7006R5	BTB06-700BW	
Q7008L5	BTA08-700BW	
Q7008R5	BTB08-700BW	
Q7010L5	BTA10-700BW	
Q7010R5	BTB10-700BW	
Q7015L5	BTA16-700BW	
Q7015R5	BTB16-700BW	
Q7025J6		BTA26-700BW
Q7025K6	BTA26-700BW	
Q7025P		BTA25-700B
Q7025R6	BTB24-700BW	
Q7040J7		BTA41-700A
Q7040K7	BTA41-700A	
Q7040P	BTA40-700A	
Q7040W7		BTA41-700A
Q8006L5	BTA06-800BW	
Q8006R5	BTB06-800BW	
Q8008L5	BTA08-800BW	
Q8008R5	BTB08-800BW	
Q8010L5	BTA10-800BW	
Q8010R5	BTB10-800BW	
Q8015L5	BTA16-800BW	
Q8015R5	BTB16-800BW	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
Q8025J6		BTA26-800BW
Q8025K6	BTA26-800BW	
Q8025P		BTA25-800B
Q8025R6	BTB24-800BW	
Q8040J7		BTA41-800A
Q8040K7	BTA41-800A	
Q8040W7		BTA41-800A
S0304F1		TYN054
S0306F1		TYN056
S0308F1		TYN058
S0308L	TXN058	
S0308R	TYN058	
S0310F1		TYN0510
S0312R	TYN0512	
S0316R	TYN0516	
S031E		TL1006
S0402BH	TYS406-2	
S0402DH	TYS406-4	
S0402MH	TYS406-6	
S0402NH	TYS406-8	
S0407BH		TYN204
S0407DH		TYN404
S0407MH		TYN604
S0407NH		TYN804
S0410BH		TYN204
S0410DH		TYN404
S0410MH		TYN604
S0410NH		TYN804
S0503LS2		TLS106-05
S0504F1		TYN054
S0506F1		TYN056
S0506FS21		TYS606-05
S0506FS31		TYS606-05
S0508F1		TYN058
S0508L	TXN058	
S0508R	TYN058	
S0510F1		TYN0510
S0512R	TYN0512	
S0516R	TYN0516	
S051E		TL1006
S0602BH	TYS606-2	
S0602DH	TYS606-4	
S0602MH	TYS606-6	
S0602NH	TYS606-8	
S0607BH		TYN206
S0607DH		TYN406
S0607MH		TYN606
S0607NH		TYN806
S0610BH		TYN206
S0610DH		TYN406
S0610MH		TYN606
S0610NH		TYN806
S0807BH		TYN208
S0807DH		TYN408
S0807MH		TYN608

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
S0807NH		TYN808
S0810BH	TYN208G	
S0810DH	TYN408G	
S0810MH	TYN608G	
S0810NH	TYN808G	
S1003LS2		TLS106-1
S1003LS3		TLS106-1
S1004F1		TYN104
S1006F1		TYN106
S1006FS21		TYS606-1
S1006FS31		TYS606-1
S1007BH		TYN210
S1007DH		TYN410
S1007MH		TYN610
S1007NH		TYN810
S1008F1		TYN108
S1008L	TXN108	
S1008R	TYN108	
S1010BH		TYN210
S1010DH		TYN410
S1010F1		TYN110
S1012R	TYN112	
S1016R	TYN1016	
S101E		TL1006
S1025R	TYN225	
S1035K	BTW68-200	
S1035W	BTW68-600N	
S1207BH		TYN212
S1207DH		TYN412
S1207MH		TYN612
S1207NH		TYN812
S1210BH		TYN212
S1210DH		TYN412
S1210MH		TYN612
S1210NH		TYN812
S1610BH		TYN216
S1610DH		TYN416
S1610MH		TYN616
S1610NH		TYN816
S20010F1		TYN210
S2003LS2		TLS106-2
S2003LS3		TLS106-2
S2004F1		TYN204
S2006F1		TYN206
S2006FS21		TYS606-2
S2006FS31		TYS606-2
S2008F1		TYN208
S2008L	TXN208	
S2008R	TYN208	
S2012R	TYN212	
S2016R	TYN216	
S201E		TL2006
S2025R	TYN225	
S2035J	BTW68-200	
S2035K	BTW68-200	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
S2035W	BTW68-600N	
S2055M	BTW69-600N	
S2055W	BTW69-600N	
S2512BH	TYN225	
S2512BK		BTW66-200
S2512DH	TYN425	
S2512DK		BTW66-400
S2512MH	TYN625	
S2512MK		BTW66-600
S2512NH	TYN825	
S2512NK		BTW66-800
S2800A	TYN110	
S2800B	TYN210	
S2800D	TYN410	
S2800F	TYN0510	
S2800M	TYN610	
S2800N	TYN810	
S4003LS2		TLS106-4
S4003LS3		TLS106-4
S4004F1		TYN404
S4006F1		TYN406
S4006FS21		TYS606-4
S4006FS31		TYS606-4
S4008F1		TYN408
S4008L	TXN408	
S4008R	TYN408	
S4010F1		TYN410
S4012BK	BTW67-200	
S4012DK	BTW67-400	
S4012MK	BTW67-600	
S4012NK	BTW67-800	
S4012R	TYN412	
S4016R	TYN416	
S401E		TL4006
S4025R	TYN425	
S4035J	BTW68-400	
S4035K	BTW68-400	
S4035W	BTW68-600N	
S4055M	BTW69-600N	
S4055W	BTW69-600N	
S6003LS2		TLS106-6
S6003LS3		TLS106-6
S6004F1		TYN604
S6006F1		TYN606
S6006FS21		TYS606-6
S6006FS31		TYS606-6
S6008F1		TYN608
S6008L	TXN608	
S6008R	TYN608	
S6010F1		TYN610
S6012R	TYN612	
S6016R	TYN616	
S601E		TL606
S6025R	TYN625	
S6035J	BTW68-600	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
S6035K	BTW68-600	
S6035W	BTW68-600N	
S6055M	BTW69-600N	
S6055W	BTW69-600N	
S8008L	TXN808	
S8008R	TYN808	
S8012R	TYN812	
S8016R	TYN816	
S8025R	TYN825	
S8035J	BTW68-800	
S8035K	BTW68-800	
S8035W	BTW68-800N	
S8055M	BTW69-800N	
S8055W	BTW69-800N	
SC129B	BTB24-400BW	
SC129D	BTB24-400BW	
SC129E	BTB24-600BW	
SC129M	BTB24-600BW	
SC141B	BTB06-400BW	
SC141D	BTB06-400BW	
SC141E	BTB06-600BW	
SC141M	BTB06-600BW	
SC141N	BTB06-800BW	
SC143B	BTB08-400BW	
SC143D	BTB08-400BW	
SC143E	BTB08-600BW	
SC143M	BTB08-600BW	
SC146B	BTB10-400BW	
SC146D	BTB10-400BW	
SC146E	BTB10-600BW	
SC146M	BTB10-600BW	
SC146N	BTB10-800BW	
SC149B	BTB12-400BW	
SC149D	BTB12-400BW	
SC149M	BTB12-600BW	
SC151B	BTB16-400BW	
SC151D	BTB16-400BW	
SC151E	BTB16-600BW	
SC151M	BTB16-600BW	
SF10B41	TYN110	
SF10D41	TYN210	
SF10D41A	TYN210	
SF10G41	TYN410	
SF10G41A	TYN410	
SF10J41	TYN610	
SF10J41A	TYN610	
SF25D13		BTW39-200
SF25F13		BTW39-400
SF25G13		BTW39-400
SF25J13		BTW39-600
SF25L13		BTW39-800
SF25N13		BTW39-1000
SF25Q13		BTW39-1200
SF2B41		TLS106-1
SF2D41		TLS106-2

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
SF2G41		TLS106-4
SF2J41		TLS106-6
SF30D13		BTW48-200
SF30F13		BTW48-400
SF30G13		BTW48-400
SF30J13		BTW48-600
SF30L13		BTW48-800
SF30N13		BTW48-1000
SF30Q13		BTW48-1200
SF3B41	TYN204	TL1006
SF3B42		TLS106-1
SF3D41	TYN204	TL2006
SF3D42		TLS106-2
SF3G41	TYN404	TL4006
SF3G42		TLS106-4
SF3J41	TYN604	TL6006
SF3J42		TLS106-6
SF5B41	TYN106	
SF5B42	TYS606-1	
SF5D41	TYN206	
SF5D41A	TYN206	
SF5D42	TYS606-2	
SF5G41	TYN406	
SF5G41A	TYN406	
SF5G42	TYS606-4	
SF5J41	TYN606	
SF5J41A	TYN606	
SF5J42	TYS606-6	
SF8B41	TYN108K	
SF8D41	TYN208K	
SF8D41A	TYN208	
SF8G41	TYN408K	
SF8G41A	TYN408	
SF8GZ47		TXN406
SF8J41	TYN608K	
SF8J41A	TYN608	
SF8JZ47		TXN606
SFOR5B43	TS0850-100	
SFOR5D43	TS0850-200	
SFOR5G43	TS0850-400	
SFOR5J43	TS0850-600	
SM12D41	BTB12-400BW	
SM12D45	BTB12-400C	
SM12D45A	BTB12-400A	
SM12DZ46	BTA12-400C	
SM12DZ46A	BTA12-400A	
SM12G41	BTB12-400BW	
SM12G45	BTB12-400C	
SM12G45A	BTB12-400A	
SM12GZ46	BTA12-400C	
SM12GZ46A	BTA12-400A	
SM12GZ47	BTA12-400CW	
SM12GZ47A	BTA12-400SW	
SM12J41	BTB12-600BW	
SM12J45	BTB12-600C	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
SM12J45A	BTB12-600A	
SM12JZ46	BTA12-600C	
SM12JZ46A	BTA12-600A	
SM12JZ47	BTA12-600CW	
SM12JZ47A	BTA12-600SW	
SM16G45	BTB16-400CW	
SM16G45A	BTB16-400SW	
SM16GZ47	BTA16-400CW	
SM16GZ47A	BTA16-400SW	
SM16J45	BTB16-600CW	
SM16J45A	BTB16-600SW	
SM16JZ47	BTA16-600CW	
SM16JZ47A	BTA16-600SW	
SM25DZ41		BTA25-400A
SM25GZ41		BTA25-400A
SM25JZ41		BTA25-400A
SM3B41		T410-400D
SM3D41		T410-400D
SM3G41		T410-400D
SM3GZ45	T410-400T	
SM3GZ46	T410-400T	
SM3GZ47	T410-400T	
SM3J41		T410-600D
SM3JZ45	T410-600T	
SM3JZ46	T410-600T	
SM3JZ47	T410-600T	
SM6D45	BTB06-400C	
SM6D45A	BTB06-400A	
SM6DZ46	BTA06-400C	
SM6DZ46A	BTA06-400A	
SM6G45	BTB06-400C	
SM6G45A	BTB06-400A	
SM6GZ46	BTA06-400C	
SM6GZ46A	BTA06-400A	
SM6J45	BTB06-600C	
SM6J45A	BTB06-600A	
SM6JZ46	BTA06-600C	
SM6JZ46A	BTA06-600A	
SM8D41	BTB08-400BW	
SM8D45	BTB08-400C	
SM8D45A	BTB08-400A	
SM8DZ46	BTA08-400C	
SM8DZ46A	BTA08-400A	
SM8G41	BTB08-400BW	
SM8G45	BTB08-400C	
SM8G45A	BTB08-400A	
SM8GZ46	BTA08-400C	
SM8GZ46A	BTA08-400A	
SM8GZ47	BTA08-400CW	
SM8GZ47A	BTA08-400SW	
SM8J41	BTB08-600BW	
SM8J45	BTB08-600C	
SM8J45A	BTB08-600A	
SM8JZ46	BTA08-600C	
SM8JZ46A	BTA08-600A	

INDUSTRY PART NUM-BER1	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
SM8JZ47	BTA08-600CW	
SM8JZ47A	BTA08-600SW	
SMO8D43		T08-2A
SMO8G43		T08-4A
SMOR5B42	T08-2A	
SMOR5D42	T08-2A	
SMOR5G42	T08-4A	
T0409BJ	BTA04-400S	
T0409DJ	BTA04-400S	
T0409MJ	BTA04-600S	
T0409NJ		BTA04-700S
T0410BJ	BTA04-400A	
T0410DJ	BTA04-400A	
T0410MJ	BTA04-600A	
T0410NJ		BTA04-700A
T0505BH	BTB04-400T	T410-400T
T0505DH	BTB04-400T	T410-400T
T0505MH	BTB04-600T	T410-600T
T0505NH		T410-800T
T0509BH	BTB04-400S	T410-400T
T0509DH	BTB04-400S	T410-400T
T0509MH	BTB04-600S	T410-600T
T0509NH		T410-800T
T0510BH	BTB04-400A	T435-400T
T0510DH	BTB04-400A	T435-400T
T0510MH	BTB04-600A	T435-600T
T0510NH		T435-800T
T0512BH		T435-400T
T0512DH		T435-400T
T0512MH		T435-600T
T0512NH		T435-800T
T0605BH	BTB06-400T	BTB06-400TW
T0605DH	BTB06-400T	BTB06-400TW
T0605MH	BTB06-600T	BTB06-600TW
T0609BH	BTB06-400S	BTB06-400SW
T0609BJ	BTA06-400S	BTA06-400SW
T0609DH	BTB06-400S	BTB06-400SW
T0609DJ	BTA06-400S	BTA06-400SW
T0609MH	BTB06-600S	BTB06-600SW
T0609MJ	BTA06-600S	BTA06-600SW
T0609NJ		BTA06-700SW
T0610BH	BTB06-400A	BTB06-400CW
T0610BJ	BTA06-400A	BTA06-400CW
T0610DH	BTB06-400A	BTB06-400CW
T0610DJ	BTA06-400A	BTA06-400CW
T0610MH	BTB06-600A	BTB06-600CW
T0610MJ	BTA06-600A	BTA06-600CW
T0610NH		BTB06-800CW
T0610NJ		BTA06-800CW
T0612BH	BTB06-400C	BTB06-400CW
T0612BJ	BTA06-400C	BTA06-400CW
T0612DH	BTB06-400C	BTB06-400CW
T0612DJ	BTA06-400C	BTA06-400CW
T0612MH	BTB06-600C	BTB06-600CW
T0612MJ	BTA06-600C	BTA06-600CW

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
T0612NH	BTB06-800C	BTB06-800CW
T0612NJ	BTA06-800C	BTA06-800CW
T0805BH		BTB08-400TW
T0805DH		BTB08-400TW
T0805MH		BTB08-600TW
T0805NH		BTB08-800TW
T0809BH	BTB08-400S	BTB08-400SW
T0809DH	BTB08-400S	BTB08-400SW
T0809MH	BTB08-600S	BTB08-600SW
T0810BH	BTB08-400A	BTB08-400CW
T0810BJ	BTA08-400A	BTA08-400CW
T0810DH	BTB08-400A	BTB08-400CW
T0810DJ	BTA08-400A	BTA08-400CW
T0810MH	BTB08-600A	BTB08-600CW
T0810MJ	BTA08-600A	BTA08-600CW
T0810NH		BTB08-800CW
T0810NJ		BTA08-800CW
T0812BH	BTB08-400C	BTB08-400CW
T0812BJ	BTA08-400C	BTA08-400CW
T0812DH	BTB08-400C	BTB08-400CW
T0812DJ	BTA08-400C	BTA08-400CW
T0812MH	BTB08-600C	BTB08-600CW
T0812MJ	BTA08-600C	BTA08-600CW
T0812NH	BTB08-800C	BTB08-800CW
T0812NJ	BTA08-800C	BTA08-800CW
T0813BJ	BTA08-400B	BTA08-400BW
T0813DJ	BTA08-400B	BTA08-400BW
T0813MJ	BTA08-600B	BTA08-600CW
T0813NJ	BTA08-800B	BTA08-800CW
T1010BH		BTB08-400C
T1010BJ		BTA10-400C
T1010DH		BTB08-400C
T1010DJ		BTA10-400C
T1010MH		BTB08-600C
T1010MJ		BTA10-600C
T1010NH		BTB08-800C
T1010NJ		BTA10-800C
T1012BH	BTB10-400C	BTB10-400CW
T1012BJ	BTA10-400C	BTA10-400CW
T1012DH	BTB10-400C	BTB10-400CW
T1012DJ	BTA10-400C	BTA10-400CW
T1012MH	BTB10-600C	BTB10-600CW
T1012MJ	BTA10-600C	BTA10-600CW
T1012NH	BTB10-800C	BTB10-800CW
T1012NJ	BTA10-800C	BTA10-800CW
T1013BH	BTB10-400B	BTB10-400BW
T1013BJ	BTA10-400B	BTA10-400BW
T1013DH	BTB10-400B	BTB10-400BW
T1013DJ	BTA10-400B	BTA10-400BW
T1013MH	BTB10-600B	BTB10-600BW
T1013MJ	BTA10-600B	BTA10-600BW
T1013NH	BTB10-800B	BTB10-800BW
T1013NJ	BTA10-800B	BTA10-800BW
T106A1		TLS106-1
T106B1		TLS106-2

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
T106C1		TLS106-4
T106D1		TLS106-4
T106E1		TLS106-6
T106F1		TLS106-05
T106M1		TLS106-6
T107A1		TLS106-1
T107B1		TLS106-2
T107C1		TLS106-4
T107D1		TLS106-4
T107E1		TLS106-6
T107F1		TLS106-05
T107M1		TLS106-6
T1210BH		BTB12-400SW
T1210DH		BTB12-400SW
T1210MH		BTB12-600SW
T1210NH		BTB12-800SW
T1212BH	BTB12-400C	BTB12-400CW
T1212BJ	BTA12-400C	BTA12-400CW
T1212DH	BTB12-400C	BTB12-400CW
T1212DJ	BTA12-400C	BTA12-400CW
T1212MH	BTB12-600C	BTB12-600CW
T1212MJ	BTA12-600C	BTA12-600CW
T1212NH	BTB12-800C	BTB12-800CW
T1212NJ	BTA12-800C	BTA12-800CW
T1213BH	BTB12-400B	BTB12-400BW
T1213BJ	BTA12-400B	BTA12-400BW
T1213DH	BTB12-400B	BTB12-400BW
T1213DJ	BTA12-400B	BTA12-400BW
T1213MH	BTB12-600B	BTB12-600BW
T1213MJ	BTA12-600B	BTA12-600BW
T1213NH	BTB12-800B	BTB12-800BW
T1213NJ	BTA12-800B	BTA12-800BW
T1512BJ		BTA16-400BW
T1512DJ		BTA16-400BW
T1512MJ		BTA16-600BW
T1512NJ		BTA16-800BW
T1513BJ	BTA16-400B	BTA16-400BW
T1513DJ	BTA16-400B	BTA16-400BW
T1513MJ	BTA16-600B	BTA16-600BW
T1513NJ	BTA16-800B	BTA16-800BW
T1612BH	BTB16-400CW	BTB16-400BW
T1612DH	BTB16-400CW	BTB16-400BW
T1612MH	BTB16-600CW	BTB16-600BW
T1612NH	BTB16-800CW	BTB16-800BW
T1613BH	BTB16-400B	BTB16-400BW
T1613DH	BTB16-400B	BTB16-400BW
T1613MH	BTB16-600B	BTB16-600BW
T1613NH	BTB16-800B	BTB16-800BW
T2322B	T410-400D	
T2322D	T410-400D	
T2322M	T410-600D	
T2323B	T435-400D	
T2323D	T435-400D	
T2323M	T435-600D	
T2500B	BTB06-400C	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
T2500BFP		BTA06-400B
T2500D	BTB06-400C	
T2500DFP		BTA06-400B
T2500M	BTB06-600C	
T2500MFP		BTA06-600B
T2500N	BTB06-800C	
T2500NFP		BTA06-800B
T2512BH	BTB24-400CW	BTB24-400BW
T2512BK		BTA25-400B
T2512DH	BTB24-400CW	BTB24-400BW
T2512DK		BTA25-400B
T2512MH	BTB24-600CW	BTB24-600BW
T2512MK		BTA25-600B
T2512NH	BTB24-800CW	BTB24-800BW
T2512NK		BTA25-800B
T2513BH	BTB24-400B	BTB24-400BW
T2513BK		BTA25-400B
T2513DH	BTB24-400B	BTB24-400BW
T2513DK		BTA25-400B
T2513MH	BTB24-600B	BTB24-600BW
T2513MK		BTA25-600B
T2513NH	BTB24-800B	BTB24-800BW
T2513NK		BTA25-800B
T2800B	BTB08-400C	
T2800D	BTB08-400B	
T2800M	BTB08-600C	
T2801B	BTB06-400B	
T2801D	BTB06-400B	
T2801M	BTB06-600B	
T2801N	BTB06-800B	
T2802B	BTB08-400BW	
T2802D	BTB08-400BW	
T2802M	BTB08-600BW	
T4012BK		BTA40-400B
T4012DK		BTA40-400B
T4012MK		BTA40-600B
T4012NK		BTA40-800B
T4013BK		BTA40-400B
T4013DK		BTA40-400B
T4013MK		BTA40-600B
T4013NK		BTA40-800B
TIC106A	TYS606-1	
TIC106B	TYS606-2	
TIC106C	TYS606-4	
TIC106D	TYS606-4	
TIC106E	TYS606-6	
TIC106M	TYS606-6	
TIC106N	TYS606-8	
TIC106S	TYS606-8	
TIC116A	TYN108	
TIC116B	TYN208	
TIC116C	TYN408	
TIC116D	TYN408	
TIC116E	TYN608	
TIC116M	TYN608	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
TIC116N	TYN808	
TIC116S	TYN808	
TIC126A	TYN112	
TIC126B	TYN212	
TIC126C	TYN412	
TIC126D	TYN412	
TIC126E	TYN612	
TIC126M	TYN612	
TIC126N	TYN812	
TIC126S	TYN812	
TIC201A		TLC116D
TIC201B		TLC116D
TIC201C		TLC226D
TIC201D		TLC226D
TIC201E		TLC336D
TIC201M		TLC336D
TIC201S		TLC386D
TIC206A	T410-400T	
TIC206B	T410-400T	
TIC206C	T410-400T	
TIC206D	T410-400T	
TIC206E	T410-600T	
TIC206M	T410-600T	
TIC206N	T410-800T	
TIC206S	T410-700T	
TIC216A	BTB06-400D	
TIC216B	BTB06-400D	
TIC216C	BTB06-400D	
TIC216D	BTB06-400D	
TIC216E	BTB06-600D	
TIC216M	BTB06-600D	
TIC216S	BTB06-700D	
TIC225A	BTB08-400S	
TIC225B	BTB08-400S	
TIC225C	BTB08-400S	
TIC225D	BTB08-400S	
TIC225E	BTB08-600S	
TIC225M	BTB08-600S	
TIC225S	BTB08-700S	
TIC226A	BTB08-400BW	
TIC226B	BTB08-400BW	
TIC226C	BTB08-400BW	
TIC226D	BTB08-400BW	
TIC226E	BTB08-600BW	
TIC226M	BTB08-600BW	
TIC226N	BTB08-800BW	
TIC226S	BTB08-700BW	
TIC236A	BTB12-400BW	
TIC236B	BTB12-400BW	
TIC236C	BTB12-400BW	
TIC236D	BTB12-400BW	
TIC236E	BTB12-600BW	
TIC236M	BTB12-600BW	
TIC236N	BTB12-800BW	
TIC236S	BTB12-700BW	

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
TIC246A	BTB16-400BW	
TIC246B	BTB16-400BW	
TIC246C	BTB16-400BW	
TIC246D	BTB16-400BW	
TIC246E	BTB16-600BW	
TIC246M	BTB16-600BW	
TIC246N	BTB16-800BW	
TIC246S	BTB16-700BW	
TIC253A		BTB26-400BW
TIC253B		BTB26-400BW
TIC253C		BTB26-400BW
TIC253D		BTB26-400BW
TIC253E		BTB26-600BW
TIC253M		BTB26-600BW
TIC253N		BTB26-800BW
TIC253S		BTB26-700BW
TIC263A	BTB26-400BW	
TIC263B	BTB26-400BW	
TIC263C	BTB26-400BW	
TIC263D	BTB26-400BW	
TIC263E	BTB26-600BW	
TIC263M	BTB26-600BW	
TIC263N	BTB26-800BW	
TIC263S	BTB26-700BW	
X0101BA		TS080220
X0101DA		TS080240
X0101MA		TS080260
X0102BA		TS082020
X0102DA		TS082040
X0102MA		TS082060
X0104BA		TS080520
X0104DA		TS080540

INDUSTRY PART NUMBER	SGS-THOMSON DIRECT REPLACEMENT	SGS-THOMSON SIMILAR REPLACEMENT
X0104MA		TS080560
X0402BE	TLS106-2	
X0402BF	TLS106-2	
X0402DE	TLS106-4	
X0402DF	TLS106-4	
X0402ME	TLS106-6	
X0402MF	TLS106-6	
Z0109BA		T08-2A
Z0109DA		T08-4A
Z0109MA		T08-6A
Z0110BA	T08-2A	
Z0110DA	T08-4A	
Z0110MA	T08-6A	
Z0405BE		TLC116T
Z0405BF	TLC116T	
Z0405DE		TLC226T
Z0405DF	TLC226T	
Z0405ME		TLC336T
Z0405MF	TLC336T	
Z0409BE	TLC116S	
Z0409BF	TLC116S	
Z0409DE	TLC226S	
Z0409DF	TLC226S	
Z0409ME	TLC336S	
Z0409MF	TLC336S	
Z0410BE	TLC116A	
Z0410BF	TLC116A	
Z0410DE	TLC226A	
Z0410DF	TLC226A	
Z0410ME	TLC336A	
Z0410MF	TLC336A	

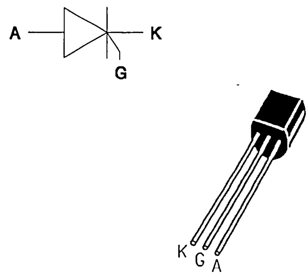
SCR'S DATASHEETS

TS08

SENSITIVE GATE SCR

FEATURES

- $I_{T(RMS)}$ = 0.8 A
- V_{DRM} = 100 V to 800 V
- $I_{GT} \leq$ 200 µA



TO 92
(Plastic)

DESCRIPTION

The TS08 high voltage series of Silicon Controlled Rectifiers use a high performance planar diffused PNPN, glass passivated sensitive gate technology.
These parts are intended for general purpose switching and phase control applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current Single phase circuit (180° conduction angle)	Tl= 70°C	0.8	A
$I_{T(AV)}$	Mean on-state current Single phase circuit (180° conduction angle)	Tl= 70°C	0.5	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	7.5	A
		tp = 10 ms	7	
I^2t	I^2t Value for fusing	tp = 10 ms	0.25	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 10 mA di_G /dt = 0.1 A/µs.		50	A/µs
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 125 - 40, + 125	°C
Tl	Maximum lead temperature for soldering during 10s		260	°C

Symbol	Parameter	TS0802- / TS0805- / TS0820-				TS0820-	Unit
		10	20	40	60	80	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C R_{GK} = 1KΩ	100	200	400	-600	-800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-l)	Junction to case for D.C	60	°C/W
Rth (j-a)	Junction to ambient	150	

GATE CHARACTERISTICS (maximum values)

P_{GM} = 2 W (tp = 20 µs) $P_{G\,(AV)}$= 100 mW I_{FGM} = 1 A (tp = 20 µs) V_{FGM} = 10 V (tp = 20 µs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	TS0802-xx	Tj= 25°C	MAX	20	µA
		TS0805-xx			50	
		TS0820-xx			200	
		TS0820-80			200	
V_{GT}	V_D=12V (DC) R_L=140Ω		Tj= 25°C	MAX	0.8	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} = 1 KΩ		Tj= 125°C	MIN	0.1	V
tgd	V_D=V_{DRM} I_G = 10mA dI_G/dt = 0.15A/µs		Tj= 25°C	MAX	0.5	µs
I_L	I_G=1mA R_{GK} = 1 KΩ		Tj= 25°C	TYP	6	mA
				MAX	8	
I_H	I_T= 50mA R_{GK} = 1 KΩ		Tj= 25°C	TYP	4	mA
				MAX	6	
V_{TM}	I_{TM}= 1.6A tp= 380µs		Tj= 25°C	MAX	1.95	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	TS08xx- 10 to 60	Tj= 125°C	MAX	0.1	mA
		TS0820-80			0.5	
tq	I_T= 1.6A V_R=35V V_D=67%V_{DRM} dI/dt=30A/µs R_{GK} = 1 KΩ		Tj= 125°C	MAX	200	µs
dV/dt	Linear slope up to V_D=67%V_{DRM}	R_{GK} = 1 KΩ	Tj= 125°C	MIN	50	V/µs
				TYP	150	
		R_{GK} = 1 KΩ C_{GK}=4.7nF		MIN	500	
				TYP	750	

Fig.1 : Maximum average power dissipation versus average on-state current.

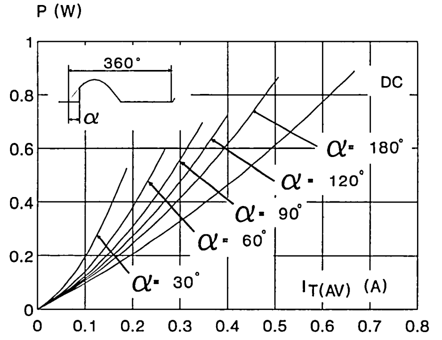


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Tlead).

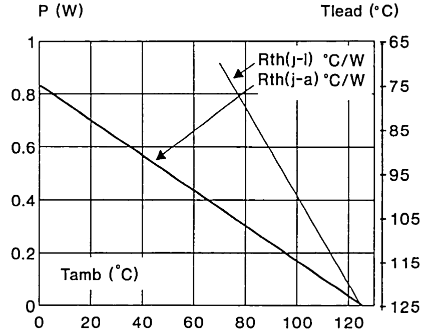


Fig.3 : Average on-state current versus lead temperature.

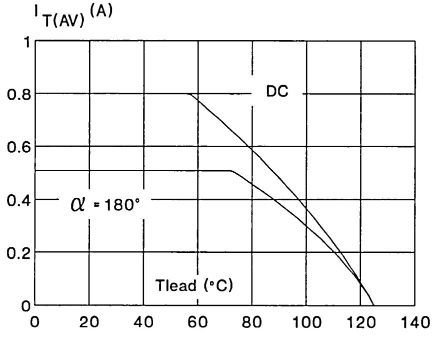


Fig.4 : Relative variation of holding current versus gate-cathode resistance (typical values).

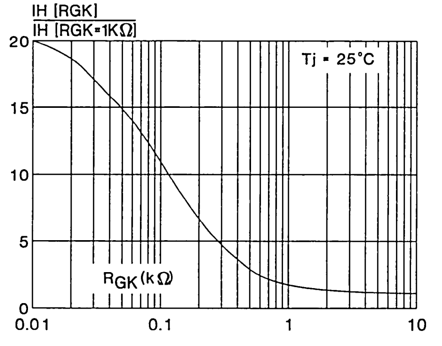


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

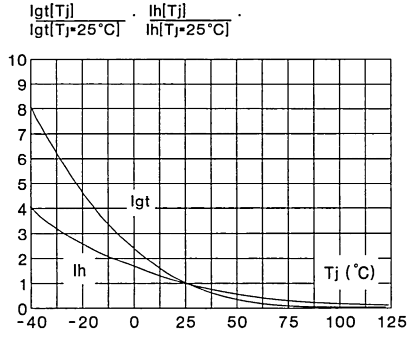


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

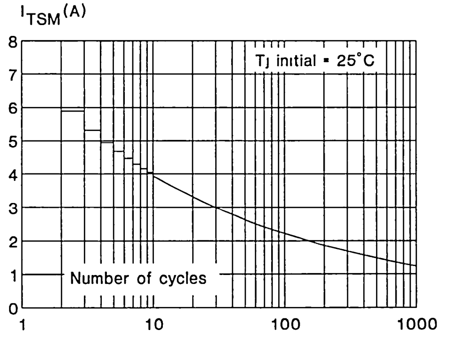


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

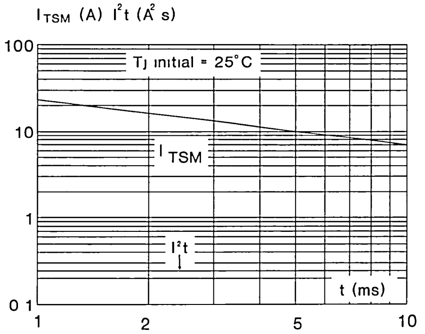


Fig.8 : On-state characteristics (maximum values).

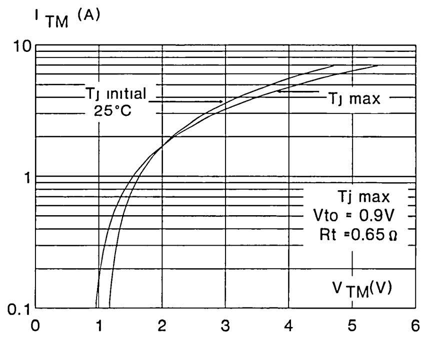
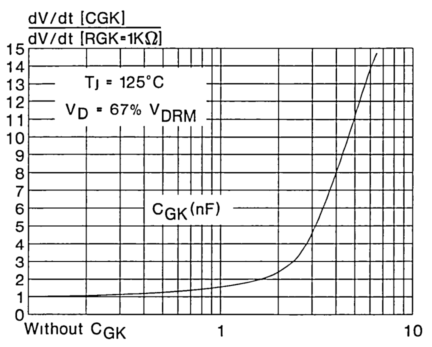
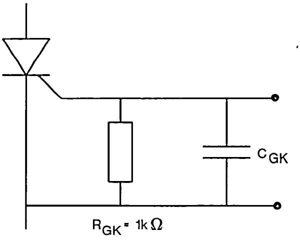
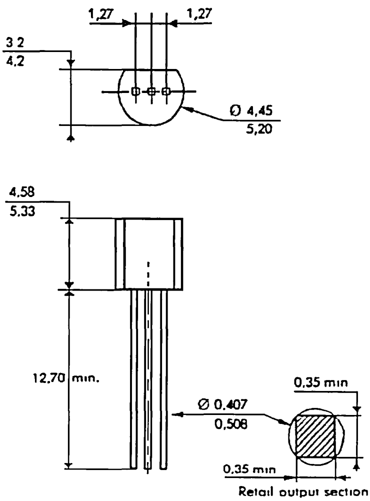


Fig.9 : Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values).





PACKAGE MECHANICAL DATA (in millimeters)
T0 92 Plastic

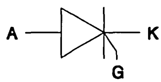


Cooling method : C
Marking · Type number
Weight : 0.2 g
Polarity : N A
Stud torque : N A

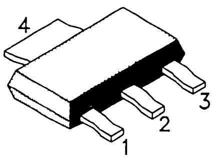
SENSITIVE GATE SCR

FEATURES

- $I_{T(RMS)}$ = 1 A
- V_{DRM} = 400 V / 600 V / 800 V
- $I_{GT} \leq$ 200 µA



1- CATHODE (K)
2 - ANODE (A)
3 - GATE (G)
4 - ANODE (Tab)



SOT 223
(Plastic)

DESCRIPTION

The TS120F high voltage series of Silicon Controlled Rectifiers use a high performance planar diffused PNPN, glass passivated sensitive gate technology. Packaged in SOT 223, suitable for surface mounting.
These parts are intended for general purpose switching and phase control applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current Single phase circuit (180° conduction angle)	Ttab = 95°C	1	A
$I_{T(AV)}$	Mean on-state current Single phase circuit (180° conduction angle)	Ttab = 95°C	0.65	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	7.5	A
		tp = 10 ms	7	
I^2t	I^2t Value for fusing	tp = 10 ms	0.25	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 10 mA di_G /dt = 0.1 A/µs.		50	A/µs
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 125 - 40, + 125	°C
Tl	Maximum lead temperature for soldering during 10s		260	°C

Symbol	Parameter	TS120			Unit
		-400F	-600F	-800F	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C R_{GK} = 1KΩ	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j - t)	Junction to tab for D.C	25	°C/W
Rth (j - a)	Junction to ambient with 5 cm^2 copper surface under tab	60	

GATE CHARACTERISTICS (maximum values)

P_{GM} = 2 W (tp = 20 µs $P_{G\,(AV)}$= 100 mW I_{FGM} = 1 A (tp = 20 µs) V_{FGM} = 10 V (tp = 20 µs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω		Tj= 25°C	MAX	200	µA
V_{GT}	V_D=12V (DC) R_L=140Ω		Tj= 25°C	MAX	0.8	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} = 1 KΩ		Tj= 125°C	MIN	0.1	V
tgd	V_D=V_{DRM} I_G = 10mA dI_G/dt = 0.15A/µs		Tj= 25°C	MAX	0.5	µs
I_L	I_G=1mA R_{GK} = 1 KΩ		Tj= 25°C	TYP	6	mA
				MAX	8	
I_H	I_T= 50mA R_{GK} = 1 KΩ		Tj= 25°C	TYP	4	mA
				MAX	6	
V_{TM}	I_{TM}= 2A tp= 380µs		Tj= 25°C	MAX	2.1	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	TS120-400F	Tj= 125°C	MAX	0.1	mA
		TS120-600F			0.1	
		TS120-800F			0.5	
tq	I_T= 2A V_R=35V V_D=67%V_{DRM} dIt/dt=30A/µs R_{GK} = 1 KΩ		Tj= 125°C	MAX	200	µs
dV/dt	Linear slope up to V_D=67%V_{DRM}	R_{GK} = 1 KΩ	Tj= 125°C	MIN	50	V/µs
		R_{GK} = 1 KΩ C_{GK}=4.7nF		MIN	500	

Fig.1 : Maximum average power dissipation versus average on-state current.

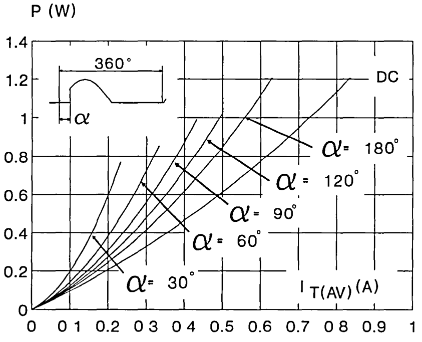


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Ttab).

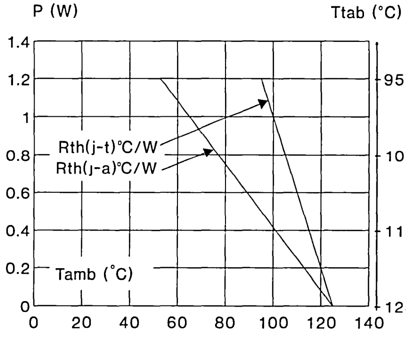


Fig.3 : Average on-state current versus tab temperature.

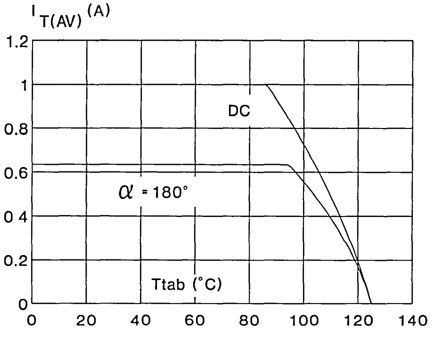


Fig.4 : Relative variation of holding current versus gate-cathode resistance (typical values).

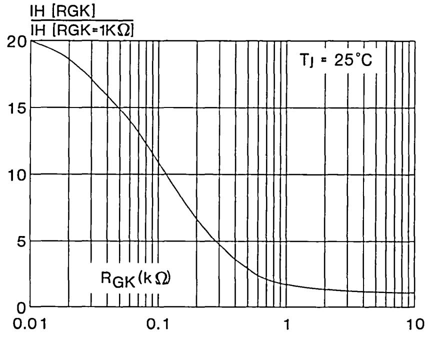


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

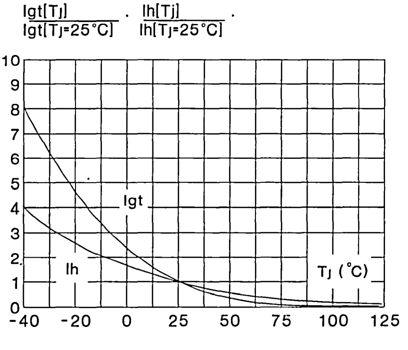


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

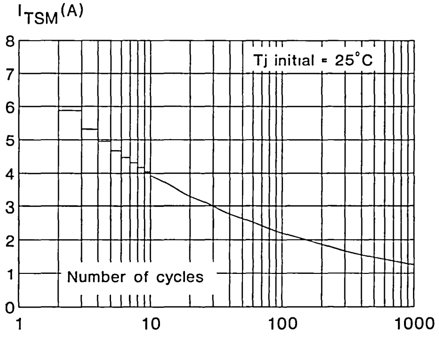


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

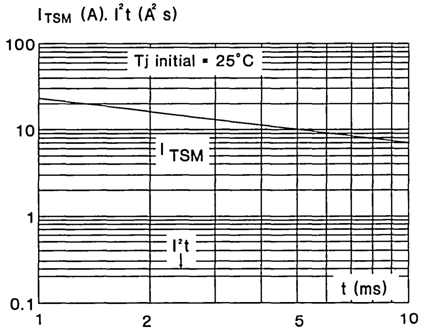


Fig.8 : On-state characteristics (maximum values).

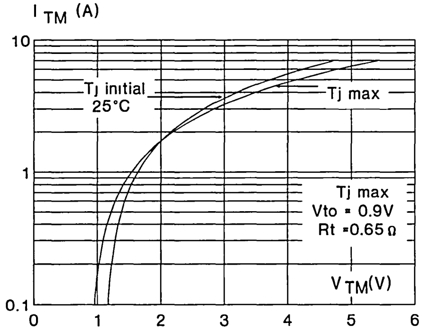
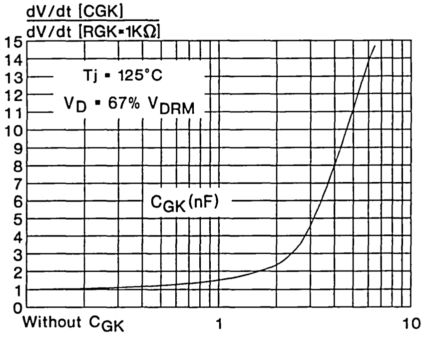


Fig.9 : Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values).



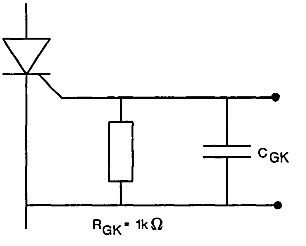
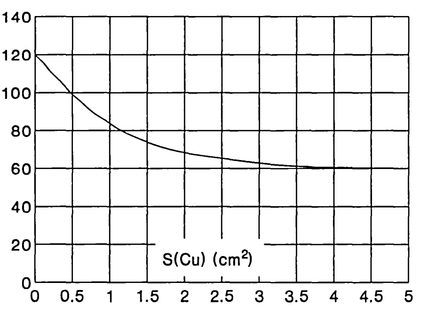
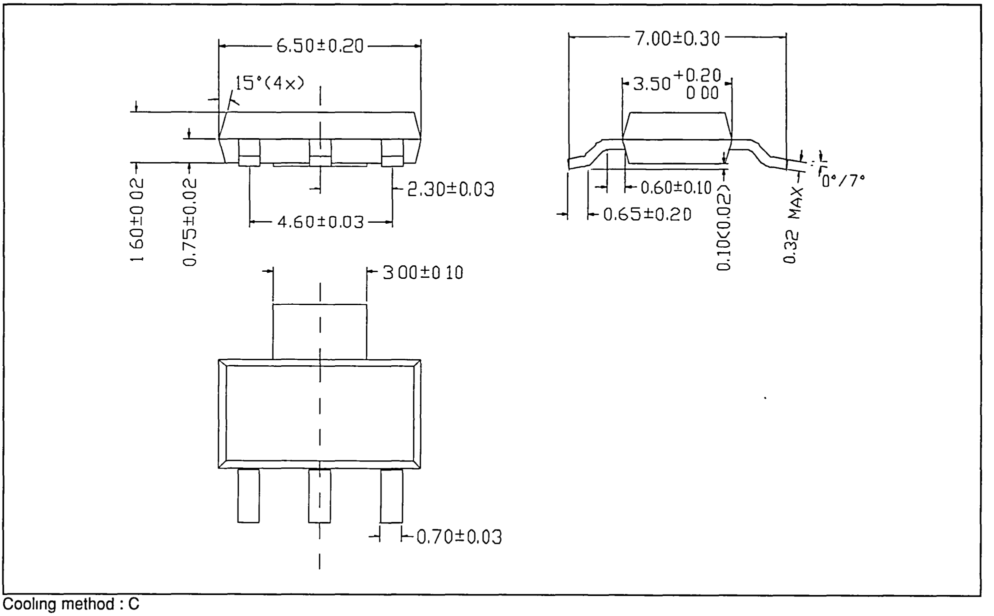


Fig.10 : Thermal resistance junction to ambient versus copper surface under tab.



PACKAGE MECHANICAL DATA (in millimeters)
SOT 223 Plastic



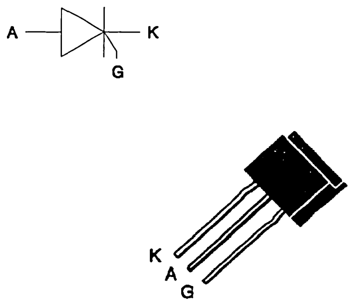
Cooling method : C
Marking : Type number
Weight : 0.11 g
Polarity : N A
Stud torque : N A

TL 1006 ---> TL 8006

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TL
(Plastic)

DESCRIPTION

The TL 1006 ---> TL 8006 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tl = 55 °C	3	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tl = 55 °C	2	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	73	A
		tp = 10 ms	70	
I^2t	I^2t value	tp = 10 ms	25	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TL					Unit
		1006	2006	4006	6006	8006	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient on printed circuit with Cu surface 1cm^2	50	°C/W
Rth (j-l) DC	Junction to leads for DC	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 20W (tp = 20 µs) I_{FGM} = 2A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 110°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	1.5	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	40	mA
I_H	I_T= 100mA gate open	Tj=25°C	TYP	20	mA
V_{TM}	ITM= 6A tp= 380µs	Tj=25°C	MAX	1.9	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		1	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 110°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 6A V_R= 10V dI_{TM}/dt=10 A/µs dV_D/dt= 20V/µs	Tj= 110°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

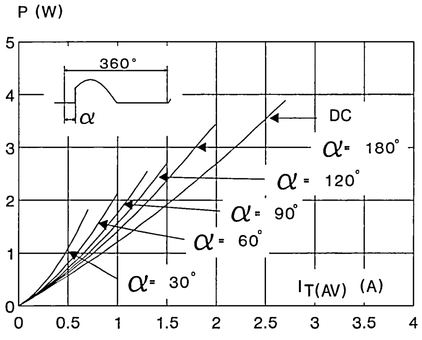


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

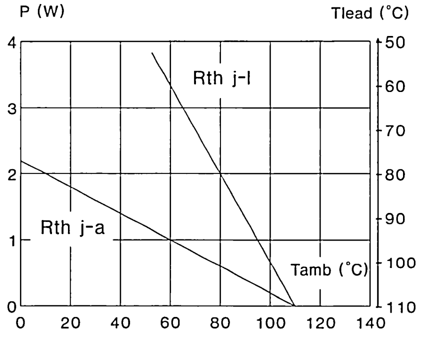


Fig.3 : Average on-state current versus leads temperature.

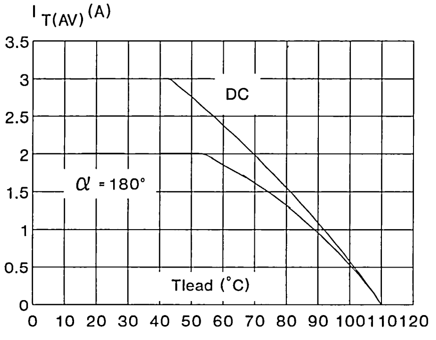


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

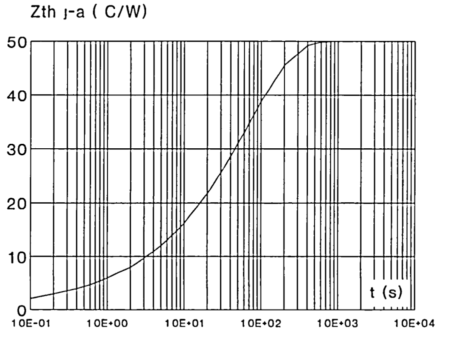


Fig.5 : Relative variation of gate trigger current versus junction temperature.

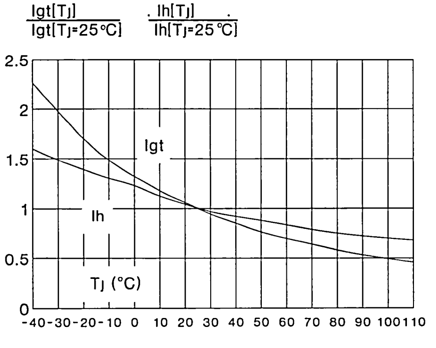


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

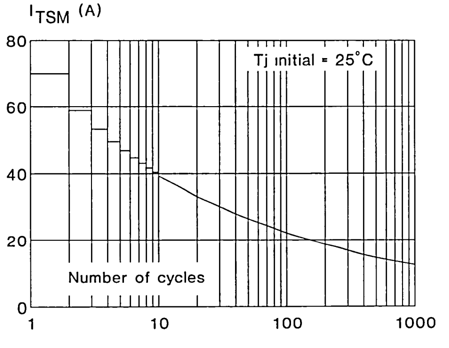


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

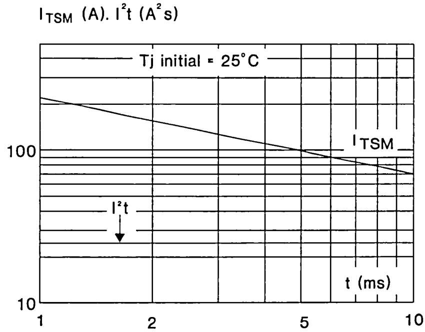
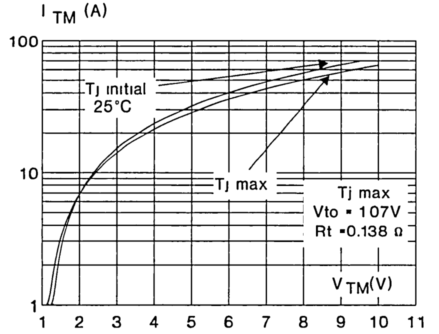
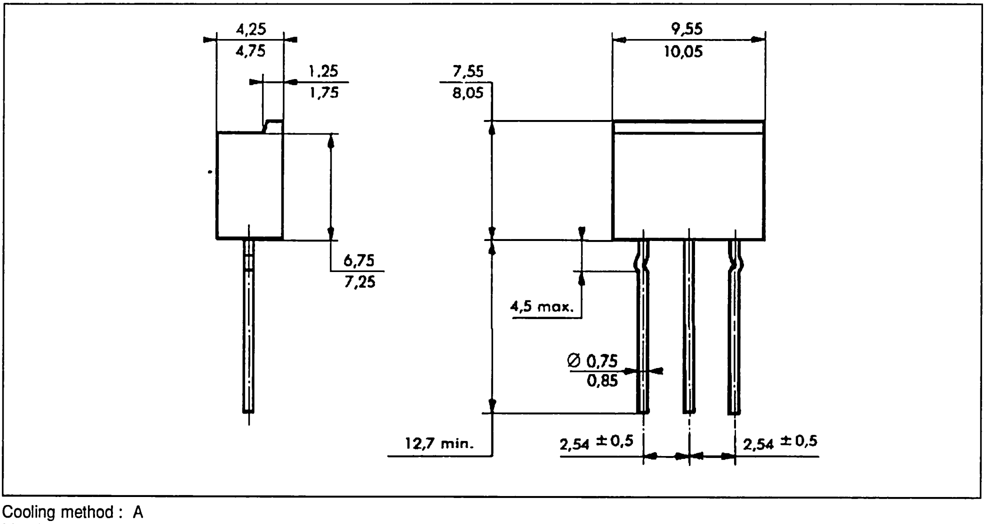


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TL Plastic

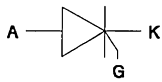


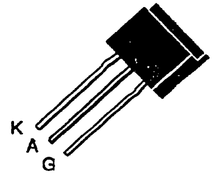
Cooling method : A
Marking : type number
Weight : 0.8 g
Polarity : N A
Stud torque : N A

SENSITIVE GATE SCR

FEATURES

- LOW $I_{GT} \leq$ 200 µA
- LOW $I_H \leq$ 5 mA
- $I_{T(RMS)}$ = 4 A





TL
(Plastic)

DESCRIPTION

The TLS 106 Silicon Controlled Rectifiers are high performance MESA diffused PNPN devices glass passivated sensitive gate technology.
These parts are intended to general purpose switching and phase control application.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tl = 25 °C	4	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tl = 25 °C	2.5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	37	A
		tp = 10 ms	35	
I^2t	I^2t value	tp = 10 ms	6	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 5 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TLS 106-					Unit
		05	1	2	4	6	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C R_{GK} = 1 KΩ	50	100	200	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient on printed circuit with Cu surface 1cm^2	50	°C/W
Rth (j-l) DC	Junction to leads for DC	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 0.5W P_{GM} = 20W (tp = 20 µs) I_{FGM} = 1A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	0.2	mA
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	1	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} =1kΩ	Tj= 110°C	MIN	0.1	V
tgt	V_D=V_{DRM} I_G = 12.5mA dI_G/dt = 0.12A/µs	Tj=25°C	TYP	1.5	µs
I_L	I_G= 1.2 I_{GT} R_{GK} =1kΩ	Tj=25°C	MAX	7	mA
I_H	I_T= 50mA R_{GK} =1kΩ	Tj=25°C	MAX	5	mA
V_{TM}	ITM= 4A tp= 380µs	Tj=25°C	MAX	1.9	V
I_{DRM} I_{RRM}	V_{DRM} Rated R_{GK} =1kΩ V_{RRM} Rated R_{GK} =1kΩ	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		0.3	
dV/dt	Linear slope up to V_D=67%V_{DRM} R_{GK} =1kΩ C_{GK} =0.1µF	Tj= 110°C	MIN	10	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 4A V_R= 10V dI_{TM}/dt=10 A/µs dV_D/dt= 2V/µs R_{GK} =1kΩ	Tj= 110°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

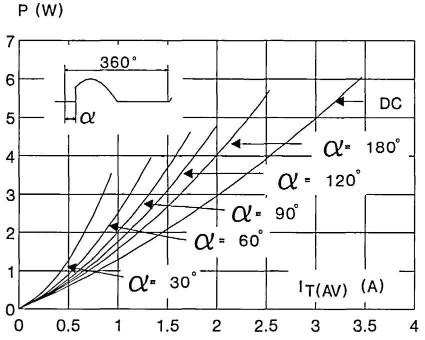


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

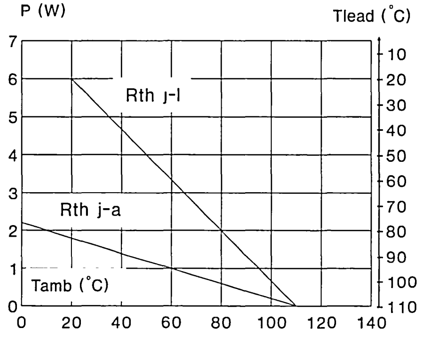


Fig.3 : Average on-state current versus leads temperature.

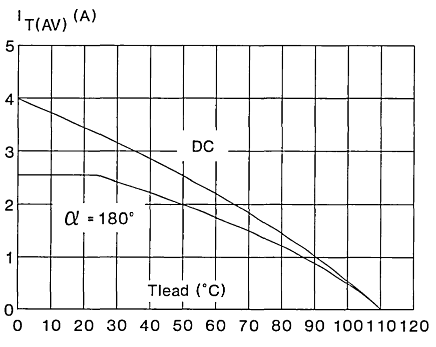


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

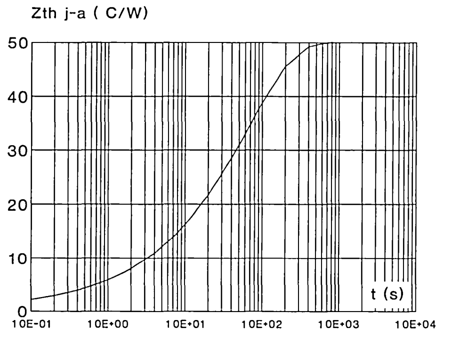


Fig.5 : Relative variation of gate trigger current versus junction temperature.

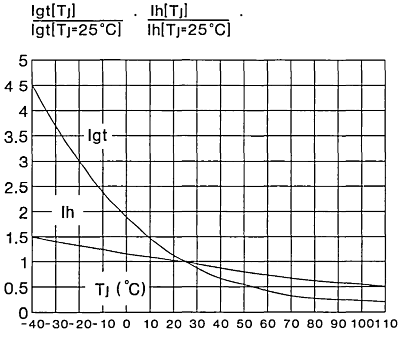


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

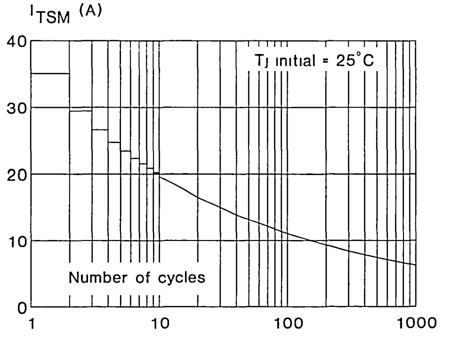


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

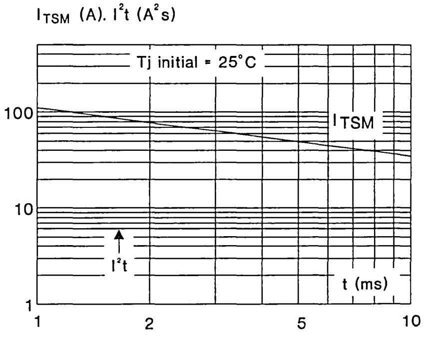
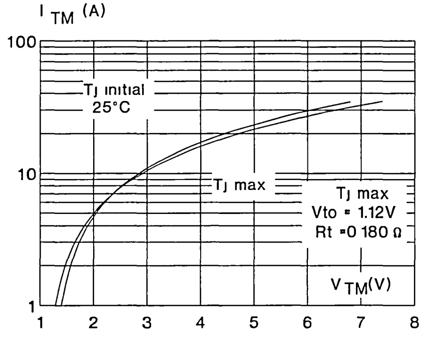
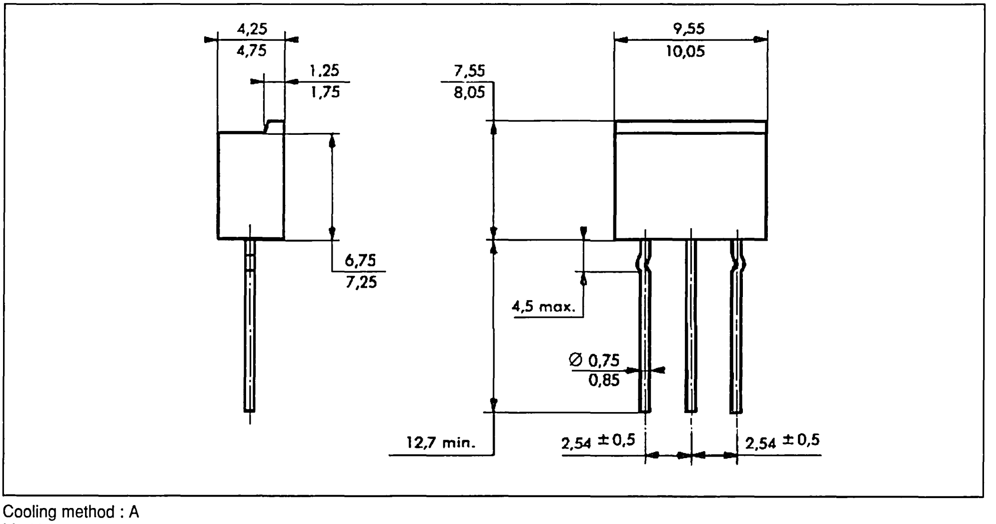


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TL Plastic



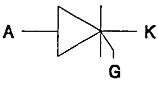
Cooling method : A
Marking : type number
Weight : 0.8 g
Polarity : N A
Stud torque : N A

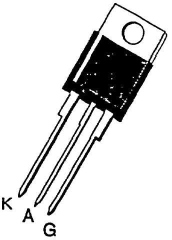
TYS 406

SENSITIVE GATE SCR

FEATURES

- LOW $I_{GT} \leq 200\ \mu A$
- LOW $I_H \leq 6$ mA
- $I_{T(RMS)} = 4$ A





TO 220 AB
(Plastic)

DESCRIPTION

The TYS 406 Silicon Controlled Rectifiers are high performance MESA diffused PNPN devices glass passivated sensitive gate technology.
These parts are intended to general purpose switching and phase control application.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 90 °C	4	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 90 °C	2.5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	42	A
		tp = 10 ms	40	
I^2t	I^2t value	tp = 10 ms	8	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 5 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYS 406-						Unit
		05	1	2	4	6	8	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C R_{GK} = 1 KΩ	50	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	5.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 0.5W P_{GM} = 20W (tp = 20 µs) I_{FGM} = 1A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	0.2	mA
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	1	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} =1kΩ	Tj= 110°C	MIN	0.1	V
tgt	V_D=V_{DRM} I_G = 12.5mA dI_G/dt = 0.12A/µs	Tj=25°C	TYP	1.5	µs
I_L	I_G= 1.2 I_{GT} R_{GK} =1kΩ	Tj=25°C	MAX	10	mA
I_H	I_T= 50mA R_{GK} =1kΩ	Tj=25°C	MAX	6	mA
V_{TM}	ITM= 8A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated R_{GK} =1kΩ V_{RRM} Rated R_{GK} =1kΩ	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		0.5	
dV/dt	Linear slope up to V_D=67%V_{DRM} R_{GK} =1kΩ C_{GK} =0.1µF	Tj= 110°C	MIN	10	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 8A V_R= 10V dI_{TM}/dt=10 A/µs dV_D/dt= 2V/µs R_{GK} =1kΩ	Tj= 110°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

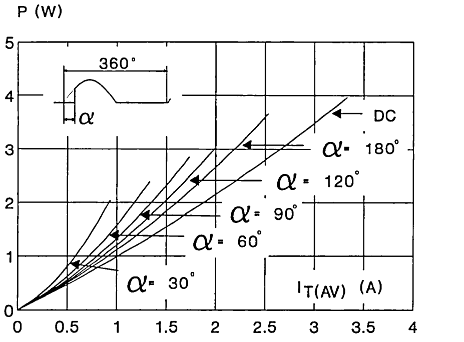


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

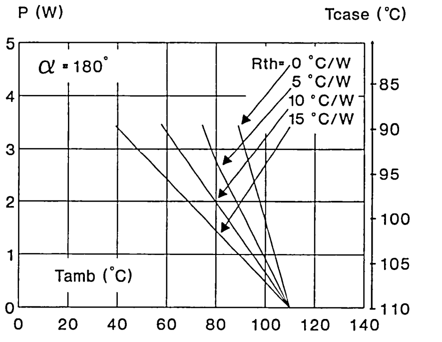


Fig.3 : Average on-state current versus case temperature.

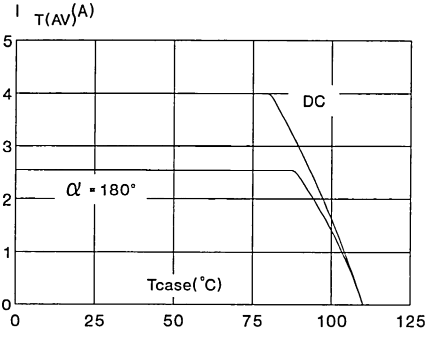


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

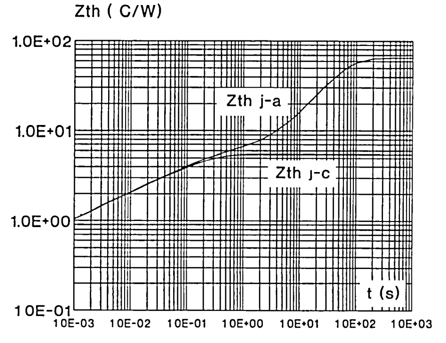


Fig.5 : Relative variation of gate trigger current versus junction temperature.

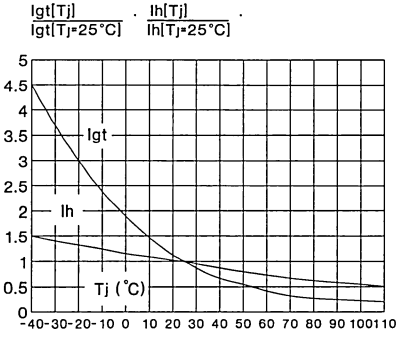


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

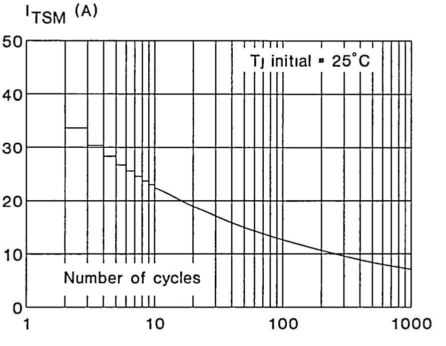


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

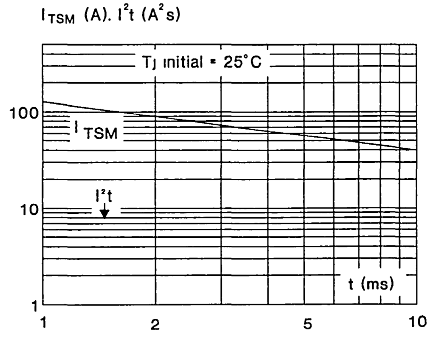
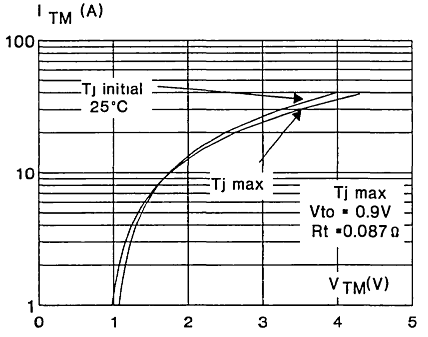
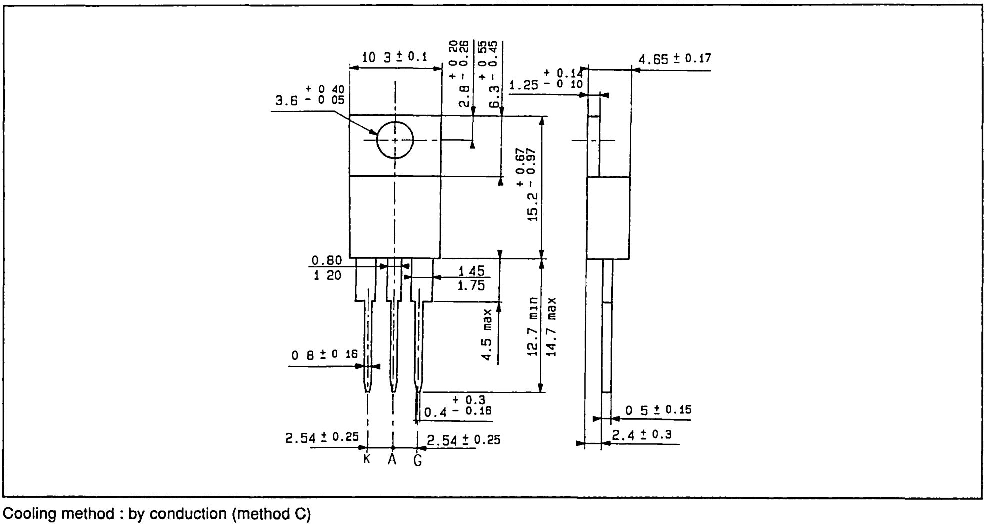


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



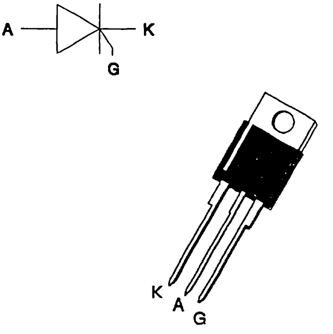
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TYN 204 ---> TYN 1004

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 220 AB
(Plastic)

DESCRIPTION

The TYN 204 ---> TYN 1004 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 100 °C	4	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 100 °C	2.5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	63	A
		tp = 10 ms	60	
I^2t	I^2t value	tp = 10 ms	18	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYN					Unit
		204	404	604	804	1004	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 110°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	mA
V_{TM}	ITM= 8A tp= 380µs	Tj=25°C	MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 110°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 8A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 110°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

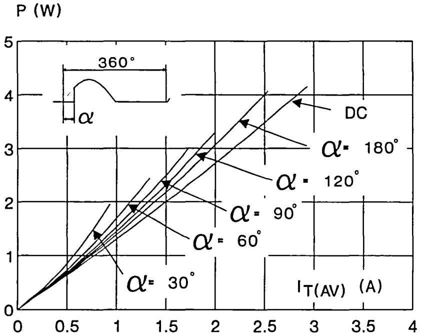


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

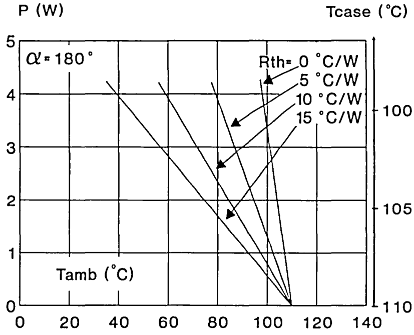


Fig.3 : Average on-state current versus case temperature.

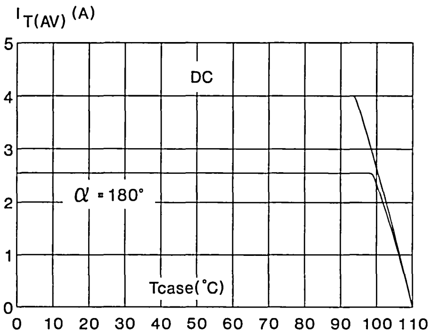


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

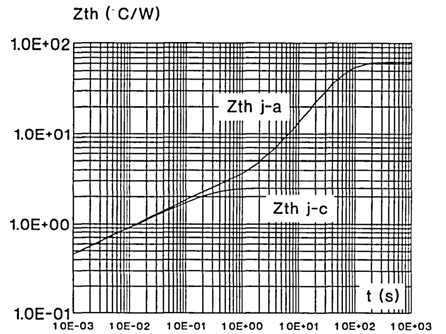


Fig.5 : Relative variation of gate trigger current versus junction temperature.

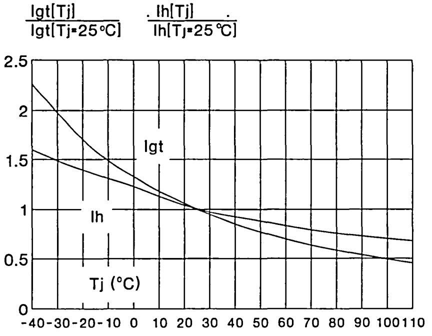


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

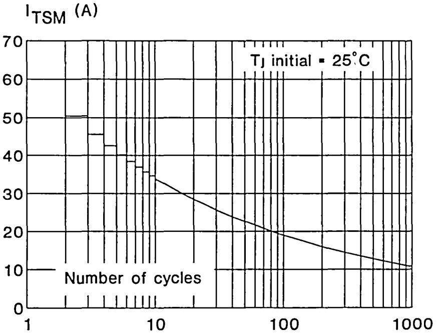


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

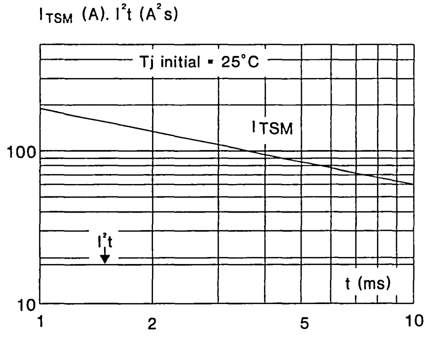
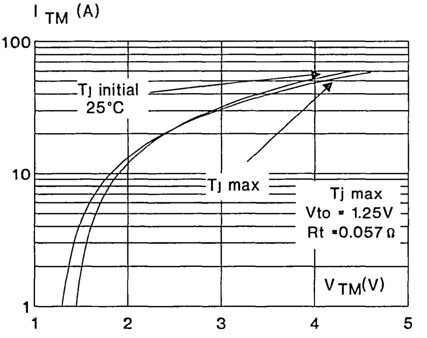
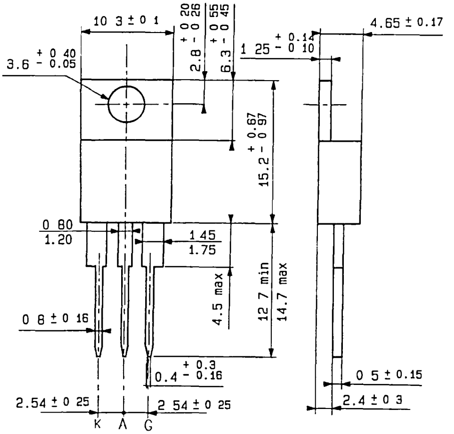


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic

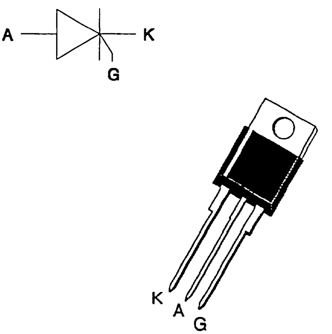


Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

SENSITIVE GATE SCR

FEATURES

- LOW $I_{GT} \leq$ 200 µA
- LOW $I_H \leq$ 6 mA
- $I_{T(RMS)}$ = 6 A



TO 220 AB
(Plastic)

DESCRIPTION

The TYS 606 Silicon Controlled Rectifiers are high performance MESA diffused PNPN devices glass passivated sensitive gate technology.
These parts are intended to general purpose switching and phase control application.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 75 °C	6	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 75 °C	3.8	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	52	A
		tp = 10 ms	50	
I^2t	I^2t value	tp = 10 ms	12.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 5 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYS 606-						Unit
		05	1	2	4	6	8	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C R_{GK} = 1 KΩ	50	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	5.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 0.5W P_{GM} = 20W (tp = 20 µs) I_{FGM} = 1A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	0.2	mA
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	1	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} =1kΩ	Tj= 110°C	MIN	0.1	V
tgt	V_D=V_{DRM} I_G = 12.5mA dI_G/dt = 0.12A/µs	Tj=25°C	TYP	1.5	µs
I_L	I_G= 1.2 I_{GT} R_{GK} =1kΩ	Tj=25°C	MAX	10	mA
I_H	I_T= 50mA R_{GK} =1kΩ	Tj=25°C	MAX	6	mA
V_{TM}	ITM= 12A tp= 380µs	Tj=25°C	MAX	1.85	V
I_{DRM} I_{RRM}	V_{DRM} Rated R_{GK} =1kΩ V_{RRM} Rated R_{GK} =1kΩ	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		0.5	
dV/dt	Linear slope up to V_D=67%V_{DRM} R_{GK} =1kΩ C_{GK} =0.1µF	Tj= 110°C	MIN	10	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 12A V_R= 24V dI_{TM}/dt=10 A/µs dV_D/dt= 2V/µs R_{GK} =1kΩ	Tj= 110°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

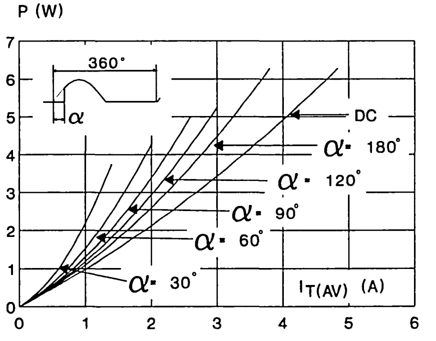


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

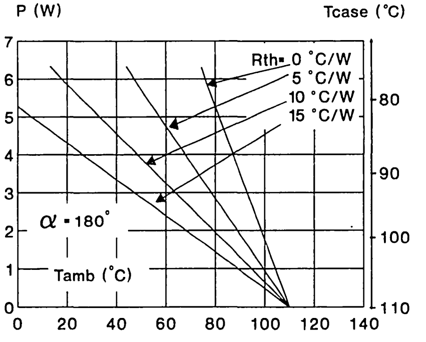


Fig.3 : Average on-state current versus case temperature.

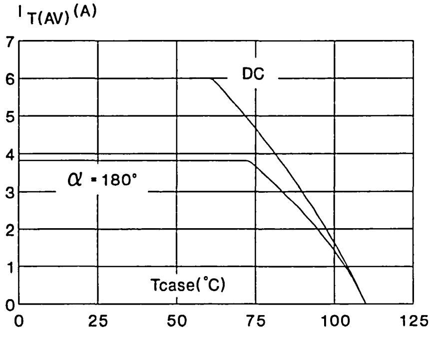


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

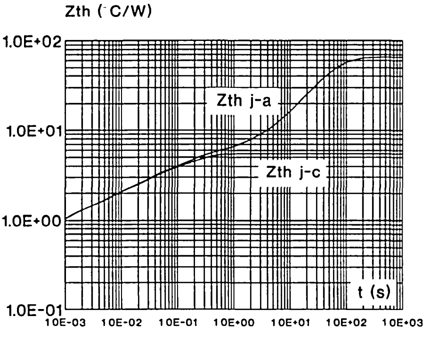


Fig.5 : Relative variation of gate trigger current versus junction temperature.

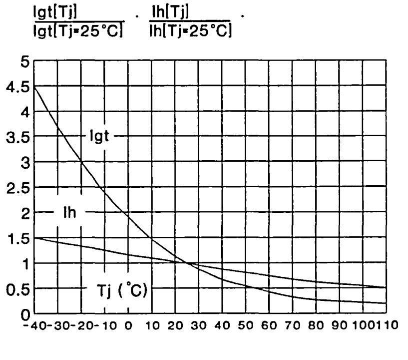


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

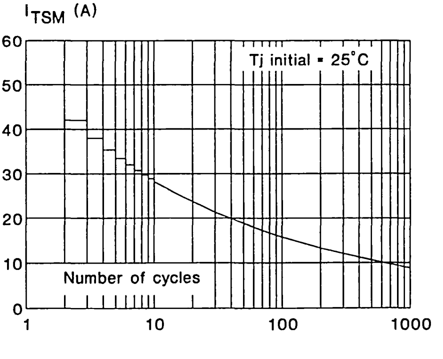


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

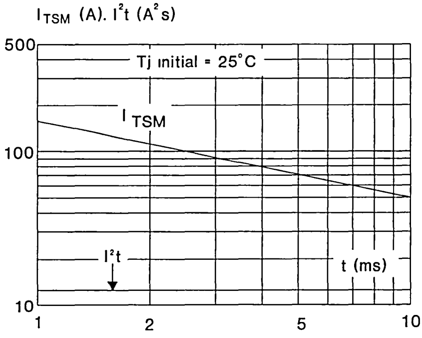
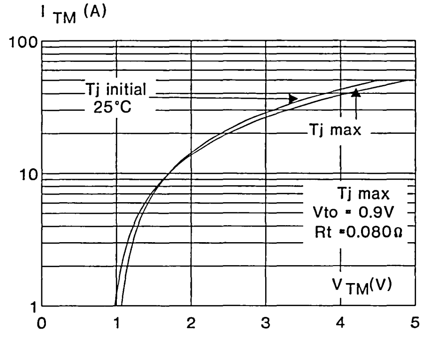
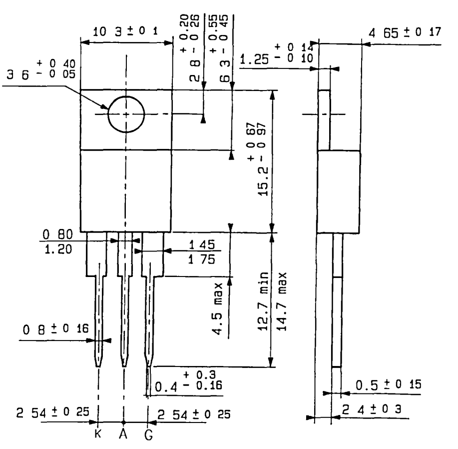


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

SGS-THOMSON MICROELECTRONICS

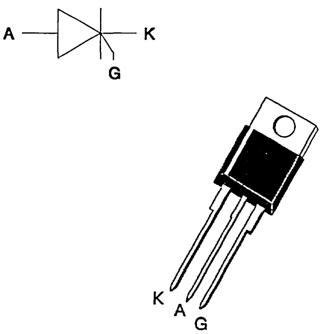
SGS-THOMSON MICROELECTRONICS

TYN 056 ---> TYN 1006

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 220 AB
(Plastic)

DESCRIPTION

The TYN 056 ---> TYN 1006 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 95 °C	6	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 95 °C	3.8	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	73	A
		tp = 10 ms	70	
I^2t	I^2t value	tp = 10 ms	24.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA dI_G/dt = 1 A/µs		50	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C.

Symbol	Parameter	TYN							Unit
		056	106	206	406	606	806	1006	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 110°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	mA
V_{TM}	ITM= 12A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 110°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 12A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 110°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

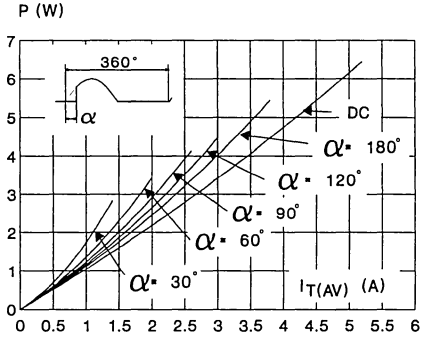


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

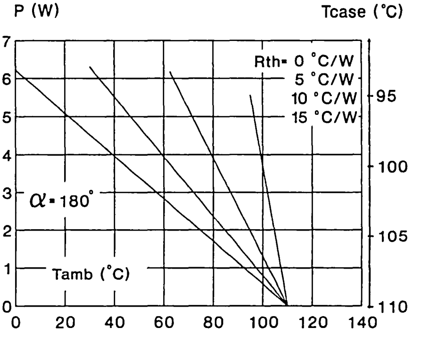


Fig.3 : Average on-state current versus case temperature.

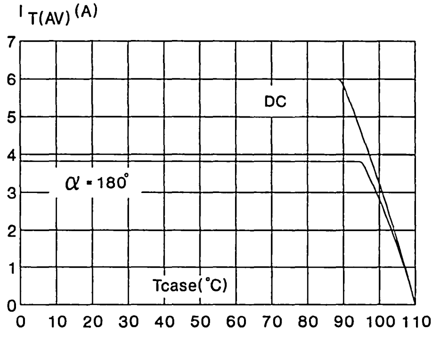


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

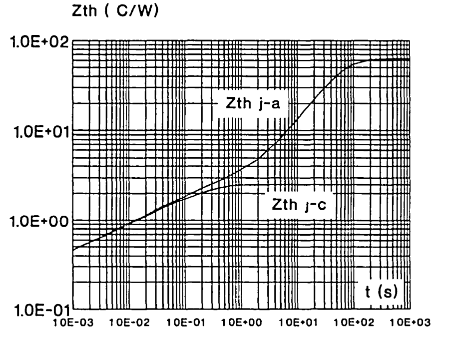


Fig.5 : Relative variation of gate trigger current versus junction temperature.

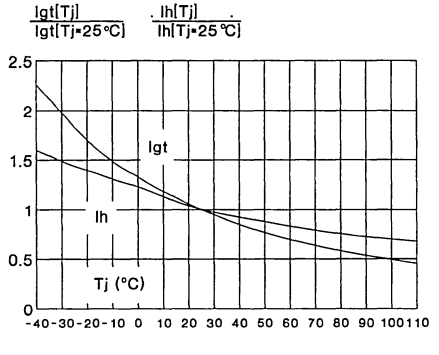


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

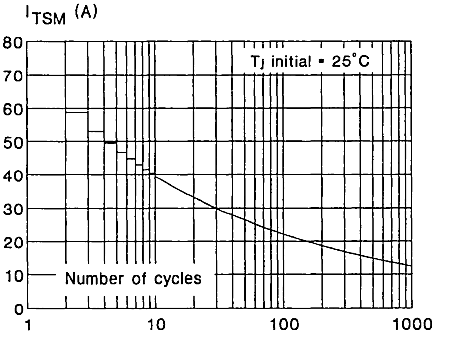


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

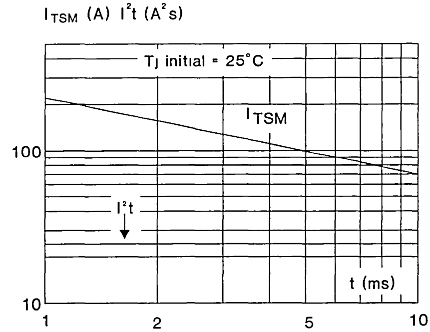
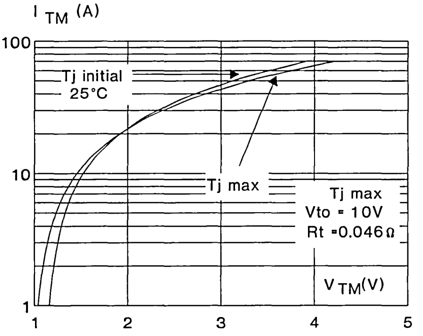
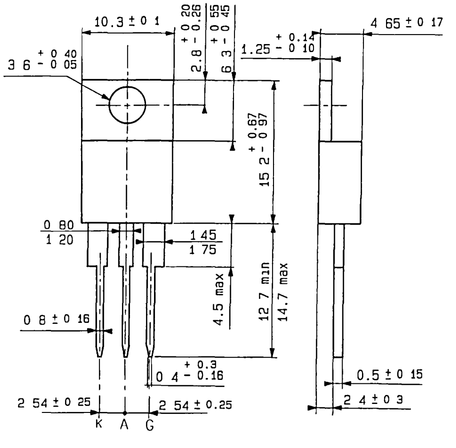


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

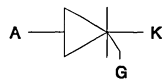
SGS-THOMSON MICROELECTRONICS

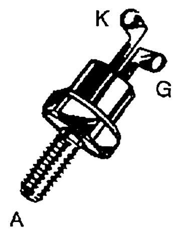
2N 1771 ---> 2N 2619

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY





TO 64
(Metal)

DESCRIPTION

The 2N 1771 ---> 2N 2619 Family of Silicon Controlled Rectifiers uses a high performance glass passivatedt technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 105 °C	7.4	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 105 °C	4.7	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	84	A
		tp = 10 ms	80	
I^2t	I^2t value	tp = 10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	2N					Unit
		1771	1772	1774	1777	2619	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 20W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	40	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	mA
V_{TM}	ITM= 15A tp= 380µs	Tj=25°C	MAX	1.85	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 15A V_R= 24V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

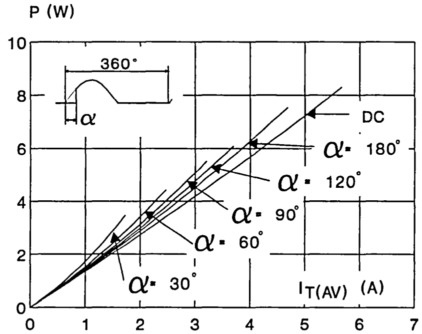


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

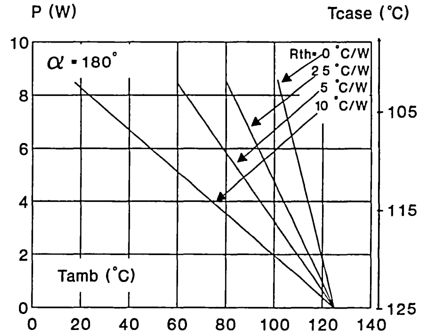


Fig.3 : Average on-state current versus case temperature.

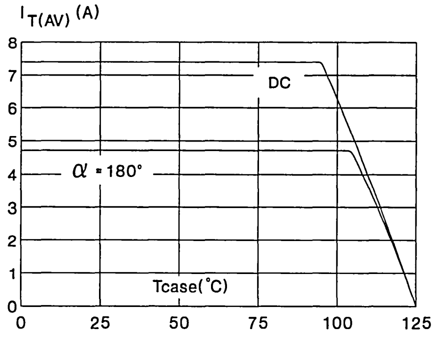


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

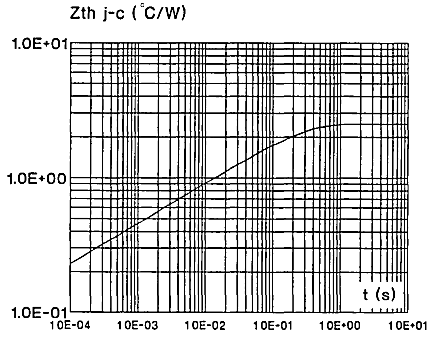


Fig.5 : Relative variation of gate trigger current versus junction temperature.

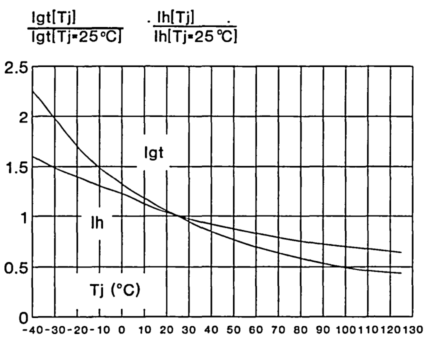


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

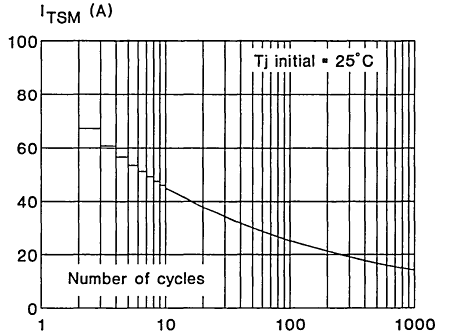


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

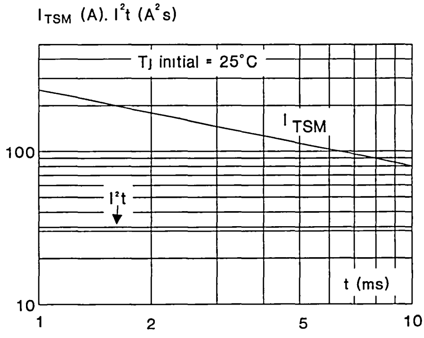
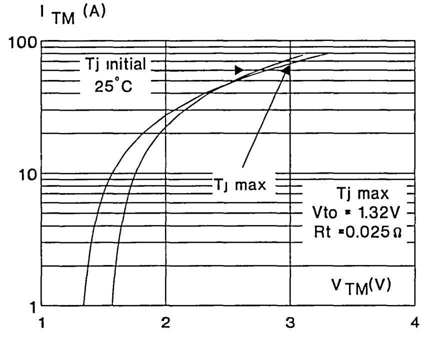
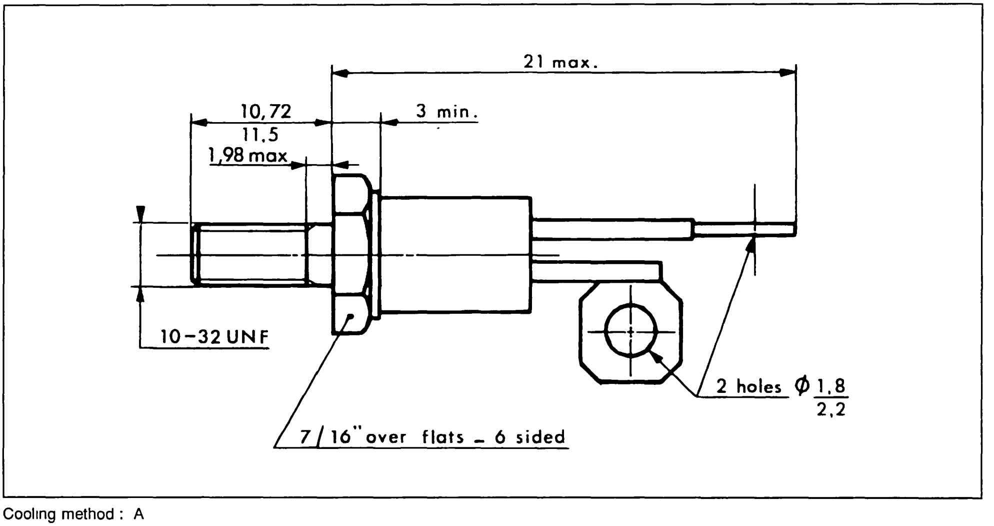


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 64 Metal



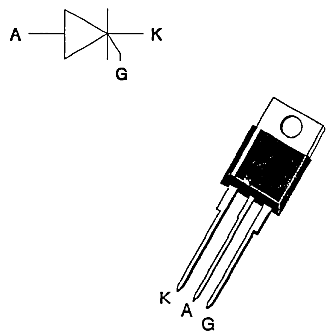
Cooling method : A
Marking : type number
Weight : 5 g
Polarity : Anode (or A2) to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

TXN/TYN 058 (G) ---> TXN/TYN 1008 (G)

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- TXN Serie :
  INSULATED VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The TYN/TXN 058 ---> TYN/TXN 1008 Family of Silicon Controlled Rectifiers uses a high performance glass passivated chips technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	TXN TYN	Tc=85°C Tc=90°C	8	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	TXN TYN	Tc=85°C Tc=90°C	5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp=8.3 ms	84	A
			tp=10 ms	80	
I^2t	I^2t value		tp=10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250 mA dI_G/dt = 1 A/µs			50	A/µs
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	TYN/TXN							Unit
		058	108	208	408	608	808	1008	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	TXN	3.5	°C/W
		TYN	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value		Unit
				BLANK	G	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	25	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 110°C	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	2		µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50		mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	45	mA
V_{TM}	ITM= 16A tp= 380µs	Tj=25°C	MAX	1.8		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01		mA
		Tj= 110°C		2		
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 110°C	MIN	200	500	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 16A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 110°C	TYP	70		µs

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BLANK	G
TXN (Insulated)	8	50	X	X
		100	X	X
		200	X	X
		400	X	X
		600	X	X
		800	X	X
		1000	X	X
TYN (Uninsulated)		50	X	X
		100	X	X
		200	X	X
		400	X	X
		600	X	X
		800	X	X
		1000	X	X

Fig.1 : Maximum average power dissipation versus average on-state current (TXN).

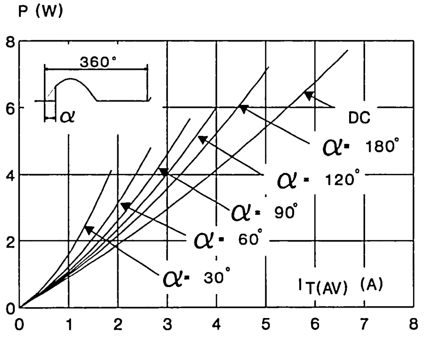


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TXN).

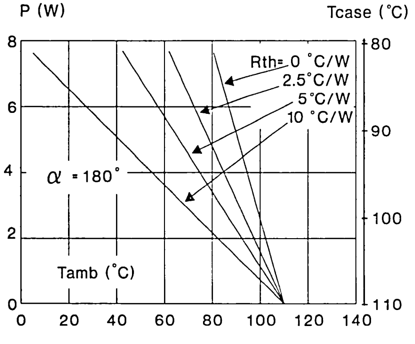


Fig.3 : Maximum average power dissipation versus average on-state current (TYN).

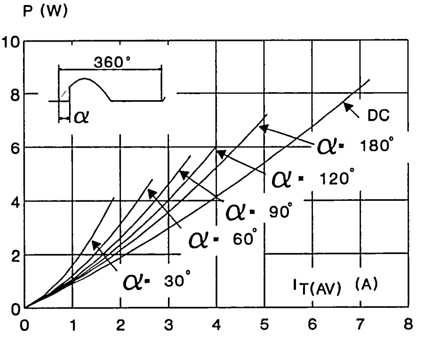


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TYN).

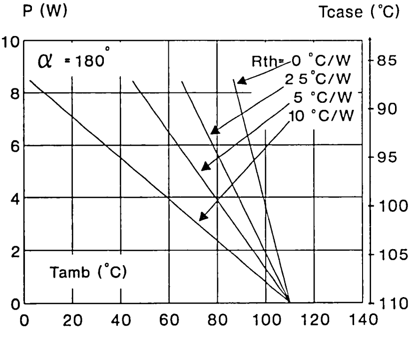


Fig.5 : Average on-state current versus case temperature (TXN).

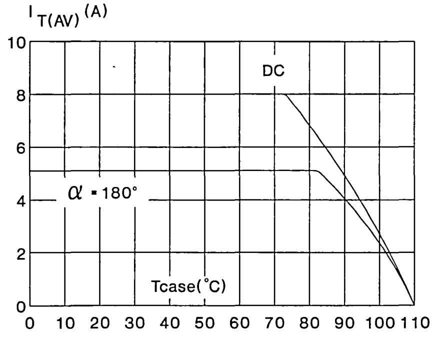


Fig.6 : Thermal transient impedance junction to ambient versus pulse duration (TXN).

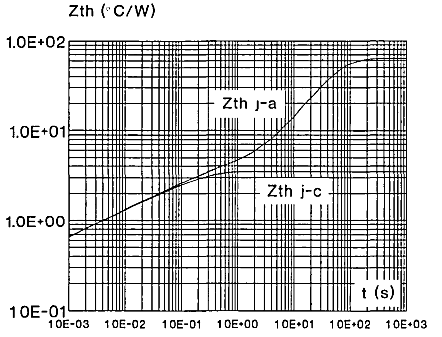


Fig.7 : Average on-state current versus case temperature (TYN).

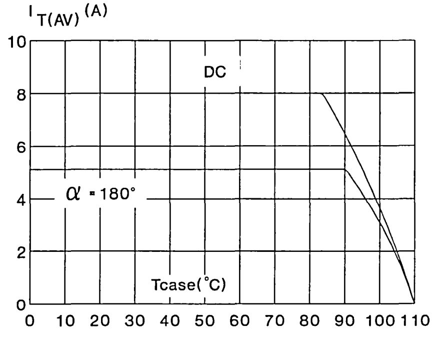


Fig.8 : Thermal transient impedance junction to ambient versus pulse duration (TYN).

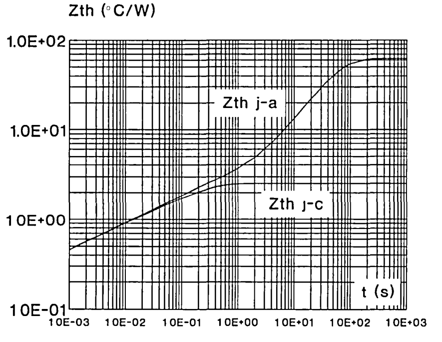


Fig.9 : Relative variation of gate trigger current versus junction temperature.

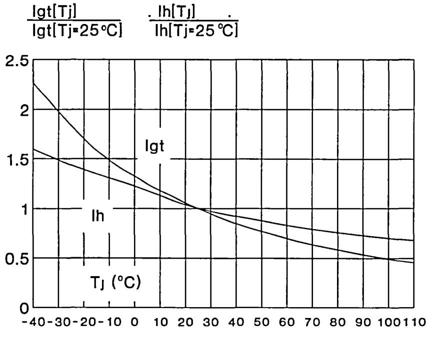


Fig.10 : Non repetitive surge peak on-state current versus number of cycles.

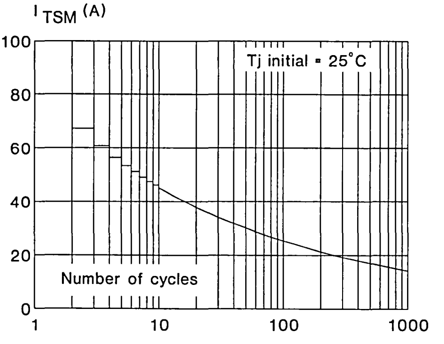


Fig.11 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

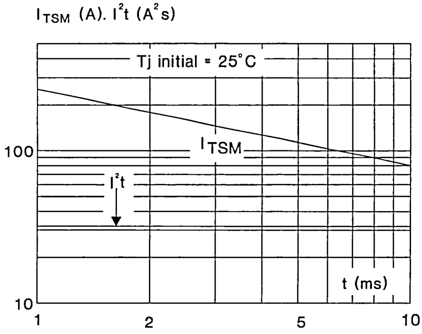
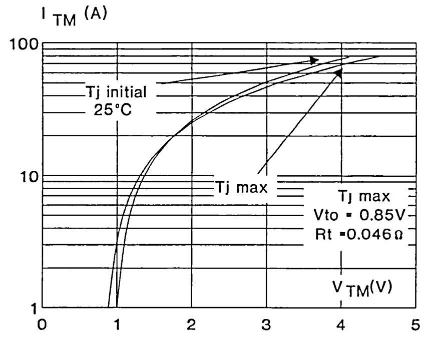
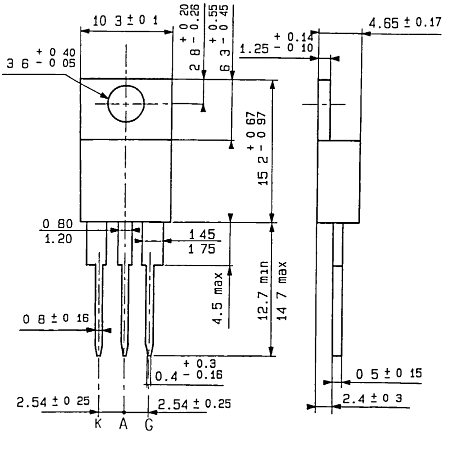


Fig12 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

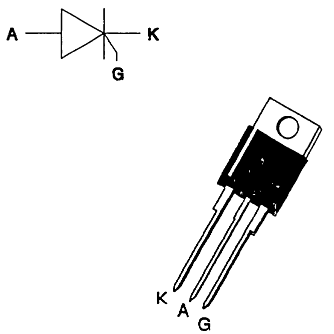
SGS-THOMSON
MICROELECTRONICS

TYN 0510 ---> TYN 1010

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 220 AB
(Plastic)

DESCRIPTION

The TYN 0510 ---> TYN 1010 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 85 °C	10	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 85 °C	6.4	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	105	A
		tp = 10 ms	100	
I^2t	I^2t value	tp = 10 ms	50	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA dI_G/dt = 1 A/µs		50	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYN							Unit
		0510	110	210	410	610	810	1010	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 110°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	mA
V_{TM}	ITM= 20A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 110°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 20A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 110°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

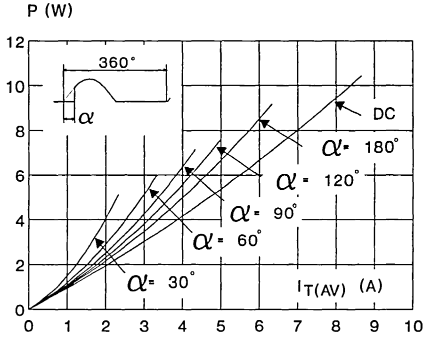


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

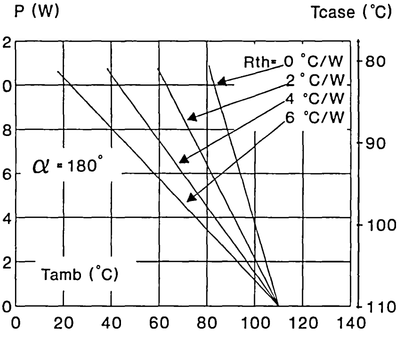


Fig.3 : Average on-state current versus case temperature.

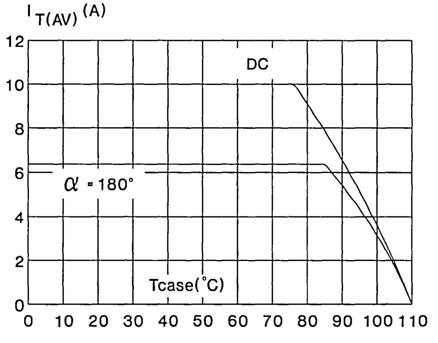


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

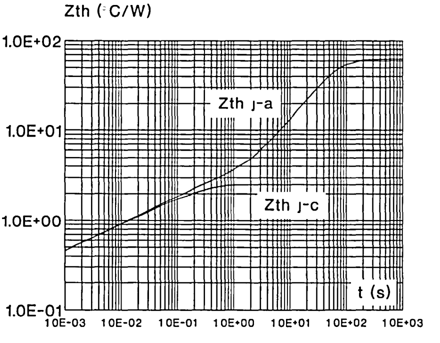


Fig.5 : Relative variation of gate trigger current versus junction temperature.

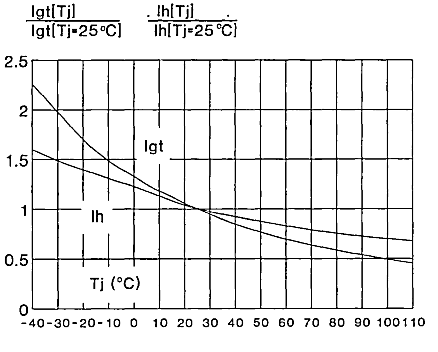


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

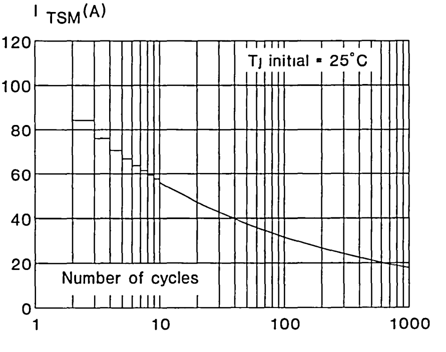


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

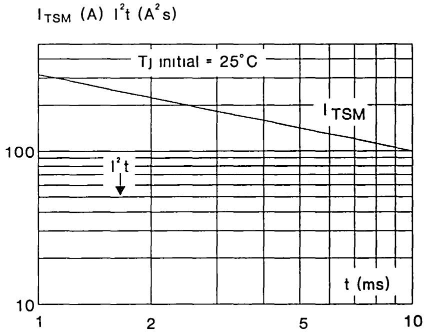
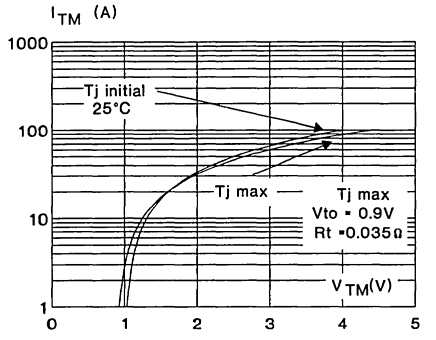
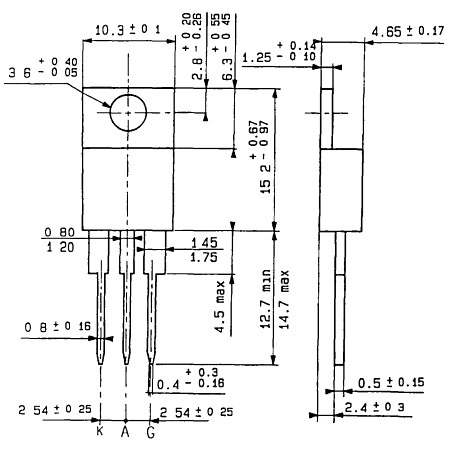


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

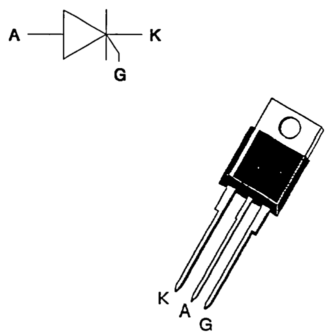
SGS-THOMSON MICROELECTRONICS

TXN/TYN 0512 ---> TXN/TYN 1012

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- TXN Serie :
  INSULATED VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The TYN/TXN 0512 ---> TYN/TXN 1012 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	TXN TYN	Tc=80°C Tc=90°C	12	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	TXN TYN	Tc=80°C Tc=90°C	8	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp=8.3 ms	125	A
			tp=10 ms	120	
I^2t	I^2t value		tp=10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 150 mA dI_G/dt = 1 A/µs			100	A/µs
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	TYN/TXN							Unit
		0512	112	212	412	612	812	1012	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	TXN	3.5	°C/W
		TYN	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	15	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	30	mA
V_{TM}	ITM= 24A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		3	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 24A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current (TXN).

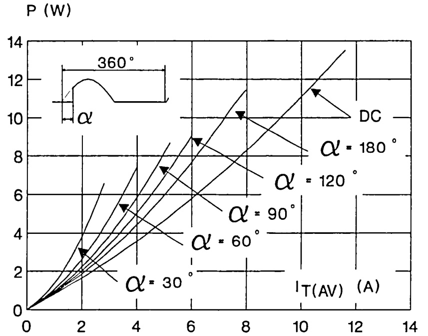


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TXN).

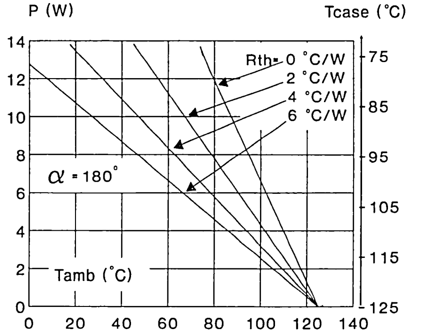


Fig.3 : Maximum average power dissipation versus average on-state current (TYN).

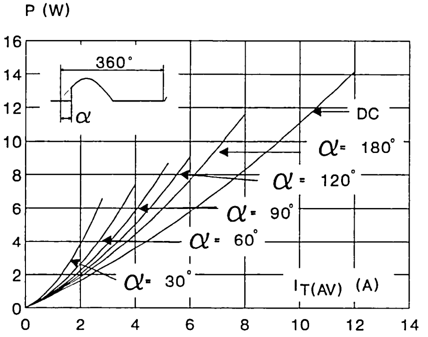


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TYN).

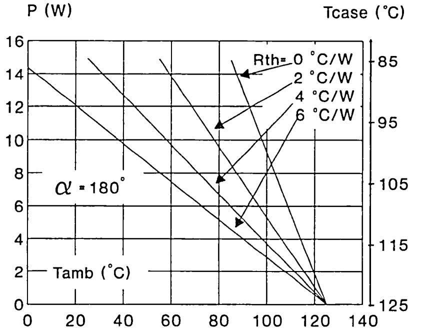


Fig.5 : Average on-state current versus case temperature (TXN).

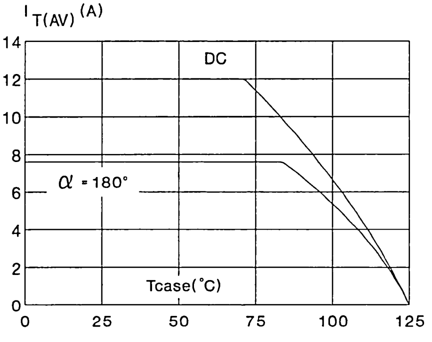


Fig.6 : Thermal transient impedance junction to ambient versus pulse duration (TXN).

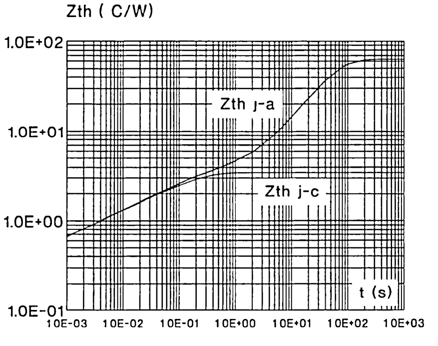


Fig.7 : Average on-state current versus case temperature (TYN).

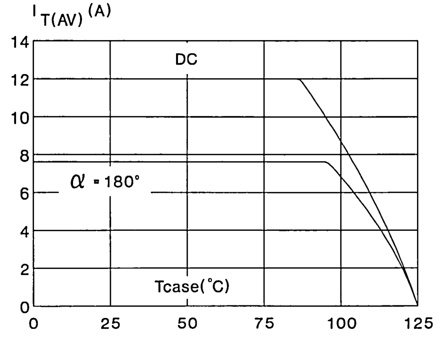


Fig.8 : Thermal transient impedance junction to ambient versus pulse duration (TYN).

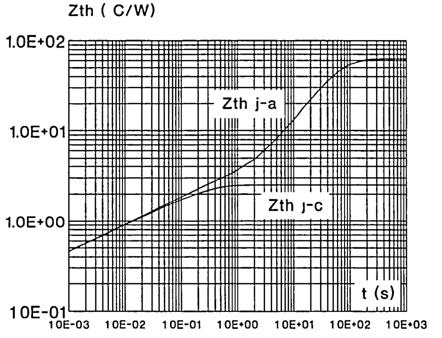


Fig.9 : Relative variation of gate trigger current versus junction temperature.

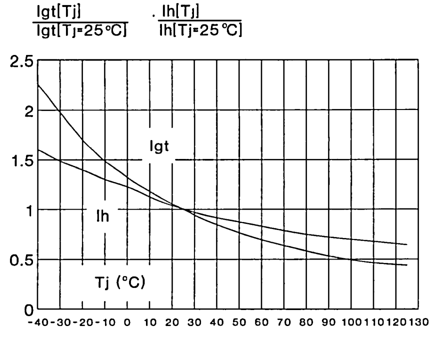


Fig.10 : Non repetitive surge peak on-state current versus number of cycles.

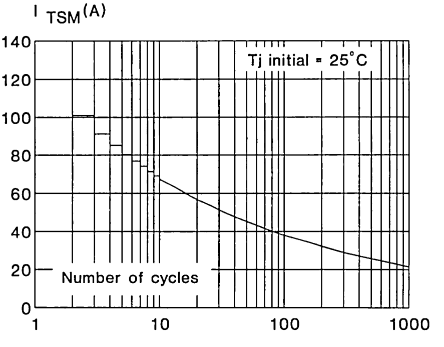


Fig.11 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

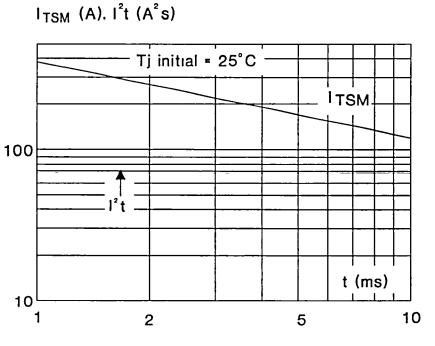
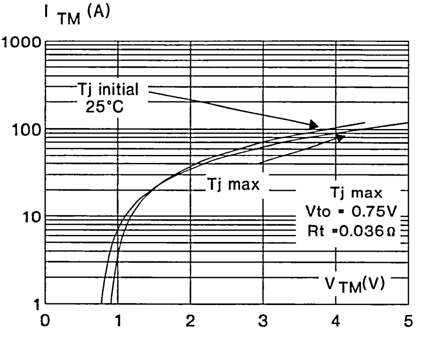
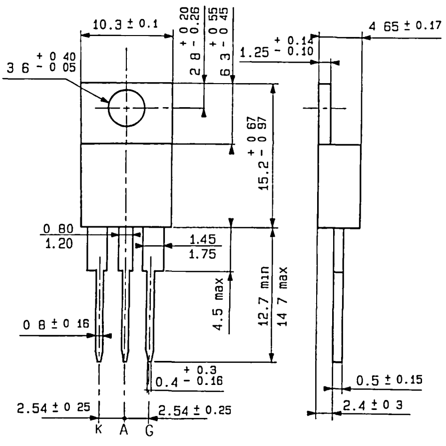


Fig12 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TYP 212 --->TYP 2012

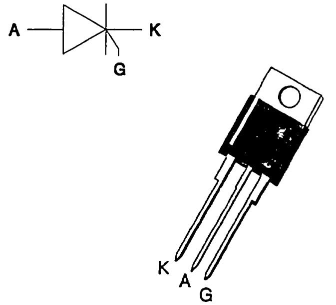
SCR FOR OVERVOLTAGE PROTECTION

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- HIGH dI/dt RATING
- HIGH STABILITY AND RELIABILITY

DESCRIPTION

The TYP 212 ---> 1012 Family uses high performance glass passivated chips technology.
These Silicon Controlled Rectifiers are designed for overvoltage protection in crowbar circuits application.



TO 220 AB
(Plastic)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle, single phase circuit)	Tc = 110 °C	12	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 110 °C	8	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	315	A
		tp = 10 ms	300	
I^2t	I^2t value	tp = 10 ms	450	A^2s
I_{TM}	Non repetitive surge peak on-state current (Tj initial = 25°C) Exponential pulse wave form	tp = 1 ms	750	A
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 300 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYP				Unit
		212	512	1012	2012	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	25	50	100	200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R_{th} (j-a)	Junction to ambient	60	°C/W
R_{th} (j-c) DC	Junction to case for DC	1.3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	30	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	1	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	60	mA
I_H	I_T= 500mA gate open	Tj=25°C	MAX	50	mA
V_{TM}	ITM= 50A tp= 380µs	Tj=25°C	MAX	1.5	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

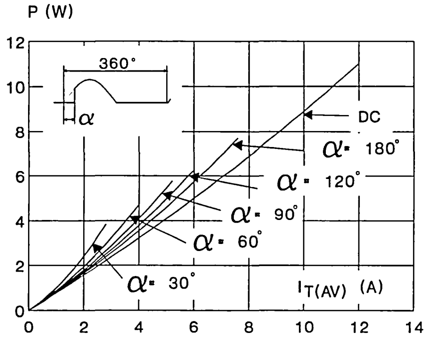


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

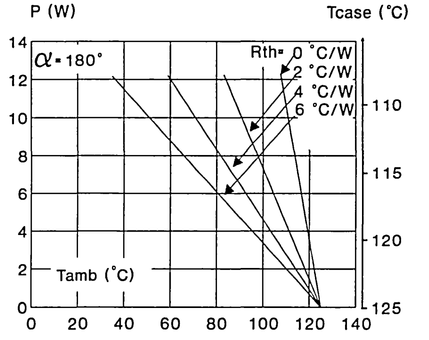


Fig.3 : Average on-state current versus case temperature.

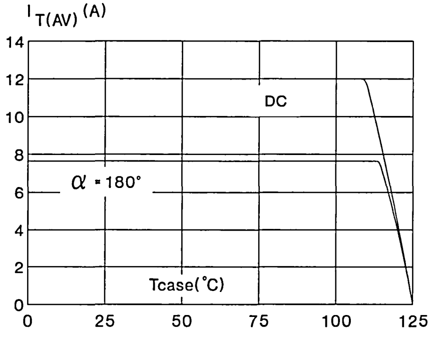


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

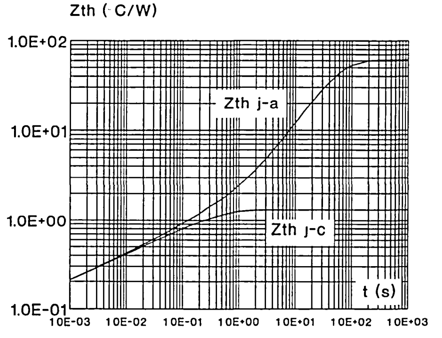


Fig.5 : Relative variation of gate trigger current versus junction temperature.

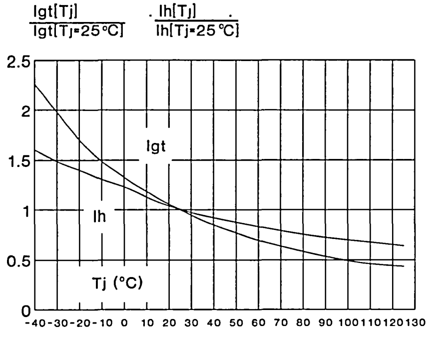


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

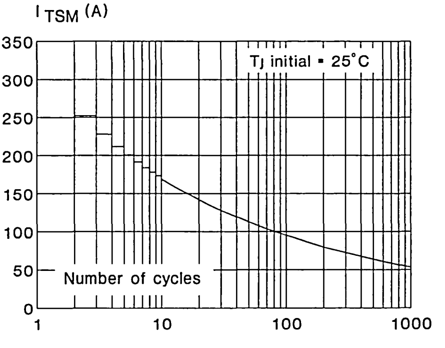


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

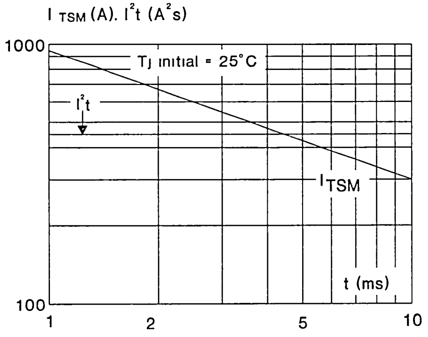


Fig.8 : On-state characteristics (maximum values).

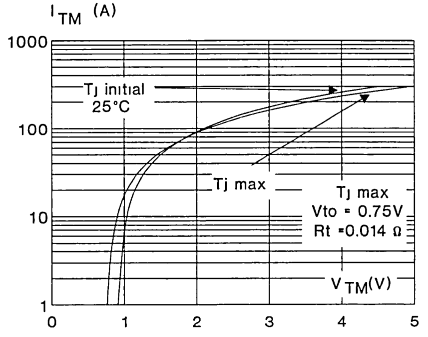


Fig.9 : Peak capacitor discharge current versus pulse width.

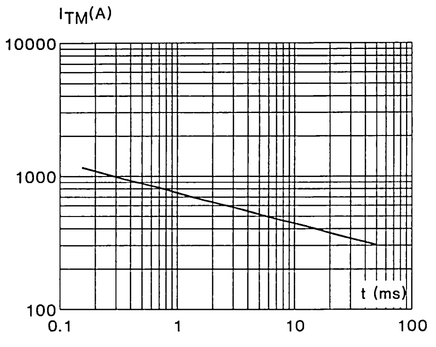
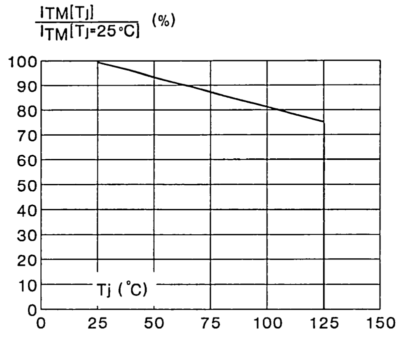
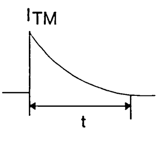


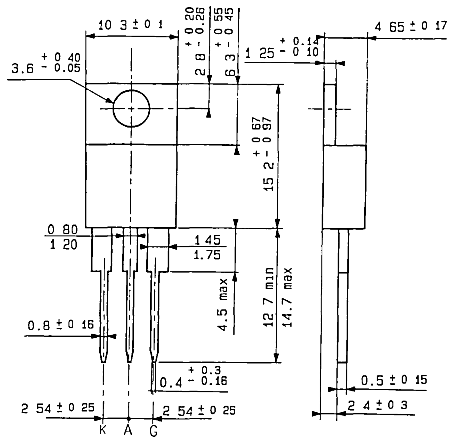
Fig.10 : Allowable peak capacitor discharge current versus initial junction temparature.





PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



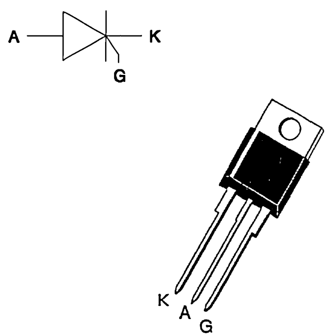
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TYN 0516 ---> TYN 816

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 220 AB
(Plastic)

DESCRIPTION

The TYN 0516 ---> TYN 816 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 95 °C	16	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 95 °C	10	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	167	A
		tp = 10 ms	160	
I^2t	I^2t value	tp = 10 ms	128	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYN						Unit
		0516	116	216	416	616	816	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.0	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	25	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	70	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	40	mA
V_{TM}	ITM= 32A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	500	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 32A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

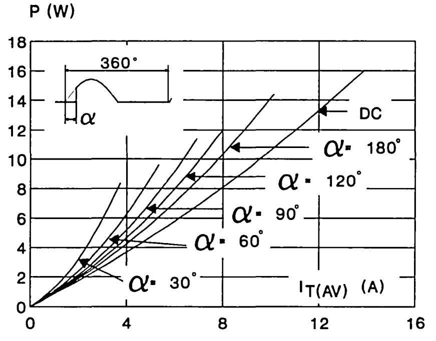


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

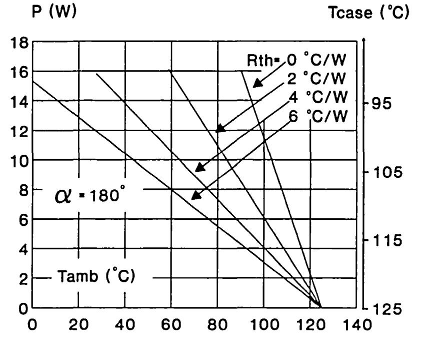


Fig.3 : Average on-state current versus case temperature.

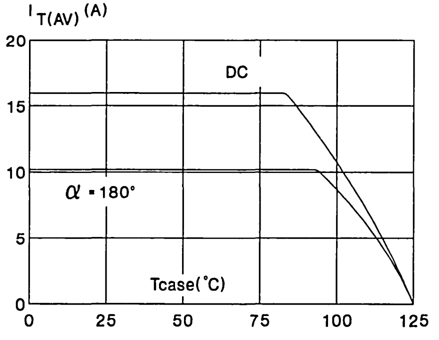


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

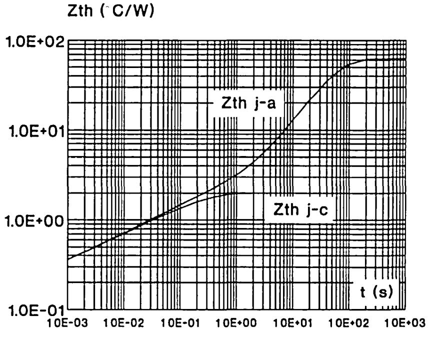


Fig.5 : Relative variation of gate trigger current versus junction temperature.

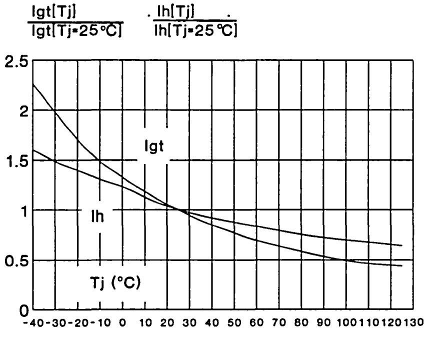


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

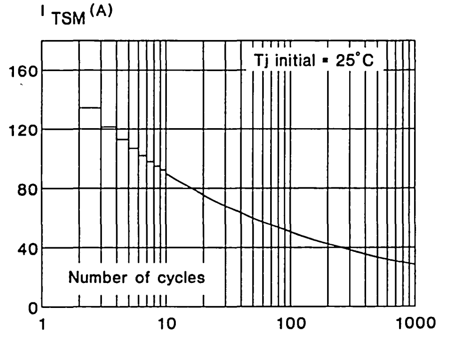


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

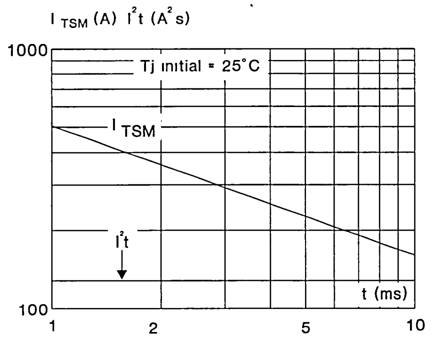
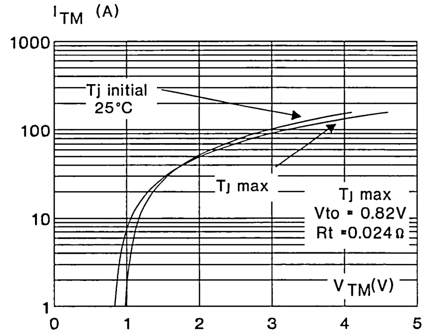
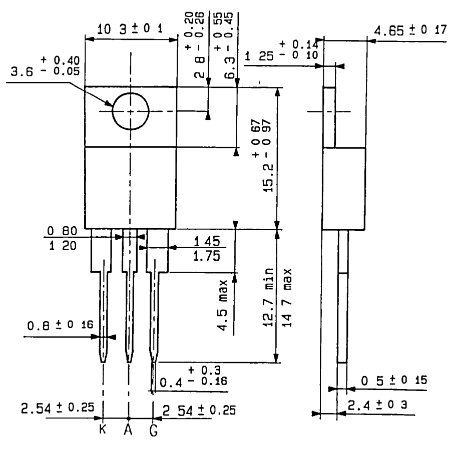


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



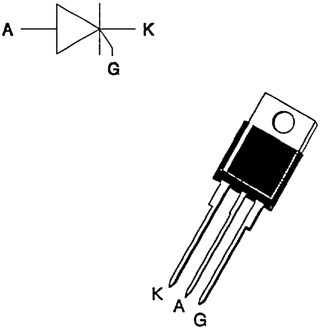
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TYN 682 ---> TYN 692

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 220 AB
(Plastic)

DESCRIPTION

The TYN 682 ---> TYN 692 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 105 °C	20	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 105 °C	13	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	260	A
		tp = 10 ms	250	
I^2t	I^2t value	tp = 10 ms	310	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYN						Unit
		682	683	685	688	690	692	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	1.3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	25	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	70	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	40	mA
V_{TM}	ITM= 50A tp= 380µs	Tj=25°C	MAX	1.4	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		2	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	500	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

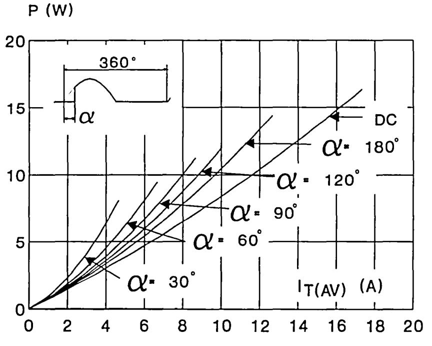


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

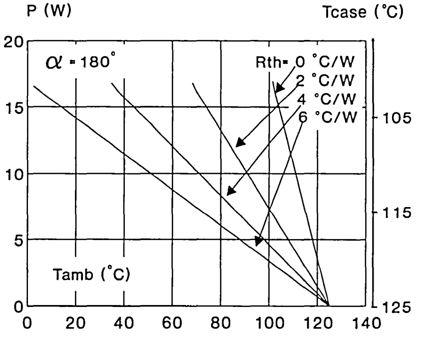


Fig.3 : Average on-state current versus case temperature.

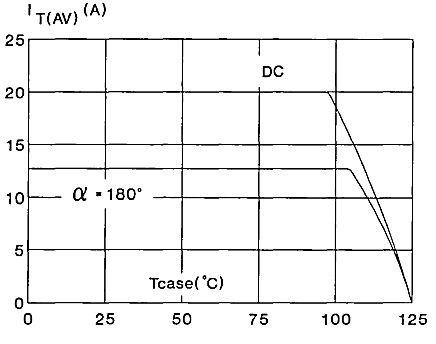


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

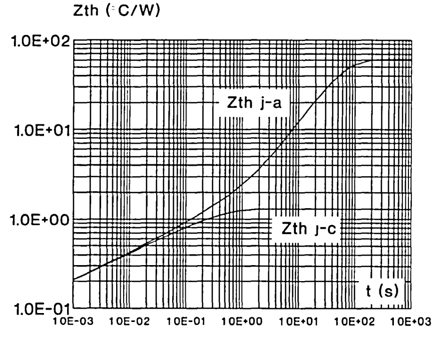


Fig.5 : Relative variation of gate trigger current versus junction temperature.

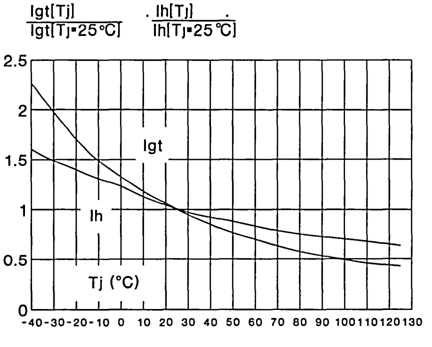


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

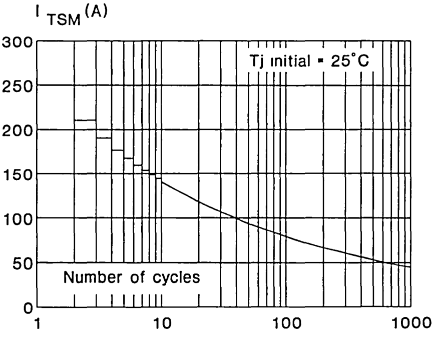


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

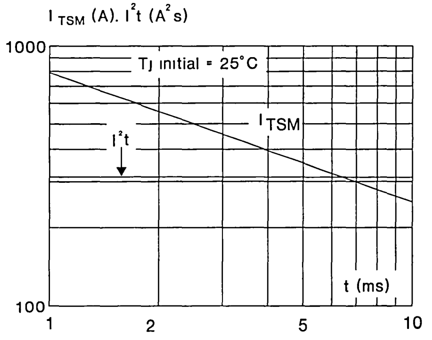
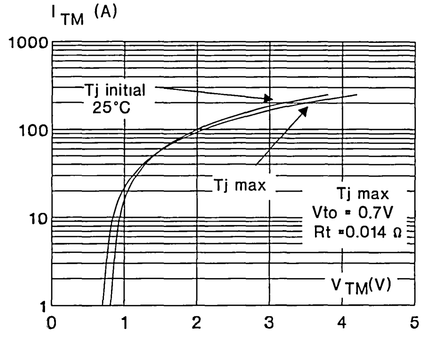
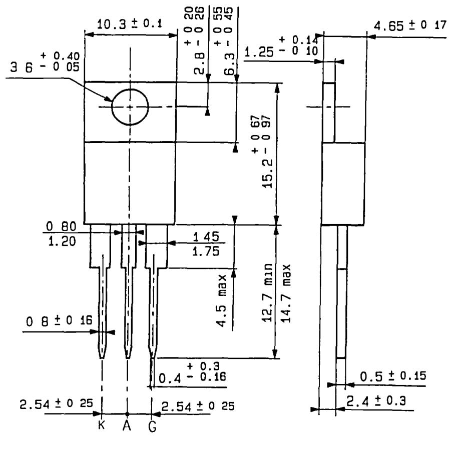


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



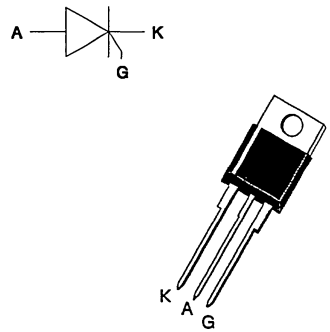
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TYN 225 ---> TYN 1025

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 220 AB
(Plastic)

DESCRIPTION

The TYN 225 ---> TYN 1025 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 95 °C	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 95 °C	16	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	260	A
		tp = 10 ms	250	
I^2t	I^2t value	tp = 10 ms	310	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 400 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TYN					Unit
		225	425	625	825	1025	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	1.3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	40	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	80	mA
I_H	I_T= 100mA gate open	Tj=25°C	MAX	50	mA
V_{TM}	ITM= 50A tp= 380µs	Tj=25°C	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		4	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	500	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	70	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

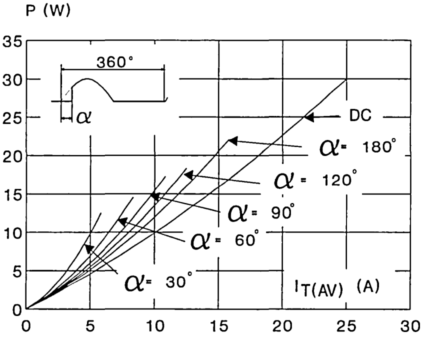


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

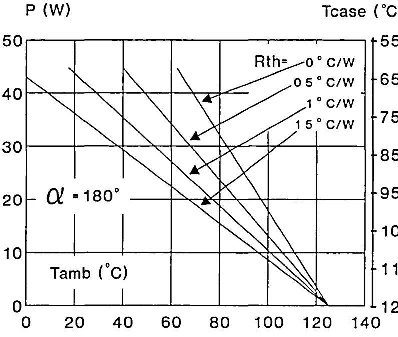


Fig.3 : Average on-state current versus case temperature.

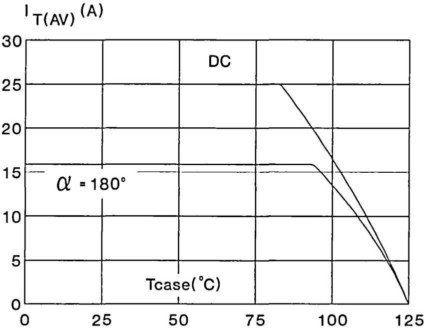


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

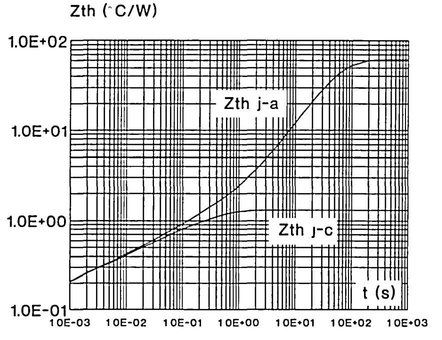


Fig.5 : Relative variation of gate trigger current versus junction temperature.

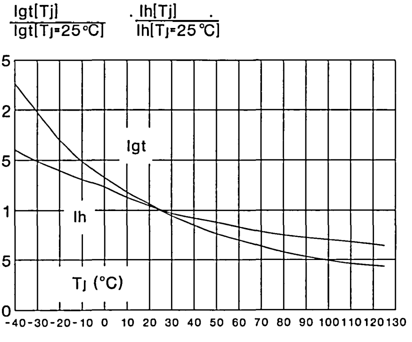


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

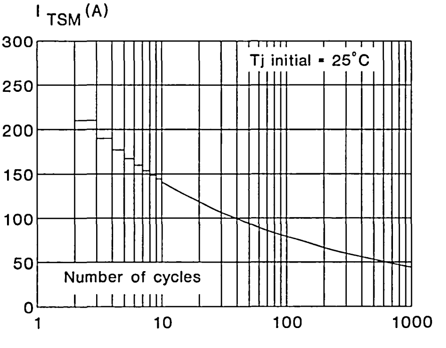


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

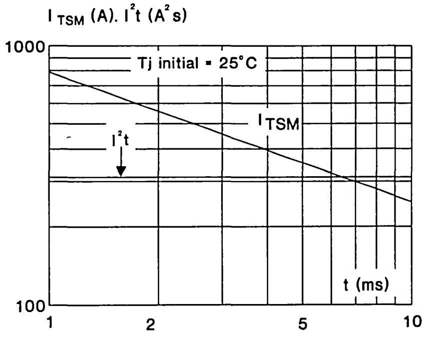
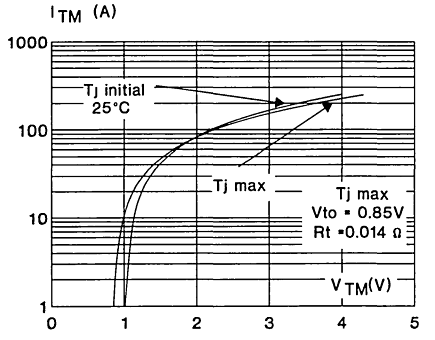
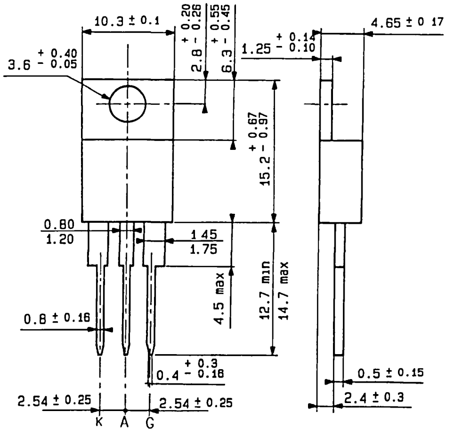


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

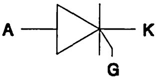
SGS-THOMSON MICROELECTRONICS

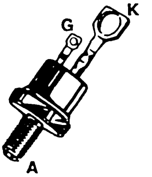
2N 682 ---> 2N 692

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The 2N 682 ---> 2N 692 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 80 °C	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 80 °C	16	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	210	A
		tp = 10 ms	200	
I^2t	I^2t value	tp = 10 ms	200	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 400 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	2N						Unit
		682	683	685	688	690	692	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	50	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 8A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	40	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.25	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 500mA gate open	Tj=25°C	TYP	30	mA
V_{TM}	ITM= 50A tp= 380µs	Tj=25°C	MAX	2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		3	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

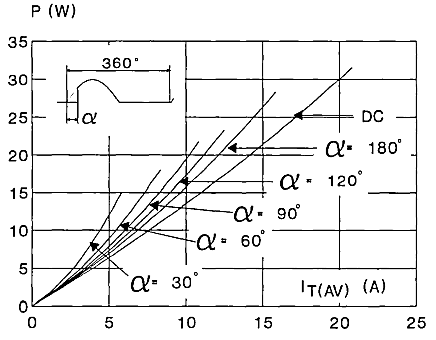


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

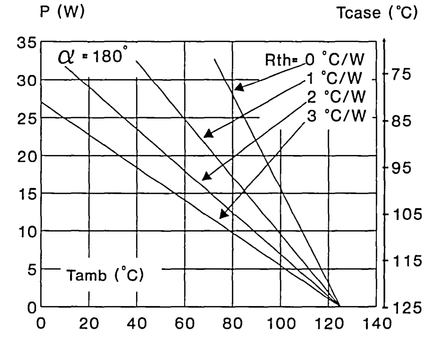


Fig.3 : Average on-state current versus case temperature.

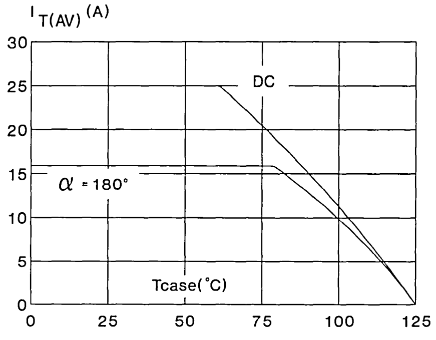


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

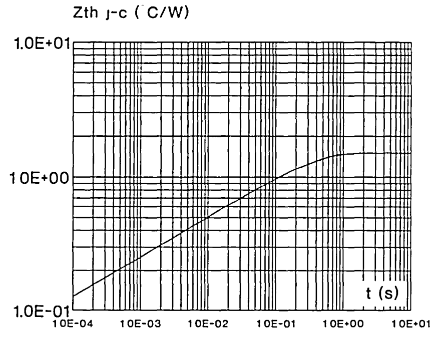


Fig.5 : Relative variation of gate trigger current versus junction temperature.

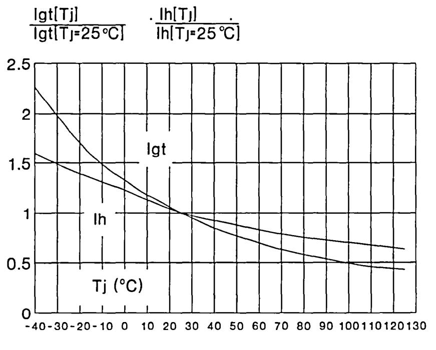


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

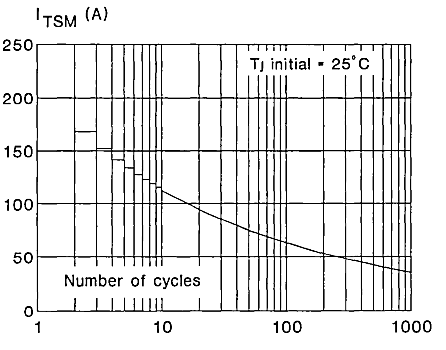


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

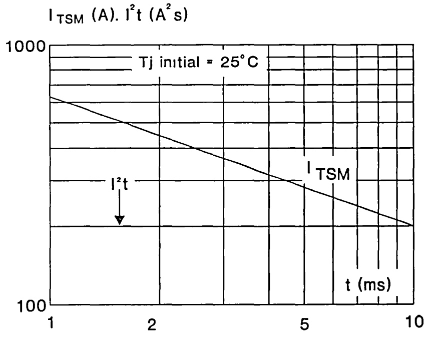
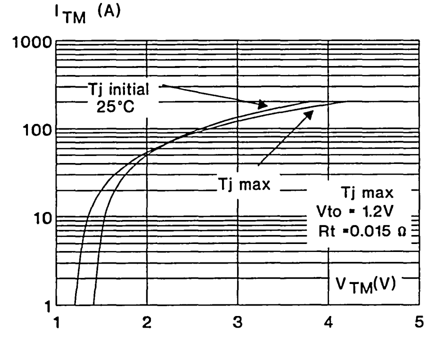
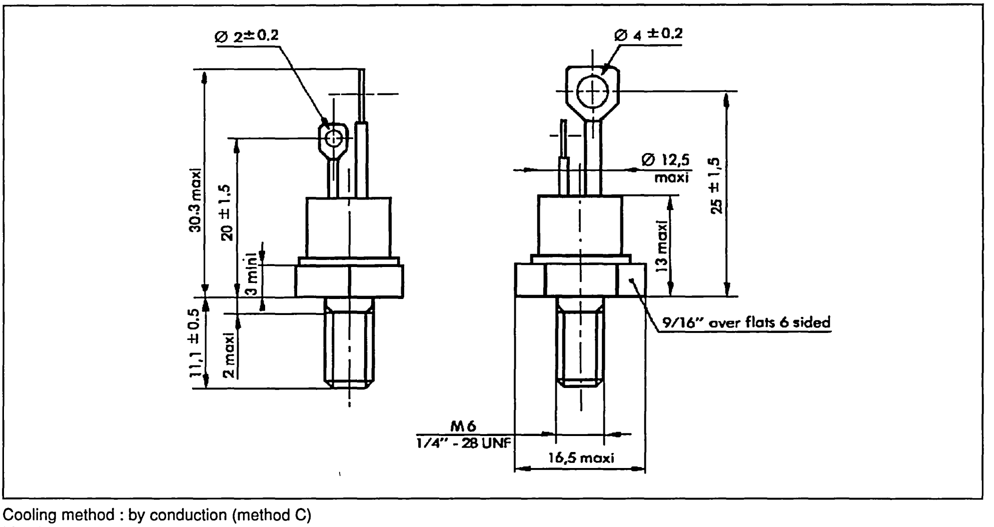


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)
TO 48 Metal



Cooling method : by conduction (method C)
Marking : type number
Weight : 13.5 g
Polarity : Anode (or A2) to case
Stud torque : 3.5m∧N min / 3.8 m∧N max

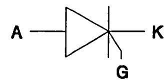
SGS-THOMSON MICROELECTRONICS

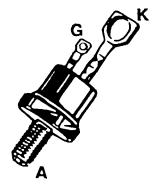
BTW 30

FAST SWITCHING SCR

FEATURES

- HIGH dI/dt AND dV/dt RATINGS
- tq : ≤ 12µs AND 20µs FOLLOWING V_{DRM}/V_{RRM}
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The BTW30 Silicon Controlled Rectifier Family uses a high performance glass passivated technology.
This fast switching Silicon Controlled Rectifier Family is designed for high frequency power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc=80°C	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	Tc=80°C	16	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp=8.3 ms	210	A
		tp=10 ms	200	
I^2t	I^2t value	tp=10 ms	200	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1 A di_G/dt = 10 A/µs		200	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTW 30-				Unit
		600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.0	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	200	mA
V_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ		Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs		Tj=25°C	TYP	1	µs
I_L	I_G= 1.2 I_{GT}		Tj=25°C	TYP	140	mA
I_H	I_T= 500mA gate open		Tj=25°C	TYP	70	mA
V_{TM}	ITM= 50A tp= 380µs		Tj=25°C	MAX	3	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated		Tj=25°C	MAX	0.05	mA
			Tj= 100°C		6	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open		Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 50V dI_{TM}/dt=10 A/µs dV_D/dt=50V/µs	V_{RRM}=600/800V	Tj= 125°C	MAX	12	µs
		V_{RRM}=1000/1200V			20	

SINUSOIDAL CURRENT PULSE DATA

Fig.1 : Energy per pulse for sinusoidal pulses.

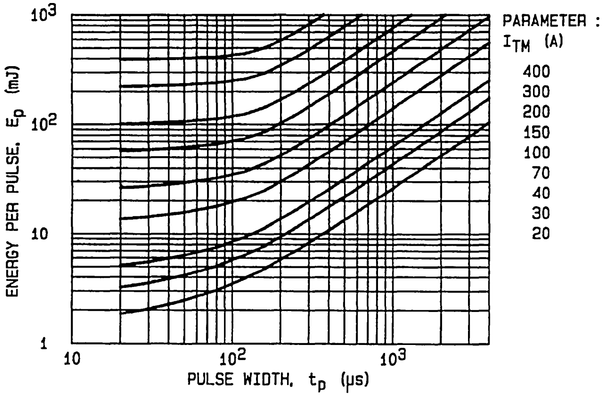
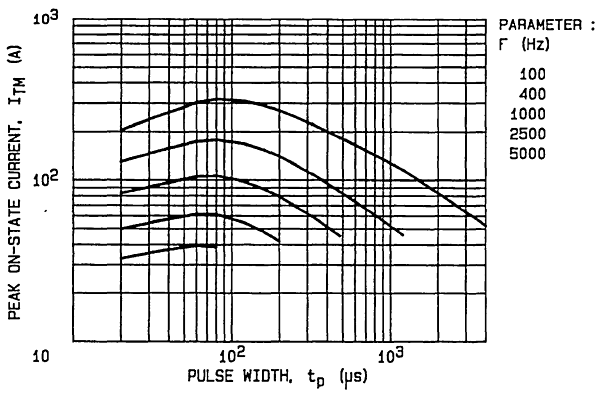


Fig.2 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



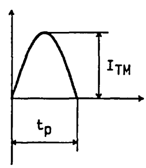
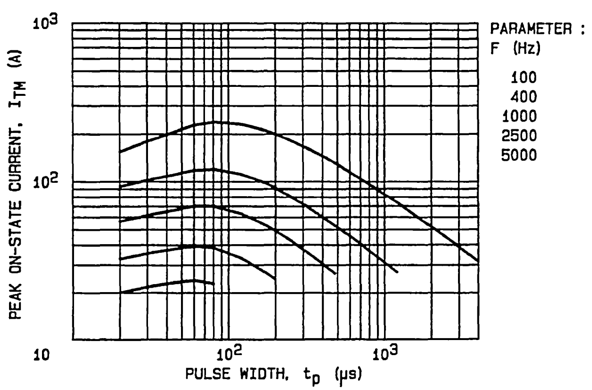


Fig.3 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R = 600$ Volts.
2. R.C Snubber, C = 0.1 μF,
   R = 33 Ω .

TRAPEZOIDAL CURRENT PULSE DATA

Fig.4 : Energy per pulse for trapezoidal pulses.

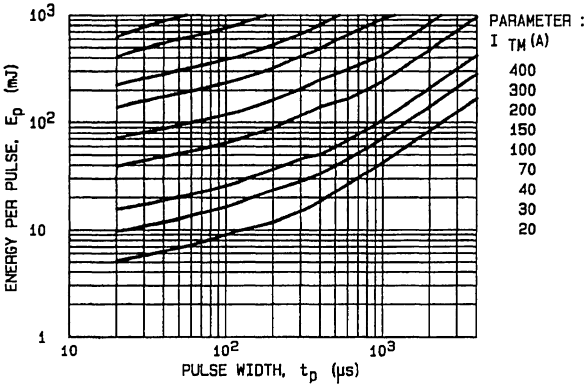
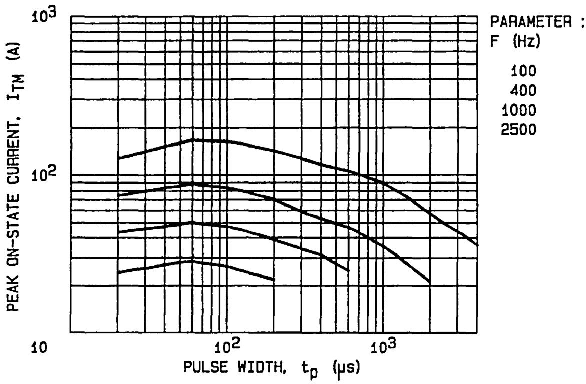


Fig.5 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



di/dt = 100 A/µs

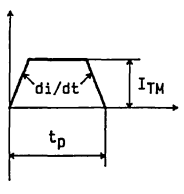
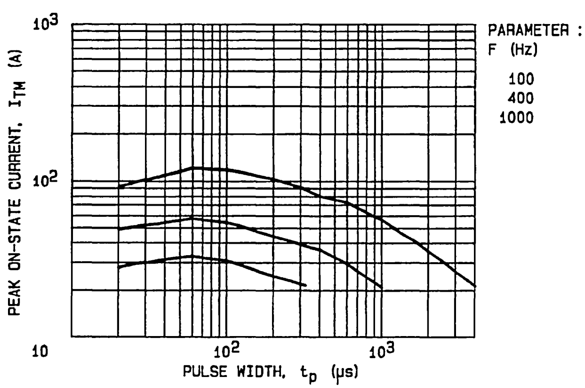


Fig.6 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :
1. $V_D = V_R$ = 600 Volts.
2. R.C Snubber, C = 0.1 µF, R = 33 Ω .

Fig.7 : Non repetitive surge peak on-state current versus number of cycles.

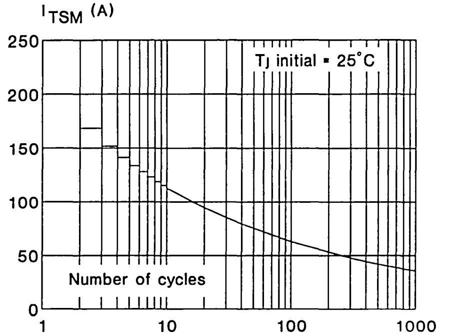


Fig.8 : Transient thermal impedance junction to ambient.

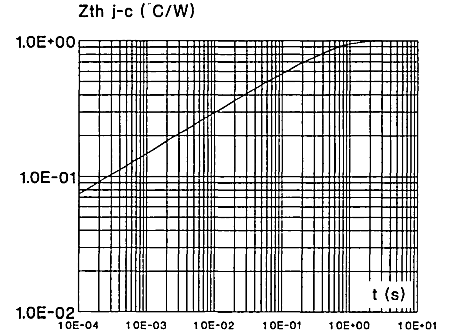


Fig.9 : Relative variation of gate trigger current and holding current versus junction temperature.

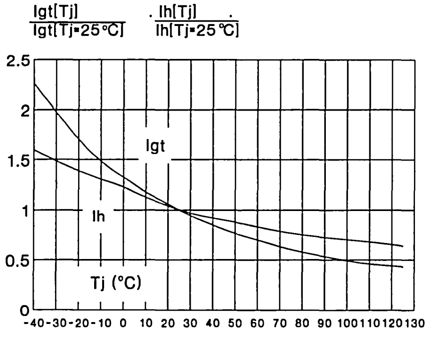


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t.

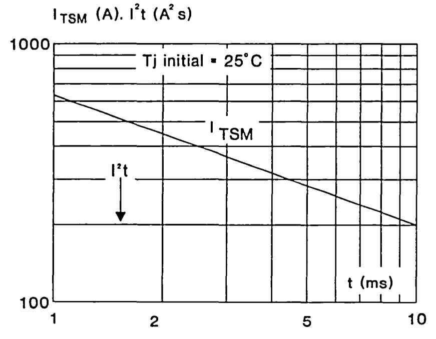
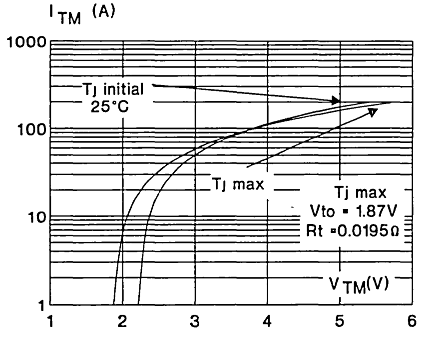
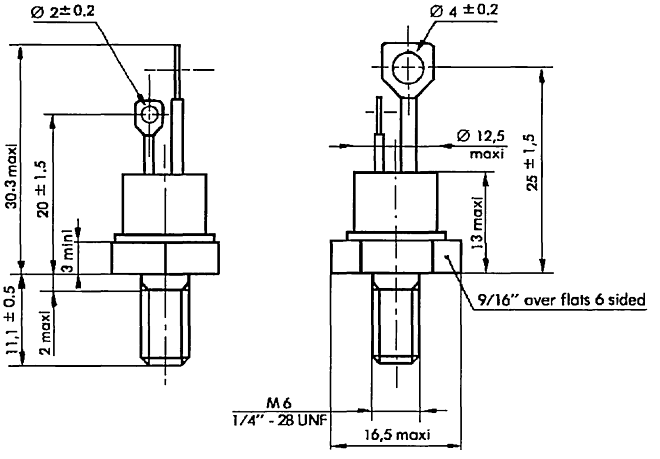


Fig11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A
Marking : type number
Weight : 13.5 g
Polarity : Anode (or A2) to case
Stud torque : 3.5 mΛN min / 3.8 mΛN max

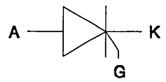
SGS-THOMSON MICROELECTRONICS

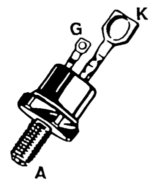
BTW 39

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The BTW 39 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 75 °C	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 75 °C	16	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	210	A
		tp = 10 ms	200	
I^2t	I^2t value	tp = 10 ms	200	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 800 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTW 39-							Unit
		100	200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	100	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 8A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	80	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	80	mA
I_H	I_T= 500mA gate open	Tj=25°C	TYP	50	mA
V_{TM}	ITM= 50A tp= 380µs	Tj=25°C	MAX	2.2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		5	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

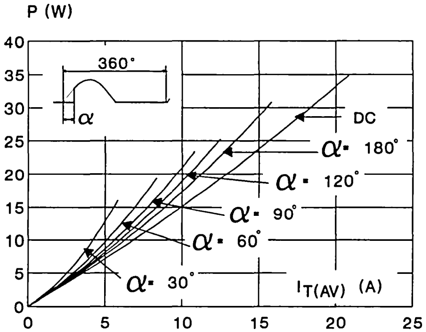


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

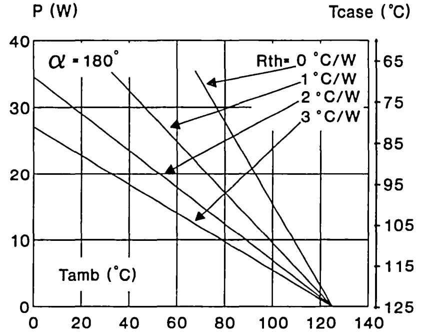


Fig.3 : Average on-state current versus case temperature.

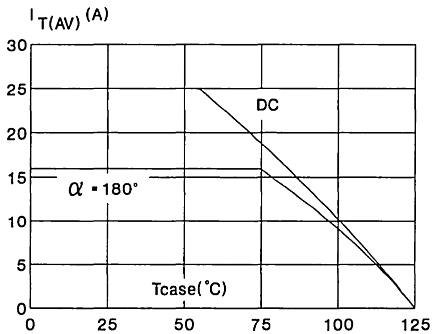


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

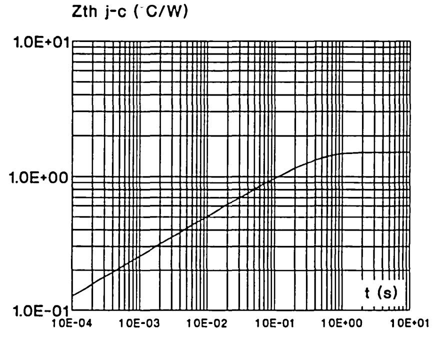


Fig.5 : Relative variation of gate trigger current versus junction temperature.

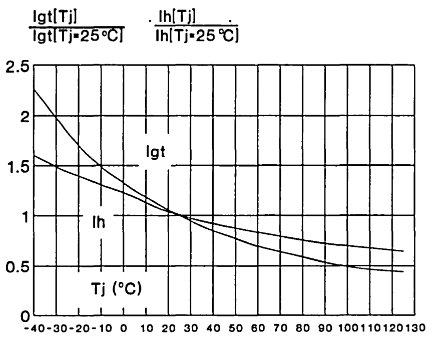


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

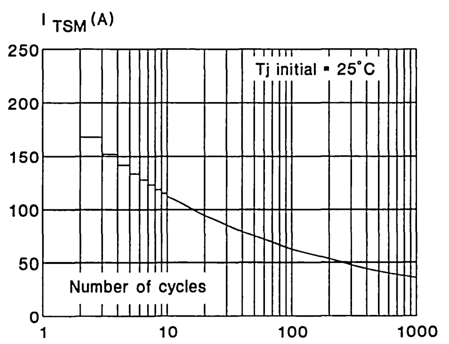


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

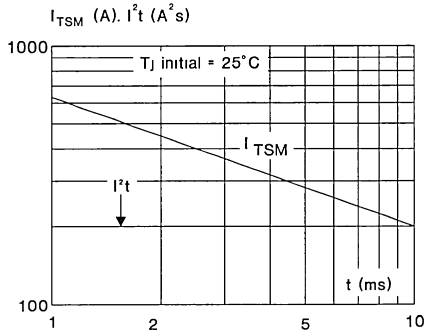
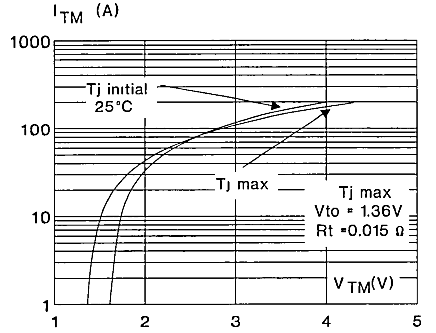
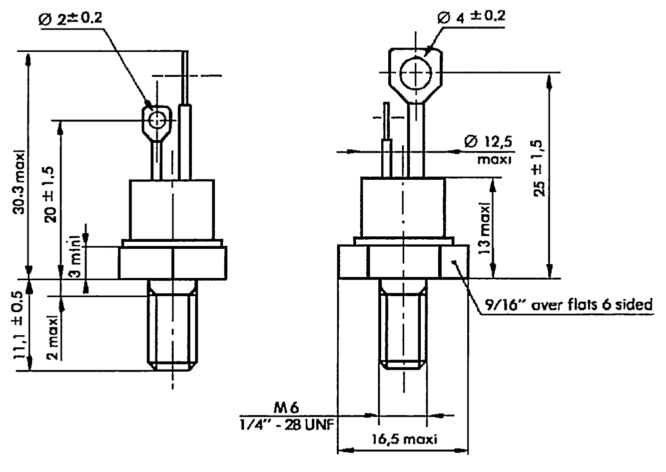


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A
Marking : type number
Weight : 13.5 g
Polarıty : Anade (or A2) to case
Stud torque : 3.5 mΛN min / 3.8 mΛN max

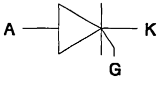
SGS-THOMSON MICROELECTRONICS

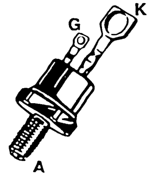
TSP 225 --->TSP 1025

SCR FOR OVERVOLTAGE PROTECTION

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- HIGH dI/dt RATING
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The TSP 225 ---> TSP1025 Family uses high performance glass passivated chips technology.
These Silicon Controlled Rectifiers are designed for overvoltage protection in crowbar circuits application.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle, single phase circuit)	Tc = 105 °C	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 105 °C	16	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	733	A
		tp = 10 ms	700	
I^2t	I^2t value	tp = 10 ms	2450	A^2s
I_{TM}	Non repetitive surge peak on-state current (Tj initial = 25°C) Rectangular pulse wave form	tp = 250 ms	145	A
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TSP			Unit
		225	525	1025	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	25	50	100	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.2	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	50	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	1	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	50	mA
I_H	I_T= 500mA gate open	Tj=25°C	MAX	50	mA
V_{TM}	ITM= 140A tp= 380µs	Tj=25°C	MAX	1.5	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.01	mA
		Tj= 125°C		10	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 140A V_R= 25V dI_{TM}/dt=30 A/µs dV_D/dt= 50V/µs	Tj= 125°C	TYP	50	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

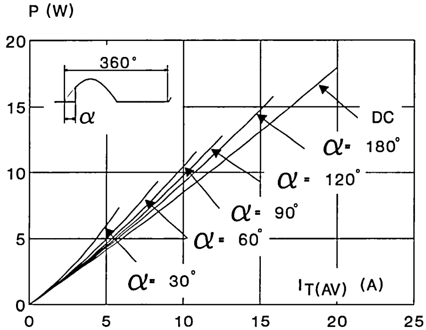


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

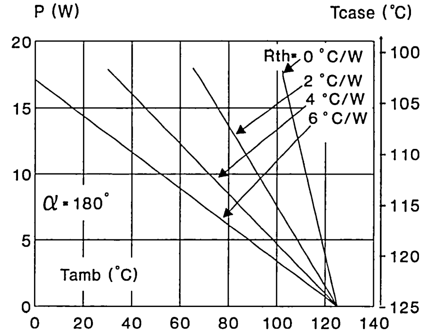


Fig.3 : Average on-state current versus case temperature.

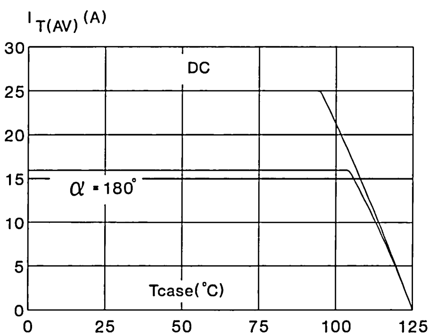


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

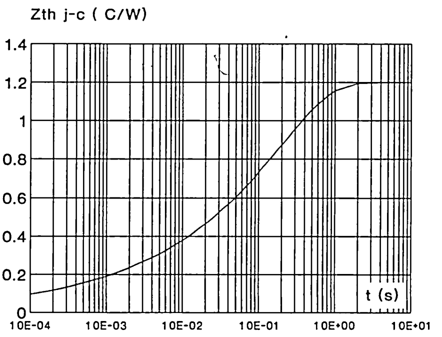


Fig.5 : Relative variation of gate trigger current versus junction temperature.

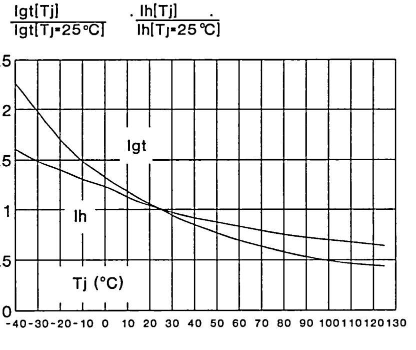


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

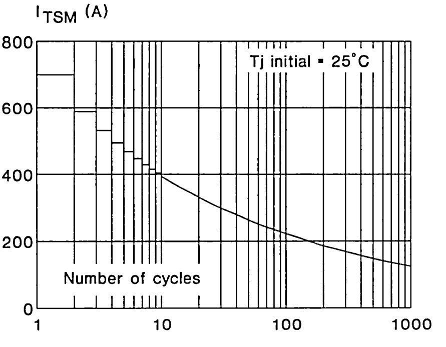


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

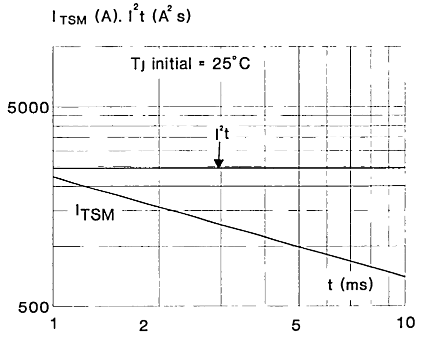


Fig.8 : On-state characteristics (maximum values).

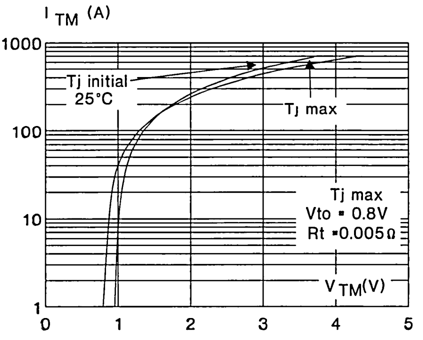
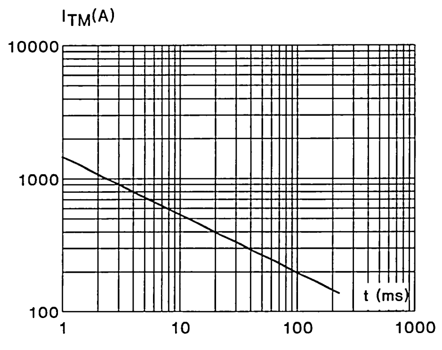


Fig.9 : Peak capacitor discharge current versus pulse width.



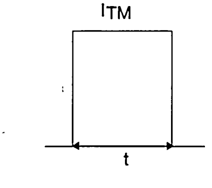
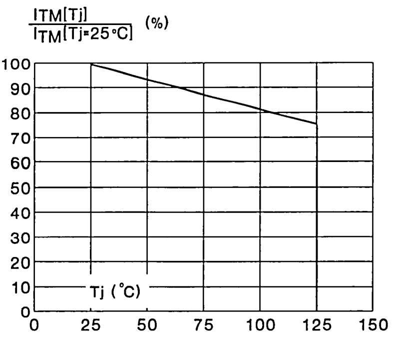
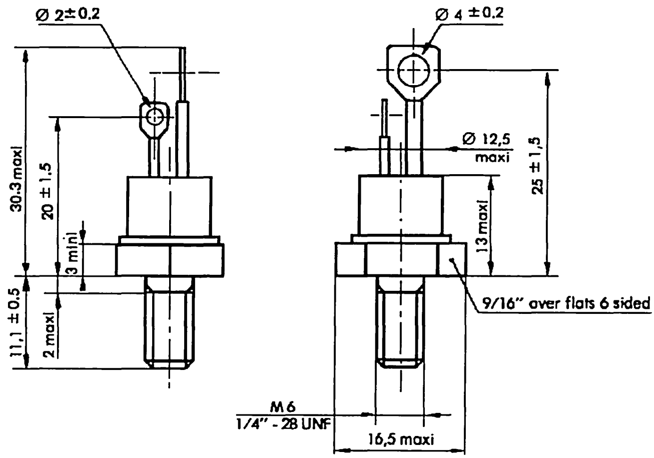


Fig.10 : Allowable peak capacitor discharge current versus initial junction temparature.



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A
Marking : type number
Weight : 13.5 g
Polarity : Anode (or A2) to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

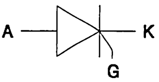
SGS-THOMSON MICROELECTRONICS

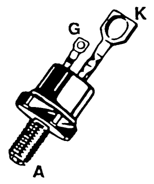
2N 5204 ---> 2N 5207

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The 2N 5204 ---> 2N 5207 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 75 °C	35	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 75 °C	22.5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	360	A
		tp = 10 ms	330	
I^2t	I^2t value	tp = 10 ms	545	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 400 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	2N				Unit
		5204	5205	5206	5207	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.0	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 60W (tp = 20 µs) I_{FGM} = 10A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	40	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.25	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	200	mA
I_H	I_T= 500mA gate open	Tj=25°C	MAX	100	mA
V_{TM}	ITM= 70A tp= 380µs	Tj=25°C	MAX	2.3	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		3.3	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 70A V_R= 30V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

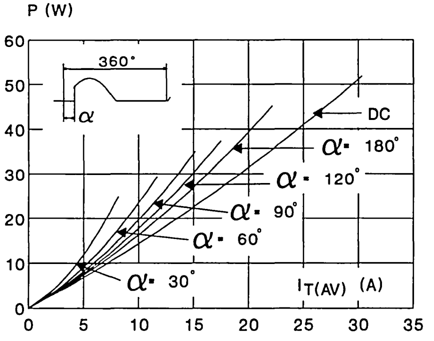


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

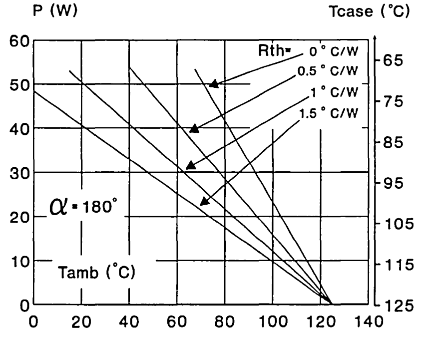


Fig.3 : Average on-state current versus case temperature.

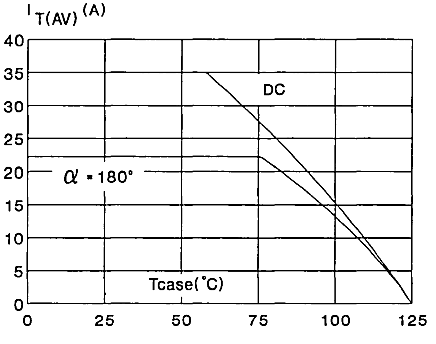


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

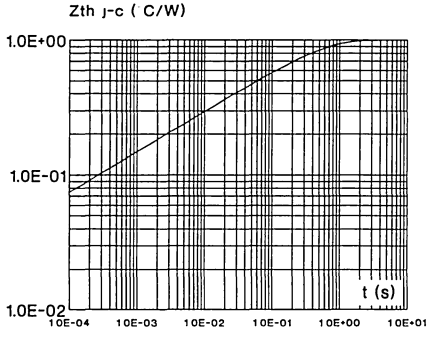


Fig.5 : Relative variation of gate trigger current versus junction temperature.

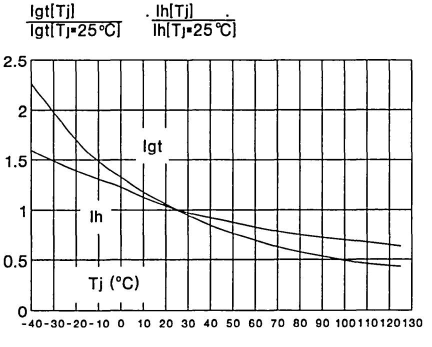


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

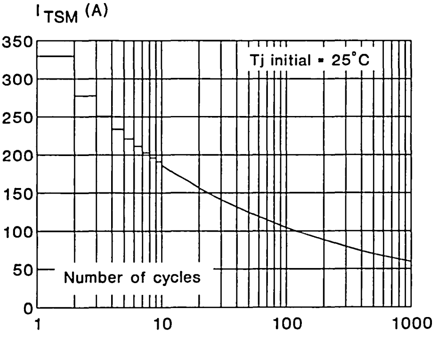


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

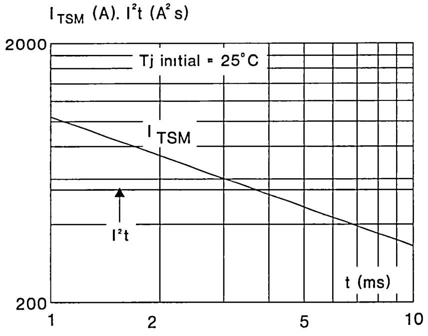
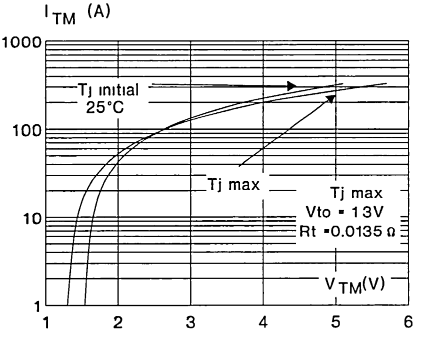
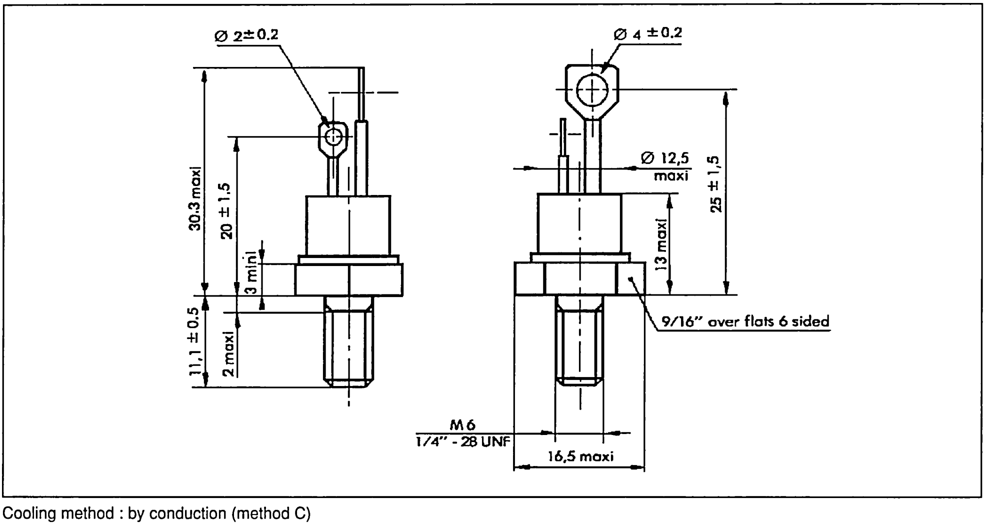


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : by conduction (method C)
Marking : type number
Weight · 13.5 g
Polarity : Anode (or A2) to case
Stud torque : 3.5mΛN min / 3 8 mΛN max

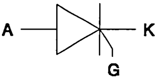
SGS-THOMSON
MICROELECTRONICS

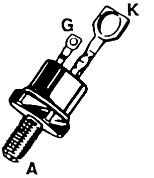
2N 3650 ---> 2N 3658

FAST SWITCHING SCR

FEATURES

- HIGH dI/dt AND dV/dt RATINGS
- tq : ≤ 10µs AND 15µs FOLLOWING V_{DRM}/V_{RRM}
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The 2N 3650 ---> 2N 3658 Silicon Controlled Rectifier Family uses a high performance glass passivated technologies.
This fast switching Silicon Controlled Rectifier Family is designed for high frequency power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc=65°C	35	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	Tc=65°C	22.5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp=8.3 ms	210	A
		tp=10 ms	200	
I^2t	I^2t value	tp=10 ms	200	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1 A dI_G/dt = 10 A/µs		400	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	2N						Unit
		3650	3655	3651	3656	3653	3658	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	100		200		400		V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.0	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	180	mA
V_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ		Tj= 120°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs		Tj=25°C	TYP	1	µs
I_L	I_G= 1.2 I_{GT}		Tj=25°C	TYP	140	mA
I_H	I_T= 500mA gate open		Tj=25°C	TYP	70	mA
V_{TM}	ITM= 25A tp= 380µs		Tj=25°C	MAX	2.05	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated		Tj=25°C	MAX	0.05	mA
			Tj= 120°C		6	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open		Tj= 120°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 25A V_R= 15V dI_{TM}/dt=5 A/µs dV_D/dt=200V/µs	2N 3650 / 2N3651 2N 3653	Tj= 120°C	MAX	15	µs
		2N 3655 / 2N 3656 2N 3658			10	

SINUSOIDAL CURRENT PULSE DATA

Fig.1 : Energy per pulse for sinusoidal pulses.

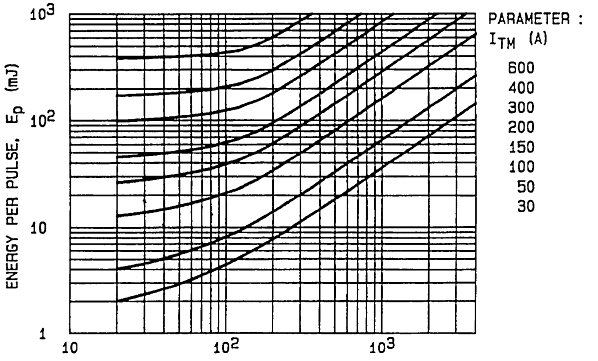
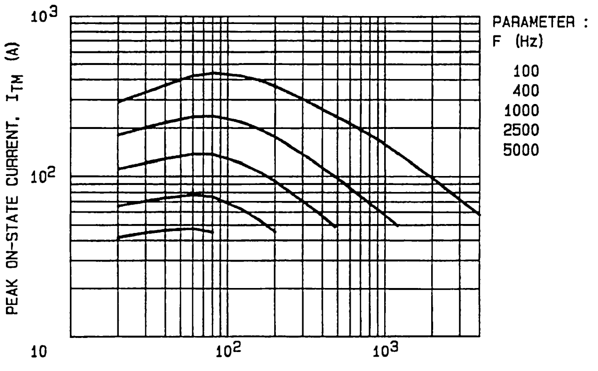


Fig.2 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



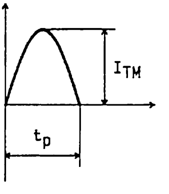
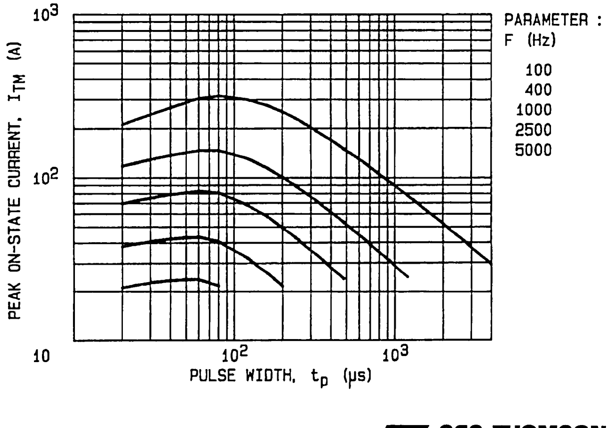


Fig.3 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R = 200$ Volts.
2. R.C Snubber, $C = 0.1\,\mu F$.
   $R = 33\,\Omega$.

TRAPEZOIDAL CURRENT PULSE DATA

Fig.4 : Energy per pulse for trapezoidal pulses.

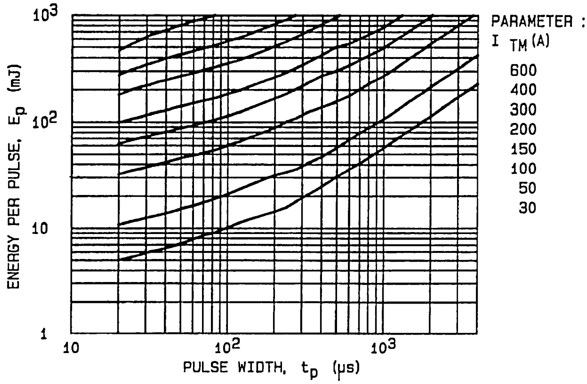
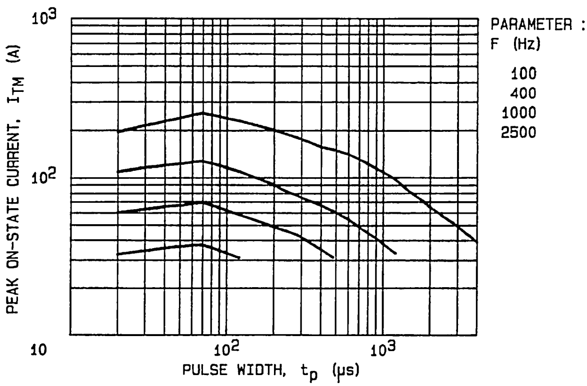


Fig.5 : Maxımum allowable peak on-state current versus pulse width for Tc = 85 °C.



di/dt = 100 A/µs

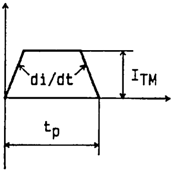
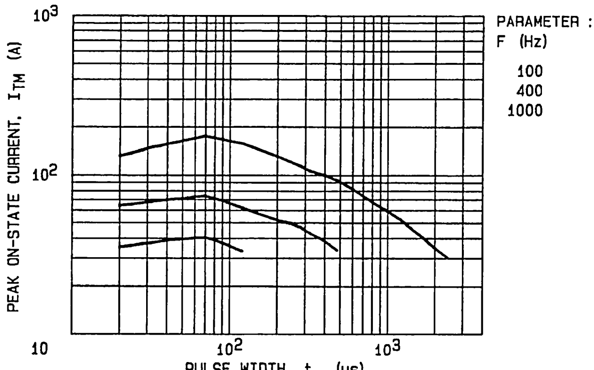


Fig.6 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R = 200$ Volts.
2. R.C Snubber, $C = 0.1\,\mu F$, $R = 33\,\Omega$.

Fig.7 : Non repetitive surge peak on-state current versus number of cycles.

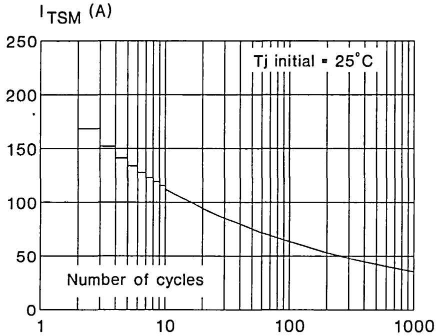


Fig.8 : Transient thermal impedance junction to ambient.

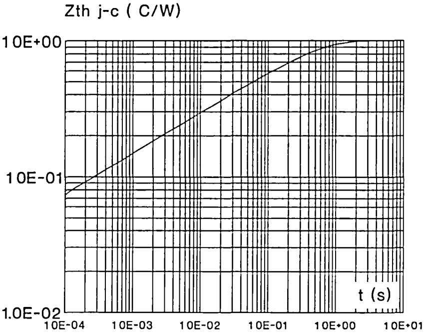


Fig.9 : Relative variation of gate trigger current and holding current versus junction temperature.

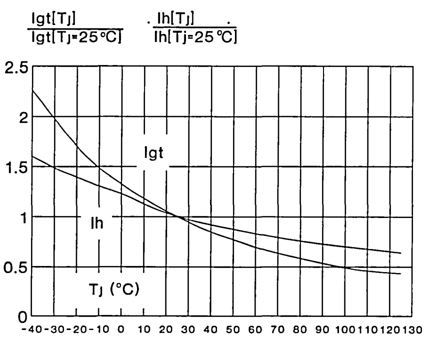


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

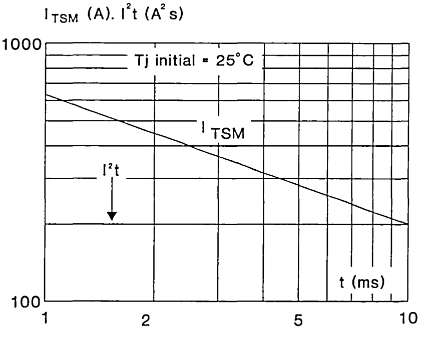
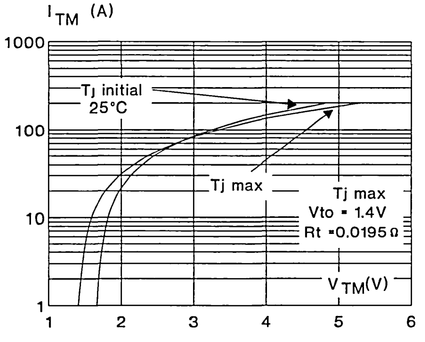
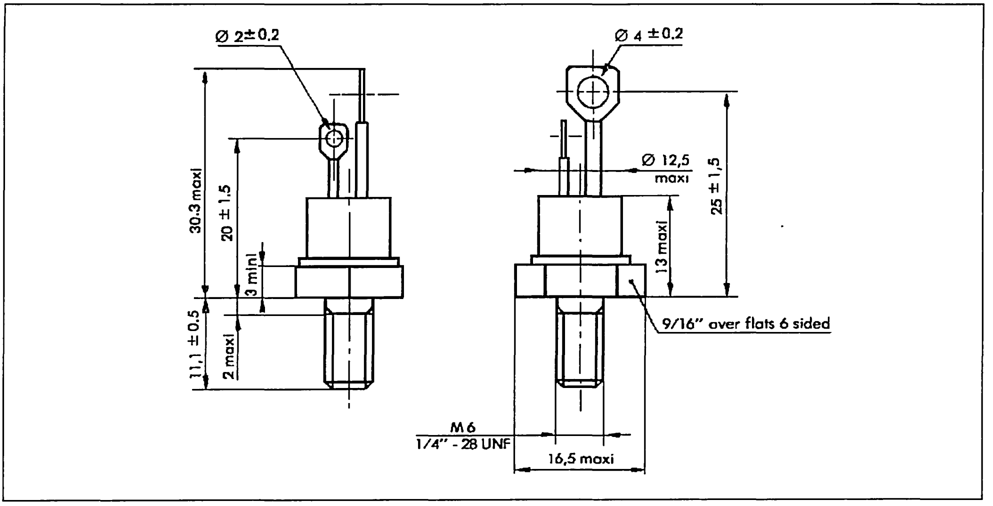


Fig11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A
Marking : type number
Weight : 13.5 g
Polarity : Anode (or A2) to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

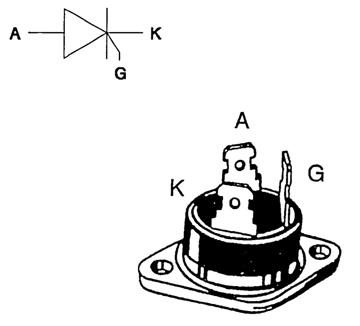
SGS-THOMSON
MICROELECTRONICS

BTW 66
BTW 67

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- ISOLATED PACKAGE :
  INSULATED VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



RD 91
(Plastic)

DESCRIPTION

The BTW 66 and BTW 67 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	BTW 66 BTW 67	Tc=75°C Tc=75°C	30 40	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	BTW 66 BTW 67	Tc=75°C Tc=75°C	20 25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	BTW 66 BTW 67	tp=8.3 ms	420 525	A
		BTW 66 BTW 67	tp=10 ms	400 500	
I^2t	I^2t value	BTW 66 BTW 67	tp=10 ms	800 1250	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 800 mA dI_G/dt = 1 A/µs			100	A/µs
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTW 66- / BTW 67-						Unit
		200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (c-h)	Contact (case to heatsink)		0.10	°C/W
Rth (j-c) DC	Junction to case for DC	BTW 66	1.2	°C/W
		BTW 67	1.0	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 50W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value		Unit
					BTW 66	BTW 67	
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	50	80	mA
V_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ		Tj= 125°C	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs		Tj=25°C	TYP	2		µs
I_L	I_G= 1.2 I_{GT}		Tj=25°C	TYP	50		mA
I_H	I_T= 500mA gate open		Tj=25°C	MAX	75	150	mA
V_{TM}	BTW 66 ITM= 60A BTW 67 I_{TM}= 80A tp= 380µs		Tj=25°C	MAX	2.2	2.0	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated		Tj=25°C	MAX	0.02		mA
			Tj= 125°C		6		
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	V_{DRM}≤ 800V V_{DRM} ≥ 1000V	Tj= 125°C	MIN	500 250		V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 60A V_R= 75V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs		Tj= 125°C	TYP	100		µs

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification
	A	V	BTW
BTW 66 (Insulated)	30	200	X
		400	X
		600	X
		800	X
		1000	X
		1200	X
BTW 67 (Insulated)	40	200	X
		400	X
		600	X
		800	X
		1000	X
		1200	X

Fig.1 : Maximum average power dissipation versus average on-state current (BTW 66).

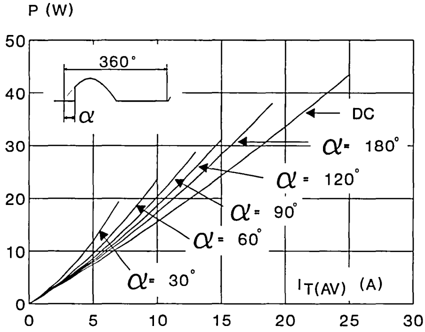


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 66).

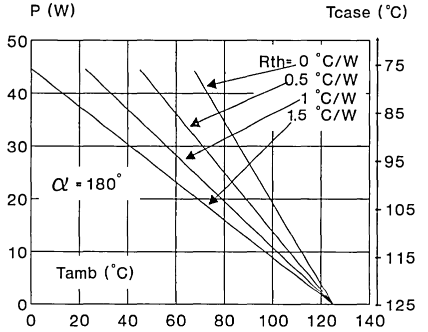


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 67).

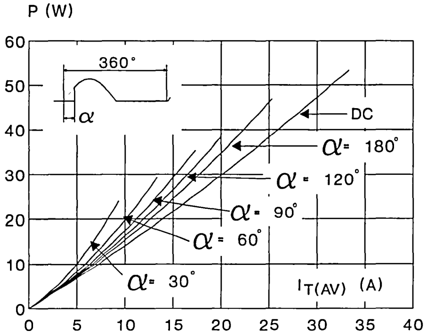


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 67).

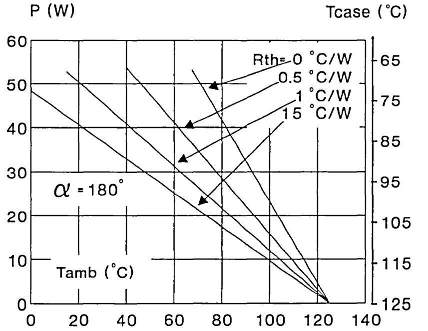


Fig.5 : Average on-state current versus case temperature (BTW 66).

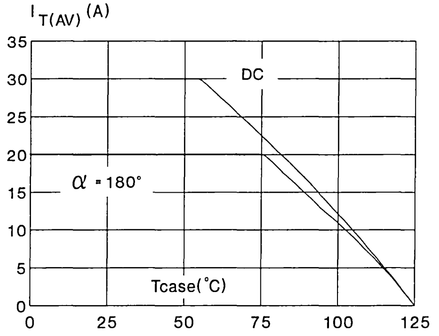


Fig.6 : Thermal transient impedance junction to ambient versus pulse duration (BTW 66).

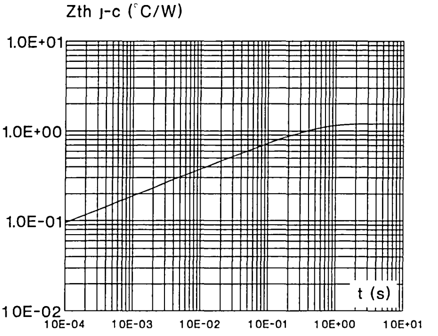


Fig.7 : Average on-state current versus case temperature (BTW 67).

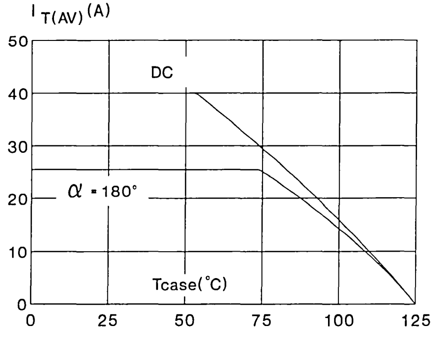


Fig.8 : Thermal transient impedance junction to ambient versus pulse duration (BTW 67).

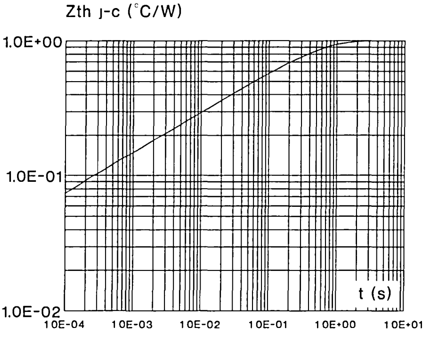


Fig.9 : Relative variation of gate trigger current versus junction temperature.

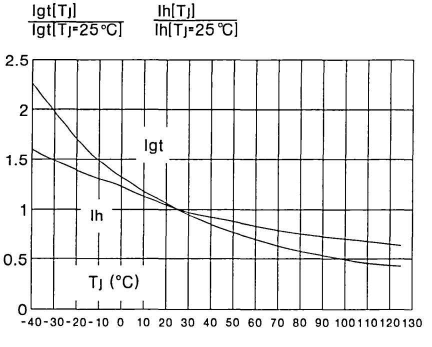


Fig.10 : Non repetitive surge peak on-state current versus number of cycles (BTW 66).

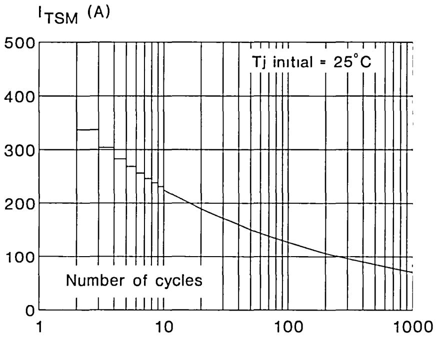


Fig11 : Non repetitive surge peak on-state current versus number of cycles (BTW 67).

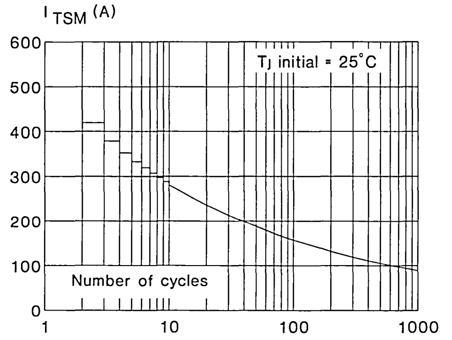


Fig.12 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t (BTW 66).

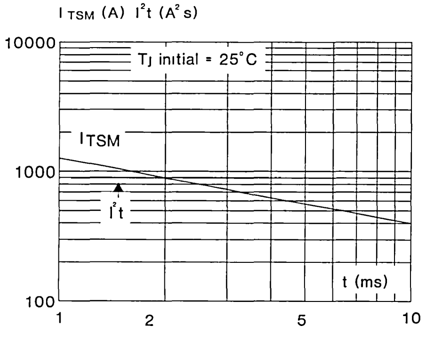


Fig.13 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t (BTW 67).

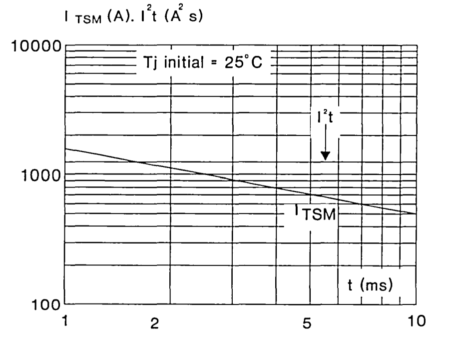


Fig.14 : On-state characteristics (maximum values) (BTW 66).

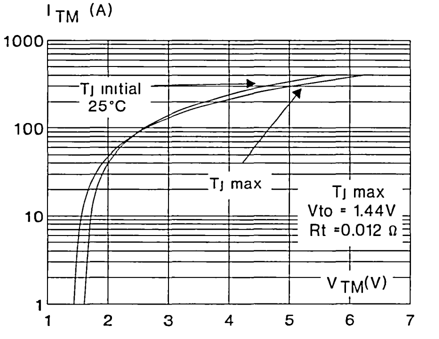
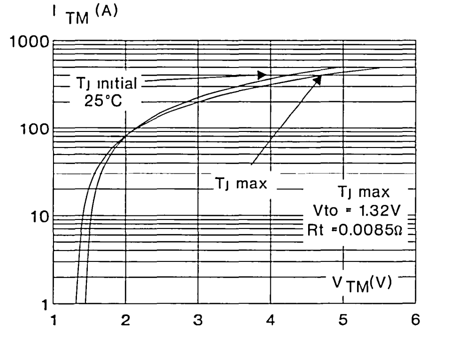
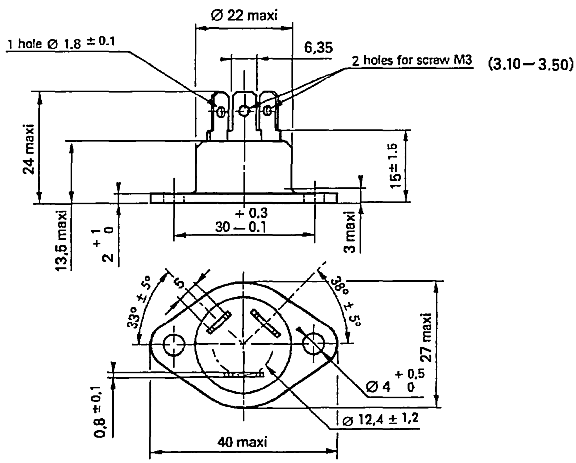


Fig.15 : On-state characteristics (maximum values) (BTW 67).



PACKAGE MECHANICAL DATA (in millimeters)

RD 91 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 15 g
Polarity : N A
Stud torque : N A

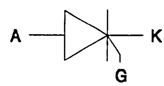
SGS-THOMSON
MICROELECTRONICS

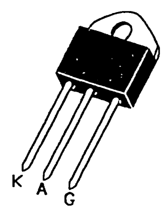
BTW 68 (N)

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- BTW 68 Serie :
  INSULATED VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





TOP 3
(Plastic)

DESCRIPTION

The BTW 68 (N) Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up - to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	BTW 68 BTW 68 N	Tc=80°C Tc=85°C	30 35	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	BTW 68 BTW 68 N	Tc=80°C Tc=85°C	19 22	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp=8.3 ms	420	A
			tp=10 ms	400	
I^2t	I^2t value		tp=10 ms	800	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500 mA dI_G/dt = 1 A/µs			100	A/µs
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTW 68		BTW 68 / BTW 68 N				Unit
		200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		50	°C/W
Rth (j-c) DC	Junction to case for DC	BTW 68	1.1	°C/W
		BTW 68 N	0.8	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 50W (tp = 20 µs) I_{FGM} = 4A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value		Unit
					BTW 68	BTW 68 N	
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	50		mA
V_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ		Tj= 125°C	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs		Tj=25°C	TYP	2		µs
I_L	I_G= 1.2 I_{GT}		Tj=25°C	TYP	40		mA
I_H	I_T= 500mA gate open		Tj=25°C	MAX	75		mA
V_{TM}	BTW 68 ITM= 60A BTW 68 N I_{TM}= 70A tp= 380µs		Tj=25°C	MAX	2.1	2.2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated		Tj=25°C	MAX	0.02		mA
			Tj= 125°C		6		
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	V_{DRM}≤ 800V V_{DRM} ≥ 1000V	Tj= 125°C	MIN	500 250		V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 60A V_R= 75V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs		Tj= 125°C	TYP	2		µs

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification
	A	V	BTW
BTW 68 (Insulated)	30	200	X
		400	X
		600	X
		800	X
		1000	X
		1200	X
BTW 68 N (Uninsulated)	35	600	X
		800	X
		1000	X
		1200	X

Fig.1 : Maximum average power dissipation versus average on-state current (BTW 68).

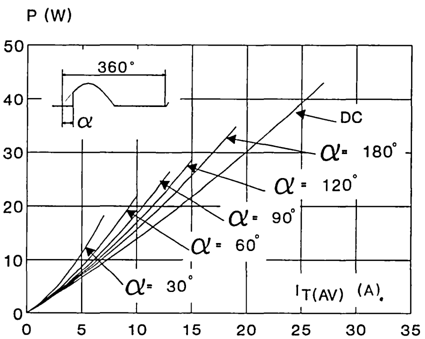


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 68).

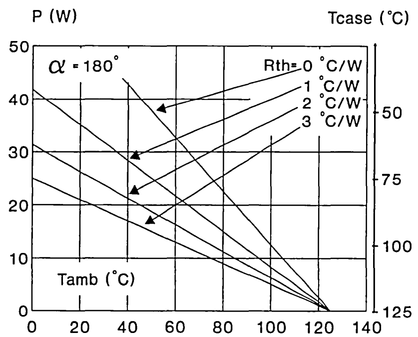


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 68 N).

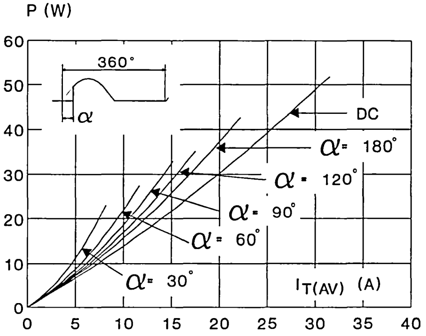


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 68 N).

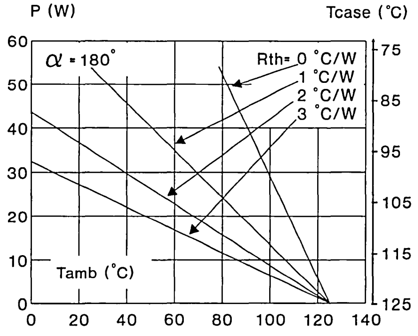


Fig.5 : Average on-state current versus case temperature (BTW 68).

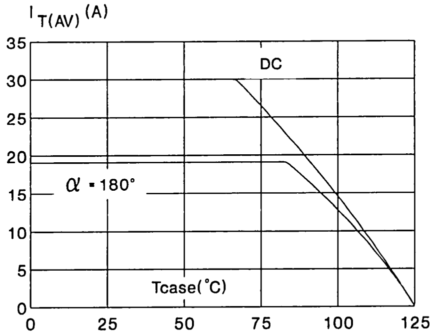


Fig.6 : Thermal transient impedance junction to ambient versus pulse duration (BTW 68).

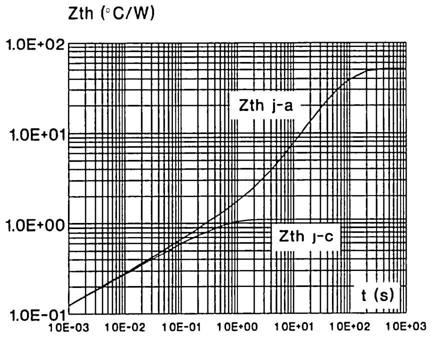


Fig.7 : Average on-state current versus case temperature (BTW 68 N).

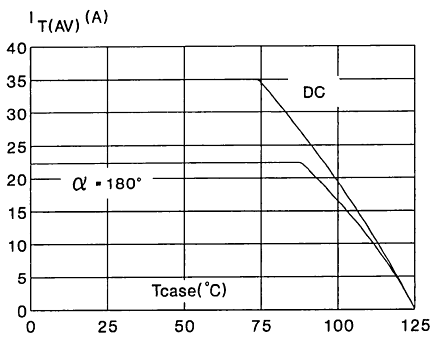


Fig.8 : Thermal transient impedance junction to ambient versus pulse duration (BTW 68 N).

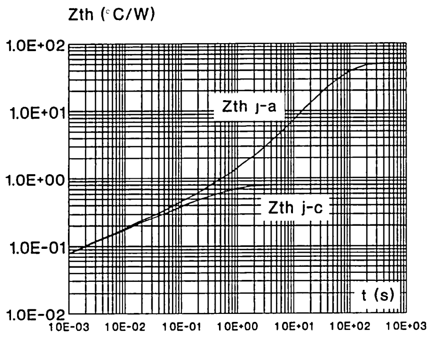


Fig.9 : Relative variation of gate trigger current versus junction temperature.

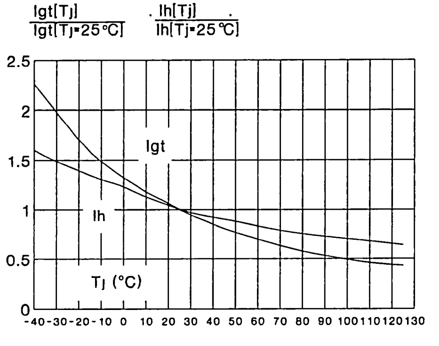


Fig.10 : Non repetitive surge peak on-state current versus number of cycles.

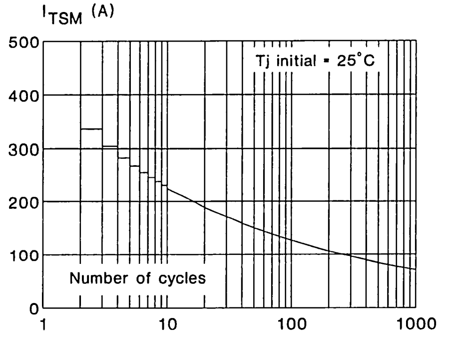


Fig.11 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

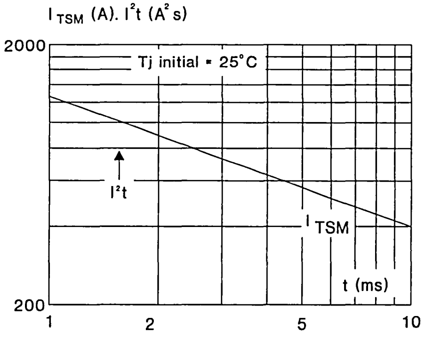
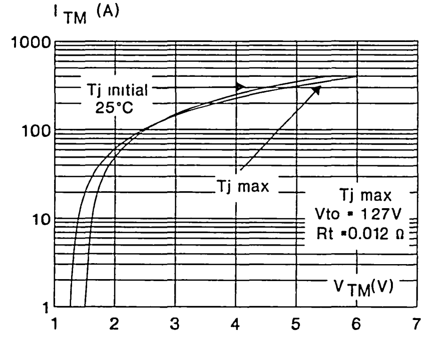
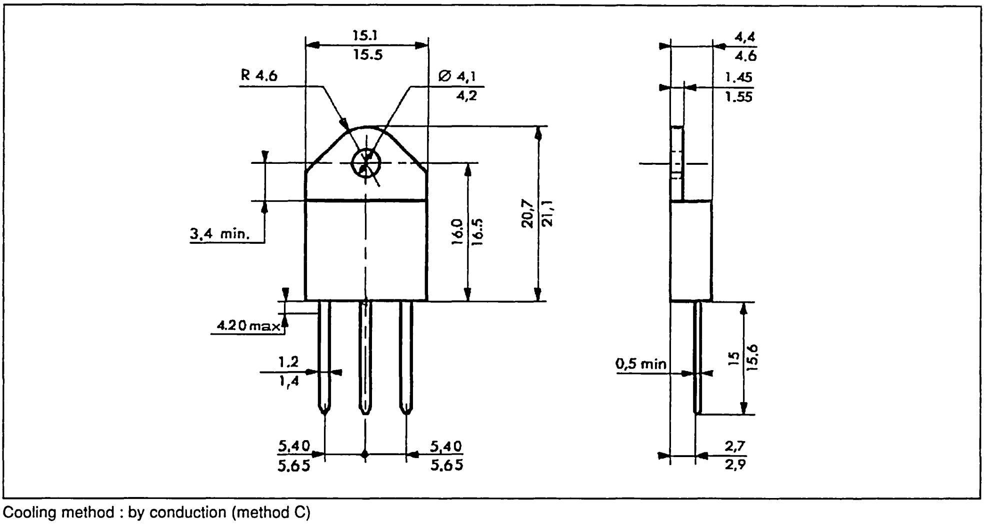


Fig12 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g
Polarity : N A
Stud torque : N A

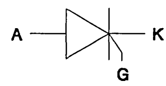
SGS-THOMSON
MICROELECTRONICS

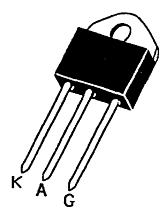
BTW 69 (N)

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- BTW 69 Serie :
  INSULATED VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





TOP 3
(Plastic)

DESCRIPTION

The BTW 69 (N) Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	BTW 69 BTW 69 N	Tc=70°C Tc=75°C	50 55	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	BTW 69 BTW 69 N	Tc=70°C Tc=75°C	32 35	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp=8.3 ms	525	A
			tp=10 ms	500	
I^2t	I^2t value		tp=10 ms	1250	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 800 mA dI_G/dt = 1 A/µs			100	A/µs
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTW 69		BTW 69 / BTW 69 N				Unit
		200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		50	°C/W
Rth (j-c) DC	Junction to case for DC	BTW 69	0.9	°C/W
		BTW 69 N	0.8	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 8A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value		Unit
					BTW 69	BTW 69 N	
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	80		mA
V_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ		Tj= 125°C	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs		Tj=25°C	TYP	2		µs
I_L	I_G= 1.2 I_{GT}		Tj=25°C	TYP	50		mA
I_H	I_T= 500mA gate open		Tj=25°C	MAX	150		mA
V_{TM}	BTW 69 ITM= 100A BTW 69 N I_{TM}= 110A tp= 380µs		Tj=25°C	MAX	1.9	2.0	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated		Tj=25°C	MAX	0.02		mA
			Tj= 125°C		6		
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	V_{DRM}≤ 800V V_{DRM} ≥ 1000V	Tj= 125°C	MIN	500 250		V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 110A V_R= 75V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs		Tj= 125°C	TYP	100		µs

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification
	A	V	BTW
BTW 69 (Insulated)	50	200	X
		400	X
		600	X
		800	X
		1000	X
		1200	X
BTW 69 N (Uninsulated)	55	600	X
		800	X
		1000	X
		1200	X

Fig.1 : Maximum average power dissipation versus average on-state current (BTW 69).

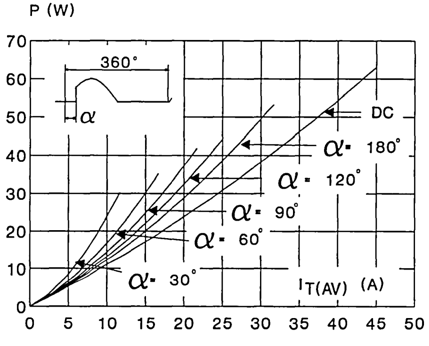


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69).

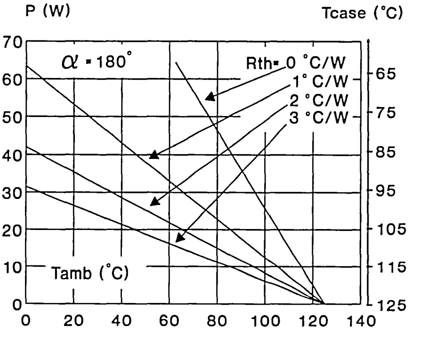


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 69 N).

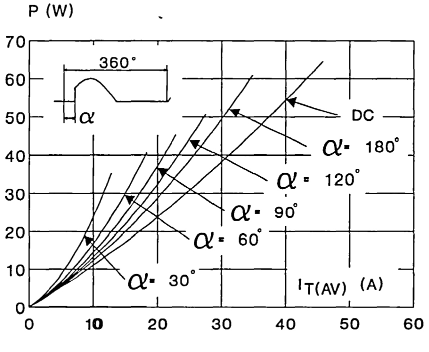


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69 N).

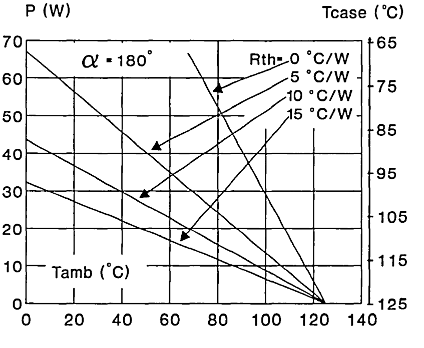


Fig.5 : Average on-state current versus case temperature (BTW 69).

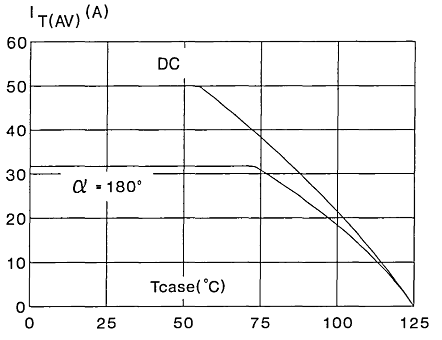


Fig.6 : Thermal transient impedance junction to ambient versus pulse duration (BTW 69).

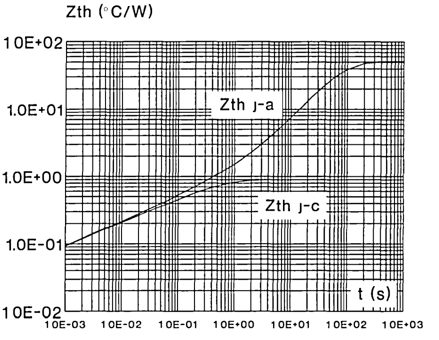


Fig.7 : Average on-state current versus case temperature (BTW 69 N).

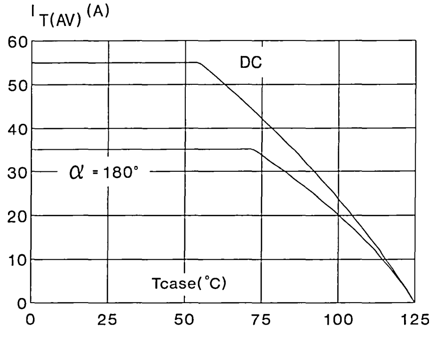


Fig.8 : Thermal transient impedance junction to ambient versus pulse duration (BTW 69 N).

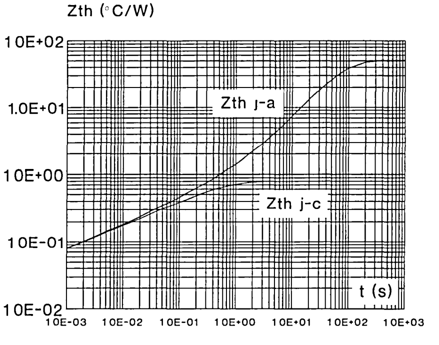


Fig.9 : Relative variation of gate trigger current versus junction temperature.

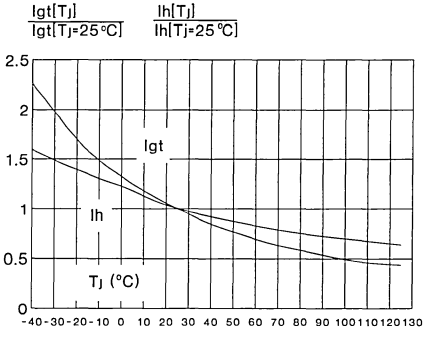
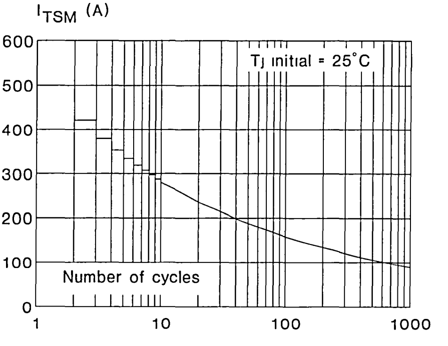


Fig.10 : Non repetitive surge peak on-state current versus number of cycles.



SGS-THOMSON MICROELECTRONICS

Fig.11 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

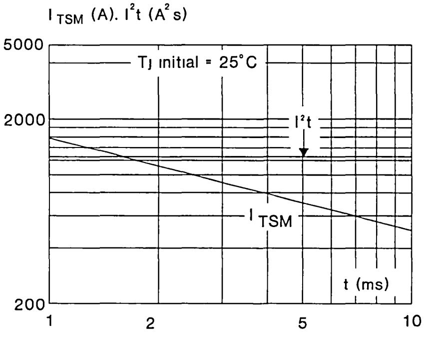
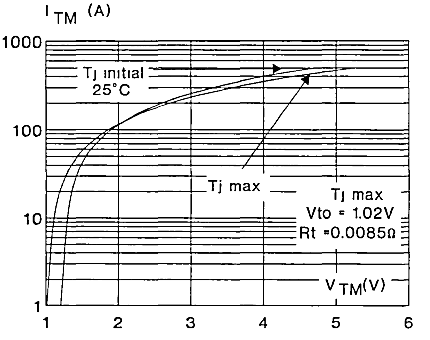
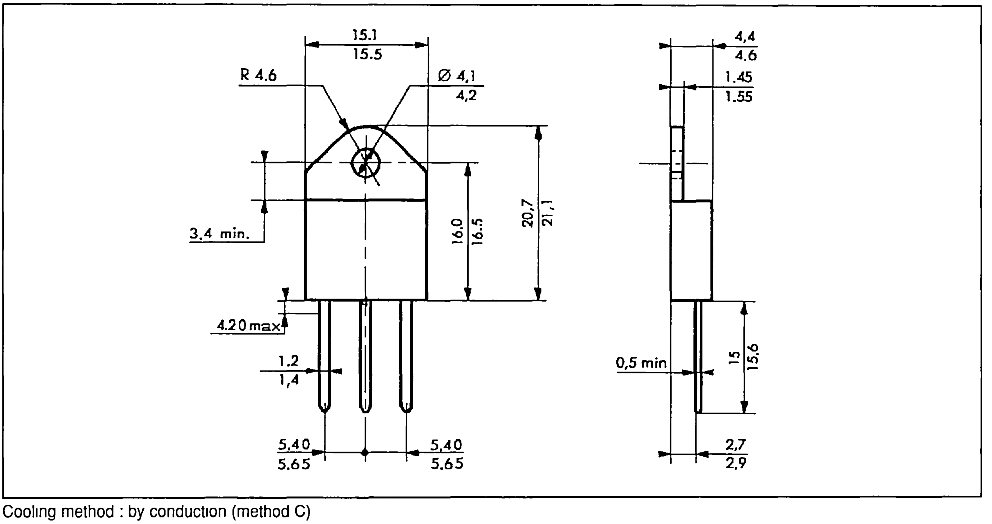


Fig12 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic

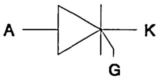


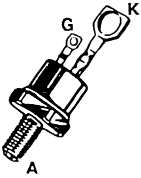
Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g
Polarity : N A
Stud torque : N A

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY





TO 48
(Metal)

DESCRIPTION

The BTW 48 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 85 °C	50	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 85 °C	32	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	520	A
		tp = 10 ms	500	
I^2t	I^2t value	tp = 10 ms	1250	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 600 mA dI_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTW 48-					Unit
		200	400	600	800	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	0.7	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 60W (tp = 20 µs) I_{FGM} = 10A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	60	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	60	mA
I_H	I_T= 500mA gate open	Tj=25°C	TYP	30	mA
V_{TM}	ITM= 100A tp= 380µs	Tj=25°C	MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		6	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 100A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

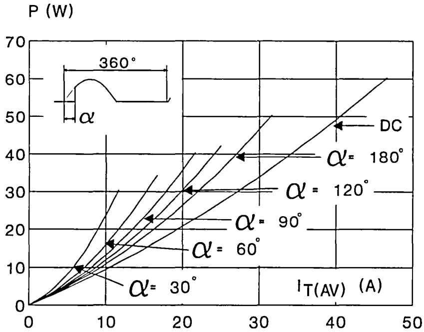


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

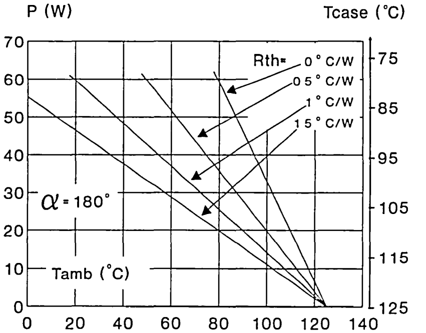


Fig.3 : Average on-state current versus case temperature.

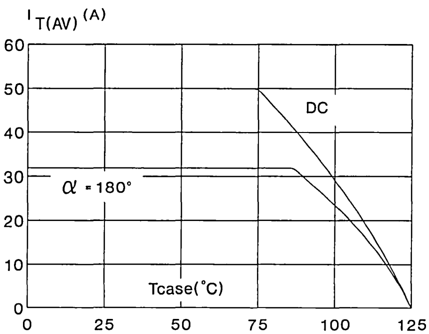


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

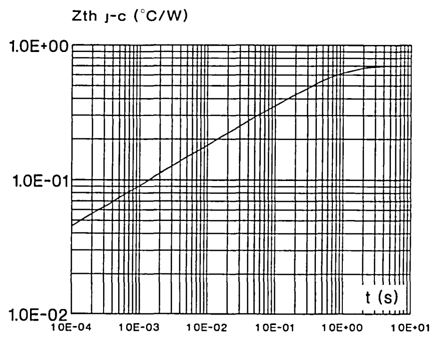


Fig.5 : Relative variation of gate trigger current versus junction temperature.

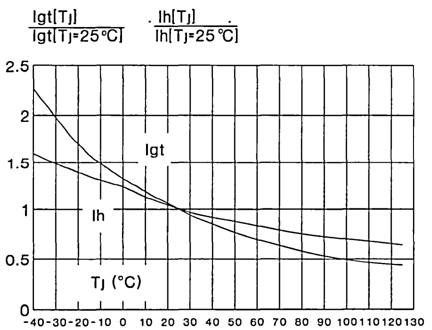


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

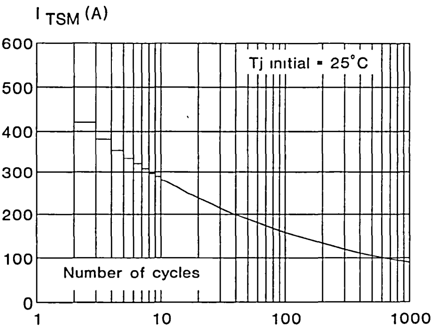


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

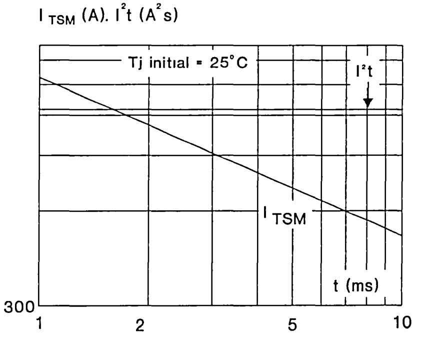
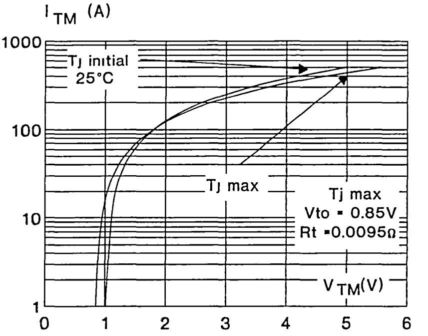
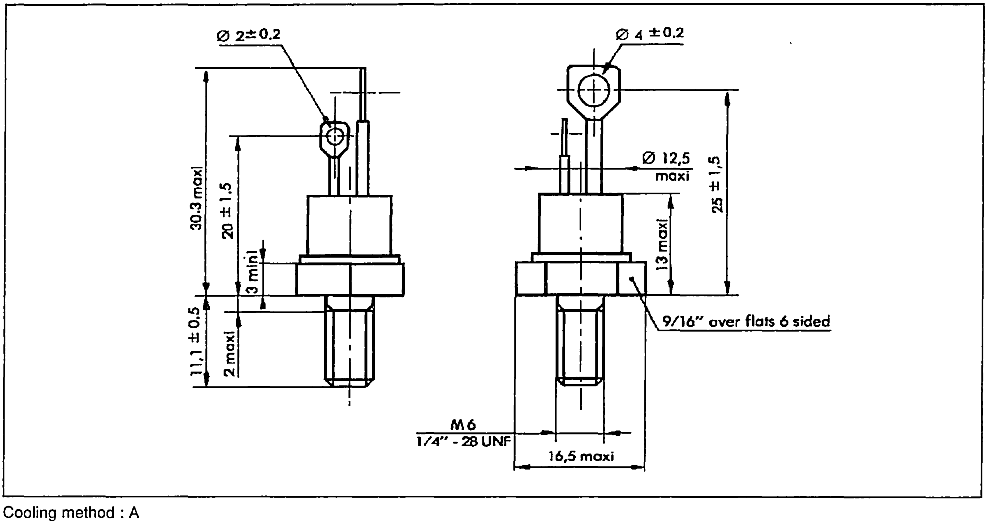


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal

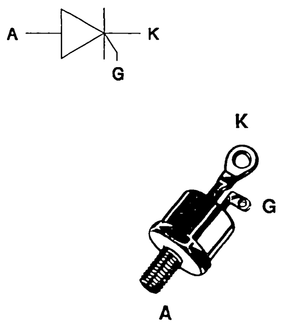


Cooling method : A
Marking : type number
Weight : 13.5 g
Polarity : Anade (or A2) to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY



TO 65
(Metal)

DESCRIPTION

The BTW 50 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 100 °C	63	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 100 °C	40	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	950	A
		tp = 10 ms	910	
I^2t	I^2t value	tp = 10 ms	4150	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1 A di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTW 50-						Unit
		200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.3	°C/W
Rth (j-c) DC	Junction to case for DC	0.4	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 2W P_{GM} = 80W (tp = 20 µs) I_{FGM} = 10A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	150	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	100	mA
I_H	I_T= 500mA gate open	Tj=25°C	TYP	50	mA
V_{TM}	ITM= 500A tp= 380µs	Tj=25°C	MAX	3	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		12	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 500A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

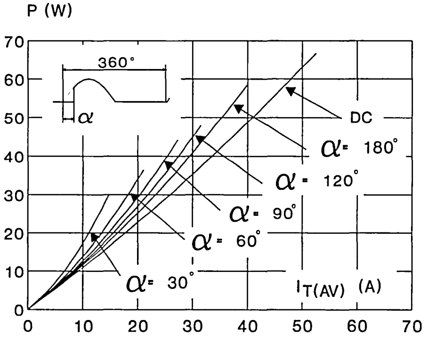


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

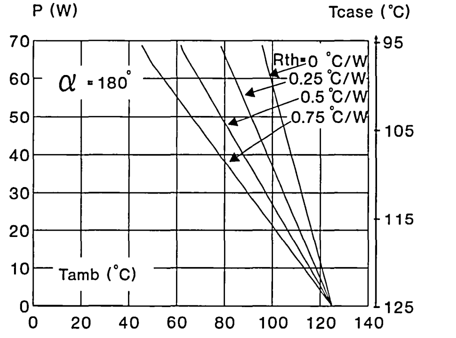


Fig.3 : Average on-state current versus case temperature.

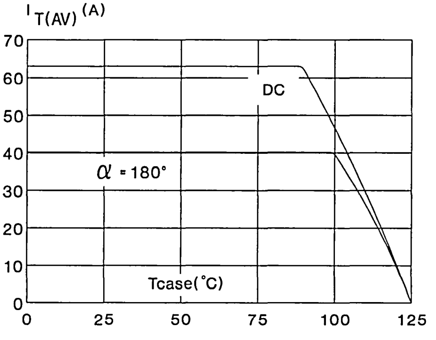


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

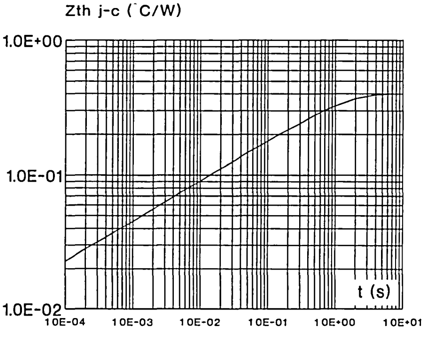


Fig.5 : Relative variation of gate trigger current versus junction temperature.

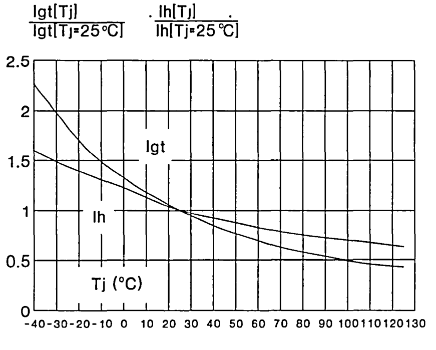


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

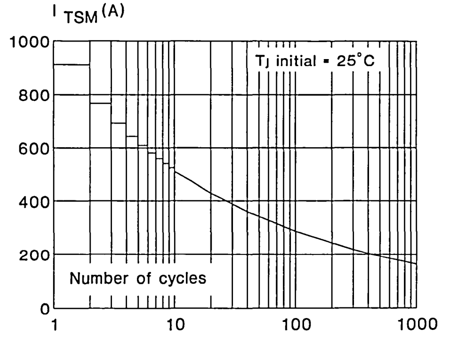


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

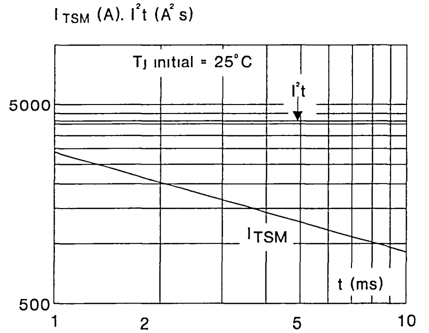
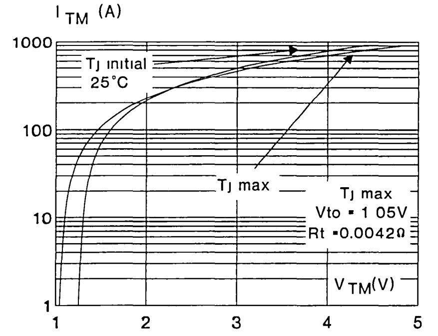
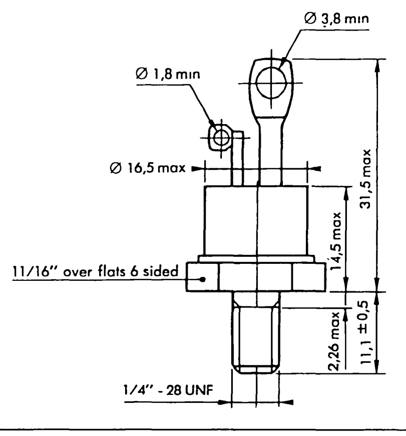


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal

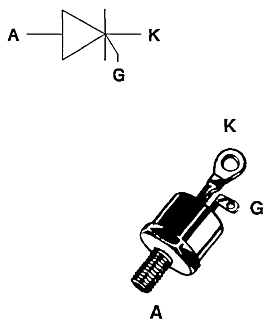


Cooling method : C
Marking : type number
Weight : 19 g
Polarity : Anade (or A2) to case
Stud torque : 3.5 mΛN min / 3.8 mΛN max

FAST SWITCHING SCR

FEATURES

- HIGH dI/dt AND dV/dt RATINGS
- tq : ≤ 40μs FOLLOWING V_{DRM}/V_{RRM}
- HIGH STABILITY AND RELIABILITY



TO 65
(Metal)

DESCRIPTION

The TGF148 B Silicon Controlled Rectifier Family uses a high performance glass passivated technolog.
This fast switching Silicon Controlled Rectifier Family is designed for high frequency power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc=65°C	63	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	Tc=65°C	40	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp=8.3 ms	700	A
		tp=10 ms	670	
I^2t	I^2t value	tp=10 ms	2245	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1 A dI_G/dt = 10 A/μs		200	A/μs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TGF148-				Unit
		600 B	800 B	1000 B	1200 B	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.30	°C/W
Rth (j-c) DC	Junction to case for DC	0.65	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 2W P_{GM} = 80W (tp = 20 µs) I_{FGM} = 10A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	150	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	MAX	400	mA
I_H	I_T= 500mA gate open	Tj=25°C	MAX	200	mA
V_{TM}	ITM= 500A tp= 380µs	Tj=25°C	MAX	4	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.05	mA
		Tj= 125°C		12	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt=20V/µs	Tj= 125°C	MAX	40	µs

SINUSOIDAL CURRENT PULSE DATA

Fig.1 : Energy per pulse for sinusoidal pulses.

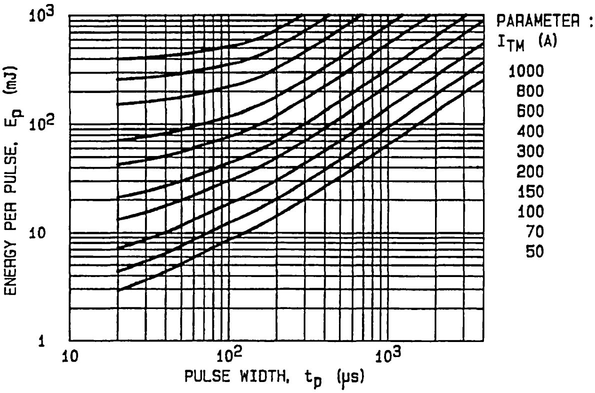
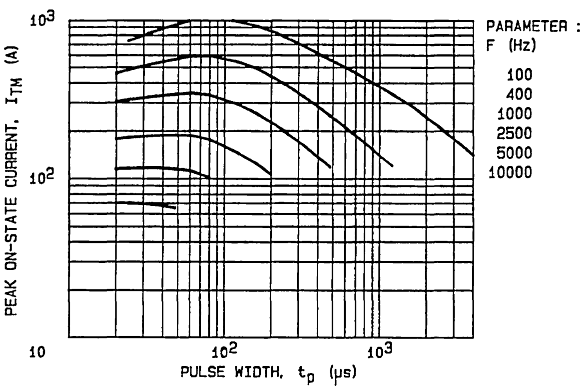


Fig.2 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



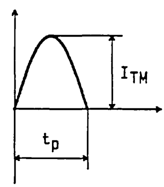
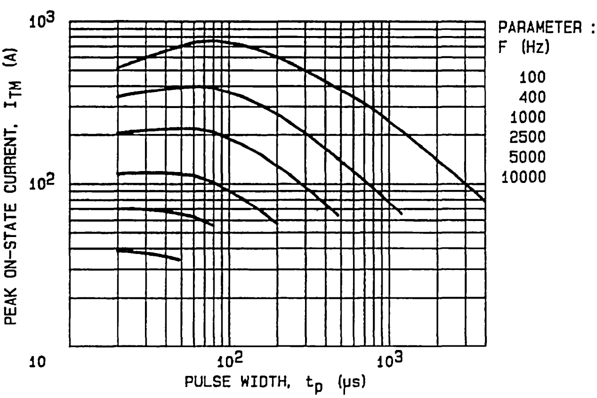


Fig.3 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R = 600$ Volts.
2. R.C Snubber, $C = 0.1\,\mu F$, $R = 33\,\Omega$.

TRAPEZOIDAL CURRENT PULSE DATA

Fig.4 : Energy per pulse for trapezoidal pulses.

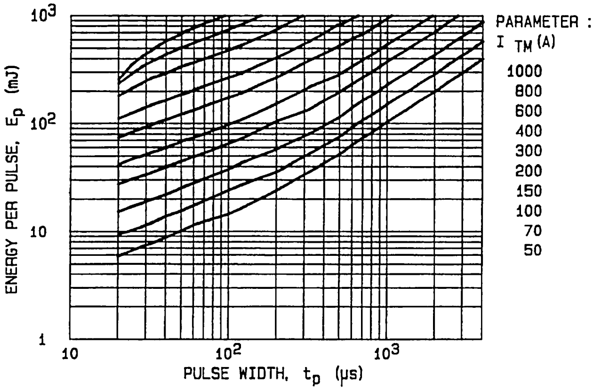
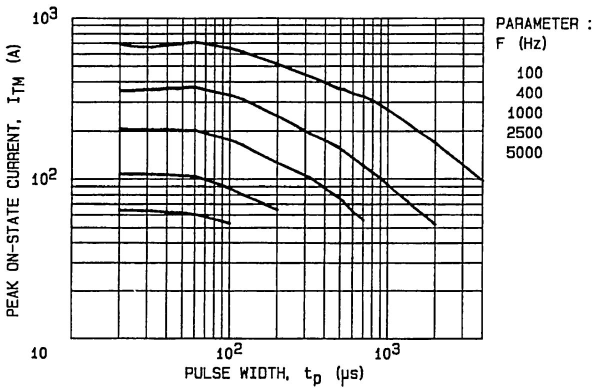


Fig.5 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



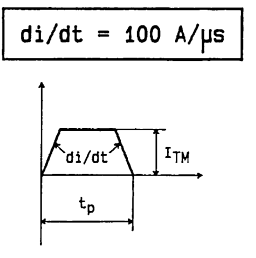
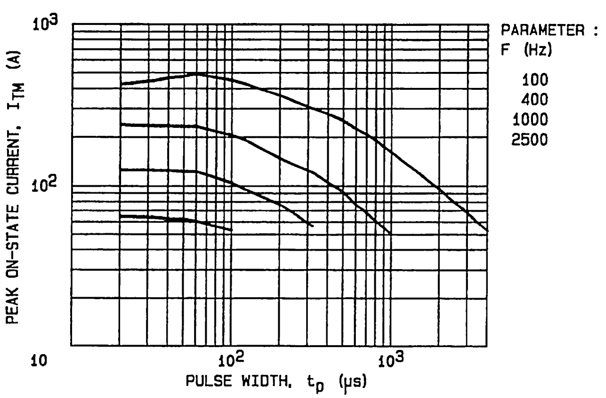


Fig.6 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R$ = 600 Volts.
2. R.C Snubber, C = 0.1 µF, R = 33 Ω .

Fig.7 : Non repetitive surge peak on-state current versus number of cycles.

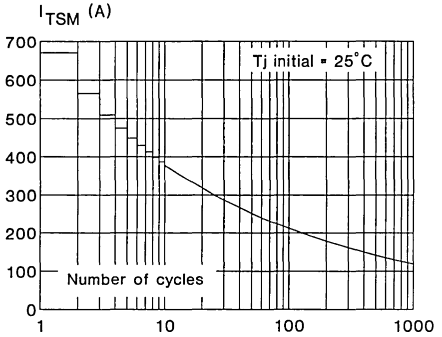


Fig.8 : Transient thermal impedance junction to ambient.

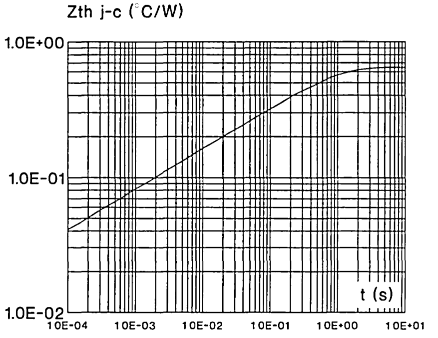


Fig.9 : Relative variation of gate trigger current and holding current versus junction temperature.

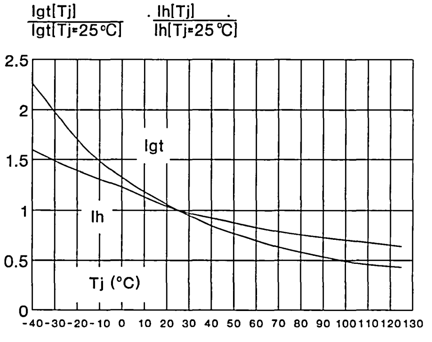


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

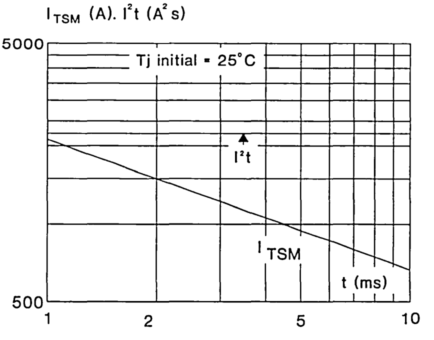
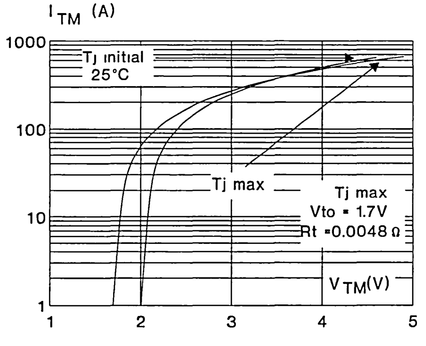
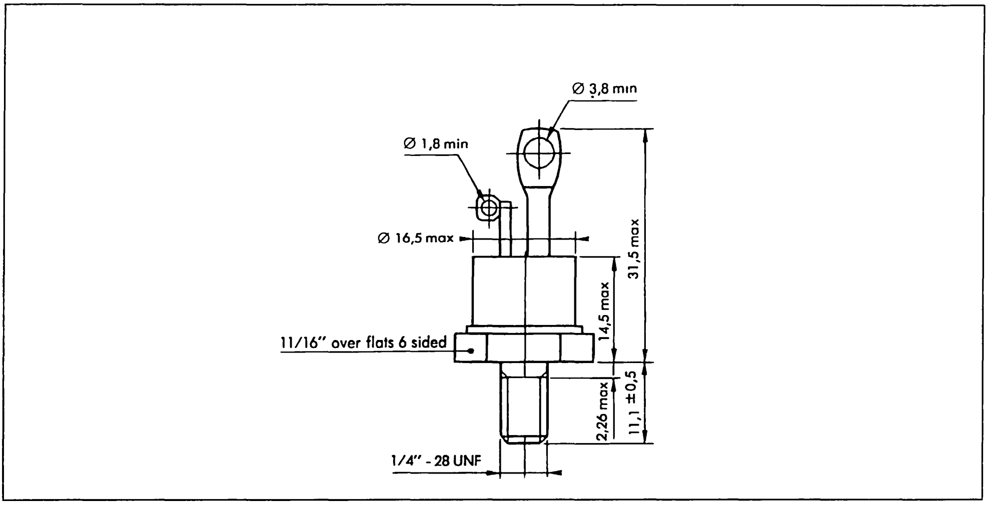


Fig11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal

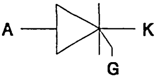


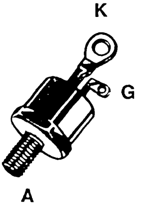
Cooling method : C
Marking : type number
Weight : 19 g
Polarity : Anode (or A2) to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

FAST SWITCHING SCR

FEATURES

- HIGH dI/dt AND dV/dt RATINGS
- tq : ≤ 20µs FOLLOWING V_{DRM}/V_{RRM}
- HIGH STABILITY AND RELIABILITY





TO 65
(Metal)

DESCRIPTION

The TGF149 A Silicon Controlled Rectifier Family uses a high performance glass passivated technology
This fast switching Silicon Controlled Rectifier Family is designed for high frequency power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc=85°C	63	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	Tc=85°C	40	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp=8.3 ms	960	A
		tp=10 ms	920	
I^2t	I^2t value	tp=10 ms	4230	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1 A dI_G/dt = 10 A/µs		200	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TGF149-			Unit
		200 A	400 A	600 A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125 °C	200	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.30	°C/W
Rth (j-c) DC	Junction to case for DC	0.65	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 2W P_{GM} = 80W (tp = 20 µs) I_{FGM} = 10A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	150	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	MAX	400	mA
I_H	I_T= 500mA gate open	Tj=25°C	MAX	200	mA
V_{TM}	ITM= 500A tp= 380µs	Tj=25°C	MAX	3	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.05	mA
		Tj= 125°C		12	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 50A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt=20V/µs	Tj= 125°C	MAX	20	µs

SINUSOIDAL CURRENT PULSE DATA

Fig.1 : Energy per pulse for sinusoidal pulses.

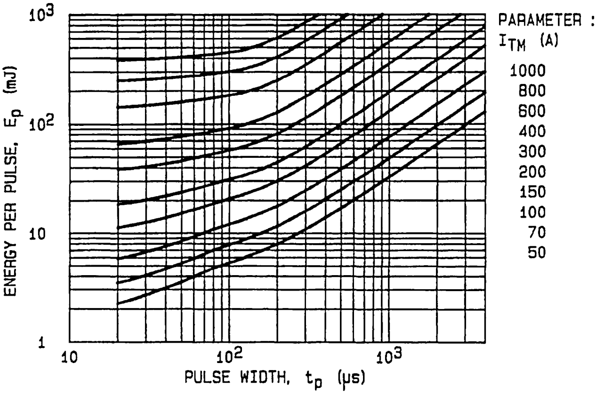
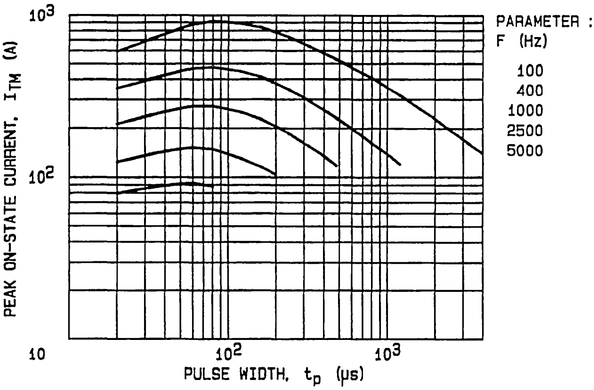


Fig.2 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



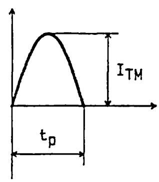
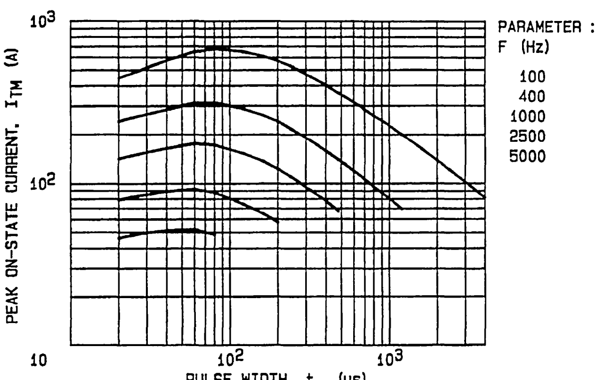


Fig.3 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R = 300$ Volts.
2. R.C Snubber, $C = 0.1\,\mu F$, $R = 33\,\Omega$.

TRAPEZOIDAL CURRENT PULSE DATA

Fig.4 : Energy per pulse for trapezoidal pulses.

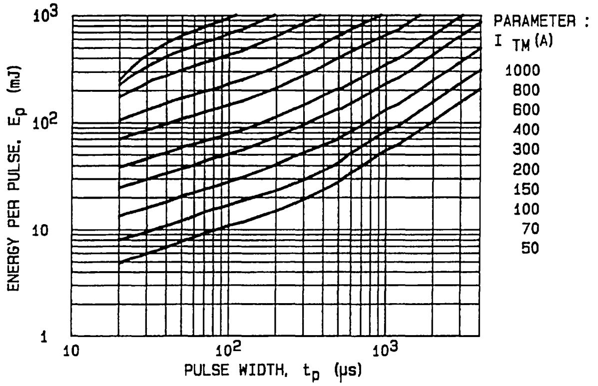
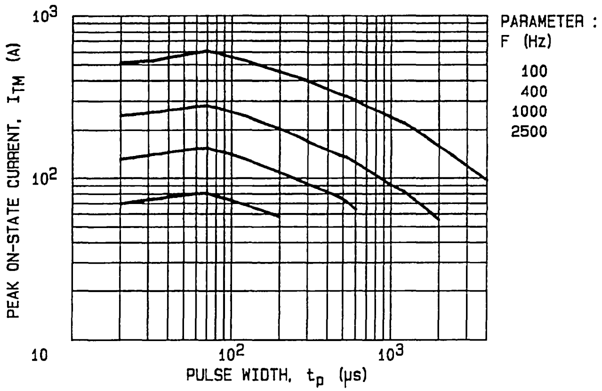


Fig.5 : Maximum allowable peak on-state current versus pulse width for Tc = 85 °C.



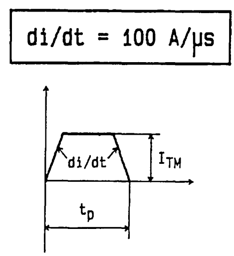
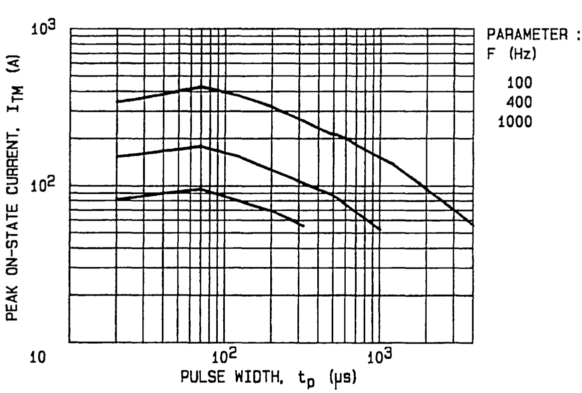


Fig.6 : Maximum allowable peak on-state current versus pulse width for Tc = 90 °C.



NOTES :

1. $V_D = V_R = 300$ Volts.
2. R.C Snubber, C = 0.1 μF, R = 33 Ω .

Fig.7 : Non repetitive surge peak on-state current versus number of cycles.

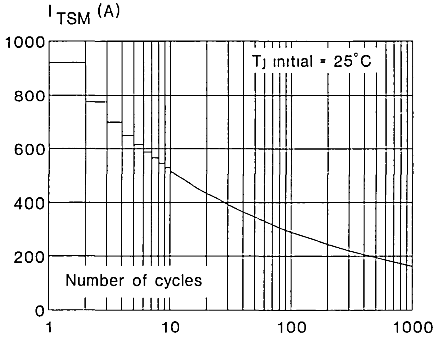


Fig.8 : Transient thermal impedance junction to ambient.

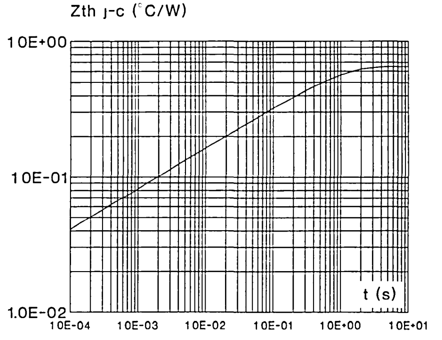


Fig.9 : Relative variation of gate trigger current and holding current versus junction temperature.

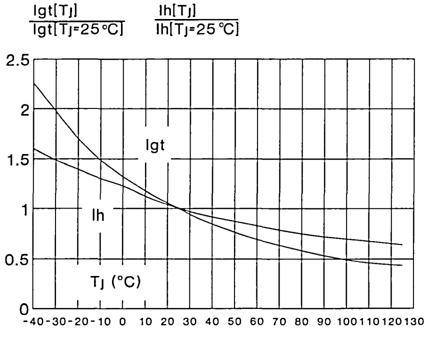


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \le 10$ ms, and corresponding value of I^2t.

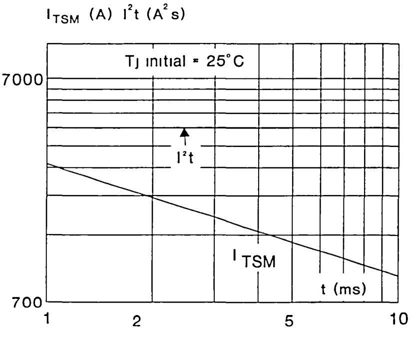
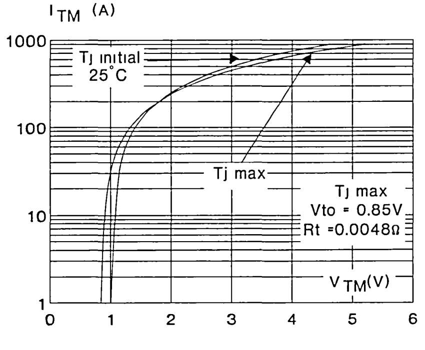
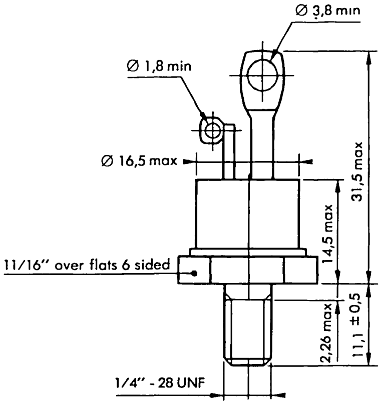


Fig11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal



Cooling method : C
Marking : type number
Weight : 19 g
Polarity : Anode (or A2) to case
Stud torque : 3 5 mΛN min / 3.8 mΛN max

SGS-THOMSON MICROELECTRONICS

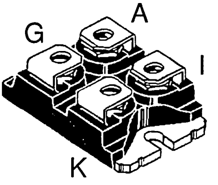
MDS35

DIODE / THYRISTOR MODULE

PRELIMINARY DATASHEET

FEATURES

- $V_{DRM} = V_{RRM}$ UP TO 1200 V
- $I_{T(AV)} = 25$ A
- HIGH SURGE CAPABILITY
- INSULATED PACKAGE : INSULATING VOLTAGE 2500 $V_{(RMS)}$



Screw version

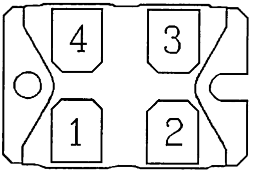
ISOTOP
(Plastic)

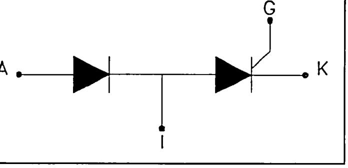
DESCRIPTION

The MDS35 family are consist of one rectifier diode and general purpose SCR. Suited for power supplies up to 400 Hz on resistive or inductive load.
The small volume (7cm^3) and weight (29g) of the ISOTOP package are well adapted to new generation of medium size module market applications.

PIN CONNECTIONS

1 : Thyristor Gate (G)
2 : Thyristor Cathode (K)
3 : Thyristor Anode/Diode Cathode (I)
4 : Diode Anode(A)





ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current		50	A
$I_{T(AV)}$	Average on-state current Single phase circuit, 180° conduction angle per device	Tc = 85°C	25	A
I_{TSM} I_{FSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3ms	450	A
		tp = 10ms	400	
I^2t	I^2t value for fusing	tp = 10ms	800	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 800mA – dI_G/dt = 1A/µs		100	A/µs
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 + 150 - 40 + 125	°C

Symbol	Parameter	MDS35			Unit
		-800	-1000	-1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-c) DC	Junction to case for DC	1	°C/W
Rth (j-h)	Contact (case to heatsink) (4)	0.10	°C/W
Rth (c)	Coupling	0.10	°C/W

(4) With contact grease utilisation

GATE CHARACTERISTICS (maximum values)

P_{GM} = 50 W (tp = 20 µs) $P_{G\,(AV)}$= 1 W I_{FGM} = 4 A (tp = 20 µs) V_{FGM} = 15 V (tp = 20 µs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS (SCR)

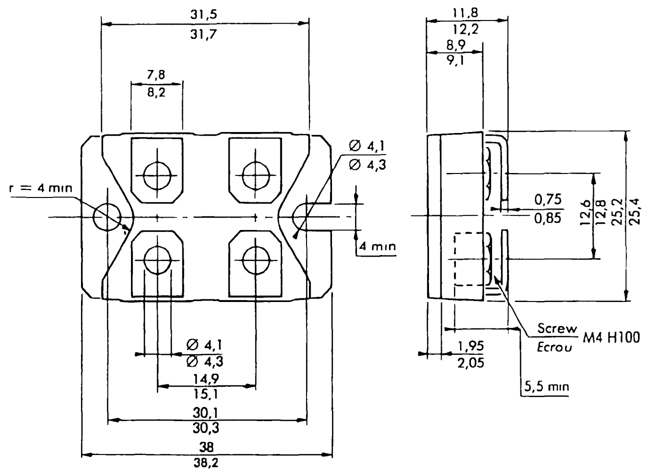
Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	50	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	TYP	60	mA
			MAX	120	
I_H	I_T= 0.5mA gate open	Tj=25°C	TYP	40	mA
			MAX	80	
V_{TM}	I_{TM}= 80A tp= 380µs	Tj=25°C	MAX	1.7	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.05	mA
		Tj=125°C	MAX	10	
tq	I_T= 80A V_R=75V V_D=67%V_{DRM} dI/dt=30A/µs dV/dt=20V/µs Gate open	Tj=125°C	TYP	100	µs
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C	MIN	500	V/µs

* For higher guaranteed values, please consult us.

ELECTRICAL CHARACTERISTICS (DIODE)

Symbol	Test Conditions		Value	Unit
V_F	I_F=80A	Tj=25°C	1.7	V
I_R	V_R=V_{RRM}	Tj=125°C	10	mA
		Tj=25°C	50	µA

PACKAGE MECHANICAL DATA (in millimeters)
ISOTOP plastic : SCREW VERSION



Cooling method : C
Marking : Type number
Weight : 28.5 g
Polarity : N A
Stud torque : 13 kg cm (max 15kg cm)

SGS-THOMSON MICROELECTRONICS

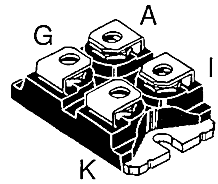
MDS50

DIODE / THYRISTOR MODULE

PRELIMINARY DATASHEET

FEATURES

- $V_{DRM} = V_{RRM}$ UP TO 1200 V
- $I_{T(AV)} = 35$ A
- HIGH SURGE CAPABILITY
- INSULATED PACKAGE :
  INSULATING VOLTAGE 2500 $V_{(RMS)}$



Screw version

ISOTOP
(Plastic)

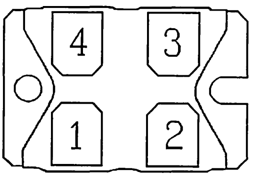
DESCRIPTION

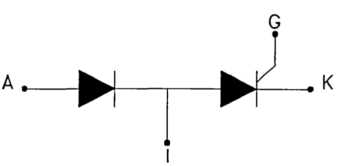
The MDS50 family are consist of one rectifier diode and general purpose SCR. Suited for power supplies up to 400 Hz on resistive or inductive load.

The small volume ($7cm^3$) and weight (29g) of the ISOTOP package are well adapted to new generation of medium size module market applications.

PIN CONNECTIONS

1 : Thyristor Gate (G)
2 : Thyristor Cathode (K)
3 : Thyristor Anode/Diode Cathode (I)
4 : Diode Anode(A)





ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current		70	A
$I_{T(AV)}$	Average on-state current Single phase circuit, 180° conduction angle per device	Tc = 85°C	35	A
I_{TSM} I_{FSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3ms	640	A
		tp = 10ms	600	
I^2t	I^2t value for fusing	tp = 10ms	1800	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 800mA – di_G/dt = 1A/µs		100	A/µs
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 + 150 - 40 + 125	°C

Symbol	Parameter	MDS50			Unit
		-800	-1000	-1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-c) DC	Junction to case for DC	0.45	°C/W
Rth (j-h)	Contact (case to heatsink) (4)	0.10	°C/W
Rth (c)	Coupling	0.10	°C/W

(4) With contact grease utilisation

GATE CHARACTERISTICS (maximum values)

P_{GM} = 50 W (tp = 20 µs) $P_{G\ (AV)}$= 1 W I_{FGM} = 4 A (tp = 20 µs) V_{FGM} = 15 V (tp = 20 µs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS (SCR)

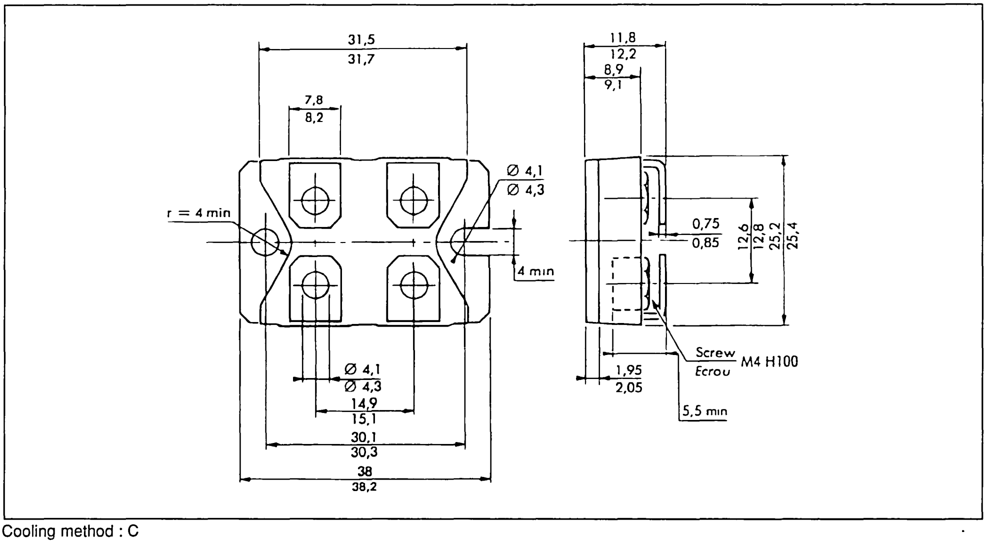
Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	50	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	TYP	60	mA
			MAX	120	
I_H	I_T= 0.5mA gate open	Tj=25°C	TYP	40	mA
			MAX	80	
V_{TM}	I_{TM}= 110A tp= 380µs	Tj=25°C	MAX	1.75	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.05	mA
		Tj=125°C	MAX	10	
tq	I_T= 110A V_R=75V V_D=67%V_{DRM} dI/dt=30A/µs dV/dt=20V/µs Gate open	Tj=125°C	TYP	100	µs
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C	MIN	500	V/µs

* For higher guaranteed values, please consult us.

ELECTRICAL CHARACTERISTICS (DIODE)

Symbol	Test Conditions		Value	Unit
V_F	I_F=110A	Tj=25°C	1.75	V
I_R	V_R=V_{RRM}	Tj=125°C	10	mA
		Tj=25°C	50	µA

PACKAGE MECHANICAL DATA (in millimeters)
ISOTOP plastic : SCREW VERSION



Cooling method : C
Marking : Type number
Weight : 28.5 g
Polarity : N A
Stud torque : 13 kg.cm (max 15kg.cm)

THYRISTOR MODULE

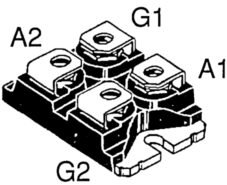
PRELIMINARY DATASHEET

FEATURES

- $V_{DRM} = V_{RRM}$ UP TO 1200 V
- $I_{T(RMS)} = 55$ A
- HIGH SURGE CAPABILITY
- INSULATED PACKAGE : INSULATING VOLTAGE 2500 $V_{(RMS)}$

DESCRIPTION

The MSS40 family are consist of two general purpose SCR. Suitable for AC switching and phase control on resistive and inductive load up to 400 Hz.
The small volume (7cm^3) and weight (29g) of the isotop package are well adapted to new generation of medium size module market applications.

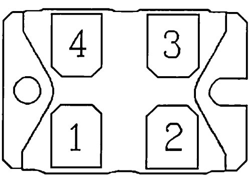


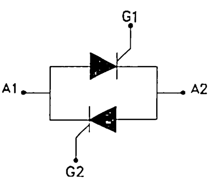
Screw version

ISOTOP
(Plastic)

PIN CONNECTIONS

1 : Thyristor 2 Anode (A2)
2 : Thyristor 2 Gate (G2)
3 : Thyristor 1 Anode (A1)
4 : Thyristor 1 Gate (G1)





ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (total)	Tc = 80°C	55	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3ms	425	A
		tp = 10ms	400	
I^2t	I^2t value for fusing	tp = 10ms	800	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 400mA – dI_G/dt = 1A/µs		100	A/µs
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 + 150 - 40 + 125	°C

Symbol	Parameter	MSS40		Unit
		-800	**-1200**	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	800	1200	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	DC (per leg)	1	°C/W
		AC (total)	0.6	
Rth (j-h)	Contact (case to heatsink) (4)		0.10	°C/W
Rth (c)	Coupling		0.10	°C/W

(4) With contact grease utilisation

GATE CHARACTERISTICS (maximum values)

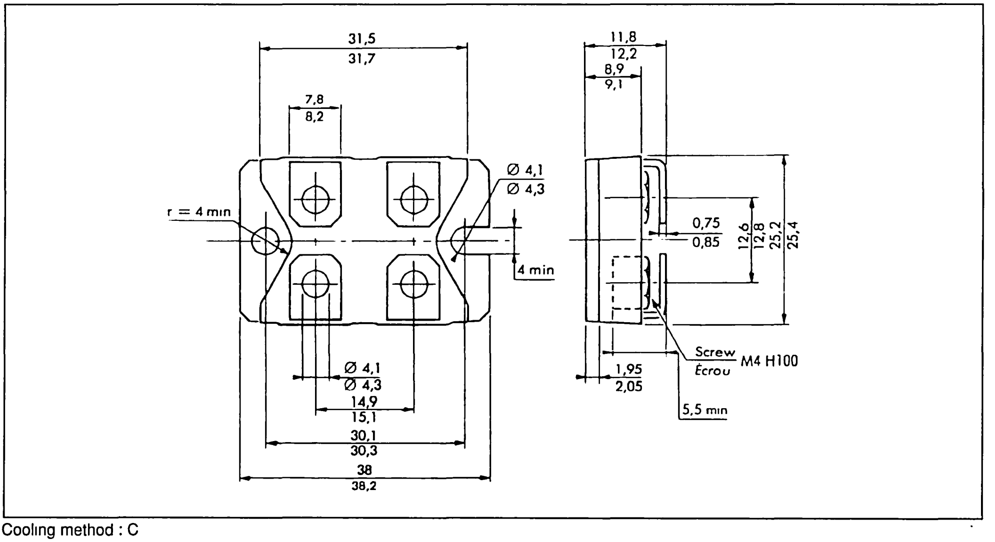
P_{GM} = 50 W (tp = 20 µs) $P_{G\,(AV)}$= 1 W I_{FGM} = 4 A (tp = 20 µs) V_{FGM} = 15 V (tp = 20 µs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	50	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	TYP	60	mA
			MAX	120	
I_H	I_T= 0.5mA gate open	Tj=25°C	TYP	40	mA
			MAX	80	
V_{TM}	I_{TM}= 80A tp= 380µs	Tj=25°C	MAX	1.7	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.05	mA
		Tj=125°C	MAX	10	
tq	I_T= 80A V_R=75V V_D=67%V_{DRM} dI/dt=30A/µs dV/dt=20V/µs Gate open	Tj=125°C	TYP	100	µs
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C	MIN	500	V/µs

* For higher guaranteed values, please consult us.

PACKAGE MECHANICAL DATA (in millimeters)
ISOTOP plastic : SCREW VERSION



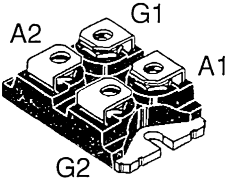
Cooling method : C
Marking : Type number
Weight : 28.5 g
Polarity : N A
Stud torque : 13 kg.cm (max 15kg.cm)

THYRISTOR MODULE

PRELIMINARY DATASHEET

FEATURES

- $V_{DRM} = V_{RRM}$ UP TO 1200 V
- $I_{T(RMS)} = 70$ A
- HIGH SURGE CAPABILITY
- INSULATED PACKAGE : INSULATING VOLTAGE 2500 $V_{(RMS)}$



Screw version

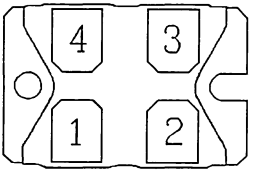
ISOTOP
(Plastic)

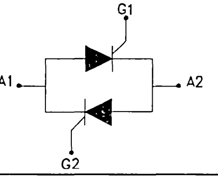
DESCRIPTION

The MSS50 family are consist of two general purpose SCR. Suitable for AC switching and phase control on resistive and inductive load up to 400 Hz.
The small volume ($7cm^3$) and weight (29g) of the isotop package are well adapted to new generation of medium size module market applications.

PIN CONNECTIONS

1 : Thyristor 2 Anode (A2)
2 : Thyristor 2 Gate (G2)
3 : Thyristor 1 Anode (A1)
4 : Thyristor 1 Gate (G1)





ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (Total)	Tc = 80°C	70	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3ms	630	A
		tp = 10ms	600	
I^2t	I^2t value for fusing	tp = 10ms	1800	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 800mA – dI_G/dt = 1A/µs		100	A/µs
T_{stg} T_j	Storage temperature range Operating junction temperature range		- 40 + 150 - 40 + 125	°C

Symbol	Parameter	MSS50		Unit
		-800	-1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	800	1200	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	DC (per leg)	0.75	°C/W
		AC (total)	0.45	
Rth (j-h)	Contact (case to heatsink) (4)		0.10	°C/W
Rth (c)	Coupling		0.10	°C/W

(4) With contact grease utilisation

GATE CHARACTERISTICS (maximum values)

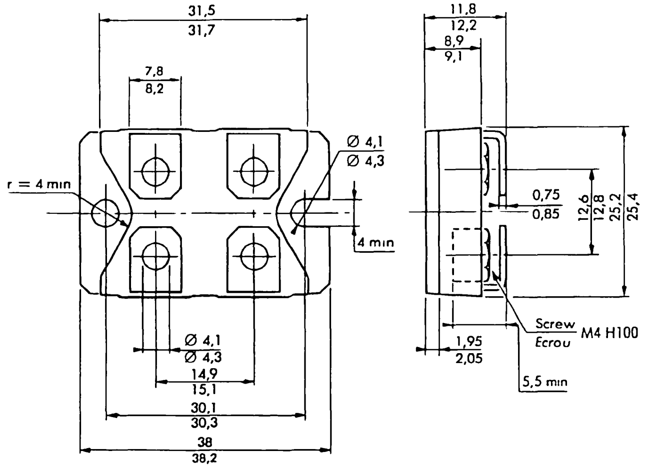
P_{GM} = 50 W (tp = 20 µs) $P_{G\ (AV)}$= 1 W I_{FGM} = 4 A (tp = 20 µs) V_{FGM} = 15 V (tp = 20 µs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	50	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	TYP	60	mA
			MAX	120	
I_H	I_T= 0.5mA gate open	Tj=25°C	TYP	40	mA
			MAX	80	
V_{TM}	I_{TM}= 100A tp= 380µs	Tj=25°C	MAX	1.7	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.05	mA
		Tj=125°C	MAX	10	
tq	I_T= 100A V_R=75V V_D=67%V_{DRM} dI/dt=30A/µs dV/dt=20V/µs Gate open	Tj=125°C	TYP	100	µs
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C	MIN	500	V/µs

* For higher guaranteed values, please consult us.

PACKAGE MECHANICAL DATA (in millimeters)
ISOTOP plastic : SCREW VERSION



Cooling method : C
Marking : Type number
Weight : 28.5 g
Polarity : N A
Stud torque : 13 kg.cm (max 15kg.cm)

TRIAC DATASHEETS

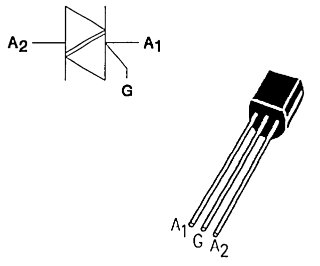
SGS-THOMSON MICROELECTRONICS

T08 A

SENSITIVE GATE TRIACS

FEATURES

- $I_{T(RMS)}$ = 0.8 A
- V_{DRM} = 200 V to 600 V
- $I_{GT} \leq$ 10 mA



TO 92
(Plastic)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tl= 55°C	0.8	A
	RMS on-state current on printed circuit (360° Conduction angle)	Ta=30°C	0.5	
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	8.5	A
		tp = 10 ms	8	
I^2t	I^2t value	tp = 10 ms	0.32	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 100 mA dI_G /dt = 1 A/µs	Repetitive	10	A/µs
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 150 - 40, + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s		260	°C

Symbol	Parameter	T08-			Unit
		2A	4A	6A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j - a) Rth (j - l)	Junction to ambient on printed circuit Junction to leads for 360° conduction angle (F = 50 Hz)	150 60	°C/W °C/W

GATE CHARACTERISTICS (maximum values)

P_{GM} = 2 W (t = 20 µs) $P_{G\ (AV)}$ = 100 mW I_{GM} = 1 A (t = 20 µs) V_{GM} = 16 V (t = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	I-II-III	MAX	10	mA
			IV		25	
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-II-III-IV	MAX	25	mA
I_H *	I_T= 50mA gate open	Tj=25°C		MAX	25	mA
V_{TM} *	I_{TM}= 1.2A tp= 380µs	Tj=25°C		MAX	1.9	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=125°C		MAX	0.75	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	70	V/µs
(dI/dt)c *	(dV/dt)c = 2V/µs	Tj=125°C		MIN	0.75	A/ms

* For either polarity of electrode A2 voltage with reference to electrode A1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

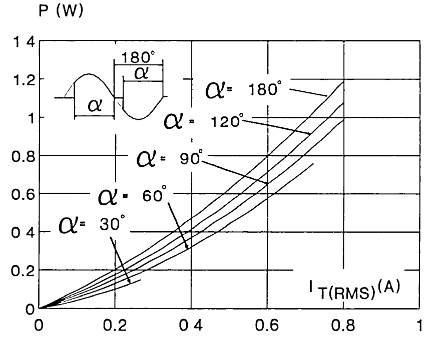


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tlead).

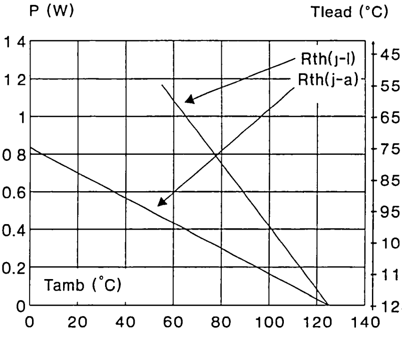


Fig.3 : RMS on-state current versus lead temperature.

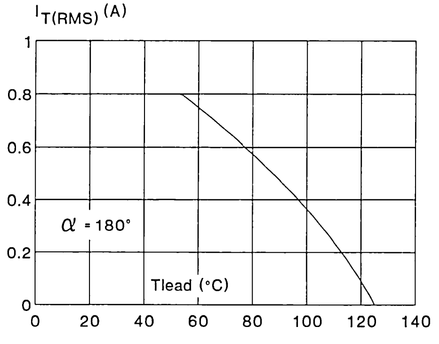


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

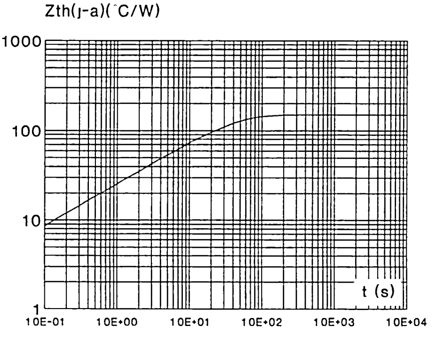


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

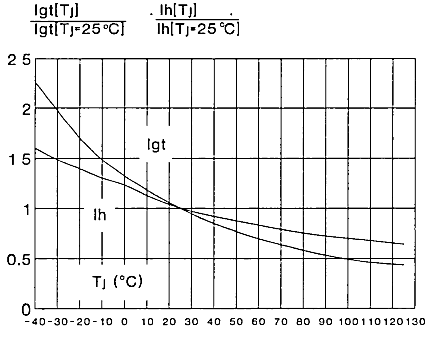


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

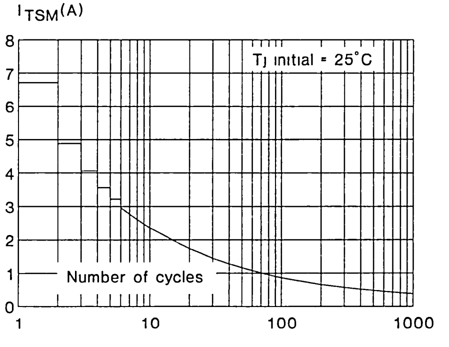


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

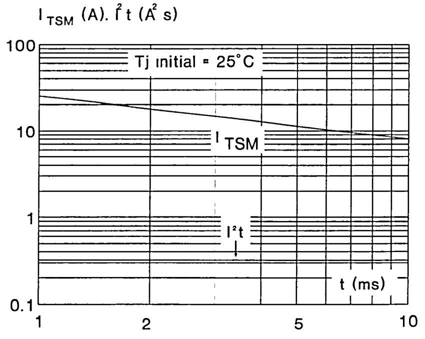
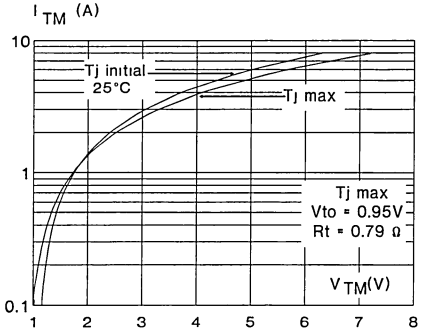
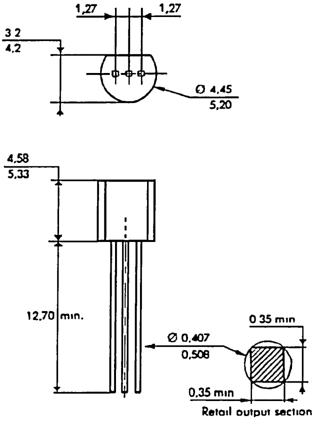


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 92 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 0.2 g
Polarity : N A
Stud torque : N A

SGS-THOMSON MICROELECTRONICS

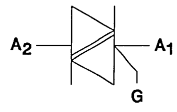
T110-400F
T110-600F

SENSITIVE GATE TRIAC

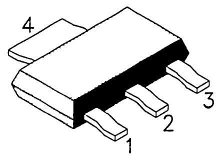
PRELIMINARY DATASHEET

FEATURES

- I_{TRMS} = 1 A
- V_{DRM} = 400 V to 600 V
- I_{GT} = 10 mA max



1- CATHODE (A1)
2 - ANODE (A2)
3 - GATE (G)
4 - ANODE (tab)



SOT 223
(Plastic)

DESCRIPTION

The T110 F series of triacs uses a are high performance planar diffused PNPN, sensitive gate technology. Packaged in SOT 223, suitable for surface mounting.
These parts are intended for general purpose switching and phase control applications.

ABSOLUTE RATING (limiting values)

Symbol	Parameter		Value	Unit
I_{TRMS}	RMS on-state current Single phase circuit (360° conduction angle)	Ttab= 85°C	1	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C) Half sine wave	t = 8.3 ms	8.5	A
		t = 10 ms	8	
I^2t	I^2t Value for Fusing	t = 10 ms	0.32	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 100 mA dI_G /dt = 1 A/µs.	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
T_{stg} T_j	Storage and operating junction temperature range		- 40, + 125 - 40, + 125	°C
Tl	Maximum lead temperature for soldering during 10s		260	°C

Symbol	Parameter	T110-		Unit
		400F	600F	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j - t)	Junction to tab for A.C	25	°C/W
Rth (j - a)	Junction to ambient with 5 cm^2 copper surface under tab	60	

GATE CHARACTERISTICS (maximum values)

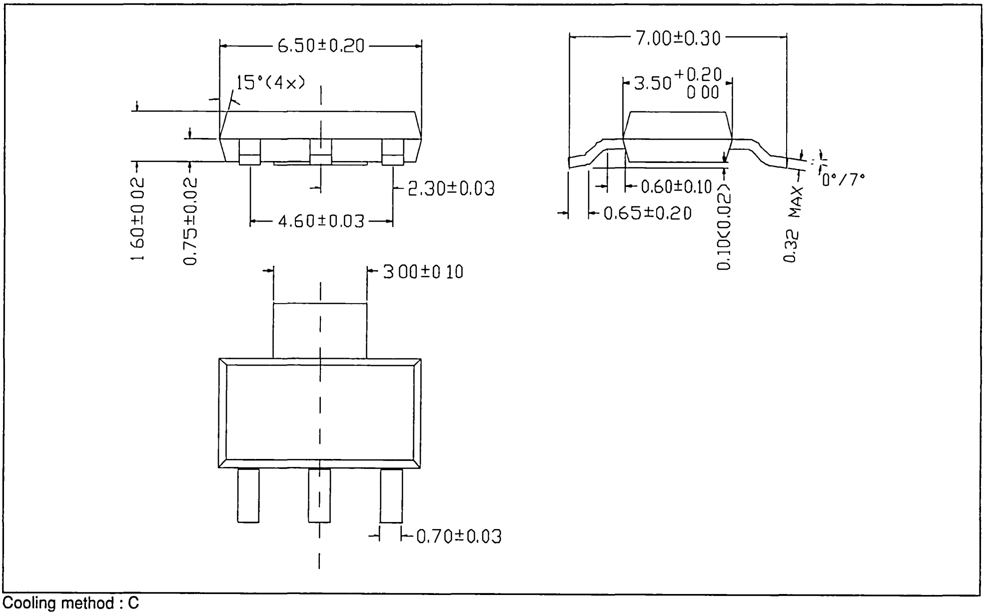
$P_{G\ (AV)}$= 100 mW P_{GM} = 2 W (tp = 20 µs) I_{GM} = 1 A (tp = 20 µs) V_{GM} = 16 V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Values	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	I-II-III	MAX	10	mA
			IV	MAX	25	
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-II-III-IV	MAX	25	mA
I_H *	I_T= 50mA gate open	Tj=25°C		MAX	25	mA
V_{TM} *	I_{TM}= 1.4A tp= 380µs	Tj=25°C		MAX	2.05	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=125°C		MAX	0.75	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	70	V/µs
(dI/dt)c *	(dV/dt)c = 2V/µs	Tj=125°C		MIN	0.75	A/ms

* For either polarity of electrode A2 voltage with reference with electrode A1

PACKAGE MECHANICAL DATA (in millimeters)
SOT 223 Plastic



Cooling method : C
Marking : Type number
Weight : 0.11 g
Polarity : N A
Stud torque : N A

TRIAC 3 and 4 A FAMILY

SNUBBERLESS "H.C.T."						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
T435-xxx W		35	35	35	400 to 800	ISOWATT220
	T435-xxx T	35	35	35	400 to 800	TO220AB
	T435-xxx D	35	35	35	400 to 800	SOT 82
	T435-xxx K	35	35	35	400 to 800	SOT 194

LOGIC LEVEL "H.C.T."						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
T410-xxx W		10	10	10	400 to 800	ISOWATT220
	T410-xxx T	10	10	10	400 to 800	TO220AB
	T410-xxx D	10	10	10	400 to 800	SOT 82
	T410-xxx K	10	10	10	400 to 800	SOT 194
T405-xxx W *		5	5	5	400 to 700	ISOWATT220
	T405-xxx T *	5	5	5	400 to 700	TO220AB
	T405-xxx D *	5	5	5	400 to 700	SOT 82
	T405-xxx K *	5	5	5	400 to 700	SOT 194

SENSITIVE							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
	TLCxx6 A	10	10	10	25	400 to 700 (3A)	TOPLESS
	TLCxx6 S	10	10	10	10	400 to 700 (3A)	TOPLESS
	TLCxx6 D	5	5	5	10	400 to 700 (3A)	TOPLESS
	TLCxx6 T	5	5	5	5	400 to 700 (3A)	TOPLESS
BTA04-xxx A	BTB04-xxx A	10	10	10	25	400 to 700	TO220AB
BTA04-xxx S	BTB04-xxx S	10	10	10	10	400 to 700	TO220AB
BTA04-xxx D	BTB04-xxx D	5	5	5	10	400 to 700	TO220AB
BTA04-xxx T	BTB04-xxx T	5	5	5	5	400 to 700	TO220AB

STANDARD							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
	TLCxx6 B	25	25	25	50	400 to 700 (3A)	TOPLESS

* In development

H.C.T. (HIGH COMMUTATION TECHNOLOGY)

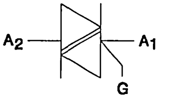
SGS-THOMSON
MICROELECTRONICS

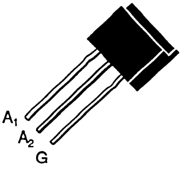
TLC116 ---> TLC386 T/D/S/A

SENSITIVE GATE TRIACS

FEATURES

- VERY LOW I_{GT} = 5mA max
- LOW I_H = 15mA max





TL
(Plastic)

DESCRIPTION

The TLC116 ---> TLC386 T/D/S/A triac family uses a high performance glass passivated PNPN technology.
These parts are suitable for general purpose applications where gate high sensitivity is required. Application on 4Q such as phase control and static

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tl = 40°C	3	A
		Ta = 25°C	1.3 (1)	
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	31.5	A
		tp = 10 ms	30	
I^2t	I^2t value	tp = 10 ms	4.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TLC				Unit
		116 T/D/S/A	226 T/D/S/A	336 T/D/S/A	386 T/D/S/A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110°C	200	400	600	700	V

(1) With Cu surface 1cm^2.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient on printed circuit with Cu surface $1 cm^2$	50	°C/W
Rth (j-l) DC	Junction leads for DC	20	°C/W
Rth (j-l) AC	Junction leads for 360° conduction angle (F= 50 Hz)	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 0.1W P_{GM} = 2W (tp = 20 µs) I_{GM} = 1A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix				Unit
					T	D	S	A	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	5	5	10	10	mA
			IV	MAX	5	10	10	25	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5				V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2				V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2				µs
I_L	IG= 1.2 I_{GT}	Tj=25°C	I-III-IV	MAX	15	15	25	25	mA
			II		15	15	25	25	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	15	15	25	25	mA
V_{TM} *	I_{TM}= 4A tp= 380µs	Tj=25°C		MAX	1.85				V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01				mA
		Tj=110°C		MAX	0.75				
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		TYP	10	10	20	20	V/µs
(dV/dt)c *	(dI/dt)c = 1.3A/ms	Tj=110°C		TYP	1	1	5	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification			
	A	V	T	D	S	A
TLC ..6	3	200	X	X	X	X
		400	X	X	X	X
		600	X	X	X	X
		700	X	X	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

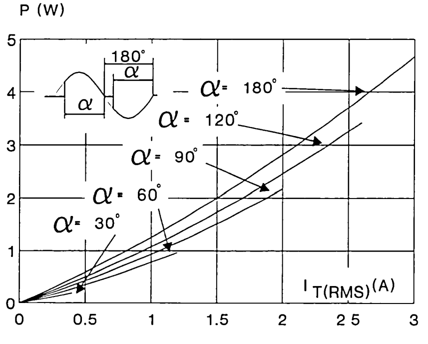


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

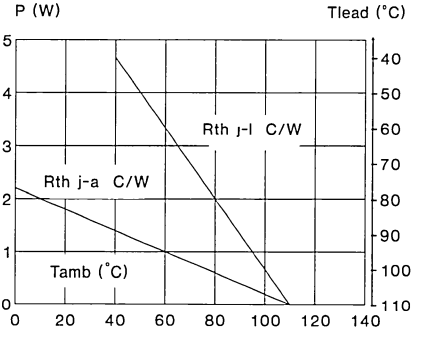


Fig.3 : RMS on-state current versus case temperature.

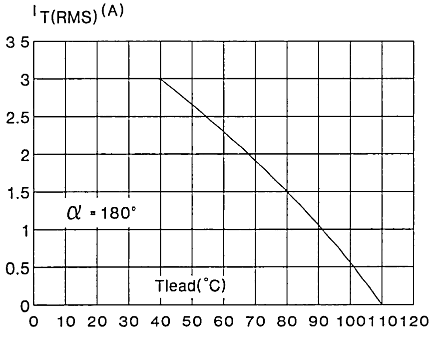


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

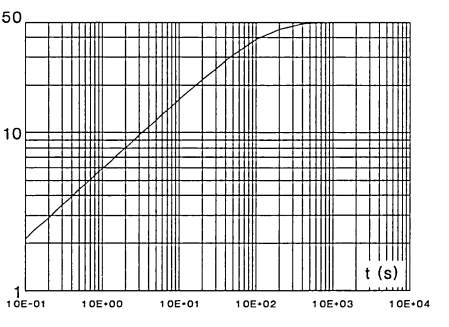


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

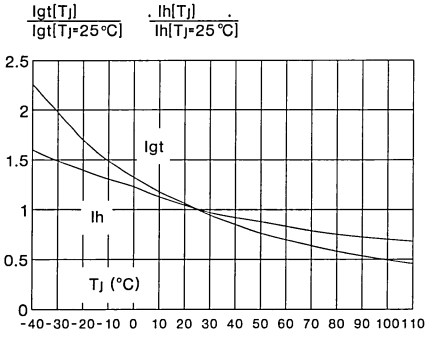


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

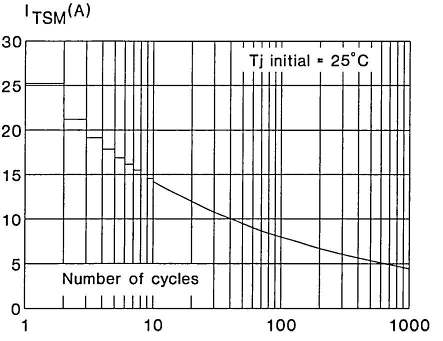


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

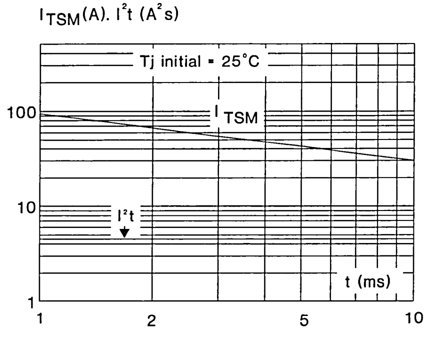
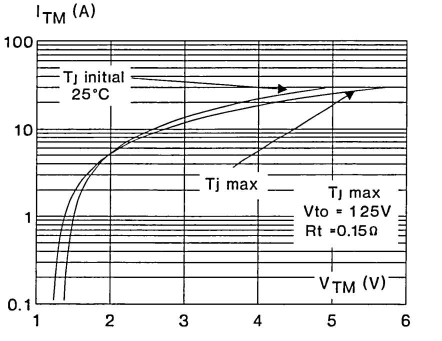


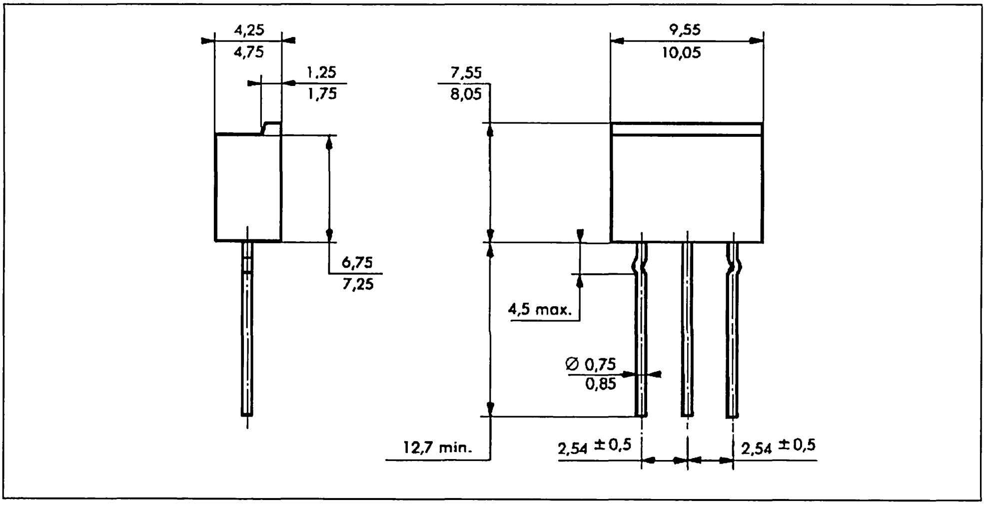
Fig.8 : On-state characteristics (maximum values).



SGS-THOMSON MICROELECTRONICS

PACKAGE MECHANICAL DATA (in millimeters)

TL Plastic



Cooling method : A
Marking : type number
Weight : 0.8 g
Polarity : N A

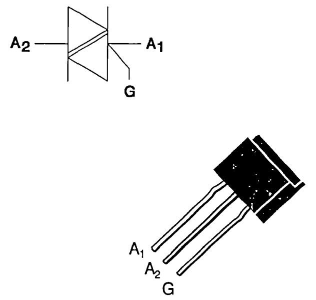
SGS-THOMSON
MICROELECTRONICS

TLC116 B
TLC386 B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 5 V/µs



TL
(Plastic)

DESCRIPTION

The TLC116 B ---> TLC386 B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tl = 40°C	3	A
		Ta = 25°C	1.3 (1)	
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	31.5	A
		tp = 10 ms	30	
I^2t	I^2t value	tp = 10 ms	4.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TLC				Unit
		116 B	226 B	336 B	386 B	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125°C	200	400	600	700	V

(1) With Cu surface 1cm^2.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient on printed circuit with Cu surface 1cm^2	50	°C/W
Rth (j-l) DC	Junction leads for DC	20	°C/W
Rth (j-l) AC	Junction leads for 360° conduction angle (F= 50 Hz)	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 0.1W P_{GM} = 2W (tp = 20 µs) I_{GM} = 1A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	25	mA
			IV	MAX	50	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	8	mA
			II		15	
I_H *	I_T= 100mA gate open	Tj=25°C		TYP	8	mA
V_{TM} *	I_{TM}= 4A tp= 380µs	Tj=25°C		MAX	1.85	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	0.75	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	20	V/µs
(dV/dt)c *	(dI/dt)c = 1.3A/ms	Tj=110°C		MIN	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

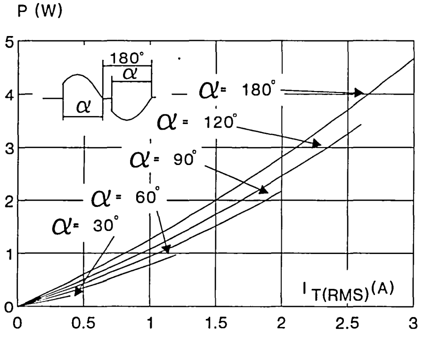


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

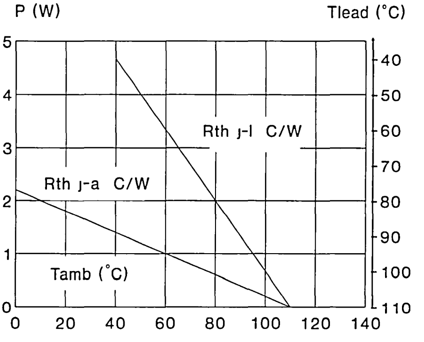


Fig.3 : RMS on-state current versus case temperature.

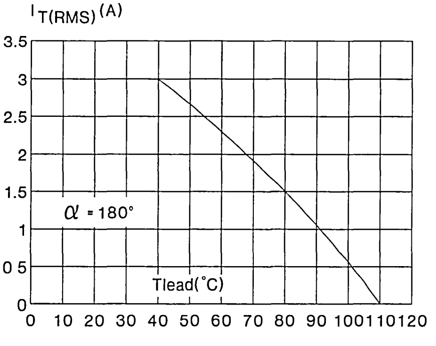


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

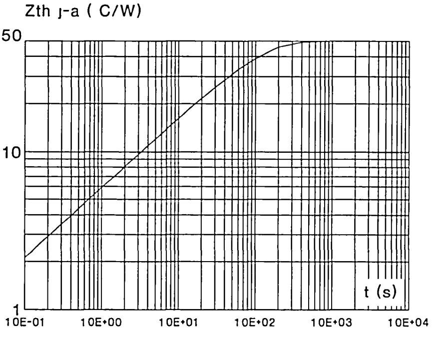


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

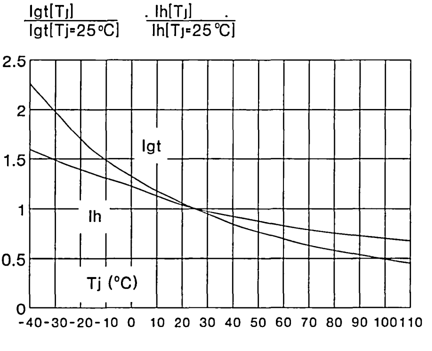


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

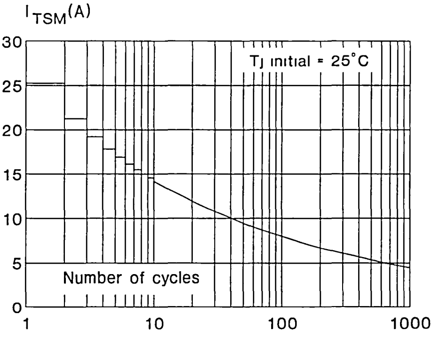


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

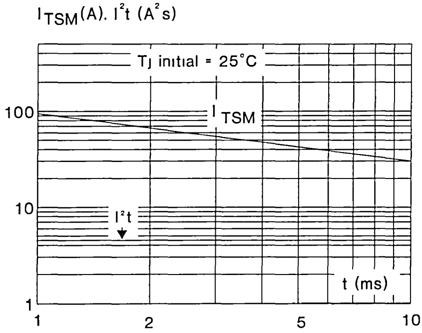
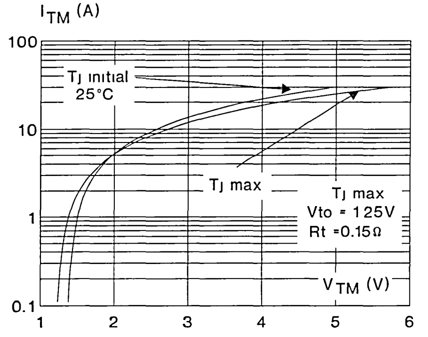
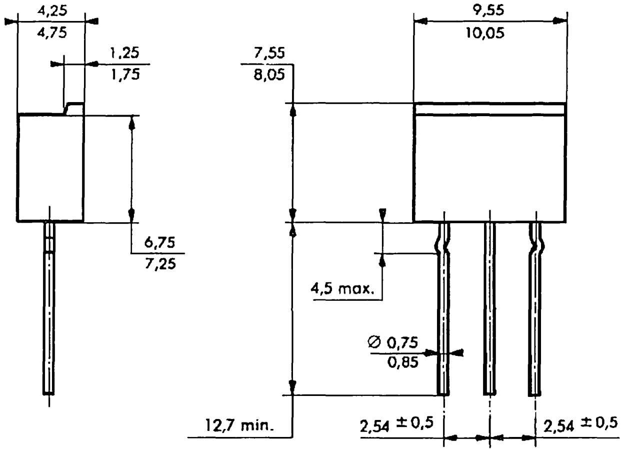


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TL Plastic



Cooling method : A
Marking : type number
Weight : 0.8 g
Polarity : N A

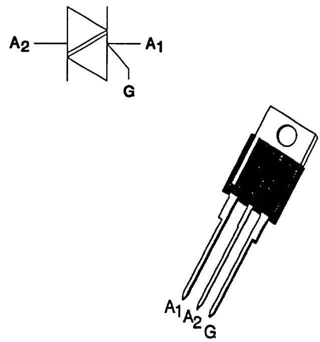
SGS-THOMSON MICROELECTRONICS

BTA04 T/D/S/A
BTB04 T/D/S/A

SENSITIVE GATE TRIACS

FEATURES

- VERY LOW I_{GT} = 10mA max
- LOW I_H = 15mA max
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB04 T/D/S/A triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where gate high sensitivity is required. Application on 4Q such as phase control and static switching.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 90°C	4	A
		BTB	Tc = 95°C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	42	A
			tp = 10 ms	40	
I^2t	I^2t value		tp = 10 ms	8	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB04-			Unit
		400 T/D/S/A	600 T/D/S/A	700 T/D/S/A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110°C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.2	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.4	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix T	Suffix D	Suffix S	Suffix A	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	5	5	10	10	mA
			IV	MAX	5	10	10	25	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5				V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2				V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2				µs
I_L	IG= 1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	10	10	20	20	mA
			II		20	20	40	40	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	15	15	25	25	mA
V_{TM} *	I_{TM}= 5.5A tp= 380µs	Tj=25°C		MAX	1.65				V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01				mA
		Tj=110°C		MAX	0.75				
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		TYP	10	10	-	-	V/µs
				MIN	-	-	10	10	
(dV/dt)c *	(dI/dt)c = 1.8A/ms	Tj=110°C		TYP	1	1	5	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification			
	A	V	T	D	S	A
BTA (Insulated)	4	400	X	X	X	X
		600	X	X	X	X
		700	X	X	X	X
BTB (Uninsulated)		400	X	X	X	X
		600	X	X	X	X
		700	X	X	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

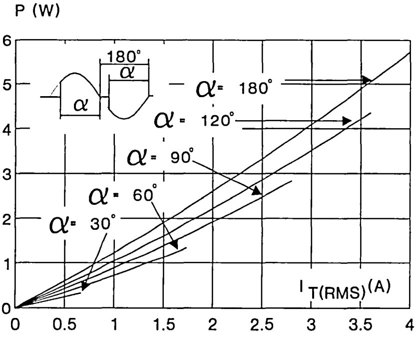


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

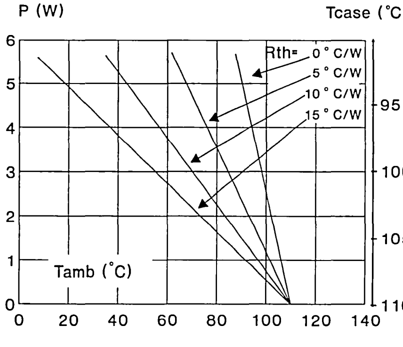


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

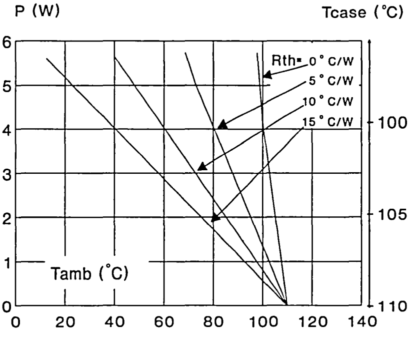


Fig.4 : RMS on-state current versus case temperature.

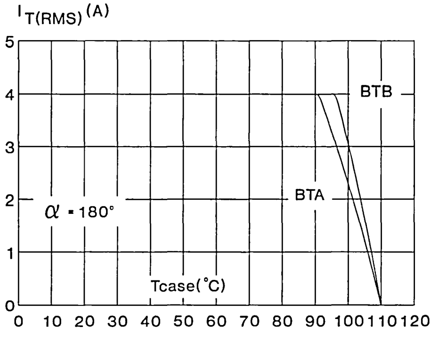


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

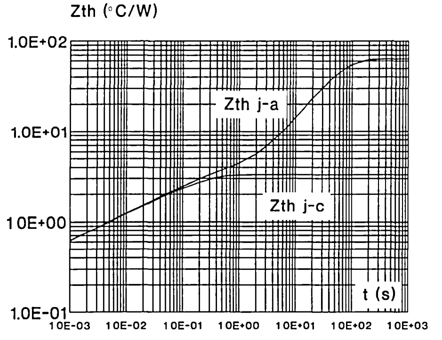


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

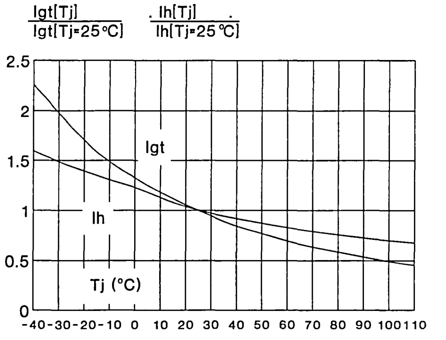


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

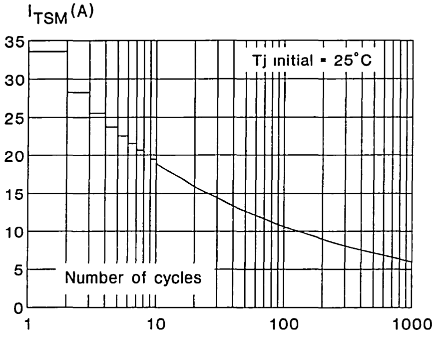


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

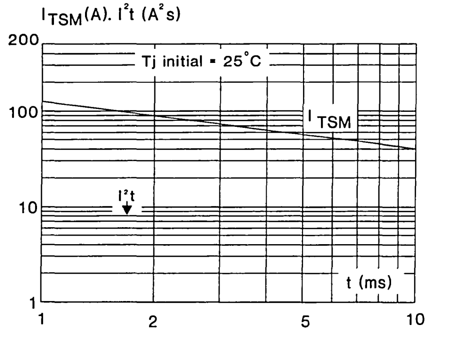
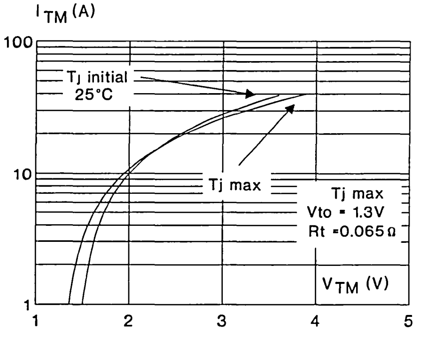
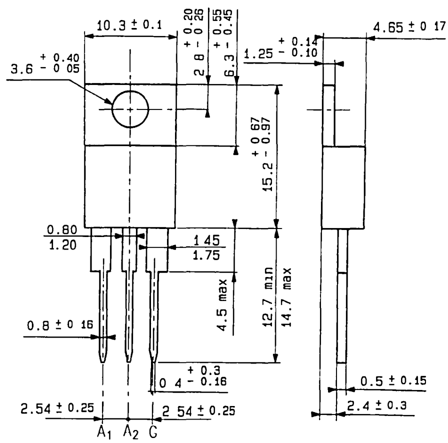


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

SGS-THOMSON
MICROELECTRONICS

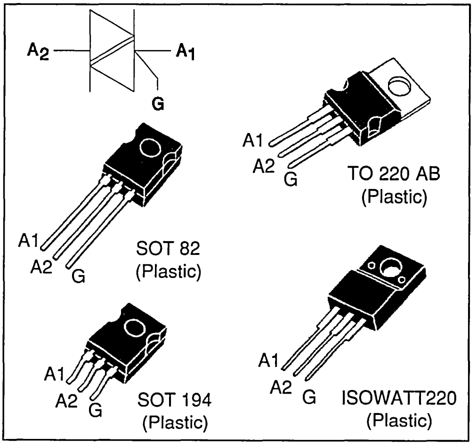
T405

HIGH PERFORMANCE TRIACS

IN DEVELOPMENT

FEATURES

- I_{TRMS} = 4 A
- V_{DRM} = 400 V to 800 V
- SENSITIVE GATE : $I_{GT} \leq$ 5 mA
- HIGH EFFICIENCY SWITCHING



DESCRIPTION

The T405 high voltage TRIAC Families are high performance planar diffused PNPN devices glass passivated technology.
Packaged either in TO 220 AB, SOT 82, SOT 194 and ISOWATT220 these products are intented for all bi-directional switch applications.

ABSOLUTE RATINGS (limiting values)

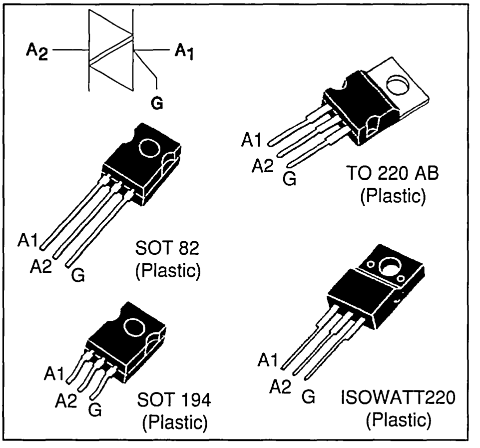
Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	TO 220 AB SOT 194/SOT 82	Tc = 110 °C	4	A
		ISOWATT220	Tc = 100 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	35	A
			tp = 10 ms	30	
I^2t	I^2t value		tp = 10 ms	4.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 50mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 125 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	T405				Unit
		-400	-600	-700	-800	

HIGH PERFORMANCE TRIACS

FEATURES

- I_{TRMS} = 4 A
- V_{DRM} = 400 V to 800 V
- SENSITIVE GATE : $I_{GT} \leq$ 10 mA
- HIGH COMMUTATION : (dI/dt)c > 3.5 A/ms



DESCRIPTION

The T410 / T435 high voltage TRIAC Families are high performance planar diffused PNPN devices glass passivated technology.
Packaged either in TO 220 AB, SOT 82, SOT 194 and ISOWATT220 these products are intented for all bi-directional switch applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	TO 220 AB SOT 194/SOT 82	Tc = 110 °C	4	A
		ISOWATT220	Tc = 100 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	35	A
			tp = 10 ms	30	
I^2t	I^2t value		tp = 10 ms	4.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 100mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 125 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	T410 or T435				Unit
		-400	**-600**	**-700**	**-800**	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient	SOT 82 / SOT 194	100	°C/W
		TO 220 AB	60	
		ISOWATT220	50	
Rth (j-c) DC	Junction to case for DC	SOT 82 / SOT 194 TO 220 AB	3.5	°C/W
		ISOWATT220	5.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	SOT 82 / SOT 194 TO 220 AB	2.6	°C/W
		ISOWATT220	4	

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)}$ = 1 W P_{GM}= 40 W (tp = 20 µs) I_{GM} = 4 A (tp = 20 µs) V_{GM} = 16 V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Quadrant		Suffix T410	Suffix T435	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	I-II-III	MAX	10	35	mA
V_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ		Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 350mA dI_G/dt = 1A/µs I_{TM} = 5.5A		Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}		Tj=25°C	I-II-III	MAX	30	60	mA
I_H *	I_T= 100mA gate open		Tj=25°C		MAX	15	35	mA
V_{TM} *	I_{TM}= 5.5A tp= 380µs		Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated		Tj=25°C		MAX	0.01		mA
			Tj=125°C		MAX	2		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	V_{DRM} = 400V / 600V	Tj=125°C		MIN	50	250	V/µs
		V_{DRM} = 700V / 800V				30	250	
(dI/dt)c *	dV/dt = 0.1V/µs		Tj=125°C		MIN	2.7	5.3	A/ms
	dV/dt = 20V/µs				MIN	1.8	3.5	

* For either polarity of electrode A2 voltage with reference to electrode A1.

ORDERING INFORMATION

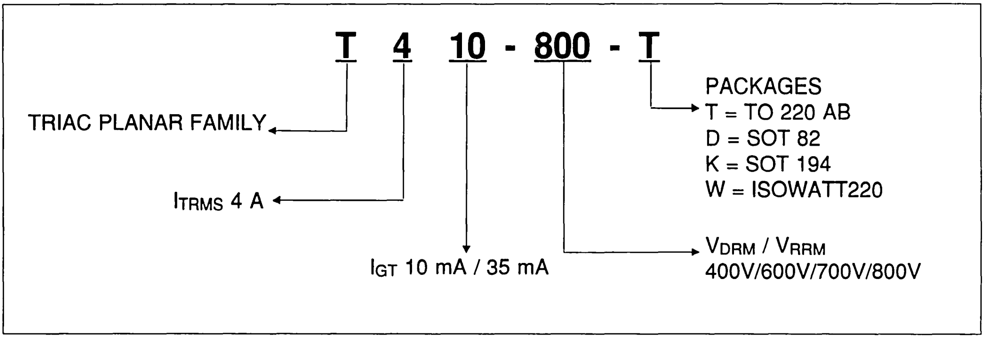


Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

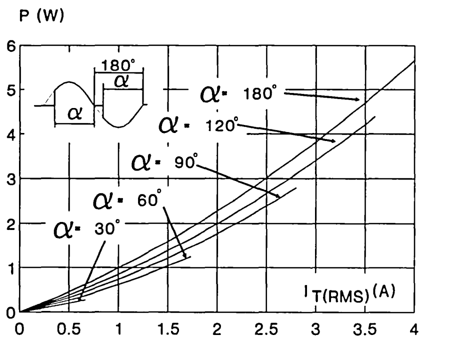


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TO220 AB / SOT 82 / SOT 194).

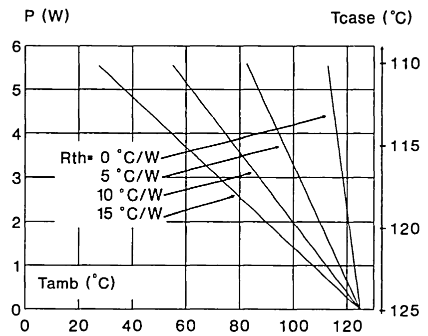


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (ISOWATT220).

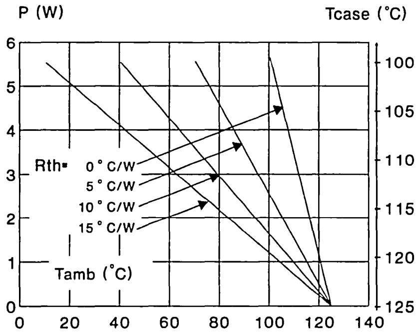


Fig.4 : RMS on-state current versus case temperature.

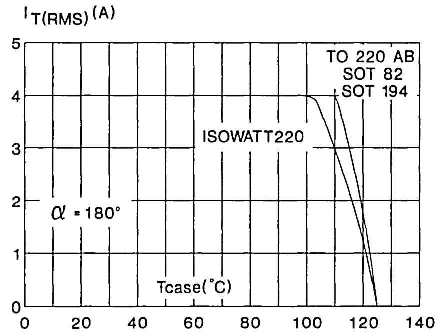


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-a : TO220 AB only); (Zth j-c : SOT 82 / SOT 194 / TO 220 AB only)

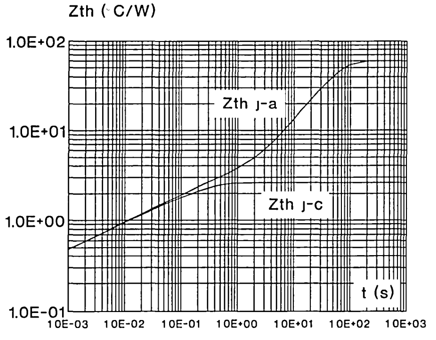


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

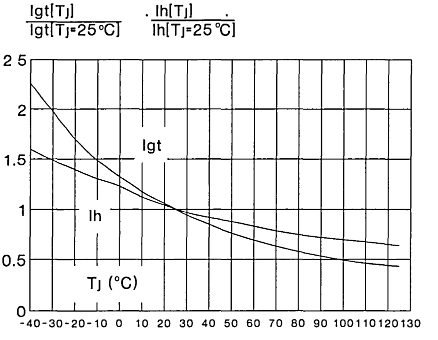


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

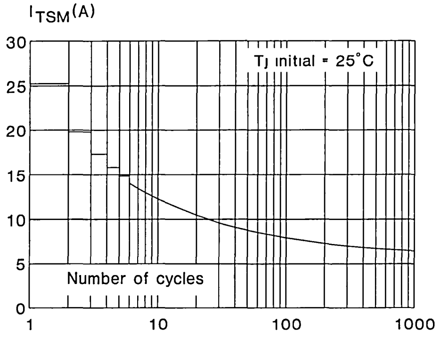


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

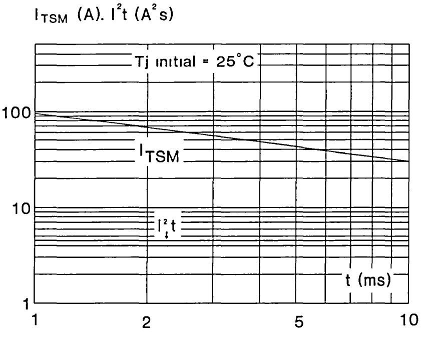
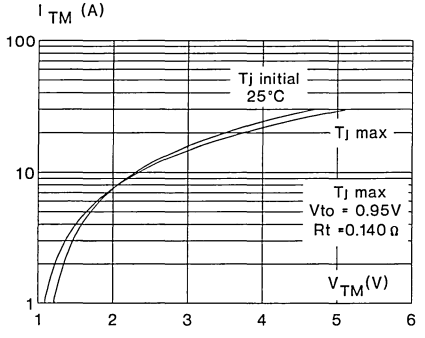
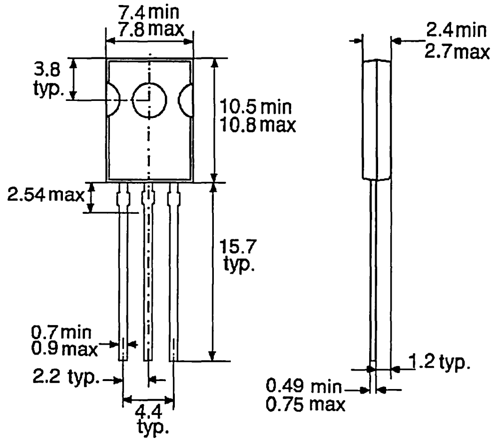


Fig.9 : On-state characteristics (maximum values).

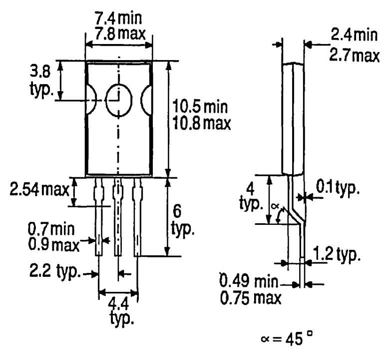


PACKAGE MECHANICAL DATA (in millimeters)
SOT 82 Plastic



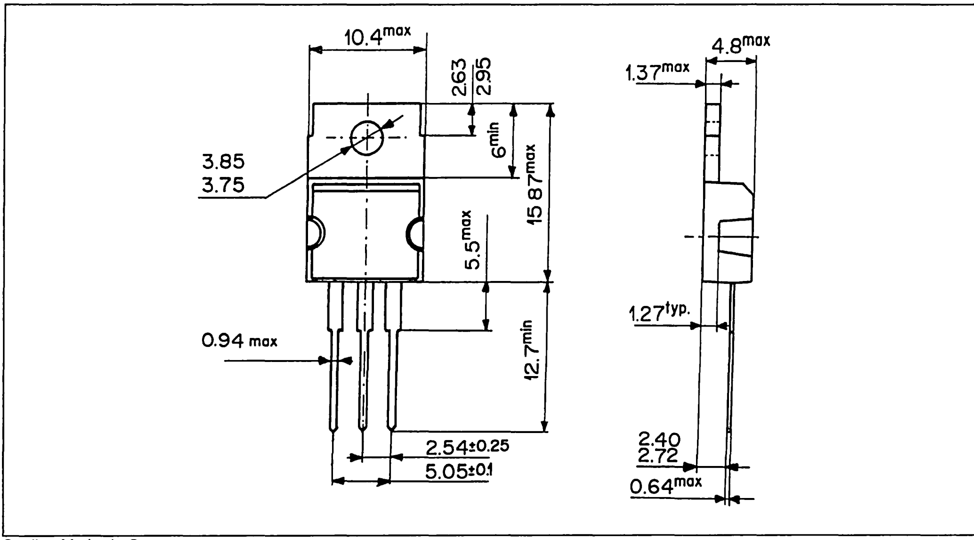
Cooling Method : C
Marking : Type number
Weight : 0.72g
Polarity : N A
Stud torque : N A

PACKAGE MECHANICAL DATA (in millimeters)
SOT 194 Plastic



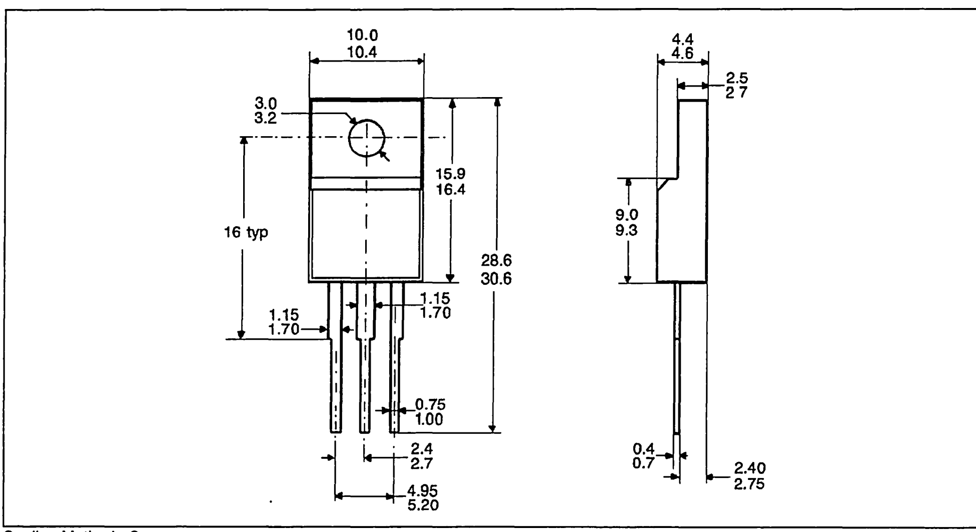
Cooling Method : C
Marking : Type number
Weight : 0.68g
Polarity : N A
Stud torque : N A

PACKAGE MECHANICAL DATA (in millimeters)
TO 220 AB Plastic



Cooling Method : C
Marking : Type number
Weight : 2 g
Polarity : N A
Stud torque : N A

PACKAGE MECHANICAL DATA (in millimeters)
ISOWATT220 Plastic



Cooling Method : C
Marking : Type number
Weight : 2.1g
Polarity : N A
Stud torque : N A

TRIAC 6 A FAMILY

SNUBBERLESS "H.C.T."

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA06-xxx BW	BTB06-xxx BW	50	50	50	400 to 800	TO220AB
BTA06-xxx CW	BTB06-xxx CW	35	35	35	400 to 800	TO220AB
T635-xxx W *		35	35	35	400 to 800	ISOWATT220
	T635-xxx T *	35	35	35	400 to 800	TO220AB
	T635-xxx D *	35	35	35	400 to 800	SOT 82
	T635-xxx K *	35	35	35	400 to 800	SOT 194

LOGIC LEVEL "H.C.T."

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA06-xxx SW	BTB06-xxx SW	10	10	10	400 to 700	TO220AB
BTA06-xxx TW	BTB06-xxx TW	5	5	5	400 to 700	TO220AB
T610-xxx W *		10	10	10	400 to 800	ISOWATT220
	T610-xxx T *	10	10	10	400 to 800	TO220AB
	T610-xxx D *	10	10	10	400 to 800	SOT 82
	T610-xxx K *	10	10	10	400 to 800	SOT 194

SENSITIVE

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA06-xxx A	BTB06-xxx A	10	10	10	25	400 to 700	TO220AB
BTA06-xxx S	BTB06-xxx S	10	10	10	10	400 to 700	TO220AB
BTA06-xxx D	BTB06-xxx D	5	5	5	10	400 to 700	TO220AB
BTA06-xxx T	BTB06-xxx T	5	5	5	5	400 to 700	TO220AB

STANDARD

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA06-xxx B	BTB06-xxx B	50	50	50	100	400 to 800	TO220AB
BTA06-xxx C	BTB06-xxx C	25	25	25	50	400 to 800	TO220AB

LIGHT DIMMERS

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA06-xxx GP		50	50	50	75	400 to 600	TO220AB

DEDICATED DEVICES

INSULATED	UNINSULATED	AUTOMATIC VOLTAGE SWITCH				V_{RRM} Range (V)	PACKAGE
AVS08-CBI	AVS08-CB					500	TO220AB

* In development

H.C.T. (HIGH COMMUTATION TECHNOLOGY)

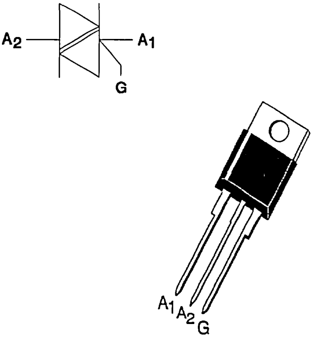
SGS-THOMSON MICROELECTRONICS

BTA06 T/D/S/A
BTB06 T/D/S/A

SENSITIVE GATE TRIACS

FEATURES

- VERY LOW I_{GT} = 10mA max
- LOW I_H = 15mA max
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB06 T/D/S/A triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where gate high sensitivity is required. Application on 4Q such as phase control and static switching.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 85°C	6	A
		BTB	Tc = 90°C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	63	A
			tp = 10 ms	60	
I^2t	I^2t value		tp = 10 ms	18	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB06-			Unit
		400 T/D/S/A	600 T/D/S/A	700 T/D/S/A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110°C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.2	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.4	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix T	Suffix D	Suffix S	Suffix A	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	5	5	10	10	mA
			IV	MAX	5	10	10	25	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5				V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2				V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2				µs
I_L	IG= 1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	10	10	20	20	mA
			II		20	20	40	40	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	15	15	25	25	mA
V_{TM} *	I_{TM}= 8.5A tp= 380µs	Tj=25°C		MAX	1.65				V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01				mA
		Tj=110°C		MAX	0.75				
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		TYP	10	10	-	-	V/µs
				MIN	-	-	10	10	
(dV/dt)c *	(dI/dt)c = 2.7A/ms	Tj=110°C		TYP	1	1	5	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification			
	A	V	T	D	S	A
BTA (Insulated)	6	400	X	X	X	X
		600	X	X	X	X
		700	X	X	X	X
BTB (Uninsulated)		400	X	X	X	X
		600	X	X	X	X
		700	X	X	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

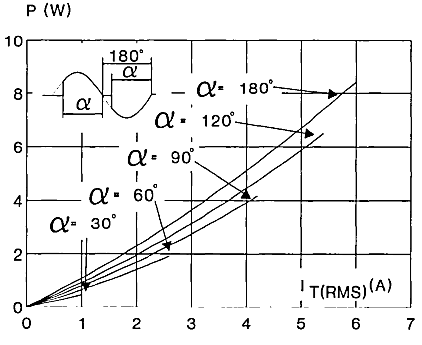


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

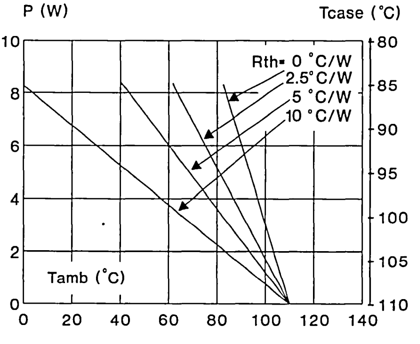


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

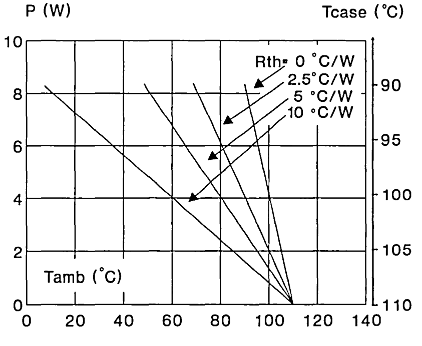


Fig.4 : RMS on-state current versus case temperature.

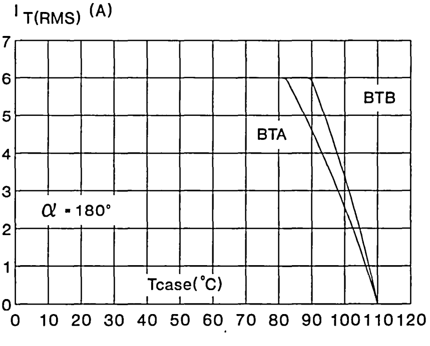


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

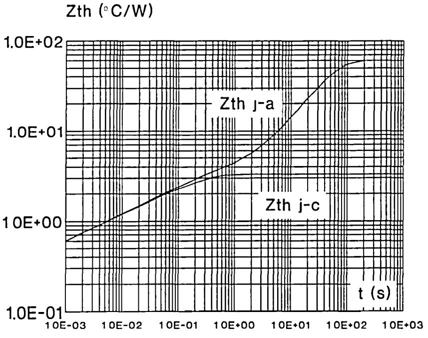


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

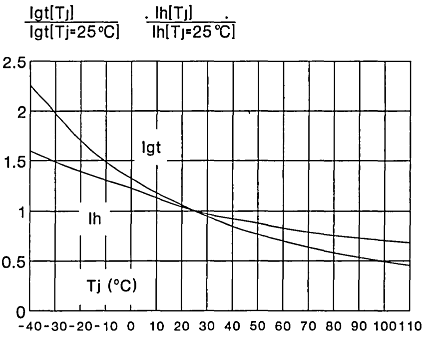


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

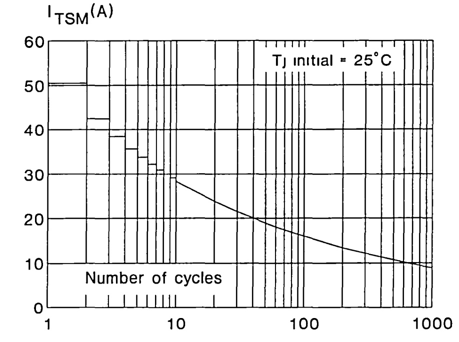


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

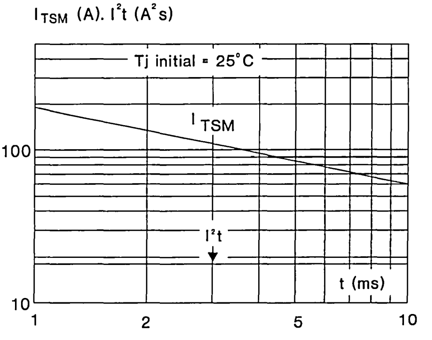
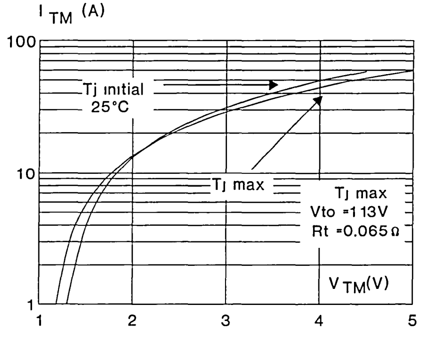
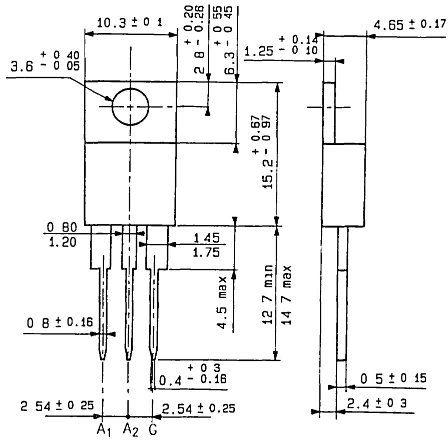


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimetres)

TO 220 AB Plastic

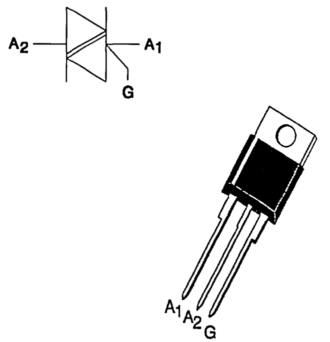


Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 5 V/µs
- BTA Family :
  INSULATING VOLTAGE= 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB06 B/C triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 85 °C	6	A
		BTB	Tc = 90 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	63	A
			tp = 10 ms	60	
I^2t	I^2t value		tp = 10 ms	18	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB06-... B/C				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.2	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.4	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					B	C	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	25	mA
			IV	MAX	100	50	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	20	mA
			II		70	35	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	25	mA
V_{TM} *	I_{TM}= 8.5A tp= 380µs	Tj=25°C		MAX	1.65		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	0.5		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	100	V/µs
(dV/dt)c *	(dI/dt)c = 2.7A/ms	Tj=110°C		MIN	10	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	B	C
BTA (Insulated)	6	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

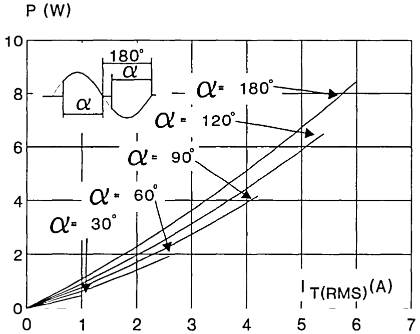


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

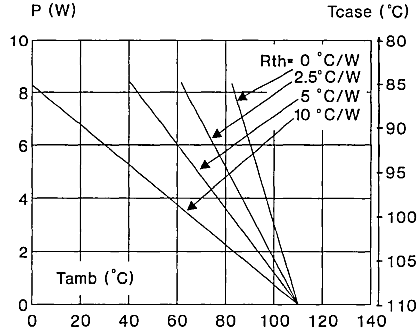


Fig.3 : Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

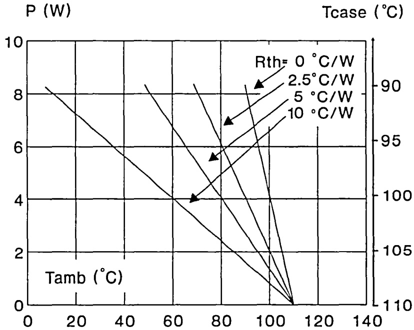


Fig.4 : RMS on-state current versus case temperature.

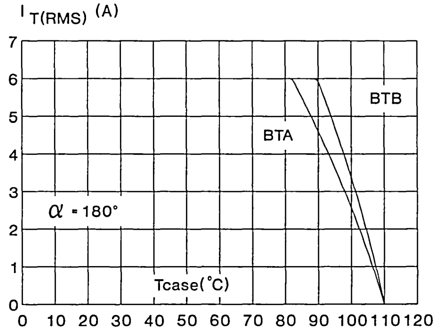


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

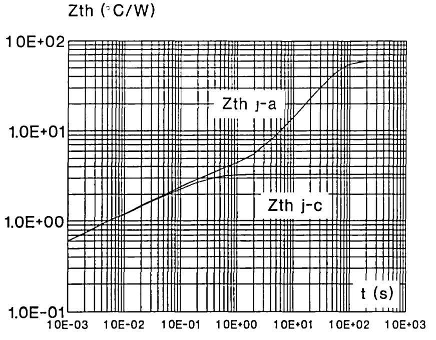


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

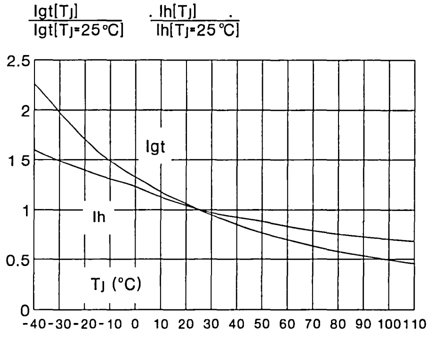


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

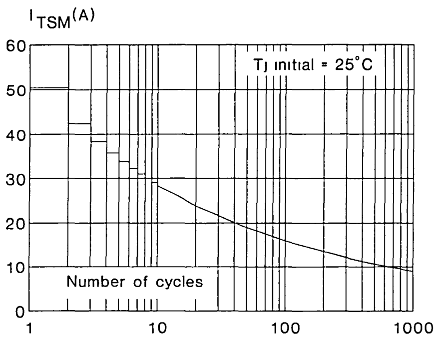


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

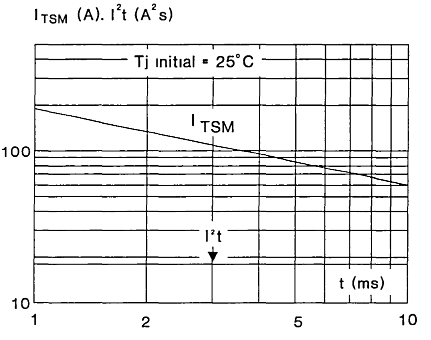
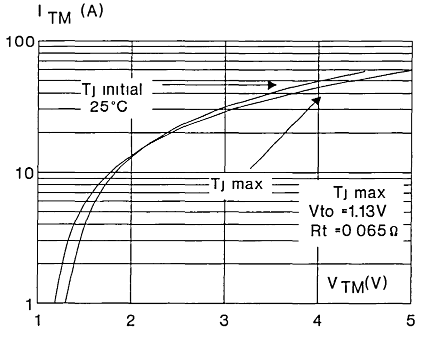
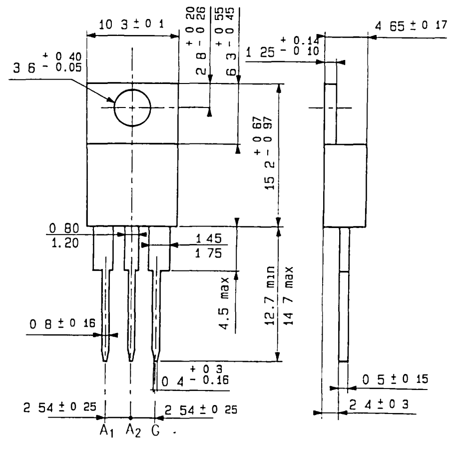


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

SGS-THOMSON MICROELECTRONICS

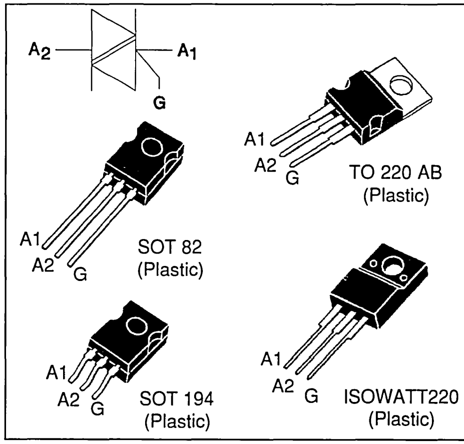
T610 T635

HIGH PERFORMANCE TRIACS

IN DEVELOPMENT

FEATURES

- I_{TRMS} = 6 A
- V_{DRM} = 400 V to 800 V
- SENSITIVE GATE : $I_{GT} \leq$ 10 mA
- HIGH COMMUTATION : (dI/dt)c > 5.4 A/ms without snubber



DESCRIPTION

The T610 / T635 high voltage TRIAC Families are high performance planar diffused PNPN devices glass passivated technology.
Packaged either in TO 220 AB, SOT 82, SOT 194 and ISOWATT220 these products are intented for all bi-directional switch applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	TO 220 AB SOT 194/SOT 82	Tc = 110 °C	6	A
		ISOWATT220	Tc = 100 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	50	A
			tp = 10 ms	45	
I^2t	I^2t value		tp = 10 ms	10	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 100mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 125 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	T610 or T635				Unit
		-400	-600	-700	-800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

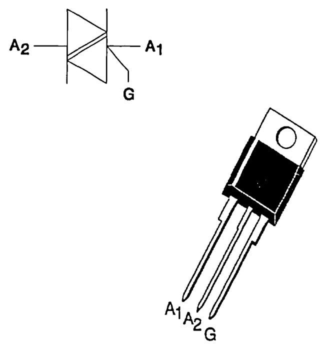
SGS-THOMSON
MICROELECTRONICS

BTA06 TW/SW
BTB06 TW/SW

LOGIC LEVEL TRIACS

FEATURES

- LOW I_{GT} = 5mA max
- LOW I_H = 15mA max
- HIGH EFFICIENCY SWITCHING
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB06 TW/SW use high performance products glass passivated chips.
The low I_{GT} / I_H level coupled with the high efficiency circuit make this family will adapted for low power trigger circuits (microcontrollers, microprocessors, integrated circuits ...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 80 °C	6	A
		BTB	Tc = 90 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	63	A
			tp = 10 ms	60	
I^2t	I^2t value		tp = 10 ms	18	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 100mA di_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB06-			Unit
		400 TW/SW	600 TW/SW	700 TW/SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix TW	Suffix SW	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	5	10	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	8	15	mA
			II		15	25	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	15	25	mA
V_{TM} *	I_{TM}= 8.5A tp= 380µs	Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	1		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	20	50	V/µs
(dI/dt)c *	dV/dt= 0.1V/µs	Tj=110°C		MIN	2.7	3.5	A/ms
	dV/dt= 20V/µs			MIN	1.3	2.7	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	TW	SW
BTA (Insulated)	6	400	X	X
		600	X	X
		700	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

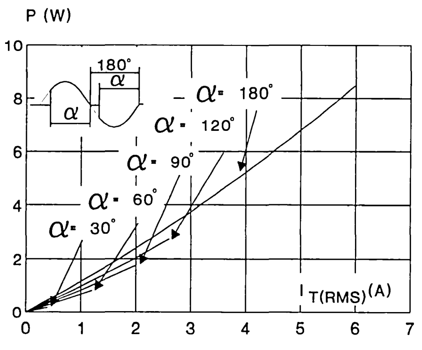


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

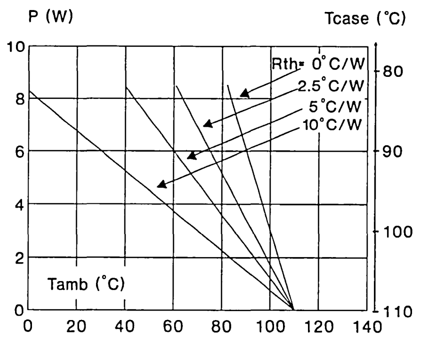


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

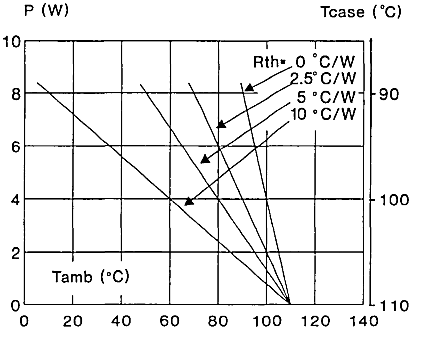


Fig.4 : RMS on-state current versus case temperature.

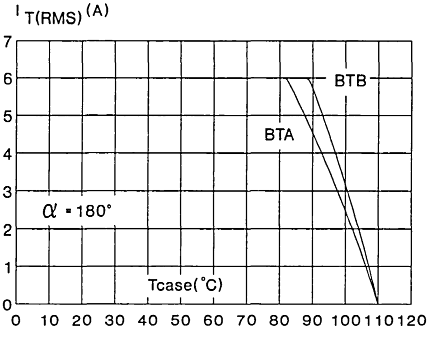


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration. (Zth j-c : BTA version only)

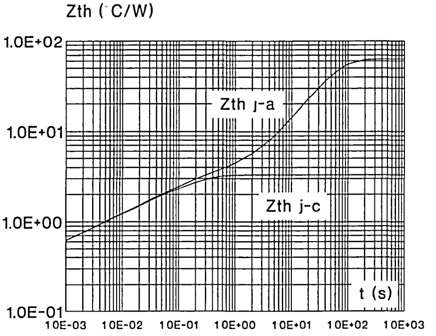


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

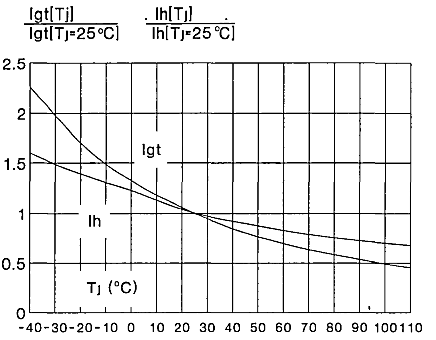


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

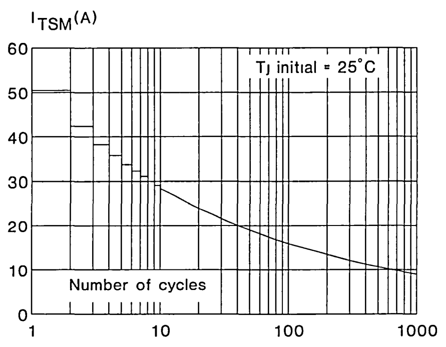


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

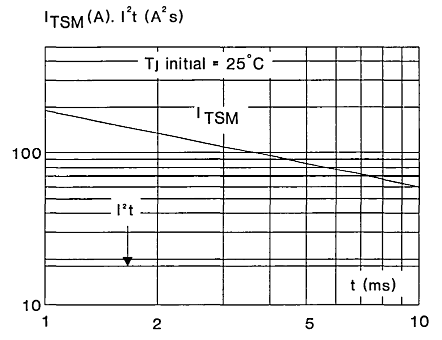


Fig.9 : On-state characteristics (maximum values).

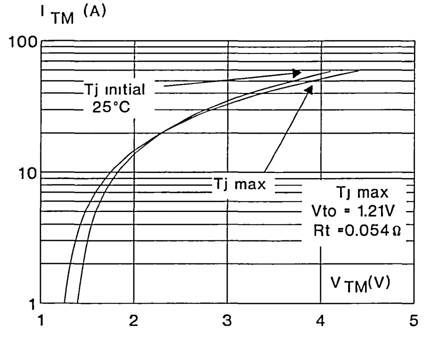
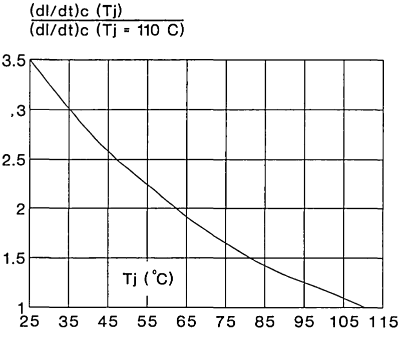
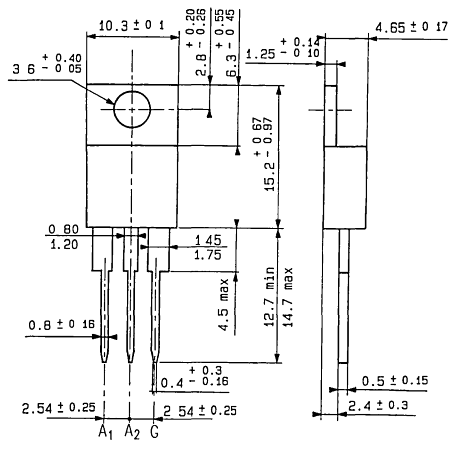


Fig.10 : Relative variation of (dI/dt)c versus junction temperature.



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



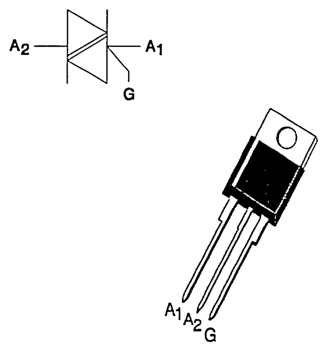
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

BTA06 BW/CW
BTB06 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 5A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 60A
- V_{DRM} UP TO 800V
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB06 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 100 °C	6	A
		BTB	Tc = 105 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	63	A
			tp = 10 ms	60	
I^2t	I^2t value		tp = 10 ms	18	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB06-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix BW	Suffix CW	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	35	mA
V_{TM} *	I_{TM}= 8.5A tp= 380µs	Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	2		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	5	3.5	A/ms
				TYP	10	7	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	6	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

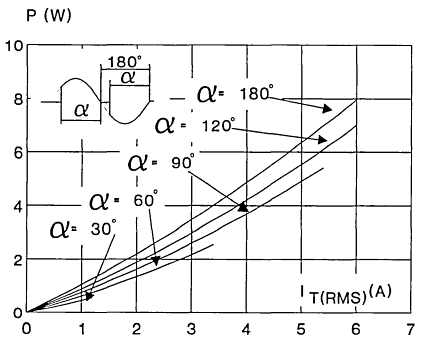


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

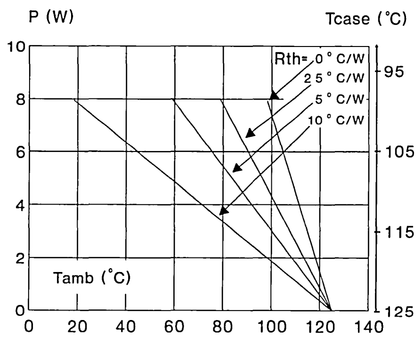


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

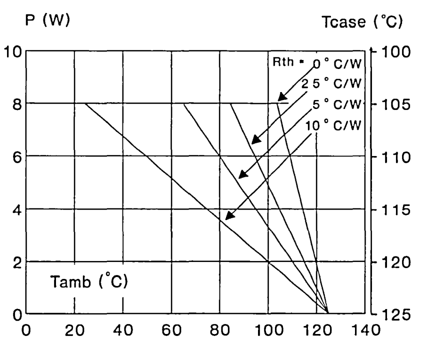


Fig.4 : RMS on-state current versus case temperature.

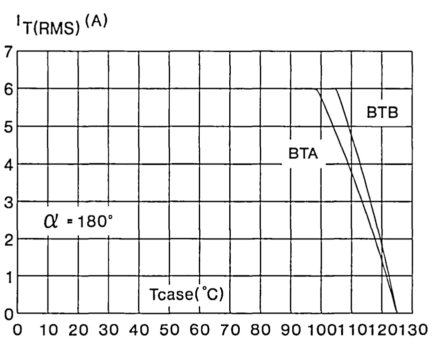


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA only version)

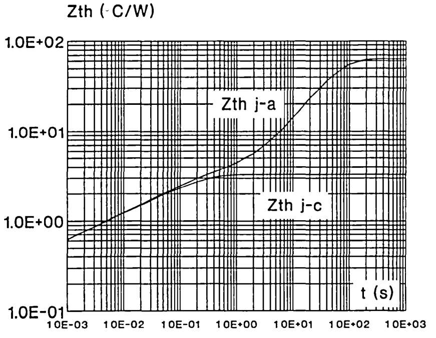


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

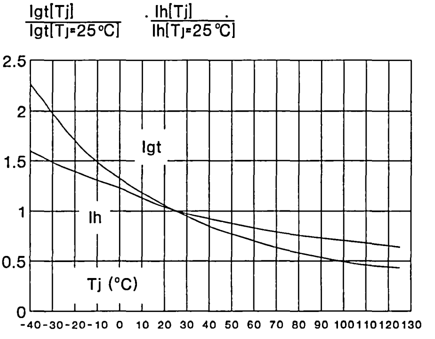


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

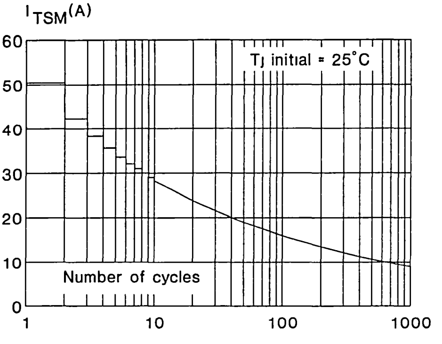


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

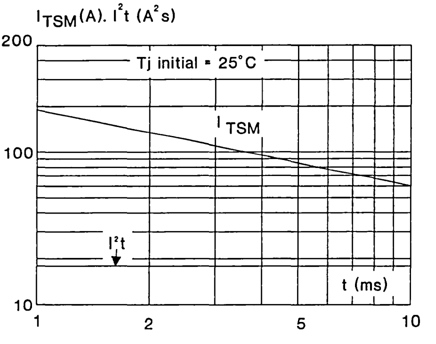
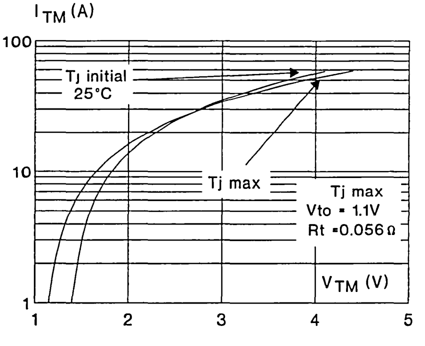
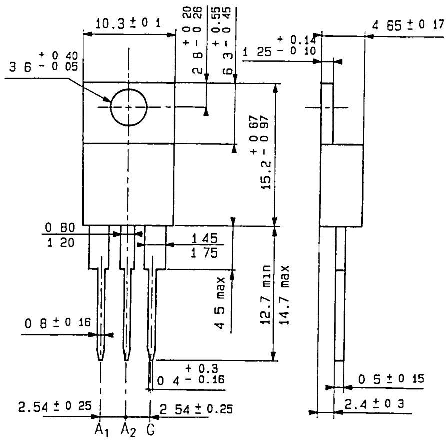


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

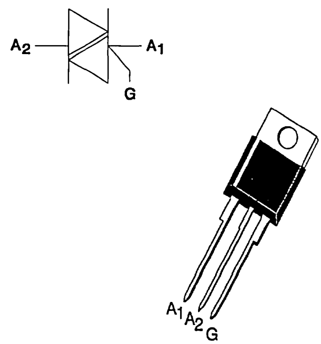
SGS-THOMSON
MICROELECTRONICS

BTA06 GP

TRIACS

FEATURES

- LOW I_H = 13mA max
- HIGH SURGE CURRENT : I_{TSM} = 100A
- I_{GT} SPECIFIED IN FOUR QUADRANTS
- INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA06 GP's use high performance, glass passivated chips.
The insulated TO 220 AB package, the high surge current and low holding current make this family well adapted to LIGHT DIMMER applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 90 °C	6	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	105	A
		tp = 10 ms	100	
I^2t	I^2t value	tp = 10 ms	50	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTA06-		Unit
		400 GP	600 GP	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	4	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix GP	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	mA
			IV	MAX	75	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	20	mA
			II		40	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	13	mA
V_{TM} *	I_{TM}= 8.5A tp= 380µs	Tj=25°C		MAX	1.4	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	0.5	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	30	V/µs
				TYP	100	
(dV/dt)c *	(dI/dt)c= 1.8A/ms	Tj=110°C		MIN	1	V/µs
				TYP	10	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

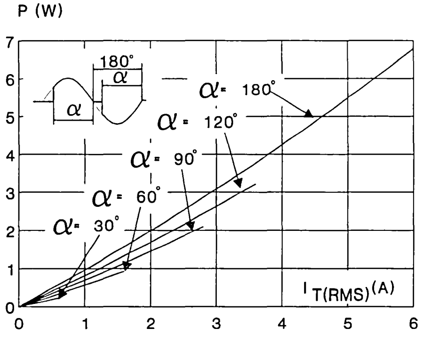


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

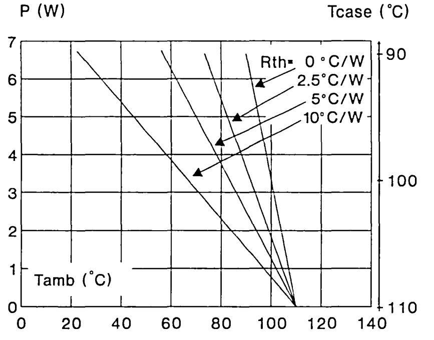


Fig.3 : RMS on-state current versus case temperature.

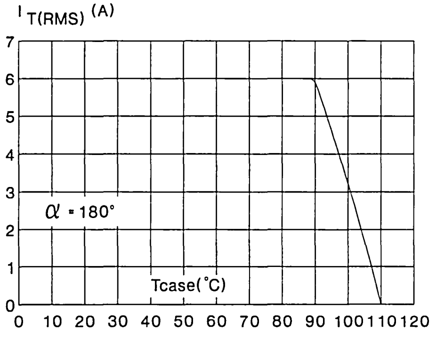


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

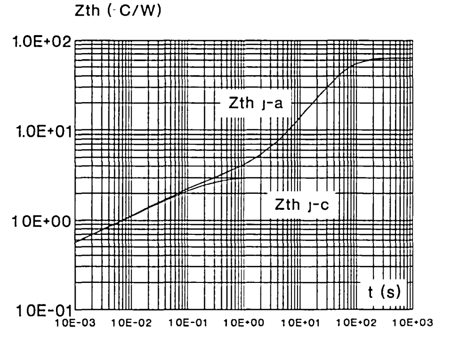


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

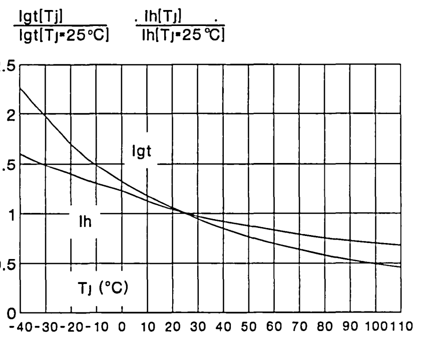


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

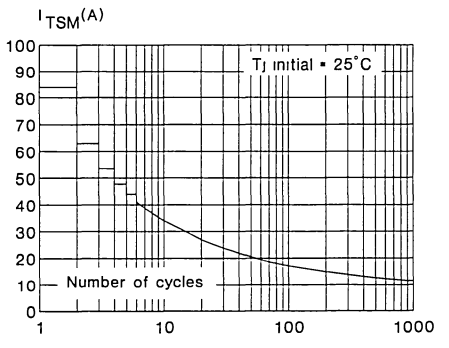


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

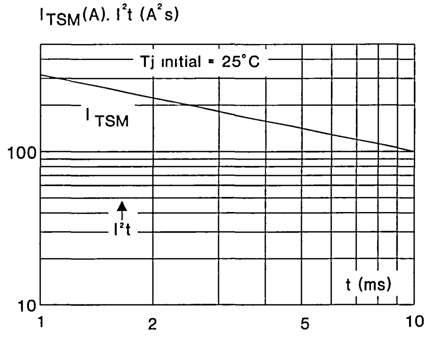
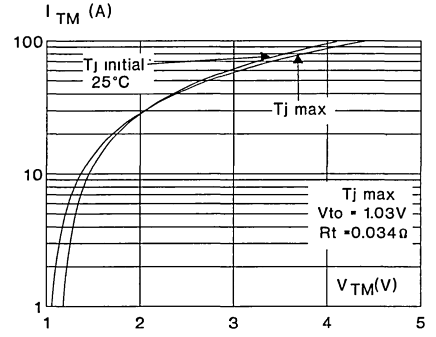
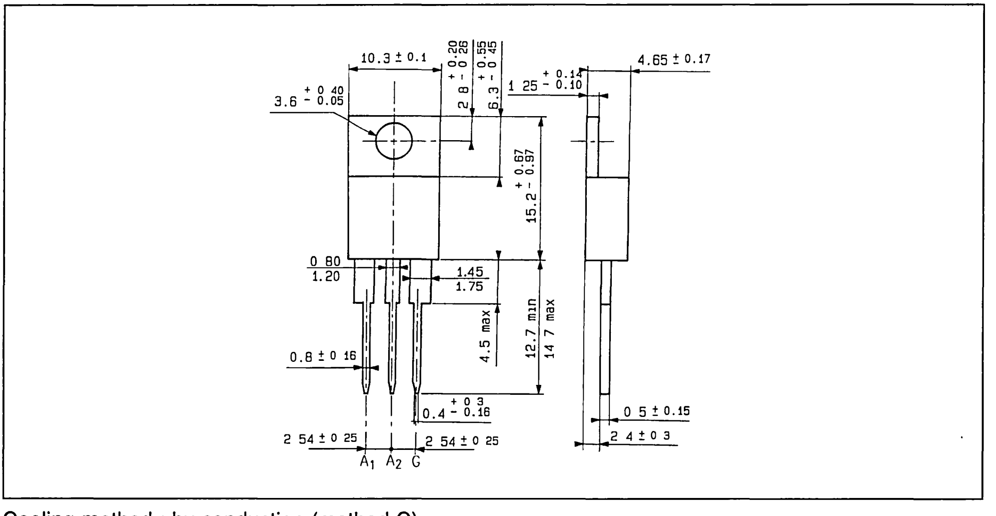


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

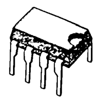
AUTOMATIC VOLTAGE SWITCH (SMPS < 200W)

CONTROLLER

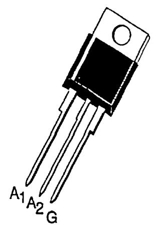
- 50/60Hz FULL COMPATIBILITY
- INTEGRATED VOLTAGE REGULATOR
- TRIGGERING PULSE TRAIN OF THE TRIAC
- PARASITIC FILTER
- LOW POWER CONSUMPTION

TRIAC

- HIGH EFFICIENCY AND SAFETY SWITCHING
- UNINSULATED PACKAGE : AVS08CB
- INSULATED PACKAGE 2500V(RMS) : AVS08CBI
- $V_{DRM} = \pm 500$ V
- $I_{T(RMS)}$: 5A



P
DIP8
(Plastic)



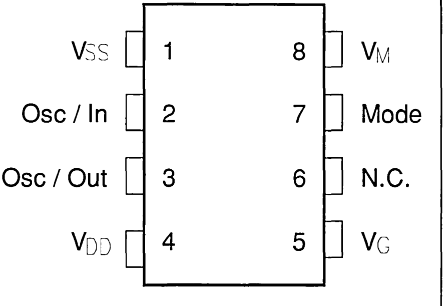
B
TO220AB
(Plastic)

DESCRIPTION

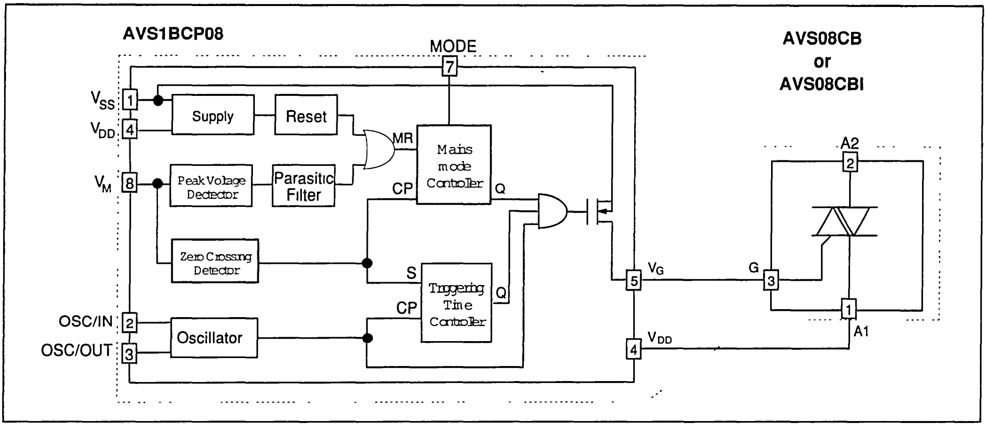
The AVS08 kit is an automatic mains selector (110/220V AC) to be used in SMPS < 200 W. It is composed of 2 devices :

- The **Controller** is optimized for low consumption and high security triggering of the triac. When connected to V_{SS}, the **mode** input activates an additional **option**. If the main power drops from 220V to 110V, the triac control remains locked to the 220V mode and avoids any high voltage spike when the voltage is restored to 220V.
  When connected to V_{DD}, the **mode** input desactivates this **option**.
- The TRIAC is specially designed for this application. An optimization between sensitivity and dynamic parameters of the triac gate highly reduces the losses of supply resistor and allows excellent immunity against disturbances.

PIN CONNECTION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

CONTROLLER AVS1BCP08

Symbol	Parameter	Value		Unit
		Min.	Max.	
V_{SS}	Supply voltage	- 12	0.5	V
V_I / V_O	I / O voltage	V_{SS} - 0.5	0.5	V
I_I / I_O	I / O current	- 40	+ 40	mA
T_{stg}	Storage Temperature	- 60	+ 150	°C
T_{oper}	Operating Temperature code " C " " T "	0 - 40	+ 70 + 105	°C

TRIAC AVS08CB / AVS08CBI T_j = +25°C (unless otherwise specified)

Symbol	Parameter			Value	Unit
V_{DRM}	Repetitive peak off-state voltage (2)			± 500	V
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	AVS08CB	T_C = 100°C	5	A
		AVS08CBI	T_C = 95°C		
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)		t = 8.3ms t = 10ms	70 65	A
I^2t	I^2t value		t = 10ms	21	A^2s
dI/dt	Critical rate of rise of on-state current (1)		Repetitive F = 50Hz	20	A/µs
			Non Repetitive	100	
T_{stg} T_j	Storage Temperature Junction Temperature Range			- 40 + 125 - 10 + 125	°C

(1) Gate supply : IG = 100mA – di/dt = 1A/µs
(2) Tj = 125°C

THERMAL RESISTANCES

TRIAC AVS08CB / AVS08CBI

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction-to-ambient		60	°C/W
Rth (j-c) DC	Junction-to-case for DC	AVS08CB	5.4	°C/W
		AVS08CBI	6.3	
Rth (j-c) AC	Junction-to-case for 360° conduction angle (F = 50Hz)	AVS08CB	4.0	°C/W
		AVS08CBI	4.7	

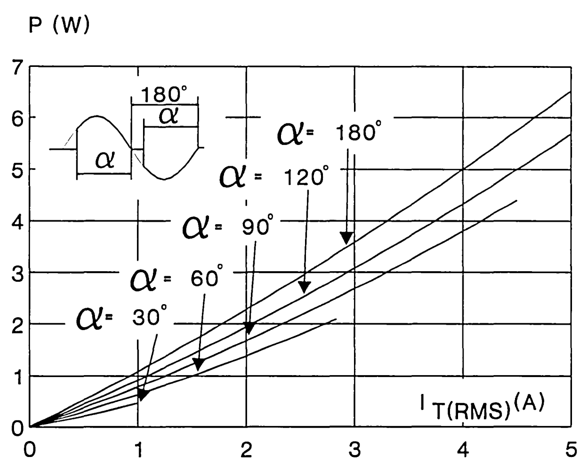
DC GENERAL ELECTRICAL CHARACTERISTICS

TRIAC AVS08CB / AVS08CBI

Symbol	Parameter		Value		Unit
			Min.	Max.	
V_{TM} *	I_{TM} = 7A t_p = 10ms	T_j = 25°C		1.65	V
I_{DRM} *	V_{DRM} rated Gate open	T_j = 25°C		10	µA

* For either polarity of electrode A2 voltage with reference to electrode A1.

Fig. 1 : Maximum RMS power dissipation versus RMS on-state current (F = 60Hz).
(Curves are cut off by (dI/dt)c limitation)



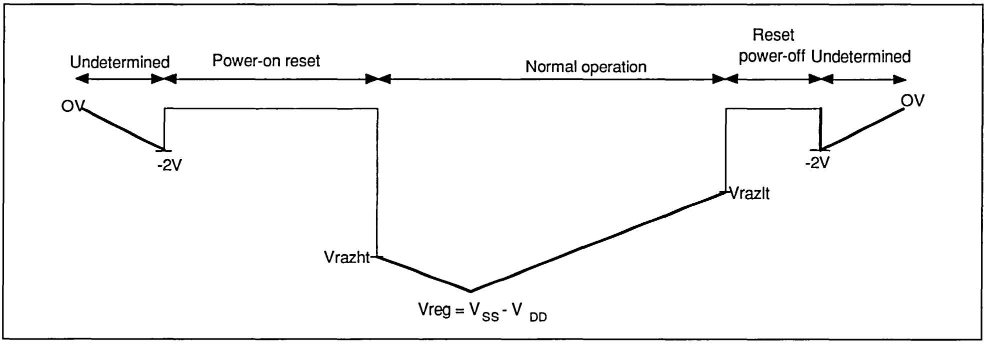
DC GENERAL ELECTRICAL CHARACTERISTICS (continued)

CONTROLLER AVS1BCP08 $T_{oper} = 25°C$ (unless otherwise specified)

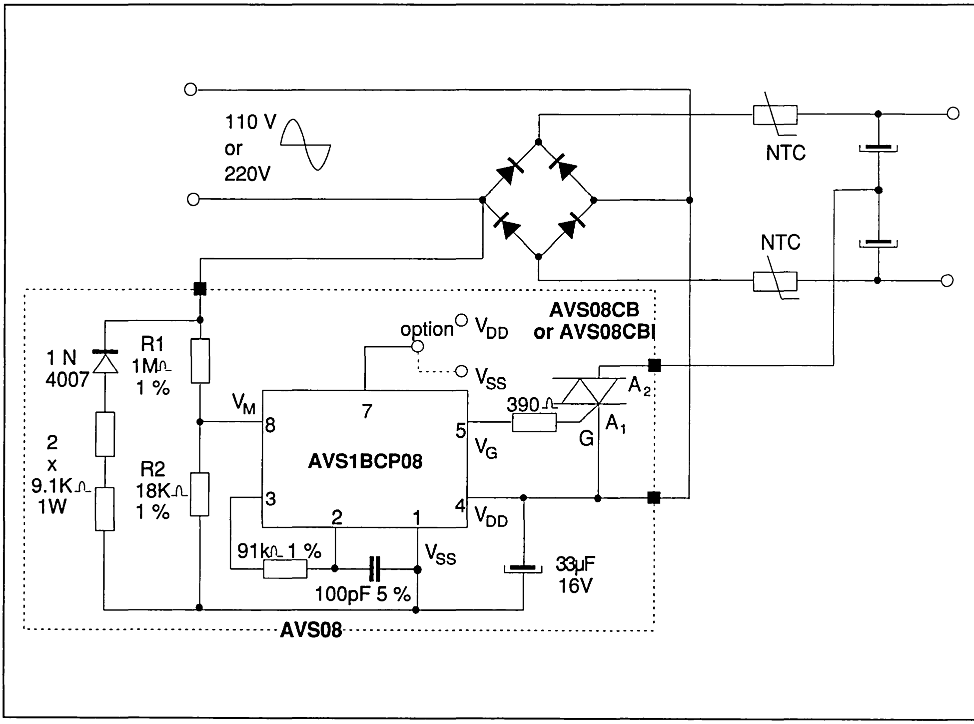
Symbol	Parameter	Value			Unit
		Min	Typ	Max	
V_{SS} (pin 1) (Vreg)	Shunt regulator	- 10	- 9	- 8	V
I_{SS} (pin 1) (Vreg) (@ V_{SS} = 9V)	Supply current	0.4		25	mA
I_{SS} (pin 1) (@ triac gate non connected)	Quiescent current			1	mA
F (pin 3) (@ R = 91kΩ) (C = 100pF)	Oscillator frequency	42	44	46	KHz
V_M (pin 8) Vth (3)	Peak voltage of detection high-threshold	4.08	4.25	4.42	V
V_M (pin 8) Vh (3)	Peak voltage of detection hysteresis	0.370	0.4	0.420	V
(1) V_M (pin 8) Vth (3)	Zero-crossing detection high-threshold	95	110	125	mV
V_M (pin 8) Vh (3)	Zero-crossing detection hysteresis	20	30	40	mV
(2) Vrazht (4)	Power-on-reset activation threshold		Vreg x 0.89		
(2) Vrazlt (4)	Power-down-reset activation threshold		Vreg x 0.55		
Mode (pin 7)	V_{IL} (4) V_{IH} (4)	0.7 Vreg		0.3 Vreg	
V_G (pin 5)	V_{OL} (I_{VG} = 25mA) Leakage current (V_G = V_{DD})			1 + 50	V µA

NOTES :
(1) : This value gives a typical noise immunıty on the zero-crossing detectionof 110mV x 1018/18 = 6.20V on the main supply
(2) : See following diagram
(3) : Voltage referred to VSS
(4) : Voltage referred to VDD

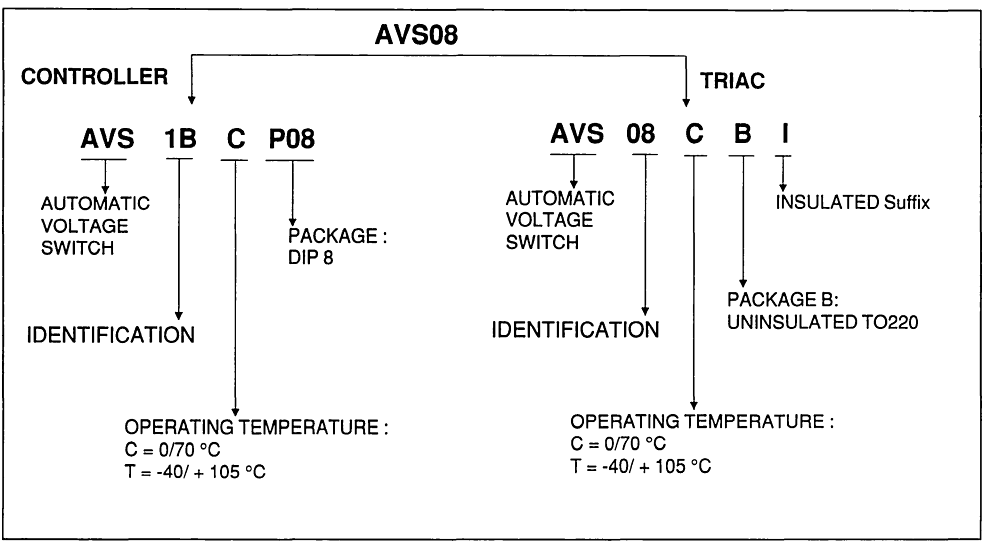
POWER-ON AND POWER-OFF RESET BEHAVIOUR



TYPICAL APPLICATION



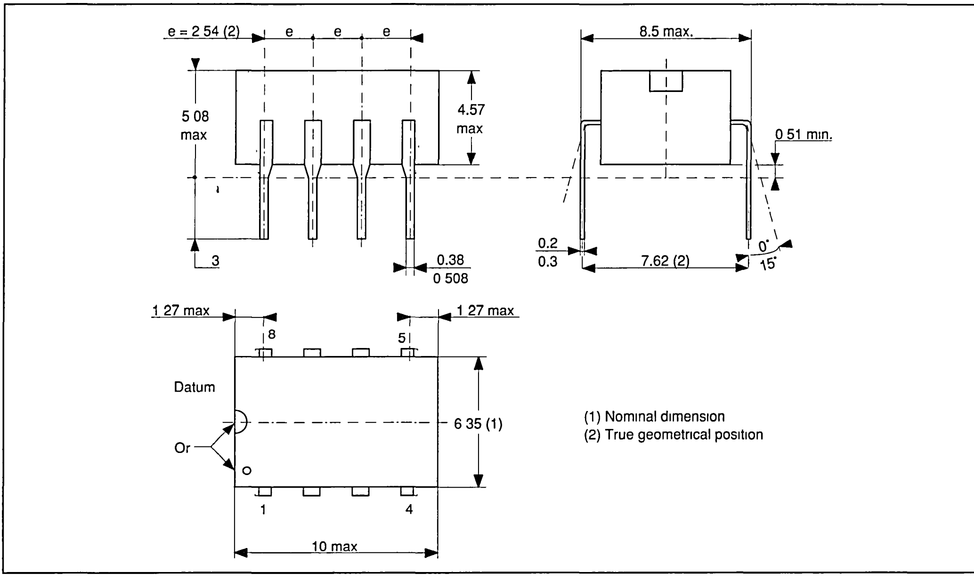
ORDERING INFORMATION



PACKAGE MECHANICAL DATA

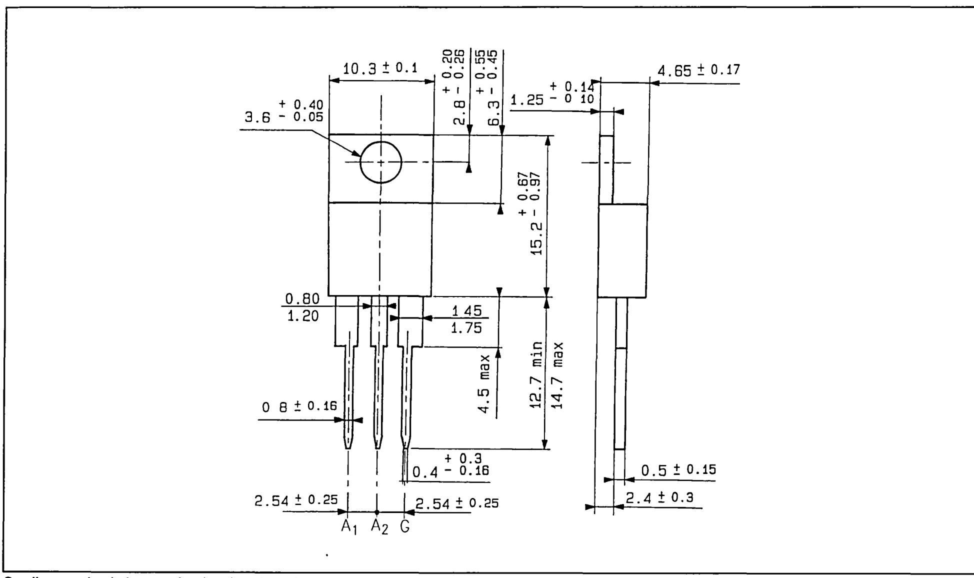
8 PINS - PLASTIC DIP

CONTROLLER



TO220AB (Plastic) (in millimeters)

TRIAC



Cooling method : by conduction (method C)
Marking : Type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TRIAC 8 A FAMILY

SNUBBERLESS "H.C.T."

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA08-xxx BW	BTB08-xxx BW	50	50	50	400 to 800	TO220AB
BTA08-xxx CW	BTB08-xxx CW	35	35	35	400 to 800	TO220AB
T835-xxx W *		35	35	35	400 to 800	ISOWATT220
	T835-xxx T *	35	35	35	400 to 800	TO220AB
	T835-xxx D *	35	35	35	400 to 800	SOT 82
	T835-xxx K *	35	35	35	400 to 800	SOT 194

LOGIC LEVEL "H.C.T."

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA08-xxx SW	BTB08-xxx SW	10	10	10	400 to 700	TO220AB
BTA08-xxx TW	BTB08-xxx TW	5	5	5	400 to 700	TO220AB
T810-xxx W *		10	10	10	400 to 800	ISOWATT220
	T810-xxx T *	10	10	10	400 to 800	TO220AB
	T810-xxx D *	10	10	10	400 to 800	SOT 82
	T810-xxx K *	10	10	10	400 to 800	SOT 194

SENSITIVE

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA08-xxx A	BTB08-xxx A	10	10	10	25	400 to 700	TO220AB
BTA08-xxx S	BTB08-xxx S	10	10	10	10	400 to 700	TO220AB

STANDARD

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA08-xxx B	BTB08-xxx B	50	50	50	100	400 to 800	TO220AB
BTA08-xxx C	BTB08-xxx C	25	25	25	50	400 to 800	TO220AB

ALTERNISTORS

INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
TXDV x08		100	100	100	400 to 800	TO220AB

DEDICATED DEVICES

INSULATED	UNINSULATED	AUTOMATIC VOLTAGE SWITCH	V_{RRM} Range (V)	PACKAGE
AVS10-CBI	AVS10-CB		600	TO220AB

* In development

H.C.T. (HIGH COMMUTATION TECHNOLOGY)

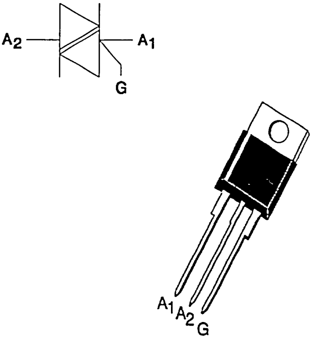
SGS-THOMSON
MICROELECTRONICS

BTA08 S/A
BTB08 S/A

SENSITIVE GATE TRIACS

FEATURES

- VERY LOW I_{GT} = 10mA max
- LOW I_H = 25mA max
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB08 S/A triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where gate high sensitivity is required. Application on 4Q such as phase control and static switching.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 75°C	8	A
		BTB	Tc = 80°C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	84	A
			tp = 10 ms	80	
I^2t	I^2t value		tp = 10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 250mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB08-			Unit
		400 S/A	600 S/A	700 S/A	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110°C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.2	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.4	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix S	Suffix A	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	10	10	mA
			IV	MAX	10	25	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III-IV	TYP	2		µs
I_L	IG= 1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	20	20	mA
			II		40	40	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	25	25	mA
V_{TM} *	I_{TM}= 11A tp= 380µs	Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	0.75		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	10	10	V/µs
(dV/dt)c *	(dI/dt)c= 3.5A/ms	Tj=110°C		TYP	5	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	S	A
BTA (Insulated)	8	400	X	X
		600	X	X
		700	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

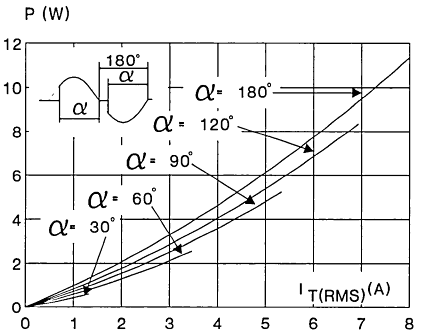


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

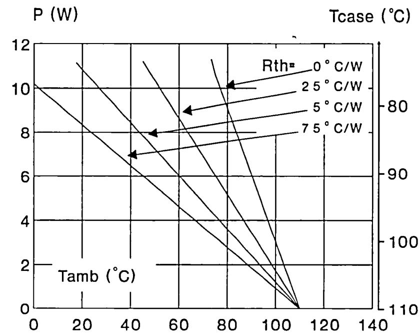


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

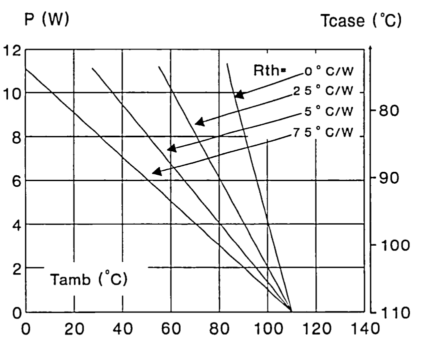


Fig.4 : RMS on-state current versus case temperature.

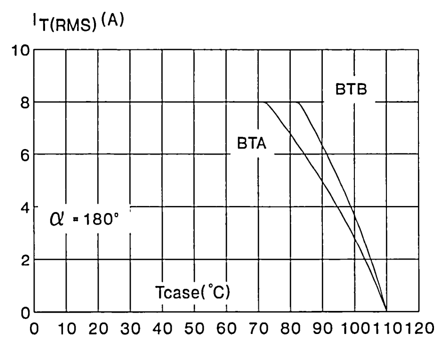


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

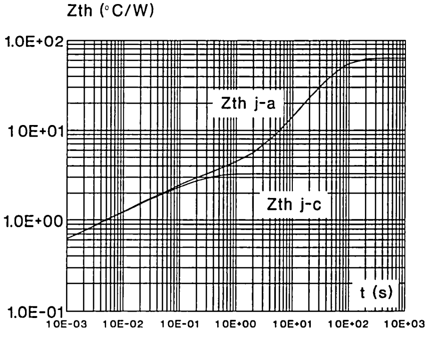


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

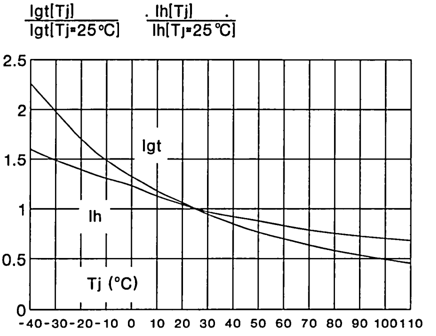


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

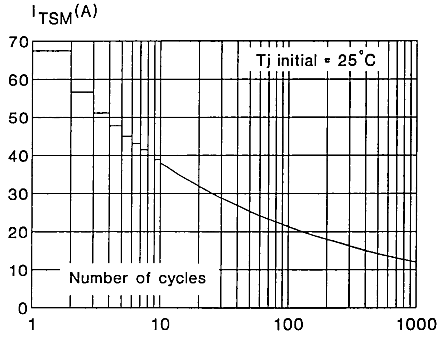


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

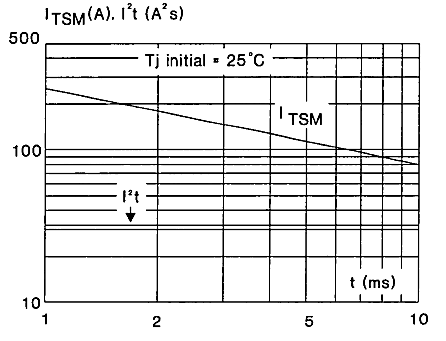
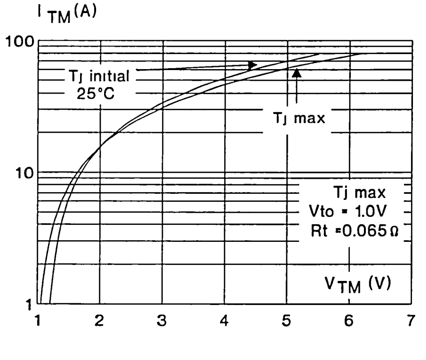
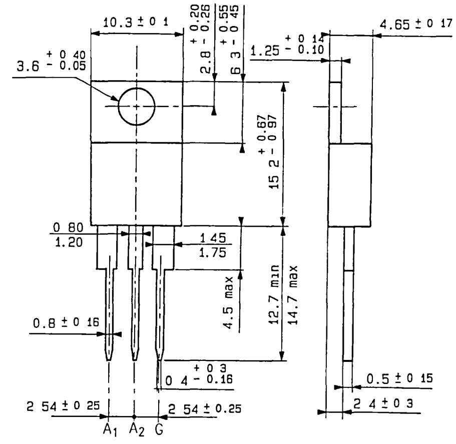


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

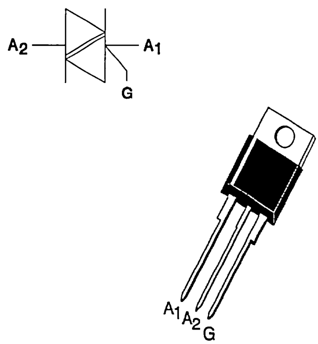
SGS-THOMSON MICROELECTRONICS

BTA08 B/C
BTB08 B/C

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 5 V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB08 B/C triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 75 °C	8	A
		BTB	Tc = 80 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	84	A
			tp = 10 ms	80	
I^2t	I^2t value		tp = 10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB08-... B/C				Unit
		400	**600**	**700**	**800**	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.2	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.4	

GATE CHARACTERISTICS (maximum values)

$P_{G (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					B	C	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	25	mA
			IV	MAX	100	50	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	20	mA
			II		70	35	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	25	mA
V_{TM} *	I_{TM}= 11A tp= 380µs	Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	0.5		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	100	V/µs
(dV/dt)c *	(dI/dt)c = 3.5A/ms	Tj=110°C		MIN	10	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	B	C
BTA (Insulated)	8	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

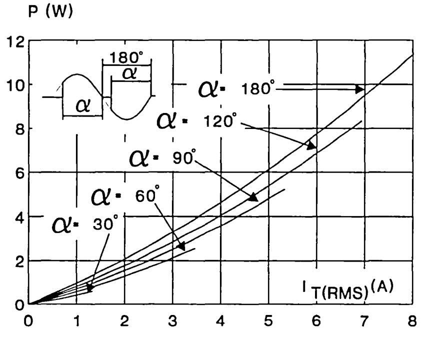


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

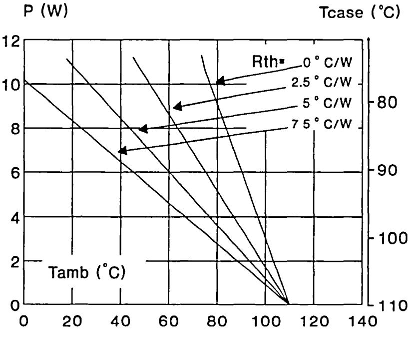


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

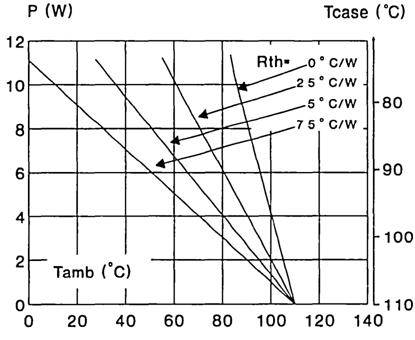


Fig.4 : RMS on-state current versus case temperature.

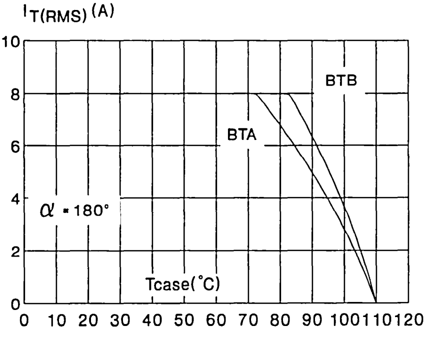


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

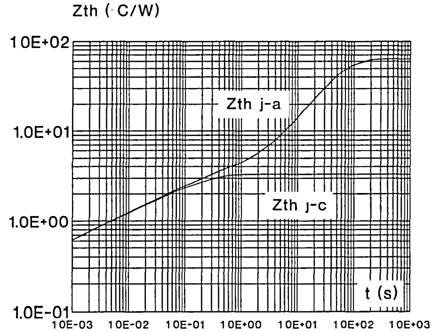


Fig.4 : Relative variation of gate trigger current and holding current versus junction temperature.

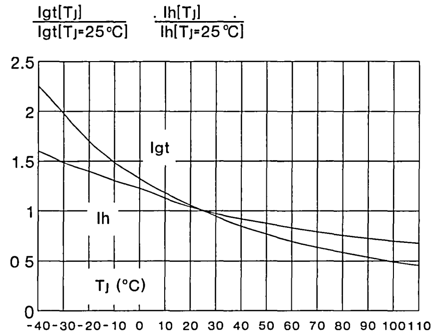


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

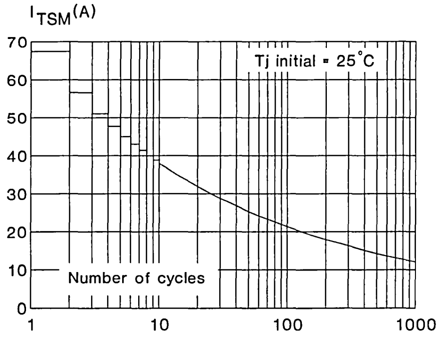


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

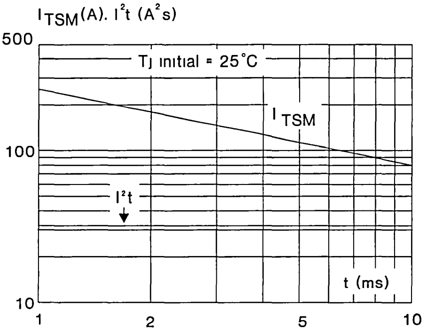
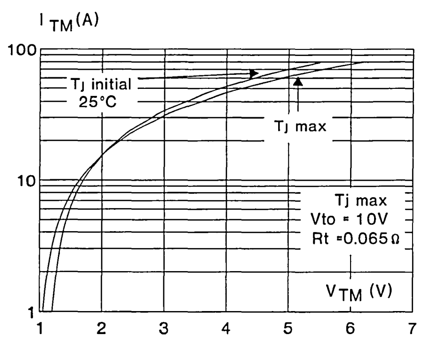
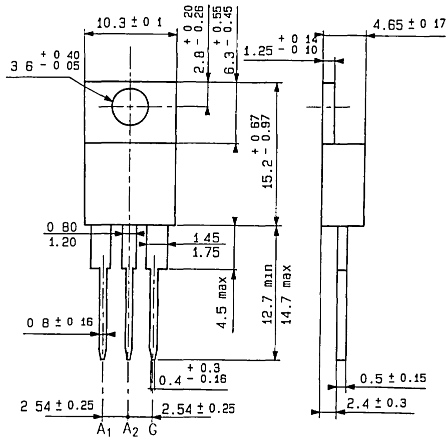


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

SGS-THOMSON
MICROELECTRONICS

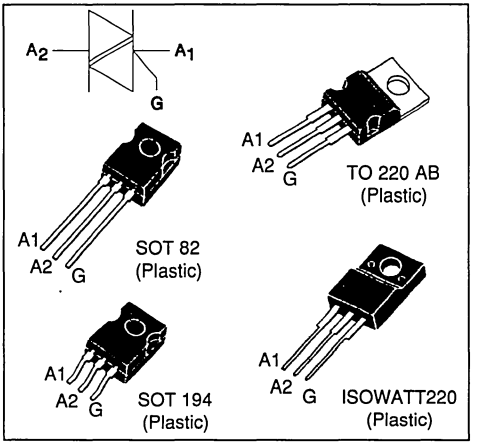
T810
T835

HIGH PERFORMANCE TRIACS

IN DEVELOPMENT

FEATURES

- I_{TRMS} = 8 A
- V_{DRM} = 400 V to 800 V
- SENSITIVE GATE : $I_{GT} \leq$ 10 mA
- HIGH COMMUTATION : (dI/dt)c > 7 A/ms without snubber



DESCRIPTION

The T810 / T835 high voltage TRIAC Families are high performance planar diffused PNPN devices glass passivated technology.
Packaged either in TO 220 AB, SOT 82, SOT 194 and ISOWATT220 these products are intented for all bi-directional switch applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	TO 220 AB SOT 194/SOT 82	Tc = 110 °C	8	A
		ISOWATT220	Tc = 100 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	65	A
			tp = 10 ms	60	
I^2t	I^2t value		tp = 10 ms	18	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 100mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 125 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	T810 or T835				Unit
		-400	-600	-700	-800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

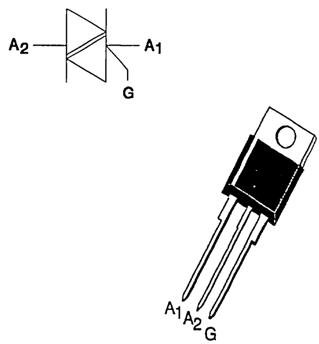
SGS-THOMSON
MICROELECTRONICS

BTA08 TW/SW
BTB08 TW/SW

LOGIC LEVEL TRIACS

FEATURES

- LOW I_{GT} = 5mA max
- LOW I_H = 15mA max
- HIGH EFFICIENCY SWITCHING
- BTA Family :
  INSULATING VOLTAGE = 2500V(RMS)
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB08 TW/SW use high performance products glass passivated chips.
The low I_{GT} / I_H level coupled with the high efficiency circuit make this family will adapted for low power trigger circuits (microcontrollers, microprocessors, integrated circuits ...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 75 °C	8	A
		BTB	Tc = 80 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	85	A
			tp = 10 ms	80	
I^2t	I^2t value		tp = 10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 100mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB08-			Unit
		400 TW/SW	600 TW/SW	700 TW/SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.0	°C/W
		BTB	3.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.0	°C/W
		BTB	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix TW	Suffix SW	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	5	10	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 90mA dI_G/dt = 0.8A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	8	15	mA
			II		15	25	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	15	25	mA
V_{TM} *	I_{TM}= 11A tp= 380µs	Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	1		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	20	50	V/µs
(dI/dt)c *	dV/dt= 0.1V/µs	Tj=110°C		MIN	3.5	4.5	A/ms
	dV/dt= 20V/µs			MIN	1.8	3.5	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	TW	SW
BTA (Insulated)	8	400	X	X
		600	X	X
		700	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

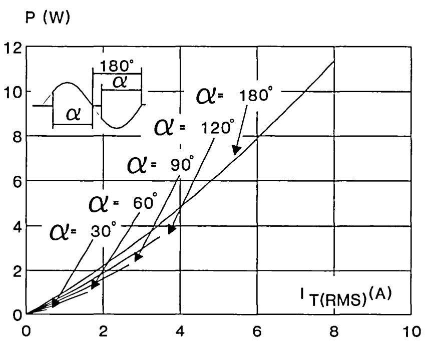


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

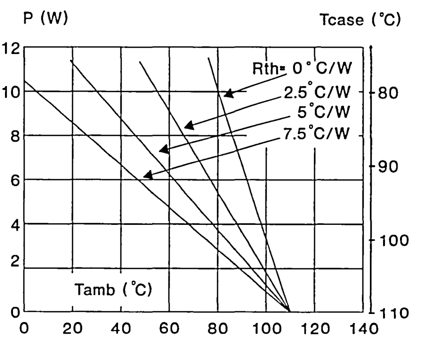


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

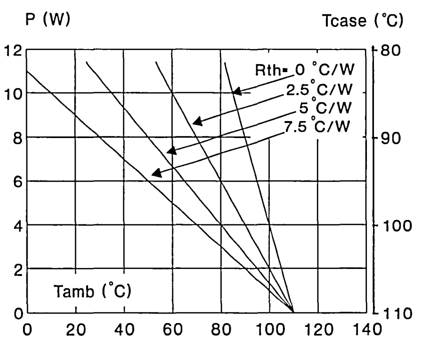


Fig.4 : RMS on-state current versus case temperature.

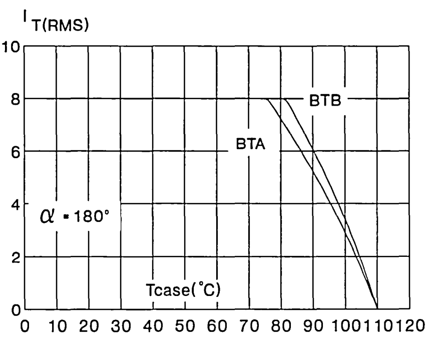


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

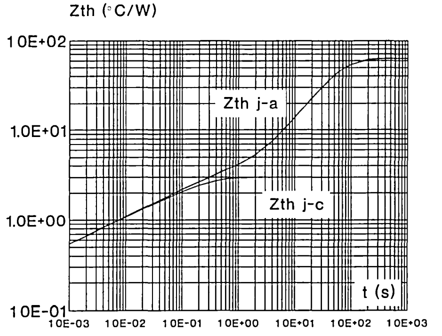


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

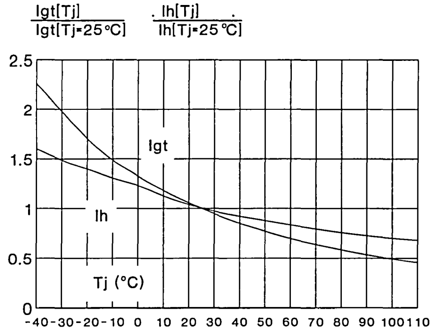


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

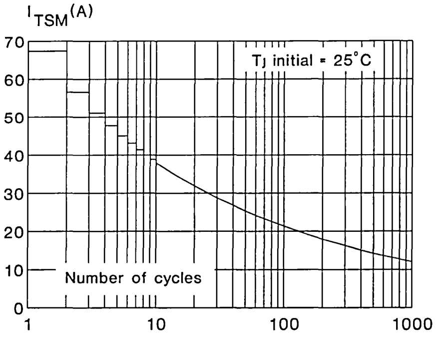


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10ms$, and corresponding value of I^2t.

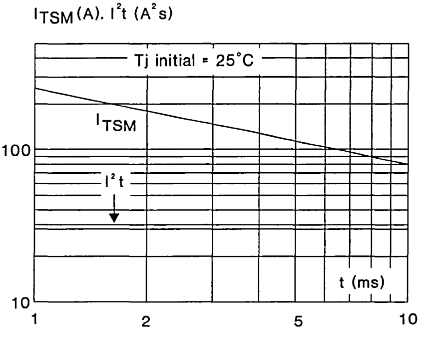


Fig.9 : On-state characteristics (maximum values).

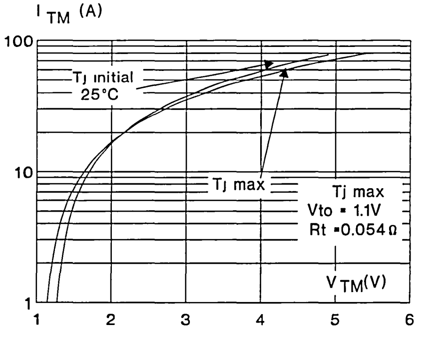
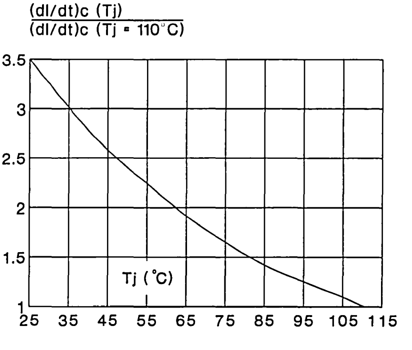
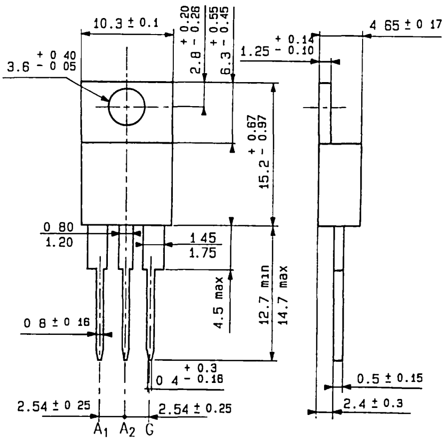


Fig.10 : Relative variation of (dI/dt)c versus junction temperature.



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



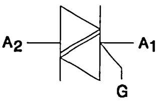
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

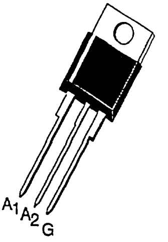
BTA08 BW/CW
BTB08 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 7A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 80A
- V_{DRM} UP TO 800V
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB08 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 90 °C	8	A
		BTB	Tc = 95 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	85	A
			tp = 10 ms	80	
I^2t	I^2t value		tp = 10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB08-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	4.4	°C/W
		BTB	3.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	3.3	°C/W
		BTB	2.5	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	CW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	35	mA
V_{TM} *	I_{TM}= 11A tp= 380µs	Tj=25°C		MAX	1.75		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	2		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	7	4.5	A/ms
				TYP	14	9	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	8	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

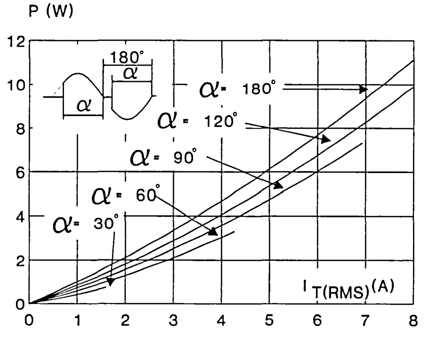


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

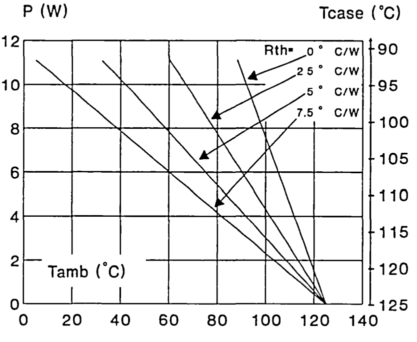


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

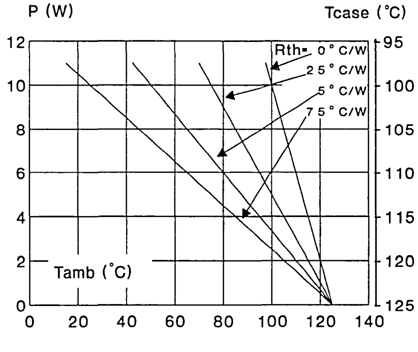


Fig.4 : RMS on-state current versus case temperature.

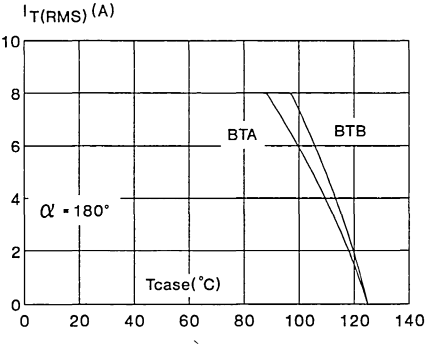


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA only version)

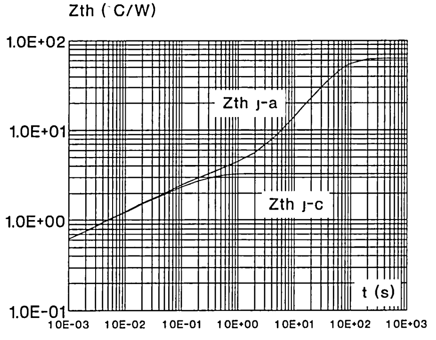


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

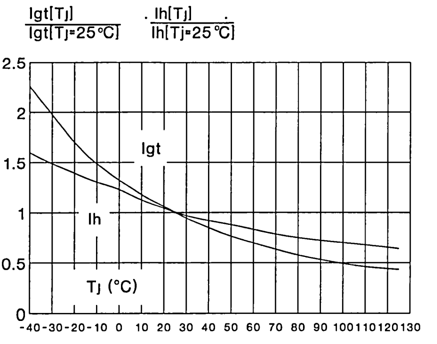


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

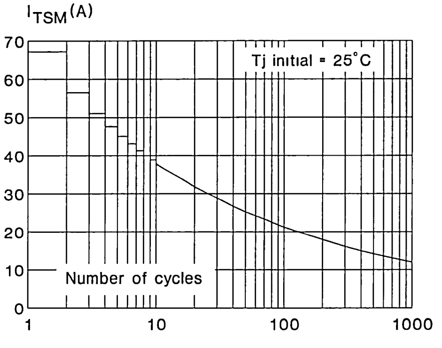


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

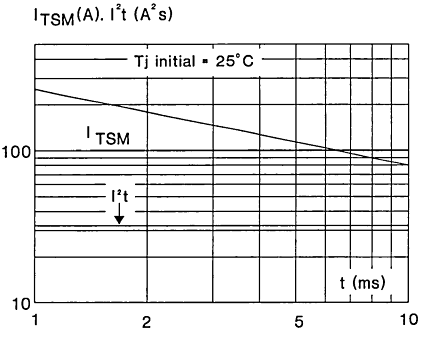
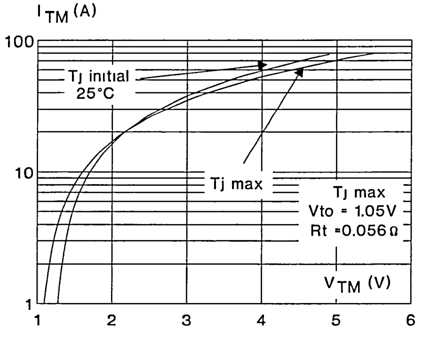
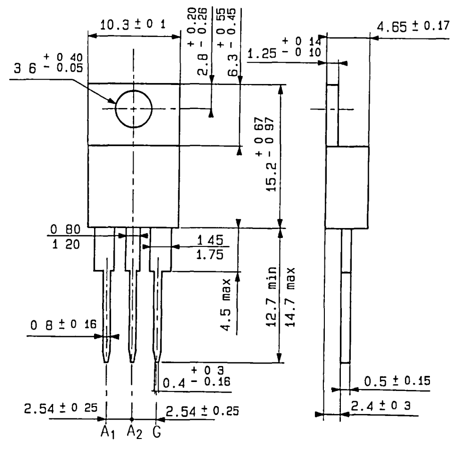


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

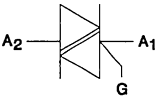
SGS-THOMSON MICROELECTRONICS

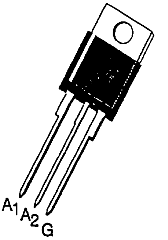
TXDV 408 ---> 808

ALTERNISTORS

FEATURES

- VERY HIGH COMMUTATION : > 28 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : E81734)
- dV/dt : 500 V/µs min





TO 220 AB
(Plastic)

DESCRIPTION

The TXDV 408 ---> 808 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	8	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	115	A
		tp = 8.3 ms	85	
		tp = 10 ms	80	
I^2t	I^2t value	tp = 10 ms	32	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1A di_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TXDV			Unit
		408	608	808	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	4	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 11A tp= 380µs	Tj=25°C		MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	2	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=110°C		MIN	7	A/ms
	(dV/dt)c = 10V/µs				28	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

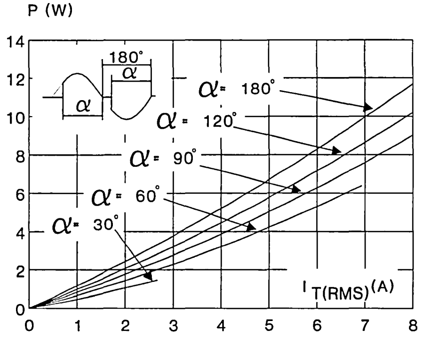


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

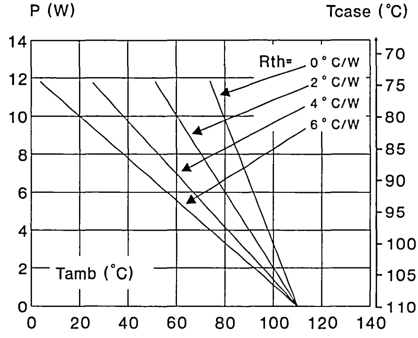


Fig.3 : RMS on-state current versus case temperature.

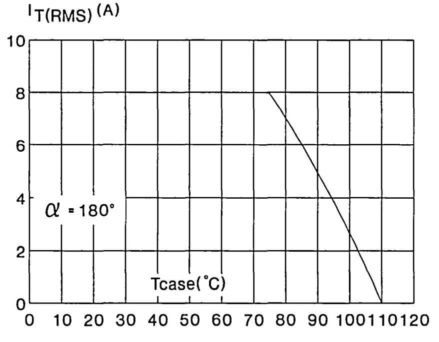


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

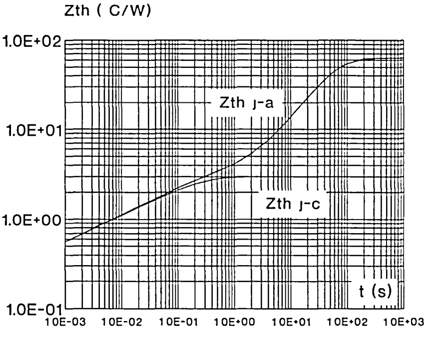


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

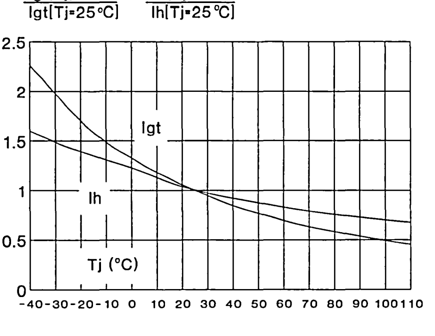


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

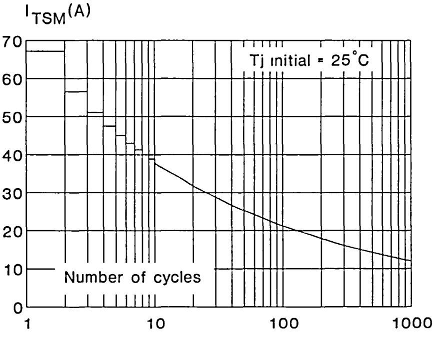


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

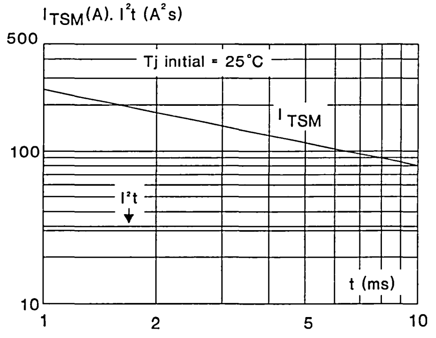


Fig.8 : On-state characteristics (maximum values).

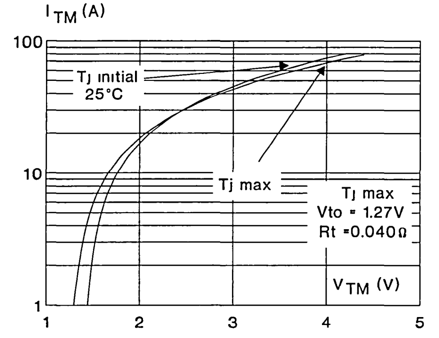
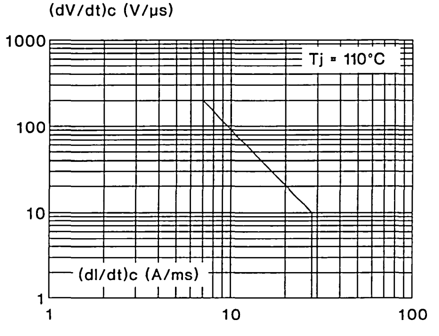
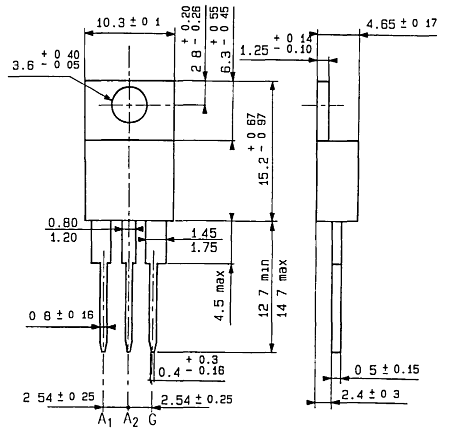


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g

AVS10

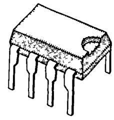
AUTOMATIC VOLTAGE SWITCH (SMPS < 300W)

CONTROLLER

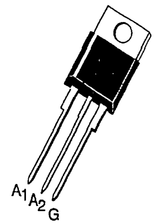
- 50/60Hz FULL COMPATIBILITY
- INTEGRATED VOLTAGE REGULATOR
- TRIGGERING PULSE TRAIN OF THE TRIAC
- PARASITIC FILTER
- LOW POWER CONSUMPTION

TRIAC

- HIGH EFFICIENCY AND SAFETY SWITCHING
- UNINSULATED PACKAGE : AVS10CB
- INSULATED PACKAGE 2500$V_{(RMS)}$: AVS10CBI
- $V_{DRM} = \pm 600V$
- $I_{T(RMS)}$: 8A



P
DIP8
(Plastic)



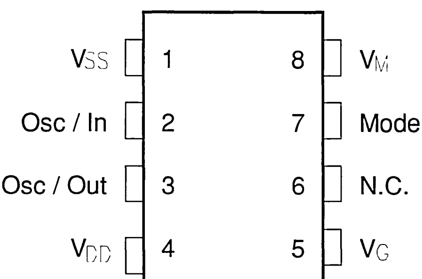
B
TO220AB
(Plastic)

DESCRIPTION

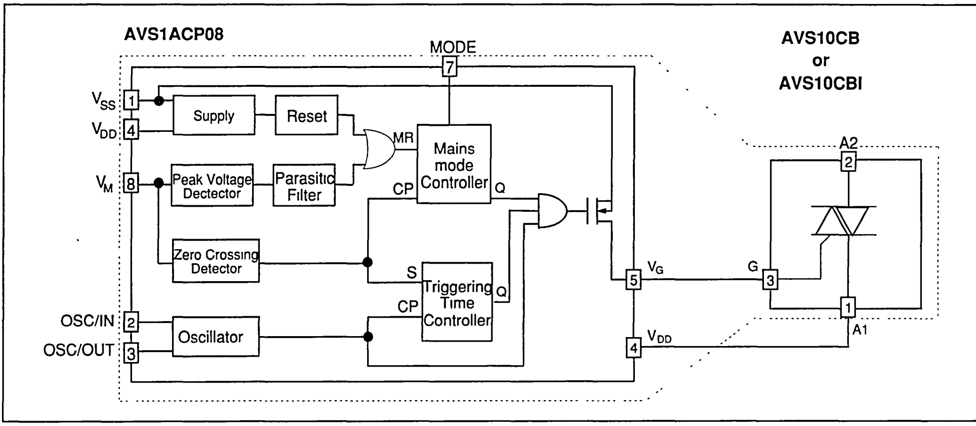
The AVS10 kit is an automatic mains selector (110/220V AC) to be used in SMPS < 300 W. It is composed of 2 devices :

- The **Controller** is optimized for low consumption and high security triggering of the triac. When connected to V_{SS}, the **mode** input activates an additional **option.** If the main power drops from 220V to 110V, the triac control remains locked to the 220V mode and avoids any high voltage spike when the voltage is restored to 220V.
  When connected to V_{DD}, the **mode** input desactivates this **option**.
- The TRIAC is specially designed for this application. An optimization between sensitivity and dynamic parameters of the triac gate highly reduces the losses of supply resistor and allows excellent immunity against disturbances.

PIN CONNECTION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

CONTROLLER AVS1ACP08

Symbol	Parameter	Value Min.	Value Max.	Unit
V_{SS}	Supply voltage	- 12	0.5	V
V_I / V_O	I / O voltage	V_{SS} - 0.5	0.5	V
I_I / I_O	I / O current	- 40	+ 40	mA
T_{stg}	Storage Temperature	- 60	+ 150	°C
T_{oper}	Operating Temperature code " C " " T "	0 - 40	+ 70 + 105	°C

TRIAC AVS10CB / AVS10CBI T_j = +25°C (unless otherwise specified)

Symbol	Parameter			Value	Unit
V_{DRM}	Repetitive peak off-state voltage (2)			± 600	V
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	AVS10CB	T_C = 80°C	8	A
		AVS10CBI	T_C = 70°C		
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)		t = 8.3ms t = 10ms	85 80	A
I^2t	I^2t value		t = 10ms	32	A^2s
dI/dt	Critical rate of rise of on-state current (1)		Repetitive F = 50Hz	20	A/µs
			Non Repetitive	100	
dv/dt *	Linear slope up to 0.67 V_{DRM} Gate open		T_j = 110°C	50	V/µs
T_{stg} T_j	Storage Temperature Operating Junction Temperature			- 40 + 150 0 + 110	°C

(1) Gate supply : IG = 100mA – dI/dt = 1A/µs
(2) T_j = 110°C

* For either polarity of electrode A2 voltage with reference to electrode A1

THERMAL RESISTANCES

TRIAC AVS10CB / AVS10CBI

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction-to-ambient		60	°C/W
Rth (j-c) DC	Junction-to-case for DC	AVS10CB	3.5	°C/W
		AVS10CBI	4.4	
Rth (j-c) AC	Junction-to-case for 360° conduction angle (F = 50Hz)	AVS10CB	2.6	°C/W
		AVS10CBI	3.3	

DC GENERAL ELECTRICAL CHARACTERISTICS

TRIAC AVS10CB / AVS10CBI

Symbol	Parameter		Value		Unit
			Min.	Max.	
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$ Pulse duration> 20µs	Tj = 110°C	0.2		V
V_{TM} *	$I_{TM} = 11A$ $t_p = 10ms$	Tj = 25°C		1.75	V
I_{DRM} *	V_{DRM} rated Gate open	Tj = 25°C		10	µA
		Tj = 110°C		500	

* For either polarity of electrode A2 voltage with reference to electrode A1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F = 60Hz).
(Curves are cut off by (dI/dt)c limitation)

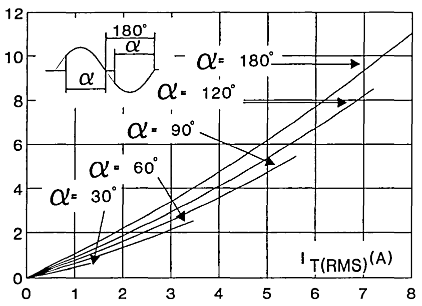


Fig. 2 : Correlation between maximum mean power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (AVS10CB).

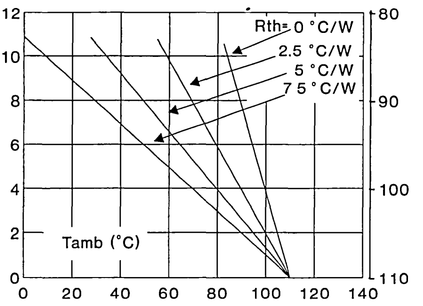


Fig. 3 : Correlation between maximum mean power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (AVS10CBI).

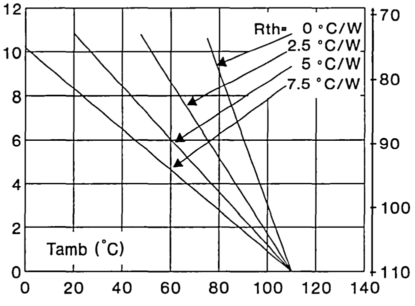


Fig. 4 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

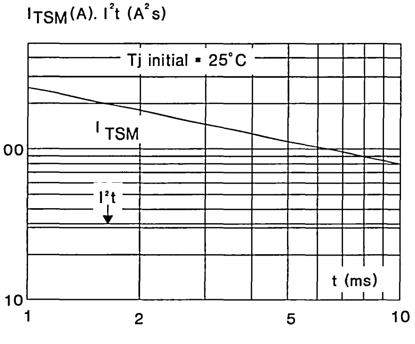
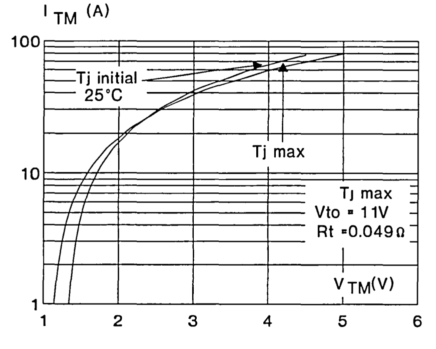


Fig. 5 : On-state characteristics (maximum values).



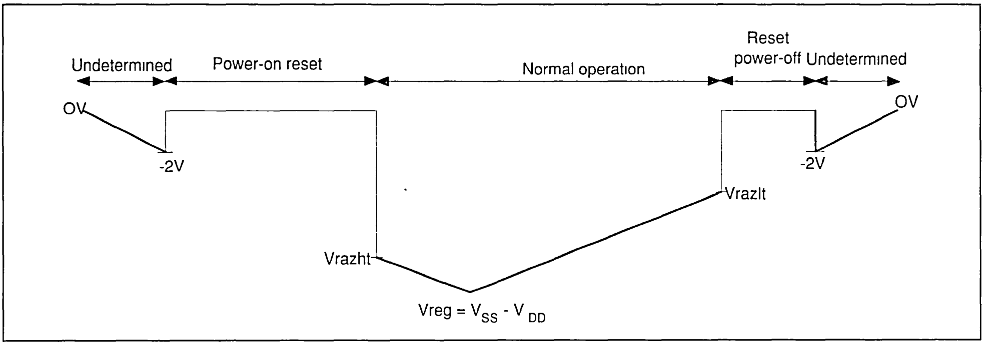
DC GENERAL ELECTRICAL CHARACTERISTICS (continued)

CONTROLLER AVS1ACP08 T_{oper} = 25°C (unless otherwise specified)

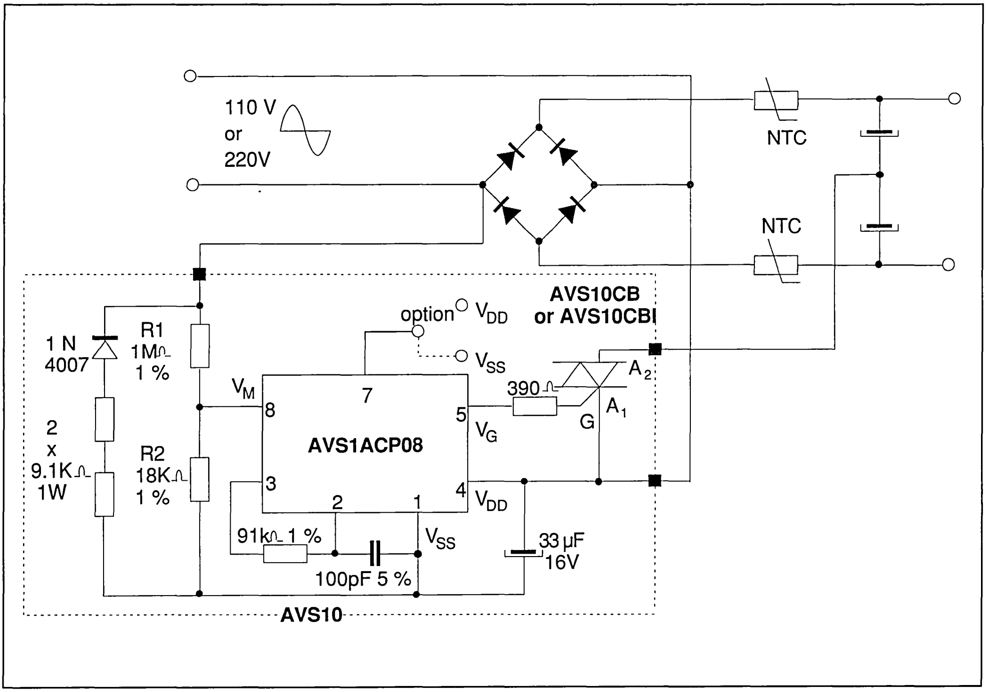
Symbol	Parameter	Value			Unit
		Min	Typ	Max	
V_{SS} (pin 1) (Vreg)	Shunt regulator	- 10	- 9	- 8	V
I_{SS} (pin 1) (Vreg) (@ V_{SS} = 9V)	Supply current	0.4		30	mA
I_{SS} (pin 1) (@ triac gate non connected)	Quiescent current			0.7	mA
f (pin 3) (@ R = 91kΩ) (C = 100pF)	Oscillator frequency	42	44	46	kHz
V_M (pin 8) Vth (3)	Peak voltage of detection high-threshold	4.08	4.25	4.42	V
V_M (pin 8) Vh (3)	Peak voltage of detection hysteresis	0.370	0.4	0.420	V
(1) V_M (pin 8) Vth (3)	Zero-crossing detection high-threshold	95	110	125	mV
V_M (pin 8) Vh (3)	Zero-crossing detection hysteresis	20	30	40	mV
(2) Vrazht (4)	Power-on-reset activation threshold		Vreg x 0.89		
(2) Vrazlt (4)	Power-down-reset activation threshold		Vreg x 0.55		
Mode (pin 7)	V_{IL} (4) V_{IH} (4)	 0.7 Vreg		0.3 Vreg 	
V_G (pin 5)	V_{OL} (I_{VG} = 25mA) Leakage current (V_G = V_{DD})			650 + 10	mV µA

NOTES :
(1) : This value gives a typical noise immunity on the zero-crossing detectionof 110mV x 1018/18 = 6.20V on the main supply
(2) . See following diagram
(3) : Voltage referred to VSS
(4) : Voltage referred to VDD

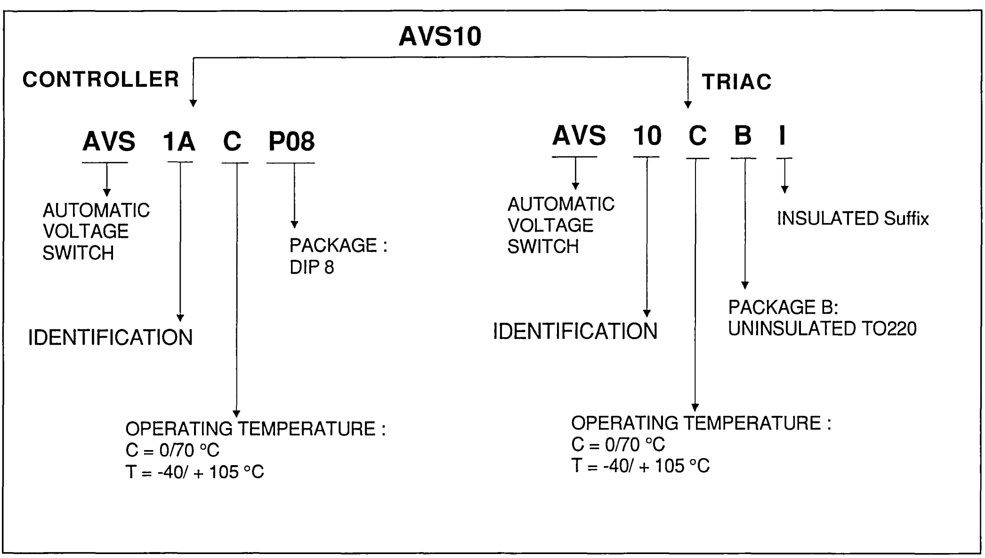
POWER-ON AND POWER-OFF RESET BEHAVIOUR



TYPICAL APPLICATION



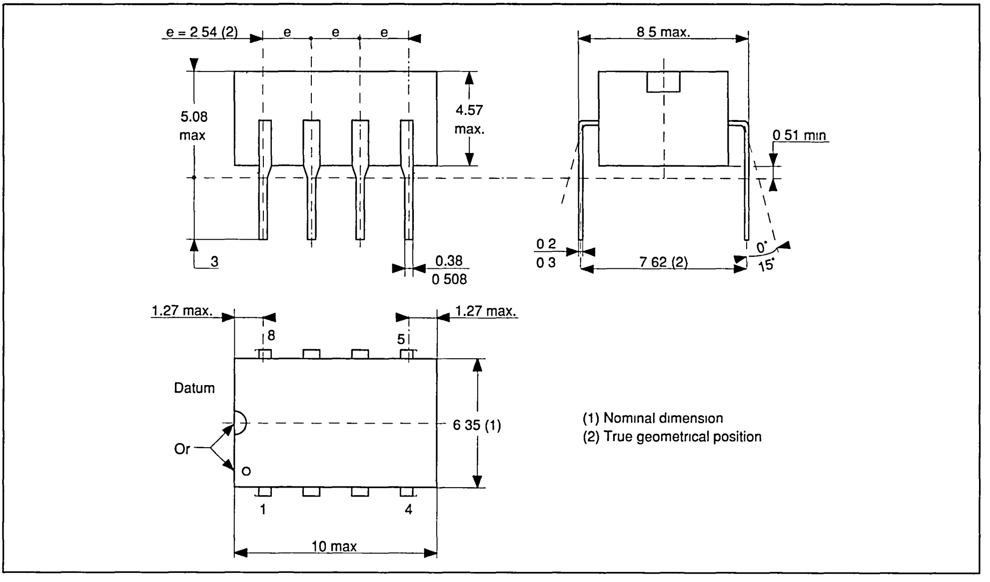
ORDERING INFORMATION



PACKAGE MECHANICAL DATA

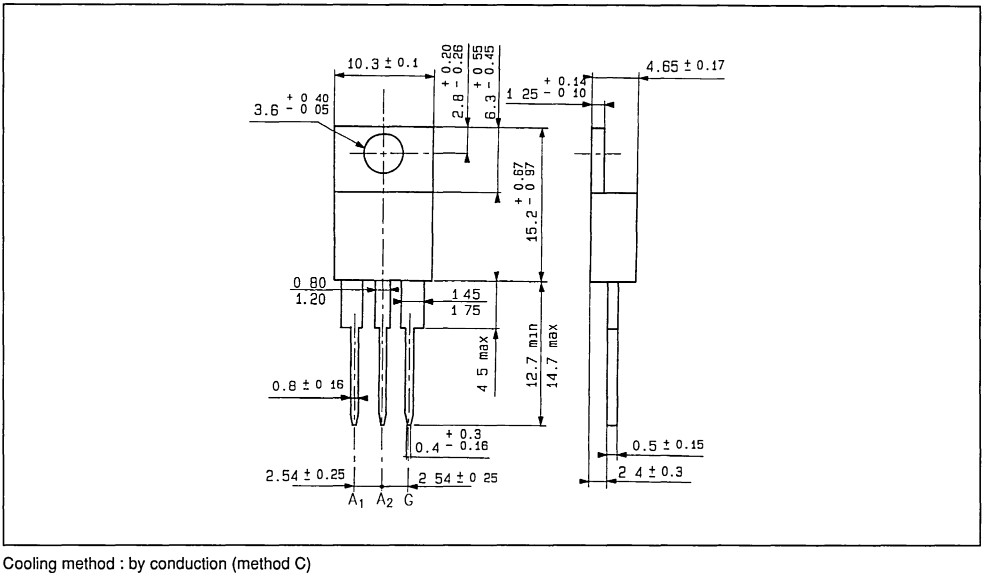
8 PINS - PLASTIC DIP

CONTROLLER



TO220AB (Plastic) (in millimeters)

TRIAC



Cooling method : by conduction (method C)
Marking : Type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TRIAC 10 A FAMILY

SNUBBERLESS "H.C.T."						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA10-xxx BW	BTB10-xxx BW	50	50	50	400 to 800	TO220AB
BTA10-xxx CW	BTB10-xxx CW	35	35	35	400 to 800	TO220AB

STANDARD							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA10-xxx B	BTB10-xxx B	50	50	50	100	400 to 800	TO220AB
BTA10-xxx C	BTB10-xxx C	25	25	25	50	400 to 800	TO220AB

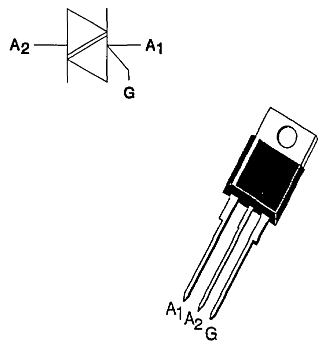
LIGHT DIMMERS							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA10-xxx GP		50	50	50	75	400 to 600	TO220AB

BTA10 B/C
BTB10 B/C

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 5 V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB10 B/C triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 75 °C	10	A
		BTB	Tc = 80 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	105	A
			tp = 10 ms	100	
I^2t	I^2t value		tp = 10 ms	50	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA di_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB10-... B/C				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.9	°C/W
		BTB	3.1	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.9	°C/W
		BTB	2.3	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix B	Suffix C	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	25	mA
			IV	MAX	100	50	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	20	mA
			II		70	35	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	25	mA
V_{TM} *	I_{TM}= 14A tp= 380µs	Tj=25°C		MAX	1.5		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	0.5		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	100	V/µs
(dV/dt)c *	(dI/dt)c = 4.4A/ms	Tj=110°C		MIN	10	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	B	C
BTA (Insulated)	10	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

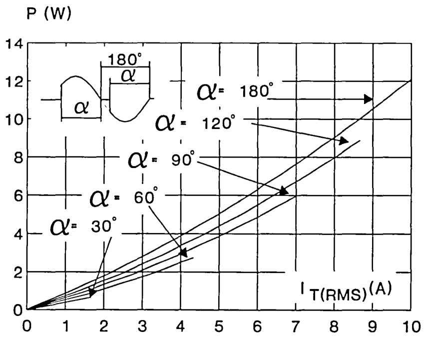


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

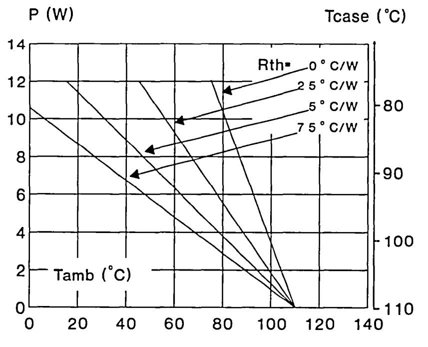


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

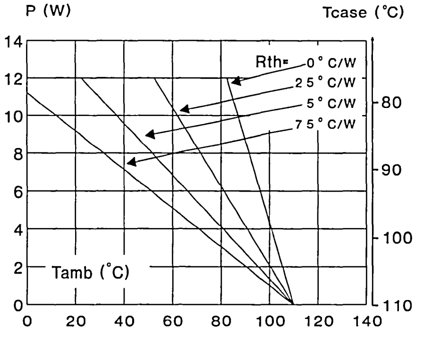


Fig.4 : RMS on-state current versus case temperature.

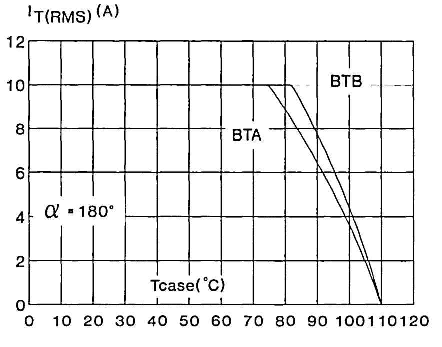


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

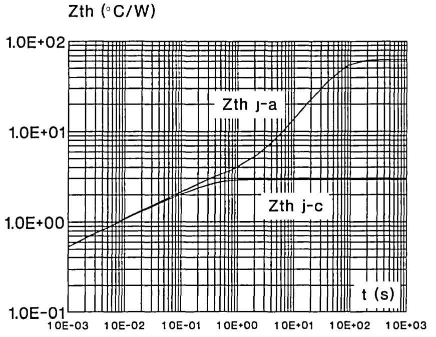


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

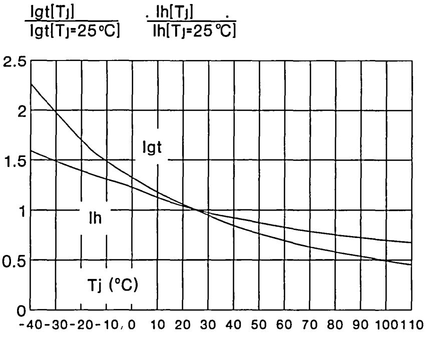


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

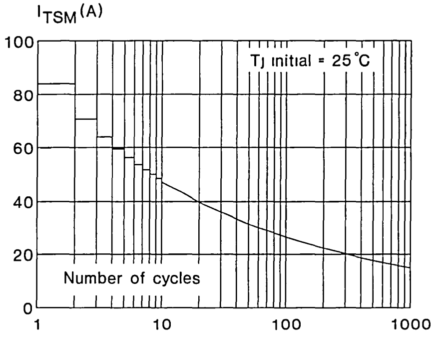


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

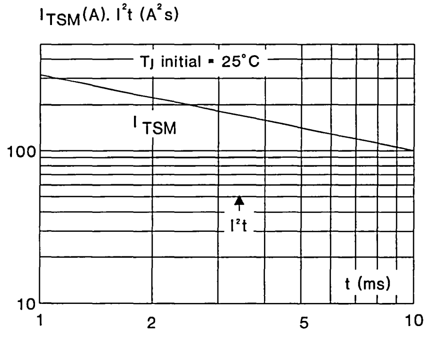
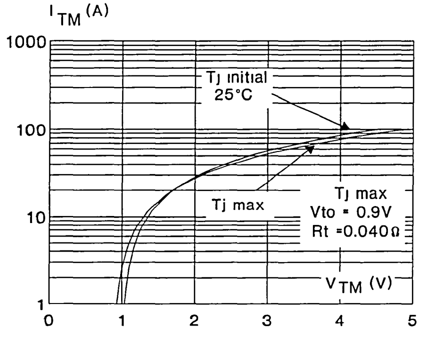
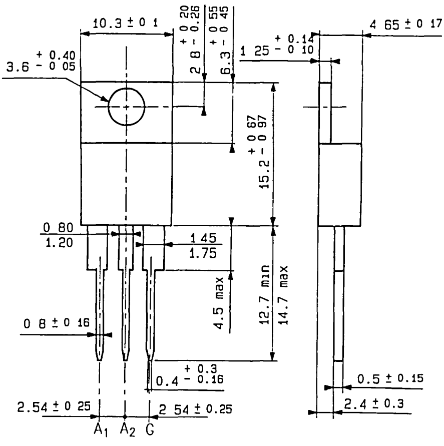


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB   Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

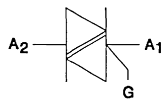
SGS-THOMSON MICROELECTRONICS

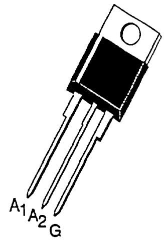
BTA10 BW/CW
BTB10 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 9A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 100A
- V_{DRM} UP TO 800V
- BTA Family :
  INSULATING VOLTAGE = 2500$V_{(RMS)}$
  (UL RECOGNIZED : E81734)





TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB10 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 90 °C	10	A
		BTB	Tc = 100 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	105	A
			tp = 10 ms	100	
I^2t	I^2t value		tp = 10 ms	50	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB10-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5	°C/W
		BTB	2.0	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	CW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	35	mA
V_{TM} *	I_{TM}= 14A tp= 380µs	Tj=25°C		MAX	1.65		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	2		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	9	5.5	A/ms
				TYP	18	11	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	10	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

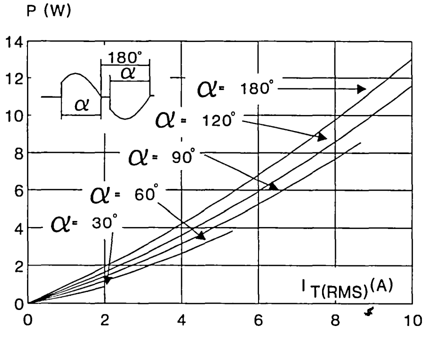


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

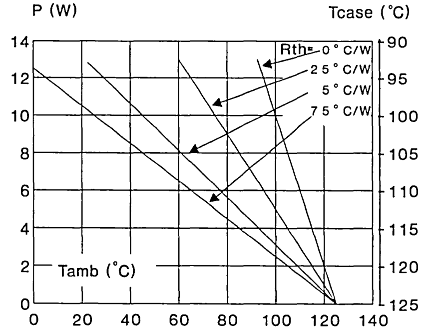


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

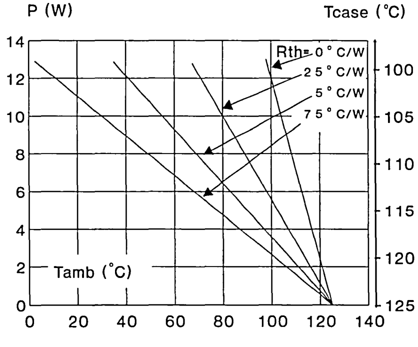


Fig.4 : RMS on-state current versus case temperature.

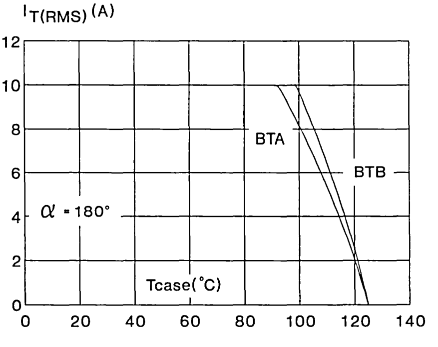


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration. (Zth j-c : BTA version only)

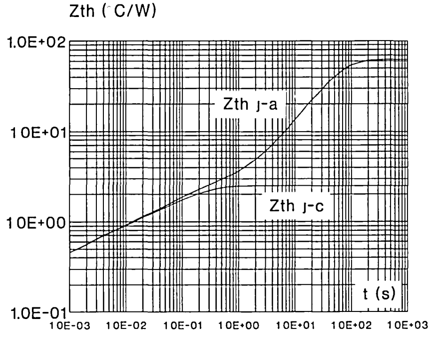


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

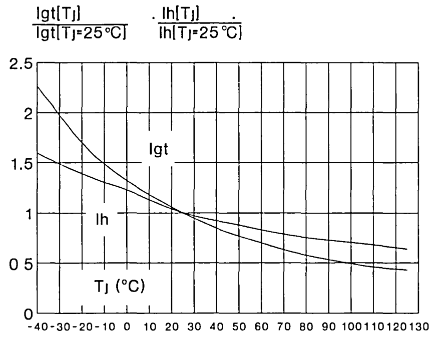


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

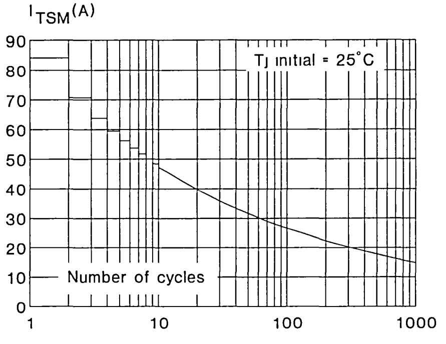


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

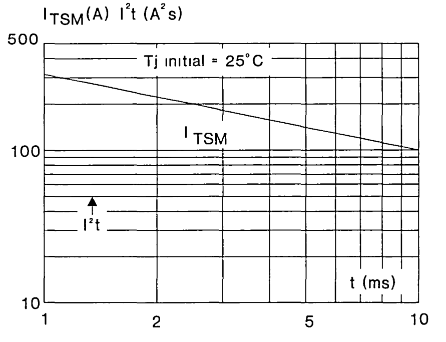
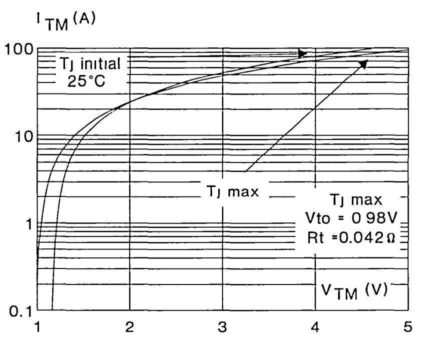
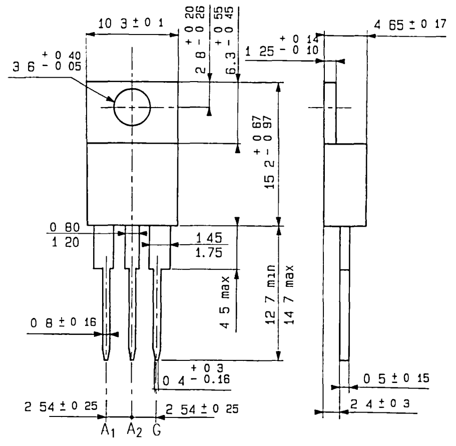


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

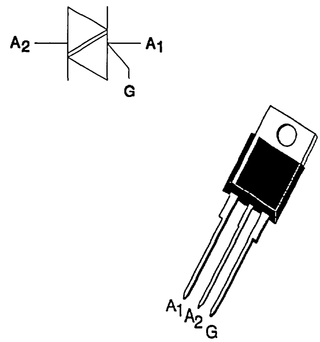
SGS-THOMSON MICROELECTRONICS

BTA10 GP

TRIACS

FEATURES

- LOW I_H = 13mA max
- HIGH SURGE CURRENT : I_{TSM} = 120A
- I_{GT} SPECIFIED IN FOUR QUADRANTS
- INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA10 GP's use high performance, glass passivated chips.
The insulated TO 220 AB package, the high surge current and low holding current make this family well adapted to LIGHT DIMMER applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	10	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	126	A
		tp = 10 ms	120	
I^2t	I^2t value	tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTA10-		Unit
		400 GP	600 GP	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	4	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix GP	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	mA
			IV	MAX	75	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	20	mA
			II		40	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	13	mA
V_{TM} *	I_{TM}= 14A tp= 380µs	Tj=25°C		MAX	1.5	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	0.5	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	30	V/µs
				TYP	100	
(dV/dt)c *	(dI/dt)c= 2.2A/ms	Tj=110°C		MIN	1	V/µs
				TYP	10	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

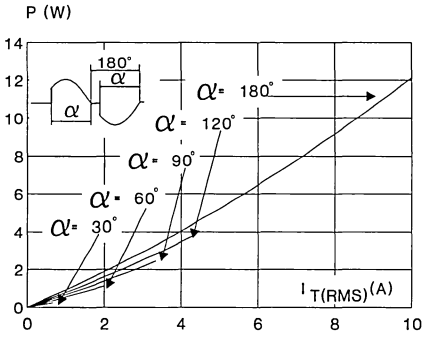


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

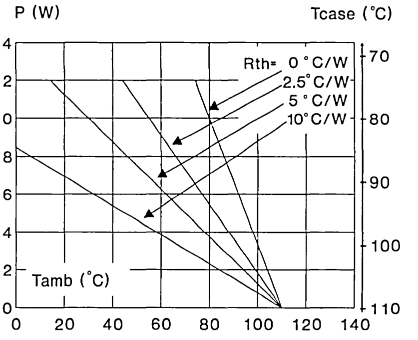


Fig.3 : RMS on-state current versus case temperature.

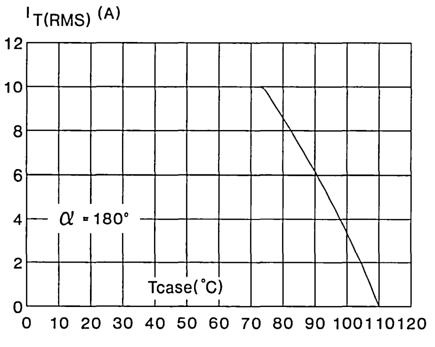


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

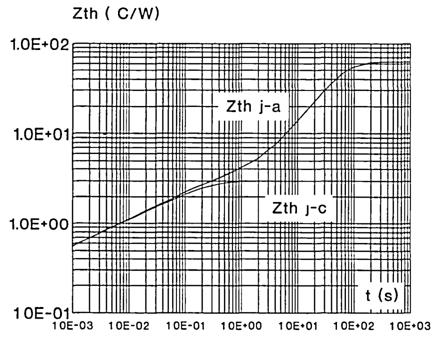


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

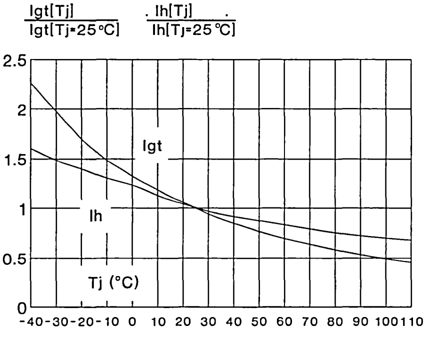


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

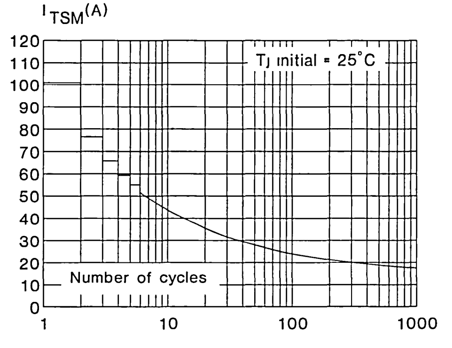


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding values of I^2t.

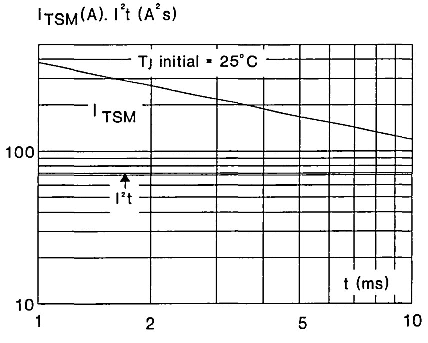
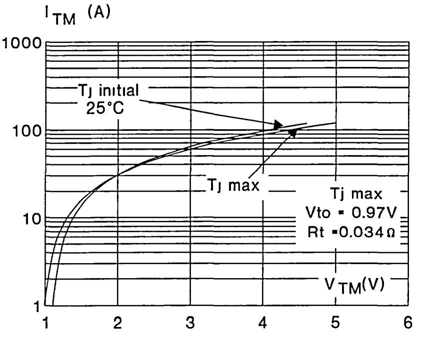
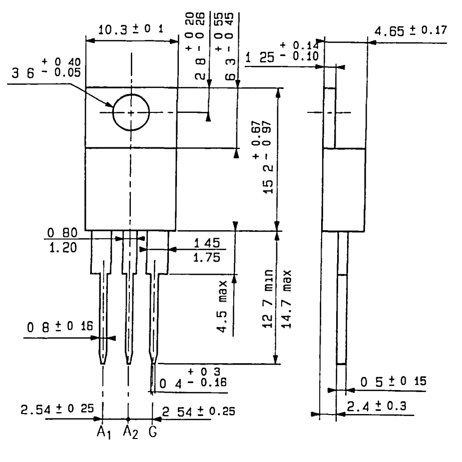


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

TRIAC 12 A FAMILY

SNUBBERLESS "H.C.T."						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA12-xxx BW	BTB12-xxx BW	50	50	50	400 to 800	TO220AB
BTA12-xxx CW	BTB12-xxx CW	35	35	35	400 to 800	TO220AB

LOGIC LEVEL "H.C.T."						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA12-xxx SW	BTB12-xxx SW	10	10	10	400 to 700	TO220AB

STANDARD							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA12-xxx B	BTB12-xxx B	50	50	50	100	400 to 800	TO220AB
BTA12-xxx C	BTB12-xxx C	25	25	25	50	400 to 800	TO220AB

ALTERNISTORS						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
TXDV x12		100	100	100	400 to 800	TO220AB

DEDICATED DEVICES							
INSULATED	UNINSULATED	AUTOMATIC VOLTAGE SWITCH				V_{RRM} Range (V)	PACKAGE
	AVS12-CB					600	TO220AB

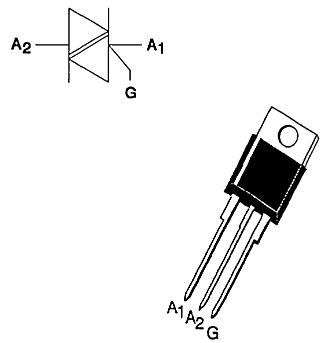
SGS-THOMSON MICROELECTRONICS

BTA12 B/C
BTB12 B/C

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 5 V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB12 B/C triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 75 °C	12	A
		BTB	Tc = 80 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	125	A
			tp = 10 ms	120	
I^2t	I^2t value		tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB12-... B/C				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5	°C/W
		BTB	2.0	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix B	Suffix C	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	25	mA
			IV	MAX	100	50	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	20	mA
			II		70	35	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	25	mA
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj=25°C		MAX	1.5		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=110°C		MAX	0.5		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	100	V/µs
(dV/dt)c *	(dI/dt)c = 5.3A/ms	Tj=110°C		MIN	10	5	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	B	C
BTA (Insulated)	12	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

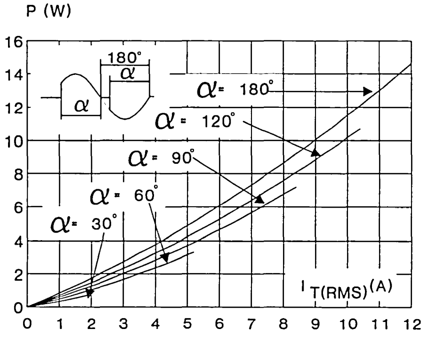


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

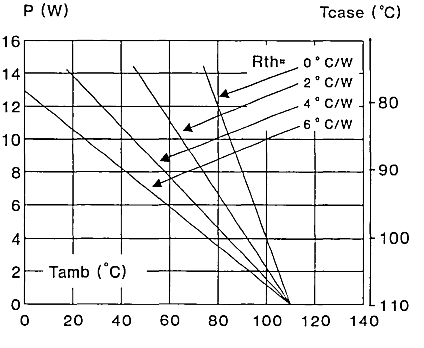


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

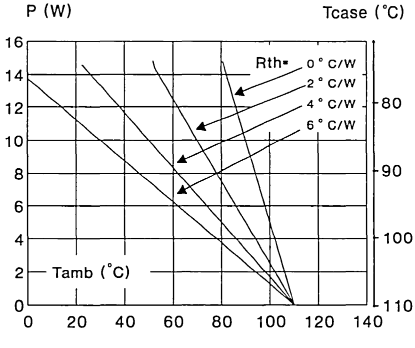


Fig.4 : RMS on-state current versus case temperature.

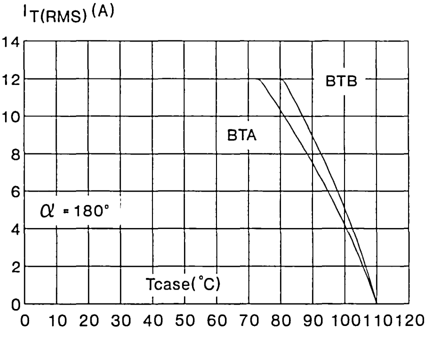


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

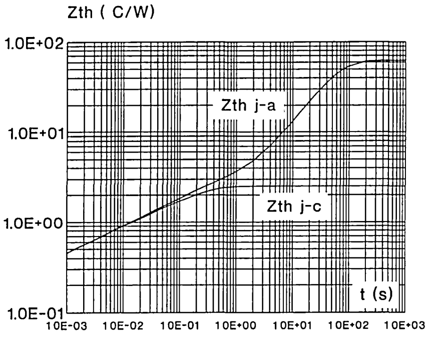


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

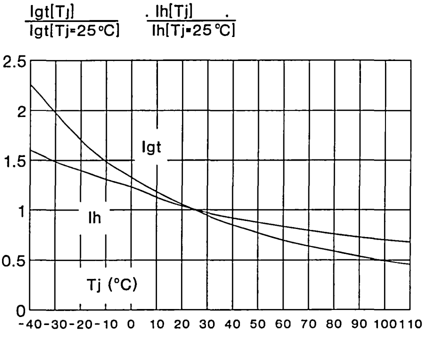


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

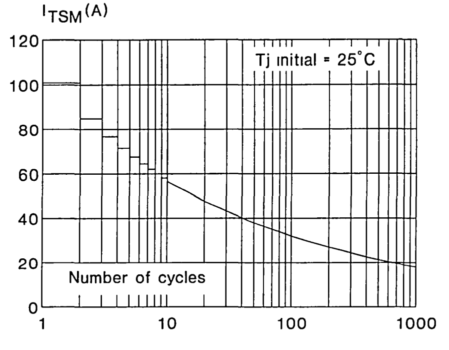


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

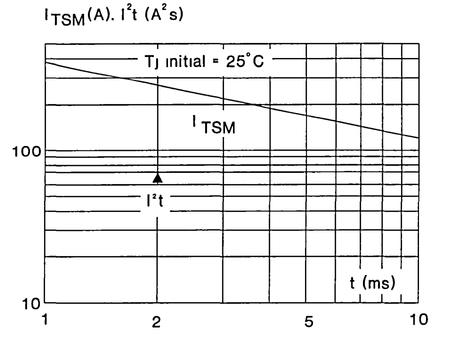
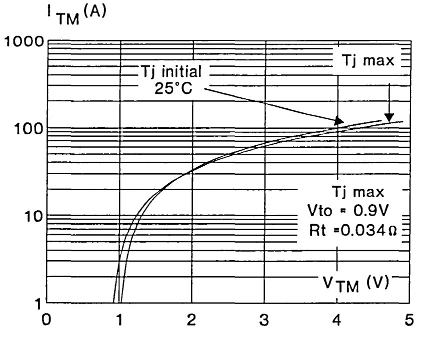


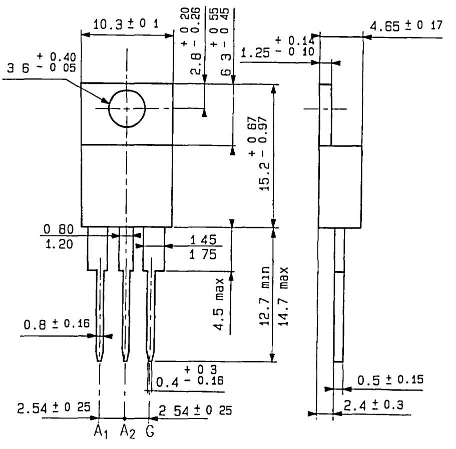
Fig.9 : On-state characteristics (maximum values).



SGS-THOMSON
MICROELECTRONICS

PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB   Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity N A

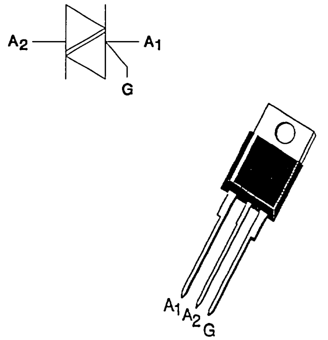
SGS-THOMSON MICROELECTRONICS

BTA12 SW
BTB12 SW

LOGIC LEVEL TRIACS

FEATURES

- LOW I_{GT} = 10mA max
- HIGH EFFICIENCY SWITCHING ON COMMUTATION
- BTA Family : INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB12 SW Triac family are high performance products glass passivated PNPN devices. These parts are suited for low power trigger circuit (integrated circuits, microcontroller, microprocessors.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 70 °C	12	A
		BTB	Tc = 75 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	126	A
			tp = 10 ms	120	
I^2t	I^2t value		tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 100mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB12-			Unit
		400 SW	600 SW	700 SW	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5	°C/W
		BTB	2	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix SW	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	10	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 40mA dI_G/dt = 0.5A/µs	Tj=25°C	I-II-III	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	15	mA
			II		25	
I_H *	I_T= 100mA gate open	Tj=25°C		MAX	25	mA
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj=25°C		MAX	1.75	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	1	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	50	V/µs
(dI/dt)c *	dV/dt= 0.1V/µs	Tj=110°C		MIN	5.3	A/ms
	dV/dt= 20V/µs			MIN	3.5	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

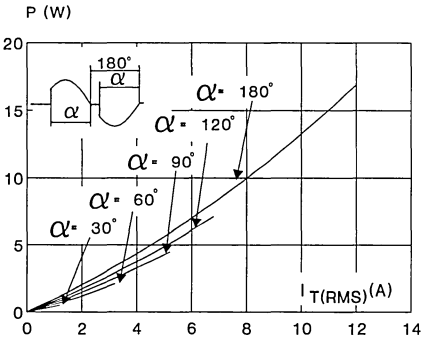


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

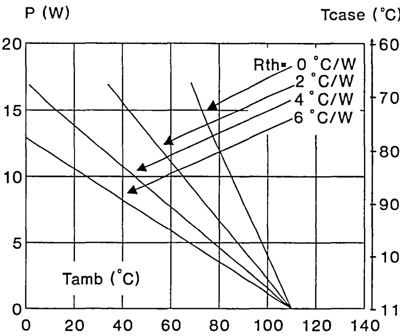


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

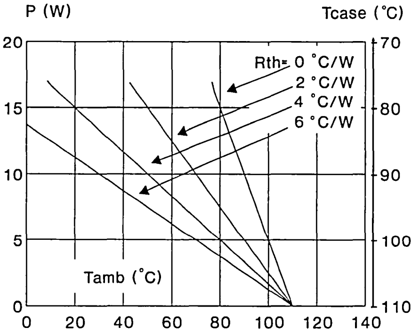


Fig.4 : RMS on-state current versus case temperature.

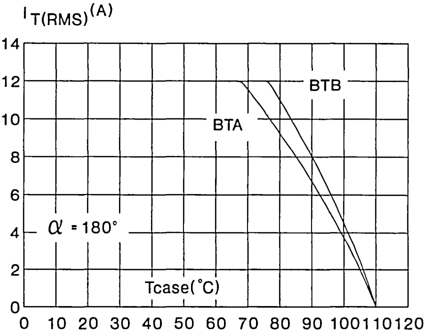


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

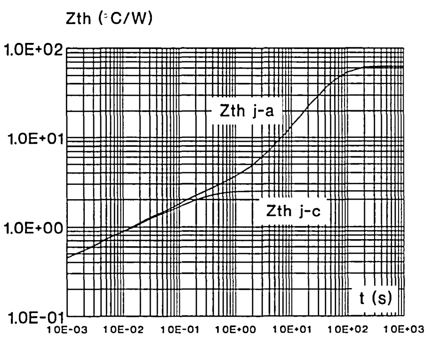


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

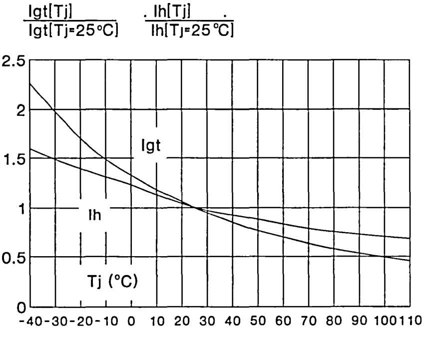


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

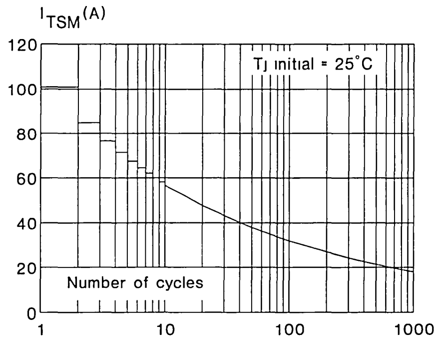


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

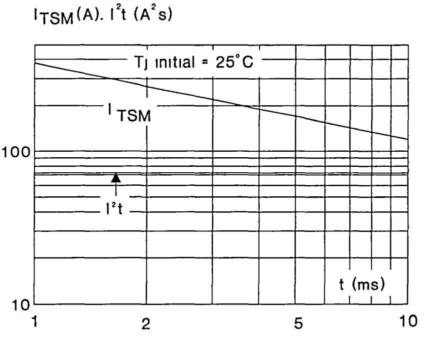


Fig.9 : On-state characteristics (maximum values).

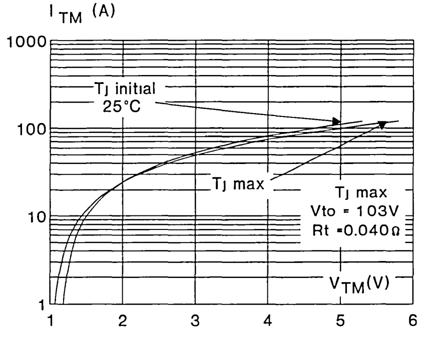
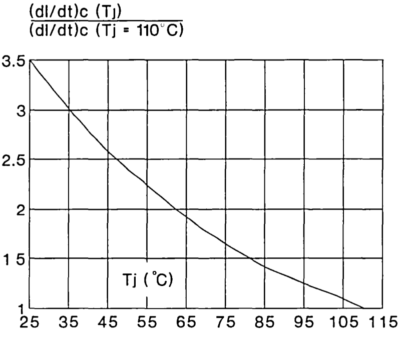
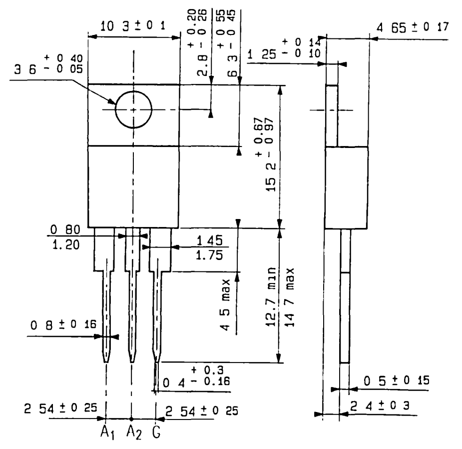


Fig.10 : Relative variation of (dI/dt)c versus junction temperature.



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

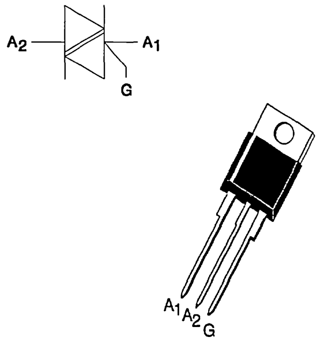
SGS-THOMSON
MICROELECTRONICS

BTA12 BW/CW
BTB12 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 12A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 120A
- V_{DRM} UP TO 800V
- BTA Family : INSULATING VOLTAGE = 2500$V_{(RMS)}$ (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB12 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 85 °C	12	A
		BTB	Tc = 95 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	126	A
			tp = 10 ms	120	
I^2t	I^2t value		tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA di_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB12-... BW/CW				Unit
		400	**600**	**700**	**800**	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.3	°C/W
		BTB	2.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.5	°C/W
		BTB	2.0	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	CW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	35	mA
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj=25°C		MAX	1.60		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	2		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	12	6.5	A/ms
				TYP	24	13	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	12	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

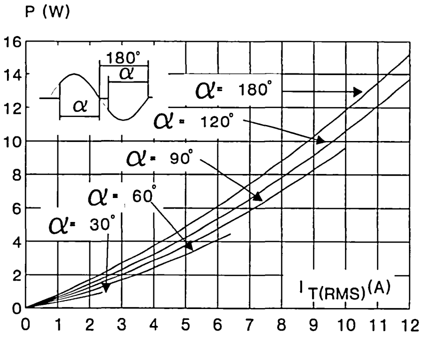


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

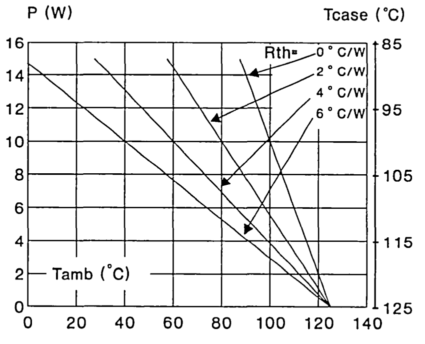


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

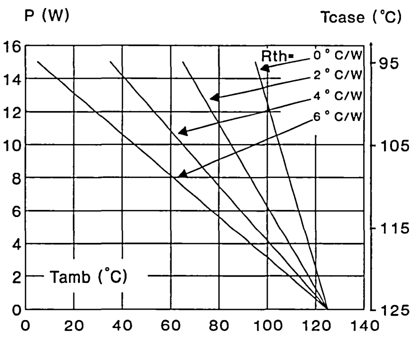


Fig.4 : RMS on-state current versus case temperature.

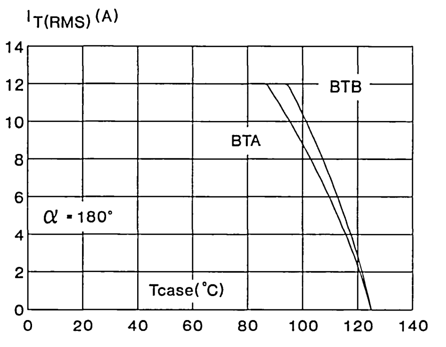


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

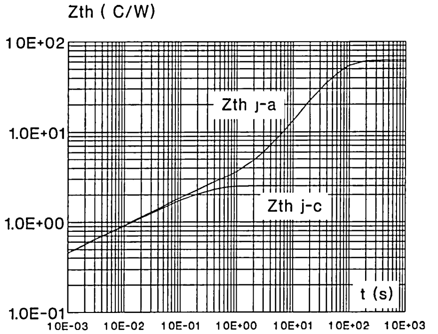


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

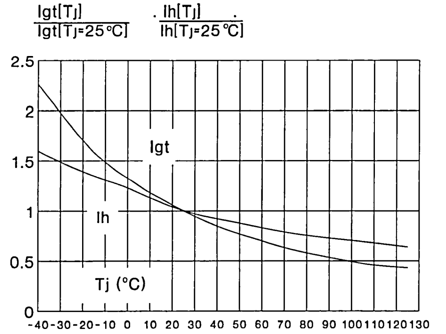


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

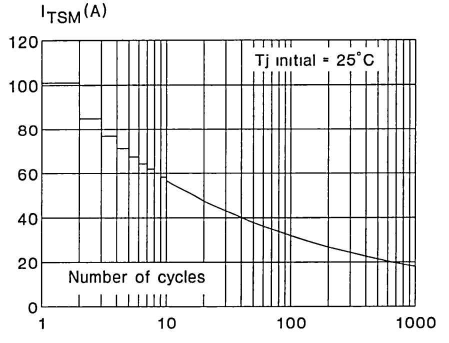


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

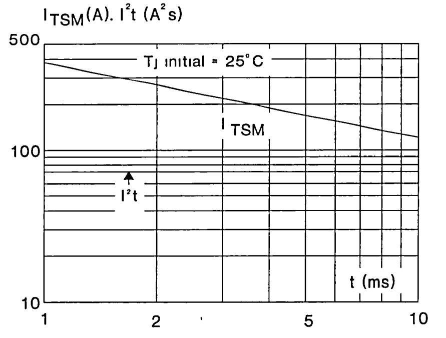
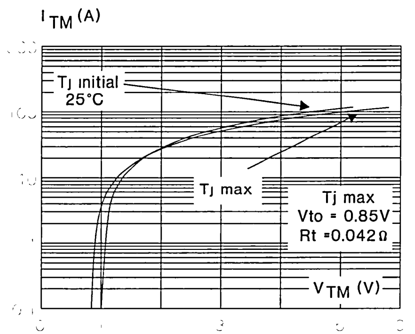
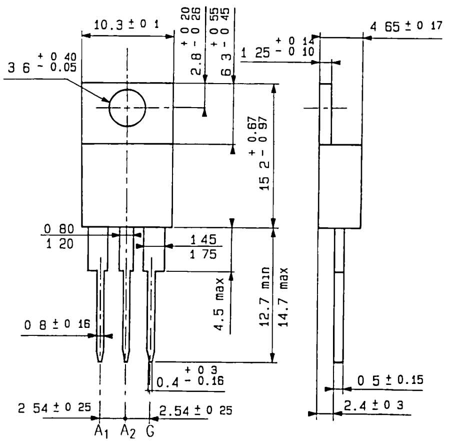


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB   Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

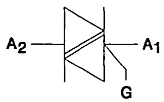
SGS-THOMSON MICROELECTRONICS

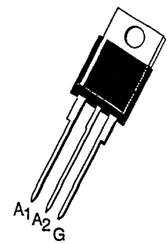
TXDV 412 ---> 812

ALTERNISTORS

FEATURES

- VERY HIGH COMMUTATION : > 42.5 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V(RMS) (UL RECOGNIZED : E81734)
- dV/dt : 500 V/µs min





TO 220 AB
(Plastic)

DESCRIPTION

The TXDV 412 ---> 812 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	12	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	170	A
		tp = 8.3 ms	125	
		tp = 10 ms	120	
I^2t	I^2t value	tp = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1A di_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TXDV			Unit
		412	612	812	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 17A tp= 380µs	Tj=25°C		MAX	1.95	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=110°C		MAX	2	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=110°C		MIN	10	A/ms
	(dV/dt)c = 10V/µs				42.5	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

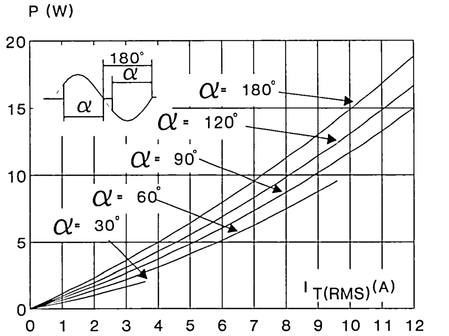


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

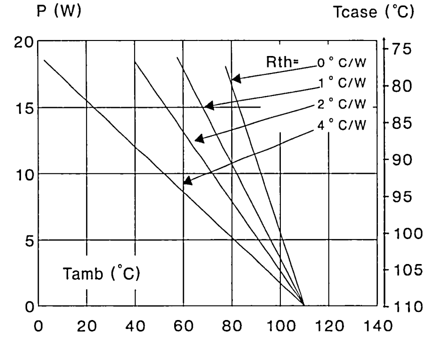


Fig.3 : RMS on-state current versus case temperature.

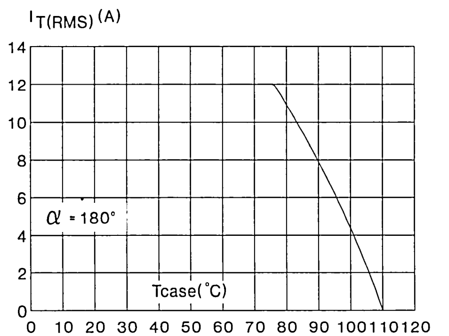


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

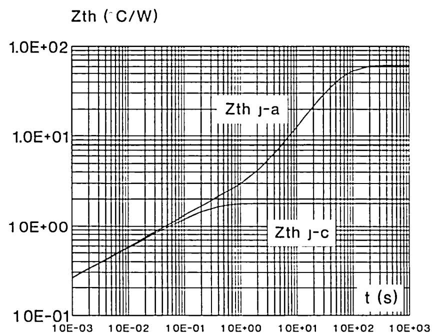


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

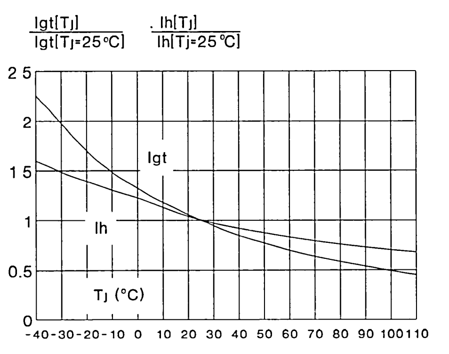


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

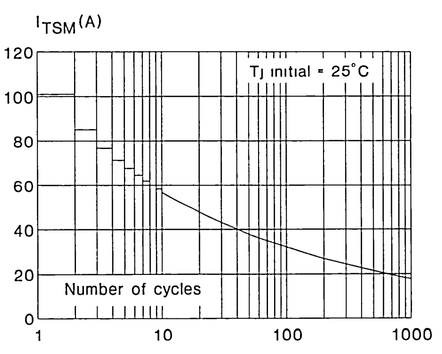


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

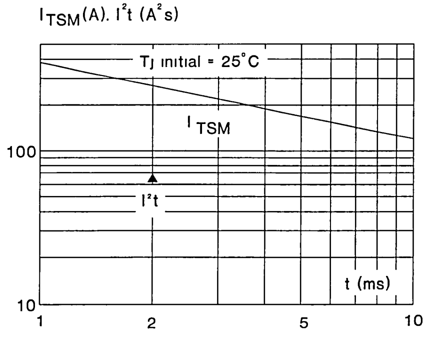


Fig.8 : On-state characteristics (maximum values).

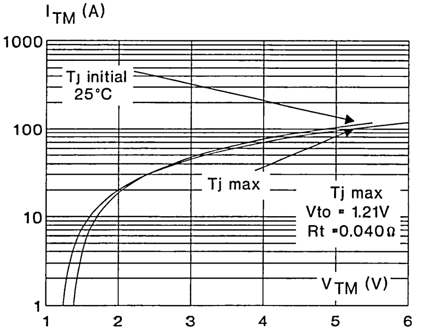
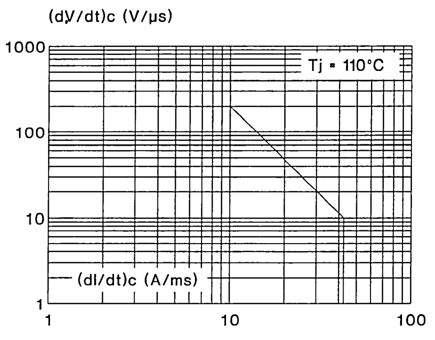
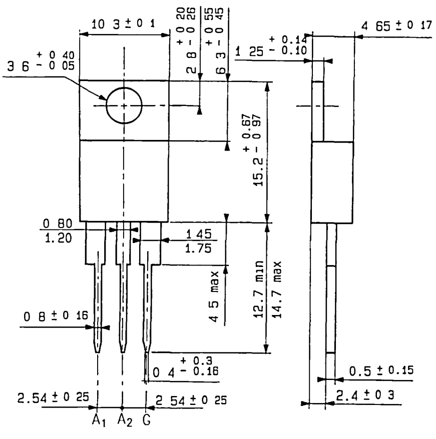


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic

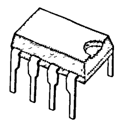


Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g

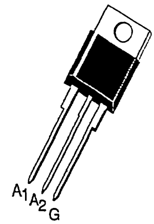
AUTOMATIC VOLTAGE SWITCH (SMPS < 500W)

CONTROLLER
- 50/60Hz FULL COMPATIBILITY
- INTEGRATED VOLTAGE REGULATOR
- TRIGGERING PULSE TRAIN OF THE TRIAC
- PARASITIC FILTER
- LOW POWER CONSUMPTION

TRIAC
- HIGH EFFICIENCY AND SAFETY SWITCHING
- UNINSULATED PACKAGE : AVS12CB
- $V_{DRM} = \pm 600V$
- $I_{T(RMS)}$: 12A



P
DIP8
(Plastic)



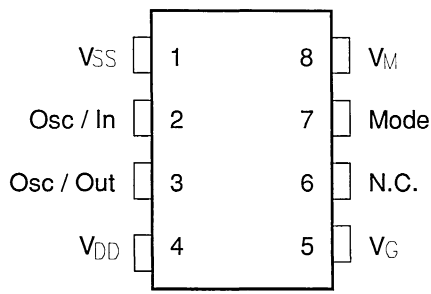
B
TO220AB
(Plastic)

DESCRIPTION

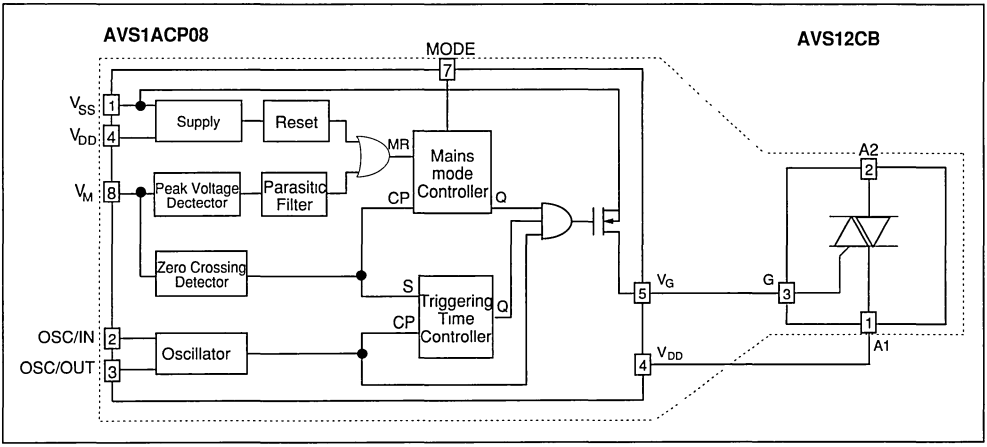
The AVS12 kit is an automatic mains selector (110/220V AC) to be used in SMPS < 500 W. It is composed of 2 devices :

- The **Controller** is optimized for low consumption and high security triggering of the triac. When connected to V_{SS}, the **mode** input activates an additional **option**. If the main power drops from 220V to 110V, the triac control remains locked to the 220V mode and avoids any high voltage spike when the voltage comes back to 220V.
  When connected to V_{DD}, the **mode** input desactivates this **option**.
- The TRIAC is specially designed for this application. An optimization between sensitivity and dynamic parameters of the triac gate highly reduces the losses of supply resistor and allows excellent immunity against disturbances.

PIN CONNECTION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

CONTROLLER AVS1ACP08

Symbol	Parameter	Value		Unit
		Min.	Max.	
V_{SS}	Supply voltage	- 12	0.5	V
V_I / V_O	I / O voltage	V_{SS} - 0.5	0.5	V
I_I / I_O	I / O current	- 40	+ 40	mA
T_{stg}	Storage Temperature	- 60	+ 150	°C
T_{oper}	Operating Temperature code " C " " T "	0 - 40	+ 70 + 105	°C

TRIAC AVS12CB T_j = 25°C (unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{DRM}	Repetitive peak off-state voltage (2)		± 600	V
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	T_C = 70°C	12	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	t = 8.3ms t = 10ms	105 100	A
I^2t	I^2t value	t = 10ms	50	A^2s
dI/dt	Critical rate of rise of on-state current (1)	Repetitive F = 50Hz	20	A/µs
		Non Repetitive	100	
dv/dt *	Linear slope up to 0.67 V_{DRM} Gate open	T_j = 110°C	50	V/µs
T_{stg} T_j	Storage Temperature Operating Junction Temperature		- 40 + 150 0 + 110	°C

(1) Gate supply : I_G =100mA – di/dt = 1A/µs

* For either polarity of electrode A2 voltage with reference to electrode A1

(2) Tj = 110°C

THERMAL RESISTANCES

TRIAC AVS12CB

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction-to-ambient	. 60	°C/W
Rth (j-c) DC	Junction-to-case for DC	3	°C/W
Rth (j-c) AC	Junction-to-case for 360° conduction angle (f= 50Hz)	2.3	°C/W

DC GENERAL ELECTRICAL CHARACTERISTICS

TRIAC AVS12CB

Symbol	Parameter		Value		Unit
			Min.	Max.	
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$ Pulse duration> 20µs	Tj = 110°C	0.2		V
V_{TM} *	I_{TM} = 17A tp = 10ms	Tj = 25°C		1.75	V
I_{DRM} *	V_{DRM} rated Gate open	Tj = 25°C		10	µA
		Tj = 110°C		500	

* For either polarity of electrode A2 voltage with reference to electrode A1.

Fig. 1 : Maximum RMS power dissipation versus RMS on-state current
(F = 60Hz).
(Curves are cut off by (dI/dt)c limitation)

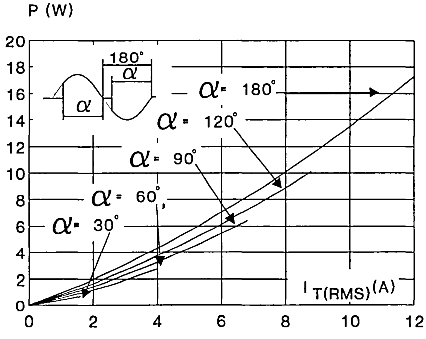


Fig. 2 : Correlation between maximum mean power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact.

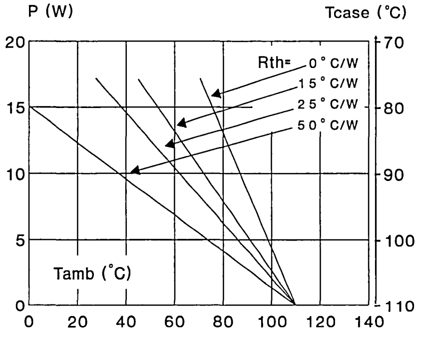


Fig. 3 : Non repetitive surge peak on state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

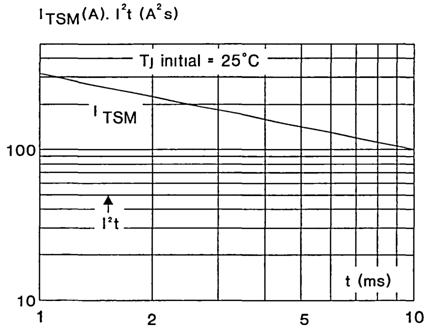
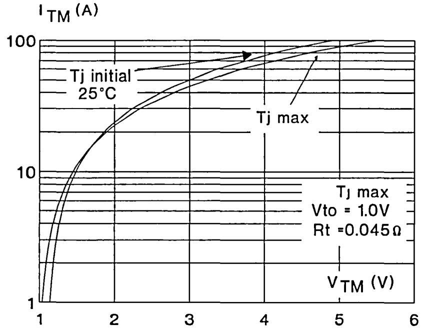


Fig. 4 : On-state characteristics (maximum values).



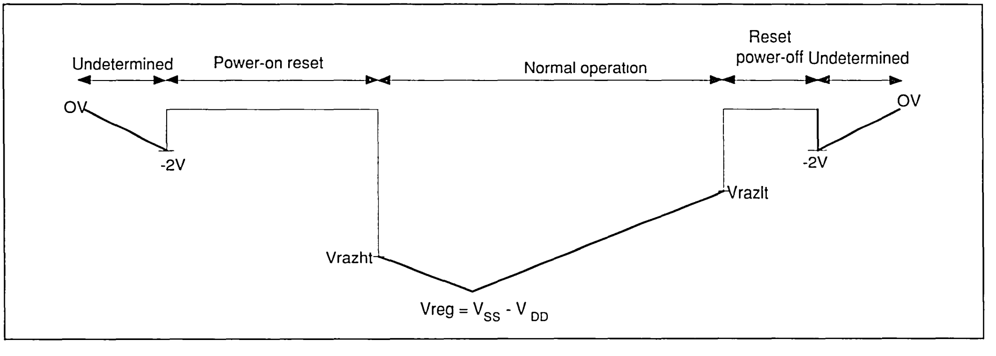
DC GENERAL ELECTRICAL CHARACTERISTICS (continued)

CONTROLLER AVS1ACP08 T_{oper} = 25°C (unless otherwise specified)

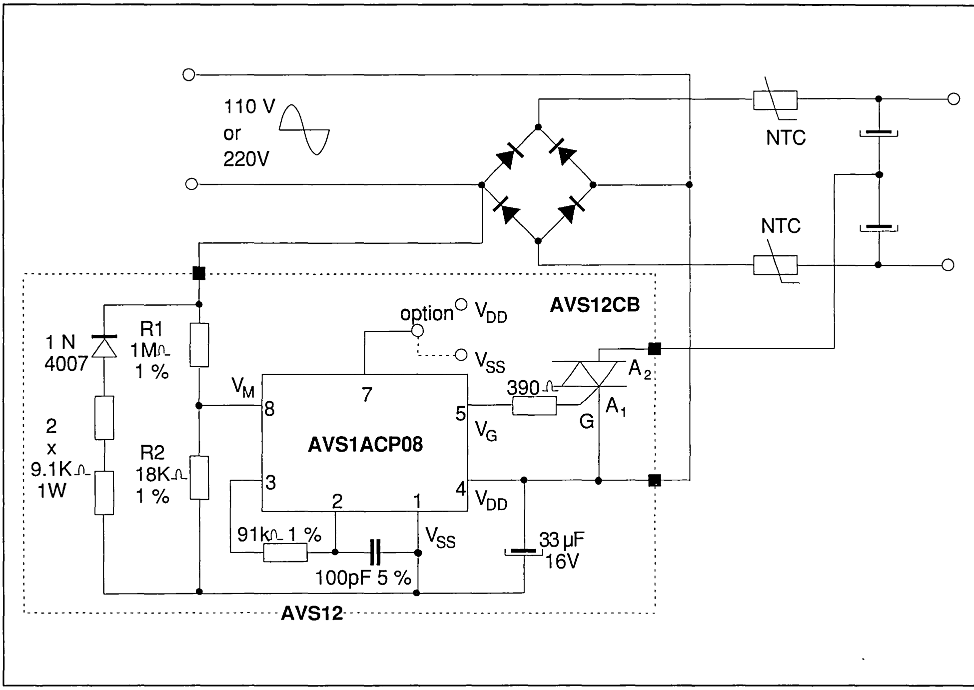
Symbol	Parameter	Value			Unit
		Min	Typ	Max	
V_{SS} (pin 1) (Vreg)	Shunt regulator	- 10	- 9	- 8	V
I_{SS} (pin 1) (Vreg) (@ V_{SS} = 9V)	Supply current	0.4		30	mA
I_{SS} (pin 1) (@ triac gate non connected)	Quiescent current			0.7	mA
f (pin 3) (@ R = 91kΩ) (C = 100pF)	Oscillator frequency	42	44	46	kHz
V_M (pin 8) Vth (3)	Peak voltage of detection high-threshold	4.08	4.25	4.42	V
V_M (pin 8) Vh (3)	Peak voltage of detection hysteresis	0.370	0.4	0.420	V
(1) V_M (pin 8) Vth (3)	Zero-crossing detection high-threshold	95	110	125	mV
V_M (pin 8) Vh (3)	Zero-crossing detection hysteresis	20	30	40	mV
(2) Vrazht (4)	Power-on-reset activation threshold		Vreg x 0.89		
(2) Vrazlt (4)	Power-down-reset activation threshold		Vreg x 0.55		
Mode (pin 7)	V_{IL} (4) V_{IH} (4)	 0.7 Vreg		0.3 Vreg	
V_G (pin 5)	V_{OL} (I_{VG} = 25mA) Leakage current (V_G = V_{DD})			650 + 10	mV µA

NOTES :
(1) : This value gives a typical noise immunity on the zero-crossing detection of 110mV x 1018/18 = 6.20V on the main supply
(2) : See following diagram
(3) : Voltage referred to V_{SS}
(4) : Voltage referred to V_{DD}

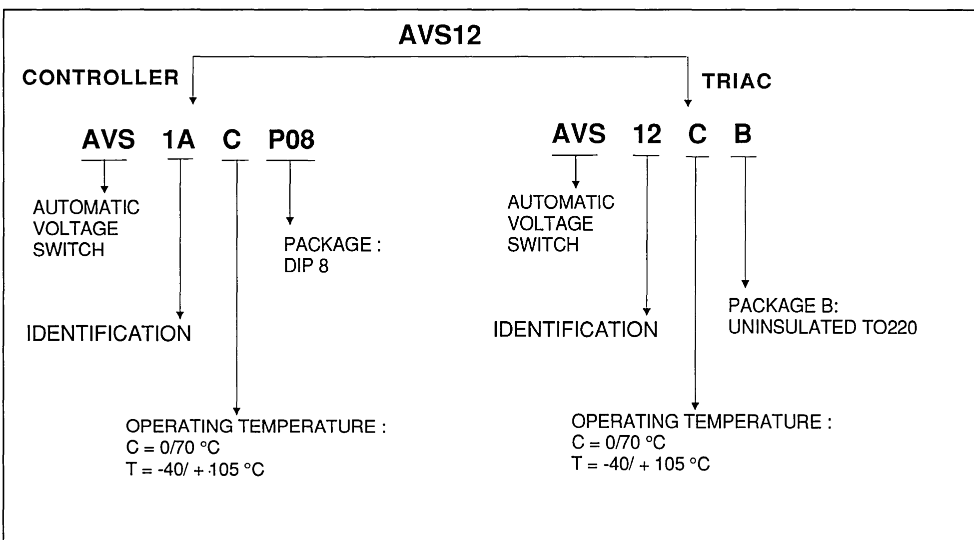
POWER-ON AND POWER-OFF RESET BEHAVIOUR



TYPICAL APPLICATION



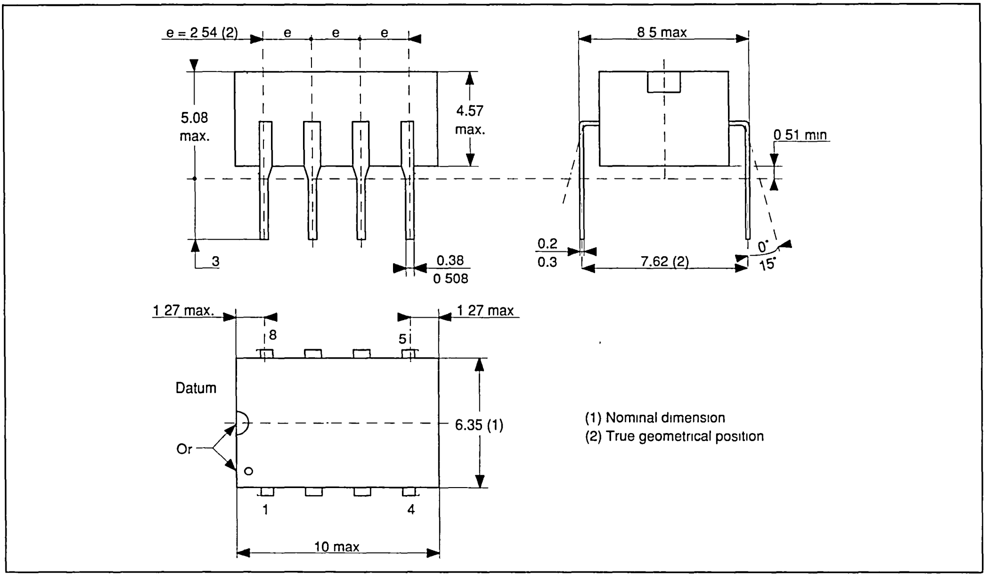
ORDERING INFORMATION



PACKAGE MECHANICAL DATA

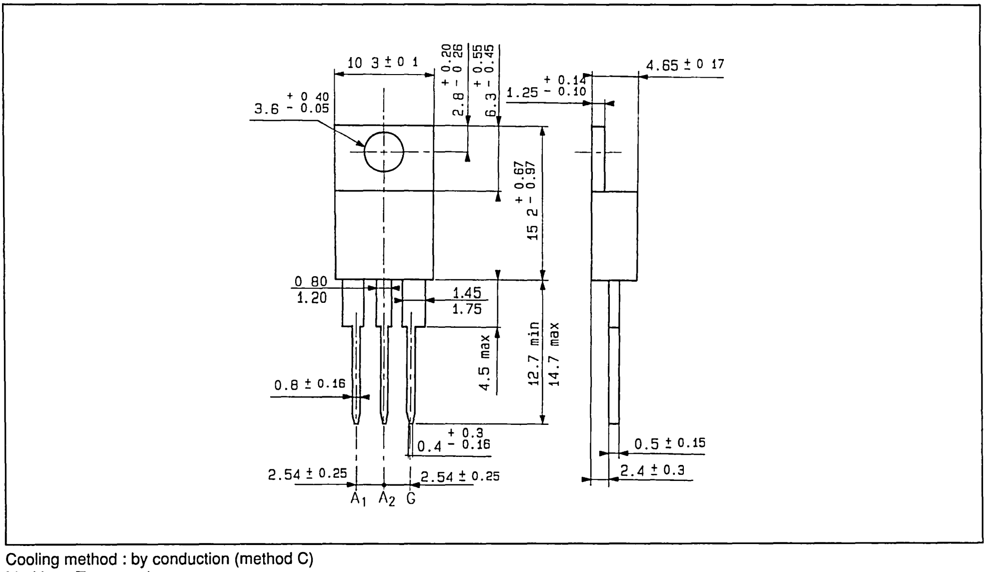
8 PINS - PLASTIC DIP

CONTROLLER



TO220AB (Plastic) (in millimeters)

TRIAC



Cooling method : by conduction (method C)
Marking : Type number
Weight : 2 g
Polarity : N A
Stud torque : N A

TRIAC 16 / 20 / 25 A FAMILY

SNUBBERLESS "H.C.T."						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
BTA16-xxx BW	BTB16-xxx BW	50	50	50	400 to 800 (16A)	TO220AB
BTA16-xxx CW	BTB16-xxx CW	35	50	50	400 to 800 (16A)	TO220AB
BTA20-xxx BW	BTB20-xxx BW	50	50	50	400 to 800 (20A)	TO220AB
BTA20-xxx CW	BTB20-xxx CW	35	35	35	400 to 800 (20A)	TO220AB
	BTB24-xxx BW	50	50	50	400 to 800 (25A)	TO220AB
	BTB24-xxx CW	35	35	35	400 to 800 (25A)	TO220AB
BTA26-xxx BW		50	50	50	400 to 800 (25A)	TOP 3
BTA26-xxx CW		35	35	35	400 to 800 (25A)	TOP 3

STANDARD							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
BTA16-xxx B	BTB16-xxx B	50	50	50	100	400 to 800 (16A)	TO220AB
	BTB24-xxx B	50	50	50	100	400 to 800 (25A)	TO220AB
BTA26-xxx B		50	50	50	100	400 to 800 (25A)	TOP 3
BTA26-xxx A		100	100	100	150	400 to 800 (25A)	TOP 3

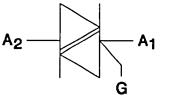
ALTERNISTORS						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
TPDV xx25		150	150	150	600 to 1200 (25A)	TOP 3
TODV xx25		150	150	150	600 to 1200 (25A)	RD 91

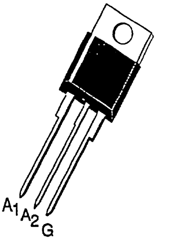
METAL CAN							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
	TRALxx25 D	100	100	100	150	200 to 700 (25A)	TO 48

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/µs
- BTA Family :
  INSULATING VOLTAGE = $2500V_{(RMS)}$
  (UL RECOGNIZED : E81734)





TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB16 B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 80 °C	16	A
		BTB	Tc = 90 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	170	A
			tp = 10 ms	160	
I^2t	I^2t value		tp = 10 ms	128	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB16-... B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	2.9	°C/W
		BTB	2.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.2	°C/W
		BTB	1.75	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 6A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	mA
			IV	MAX	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI$_G$/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	mA
			II		70	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	mA
V_{TM} *	I_{TM}= 22.5A tp= 380µs	Tj=25°C		MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=125°C		MAX	2	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250	V/µs
(dV/dt)c *	(dI/dt)c = 7A/ms	Tj=125°C		MIN	10	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

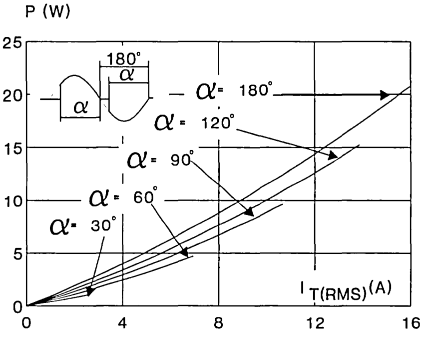


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

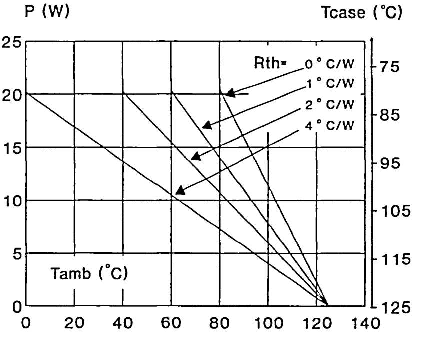


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

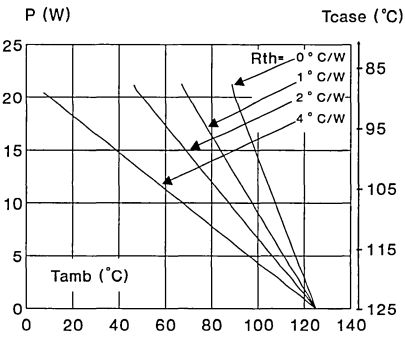


Fig.4 : RMS on-state current versus case temperature.

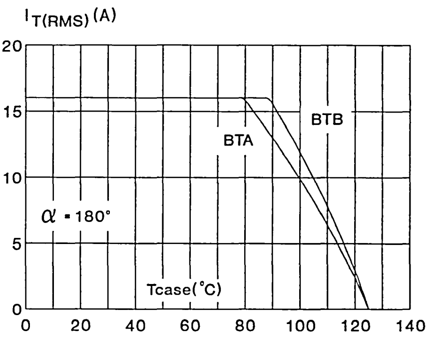


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

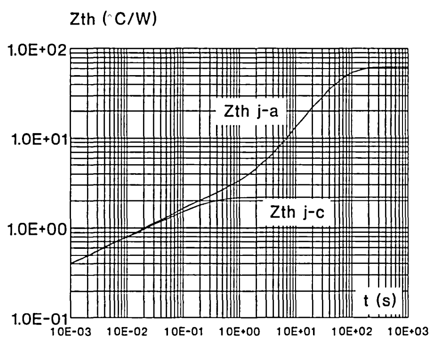


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

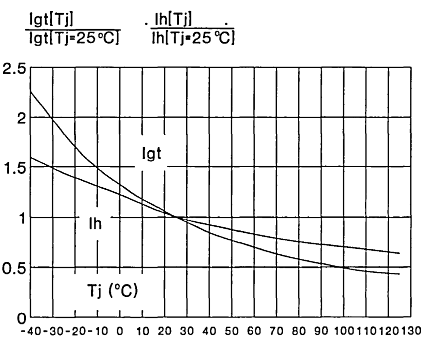


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

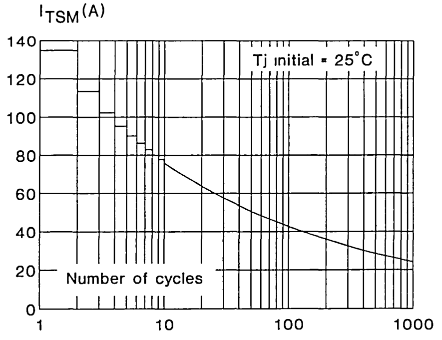


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

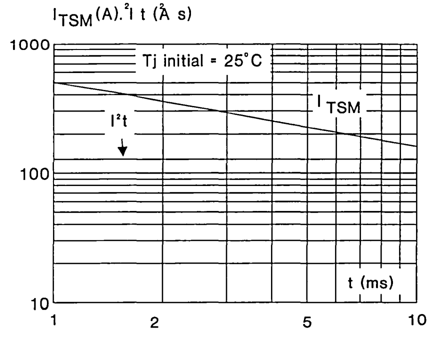
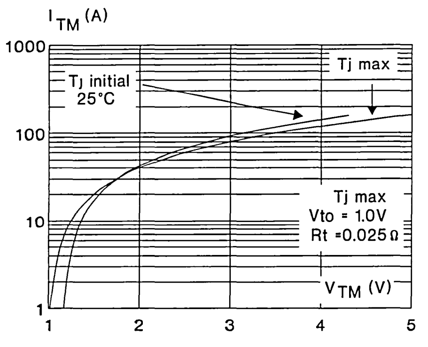
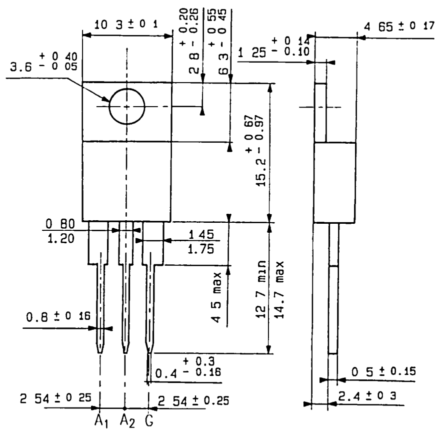


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g

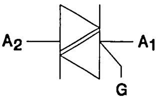
SGS-THOMSON MICROELECTRONICS

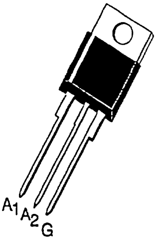
BTA16 BW/CW
BTB16 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 14A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 160A
- V_{DRM} UP TO 800V
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB16 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 80 °C	16	A
		BTB	Tc = 90 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	170	A
			tp = 10 ms	160	
I^2t	I^2t value		tp = 10 ms	128	A^2s
dI/dt	.Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB16-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	3.1	°C/W
		BTB	2.3	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.3	°C/W
		BTB	1.75	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix BW	Suffix CW	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	40	-	mA
			II	TYP	80	-	
			I-III	MAX	-	50	
			II	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	35	mA
V_{TM} *	I_{TM}= 22.5A tp= 380µs	Tj=25°C		MAX	1.60		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	2		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	14	8.5	A/ms
				TYP	28	17	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	16	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

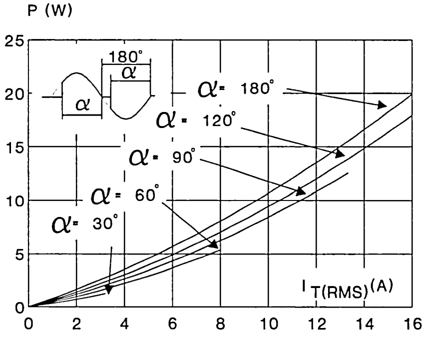


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

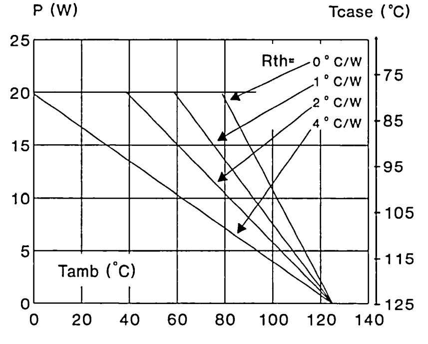


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

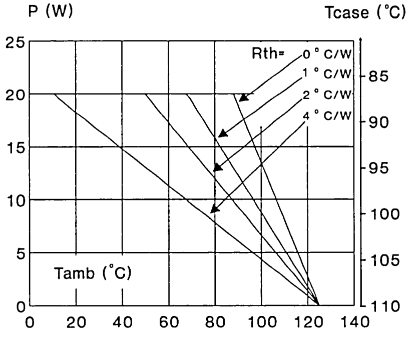


Fig.4 : RMS on-state current versus case temperature.

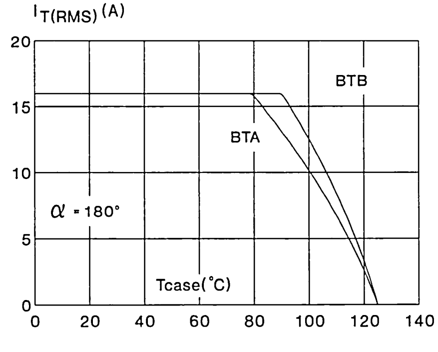


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

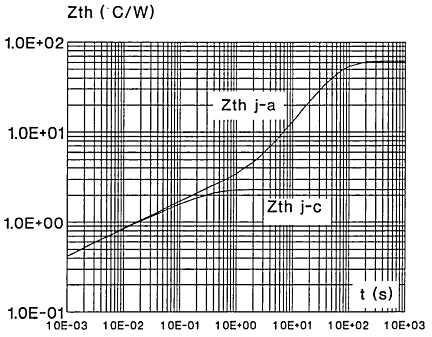


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

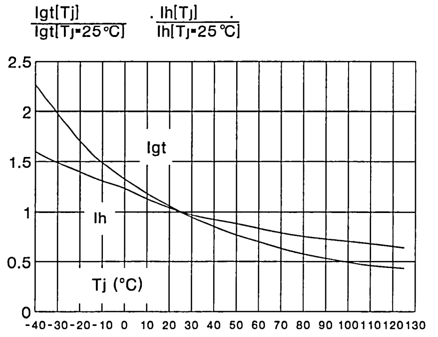


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

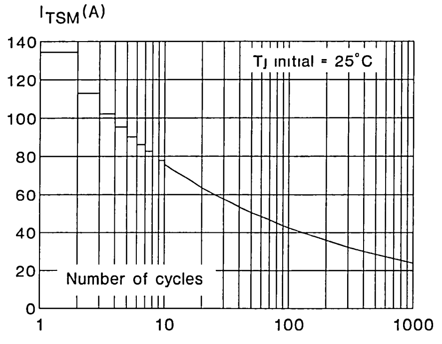


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

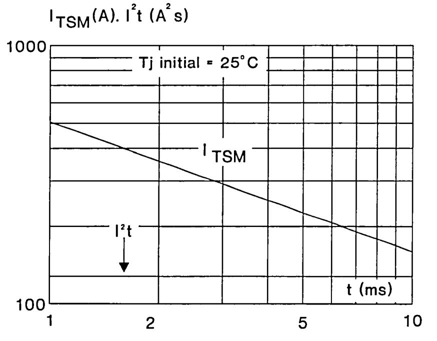
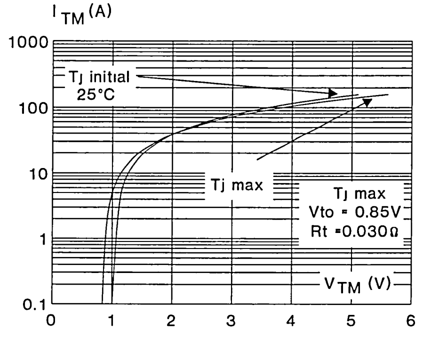
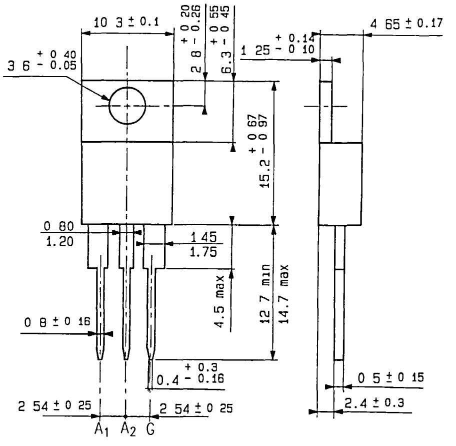


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



Cooling method : by conduction (method C)

Marking : type number

Weight : 2 g

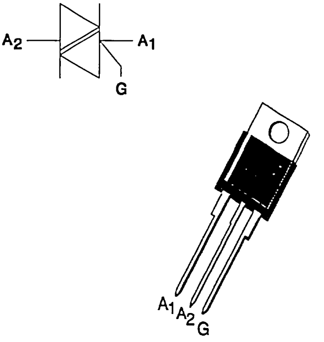
Polarity : N A

BTA20 BW/CW
BTB20 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 18A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 200A
- V_{DRM} UP TO 800V
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)



TO 220 AB
(Plastic)

DESCRIPTION

The BTA/BTB20 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 70 °C	20	A
		BTB	Tc = 90 °C		
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	210	A
			tp = 10 ms	200	
I^2t	I^2t value		tp = 10 ms	200	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	20	A/µs
			Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA / BTB20-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	2.8	°C/W
		BTB	1.7	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	2.1	°C/W
		BTB	1.3	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix BW	Suffix CW	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	1	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	50	-	mA
			II	TYP	90	-	
			I-II-III	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	75	50	mA
V_{TM} *	I_{TM}= 28A tp= 380µs	Tj=25°C		MAX	1.70		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	3		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	18	11	A/ms
				TYP	36	22	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	20	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)		400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

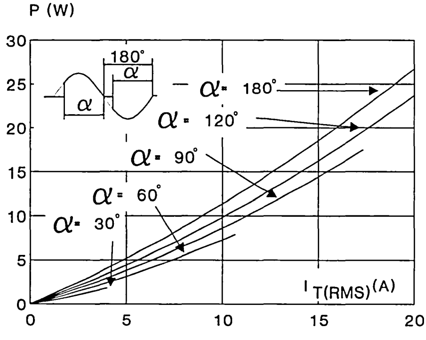


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

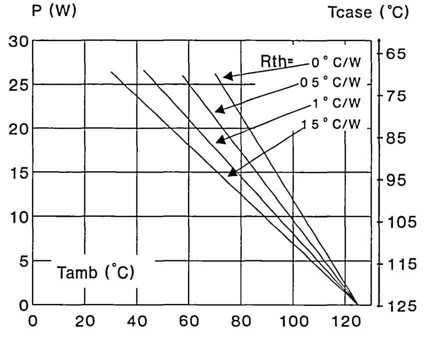


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

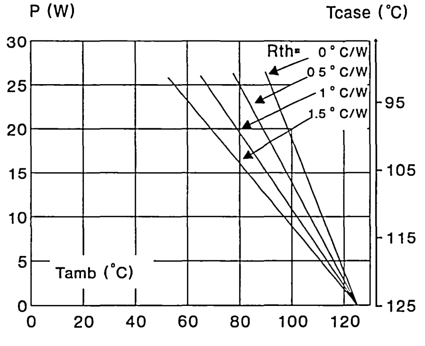


Fig.4 : RMS on-state current versus case temperature.

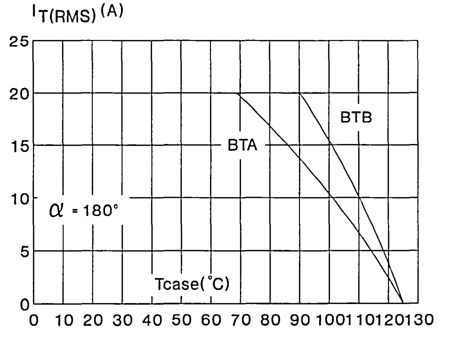


Fig.5 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

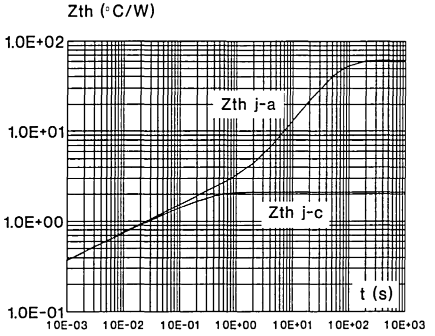


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

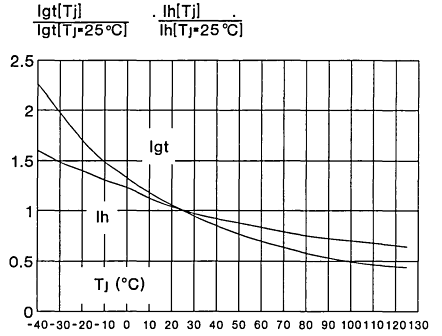


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

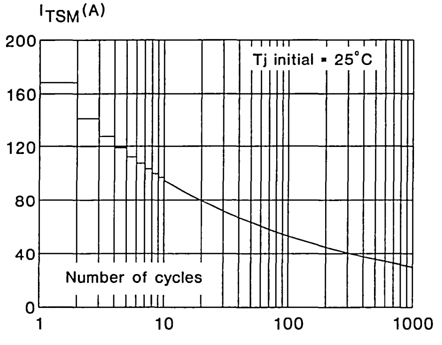


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

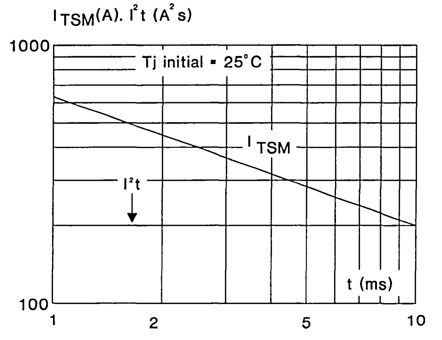
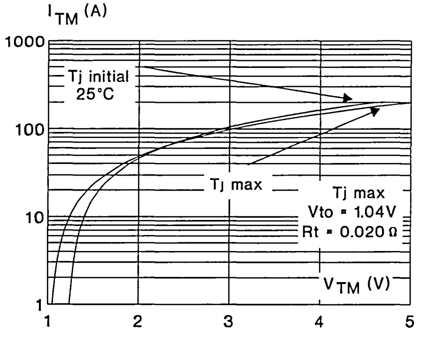
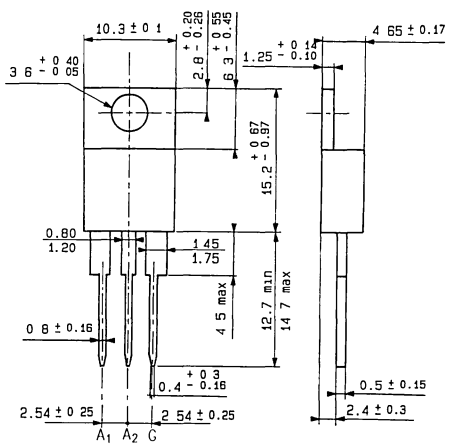


Fig.9 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



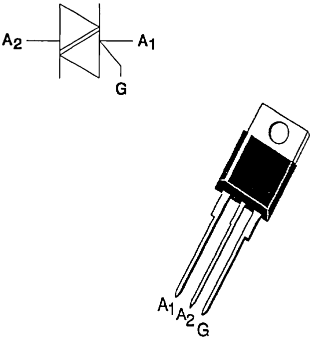
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A
Stud torque : N A

BTB24 B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/µs



TO 220 AB
(Plastic)

DESCRIPTION

The BTB24 B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 80 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	210	A
		tp = 10 ms	200	
I^2t	I^2t value	tp = 10 ms	200	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA di_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTB24-... B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	1.7	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.3	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 10A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	50	mA
			IV	MAX	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	40	mA
			II		70	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	50	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01	mA
		Tj=125°C		MAX	2	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250	V/µs
(dV/dt)c *	(dI/dt)c = 11.1A/ms	Tj=125°C		MIN	10	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

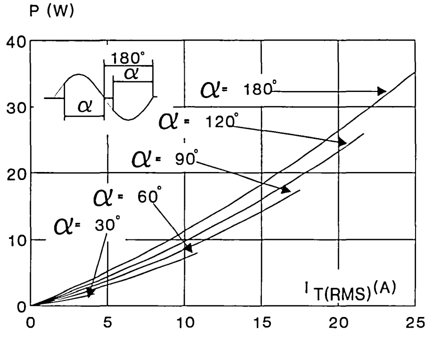


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

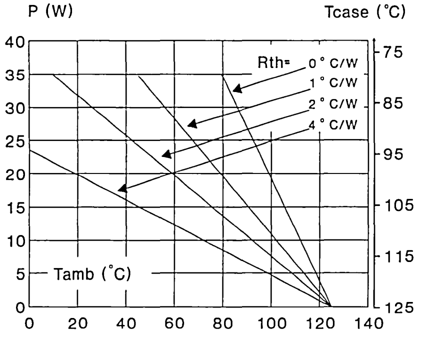


Fig.3 : RMS on-state current versus case temperature.

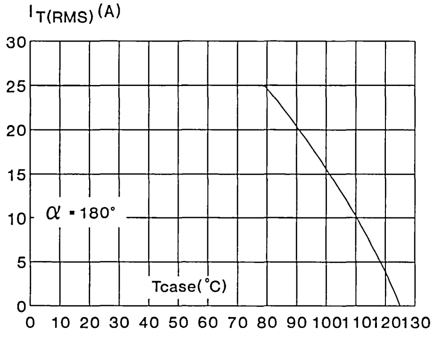


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

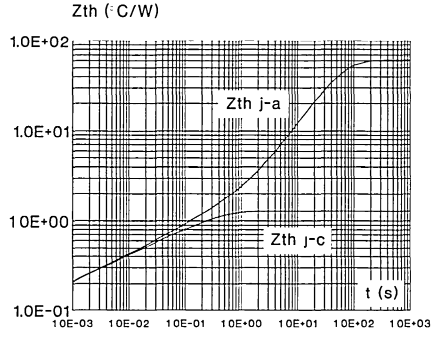


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

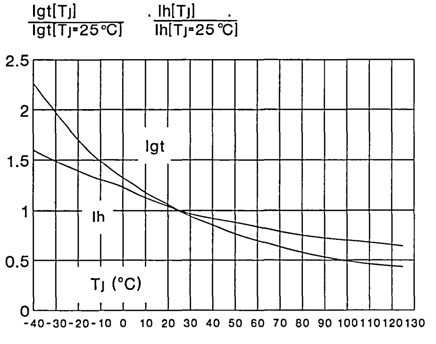


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

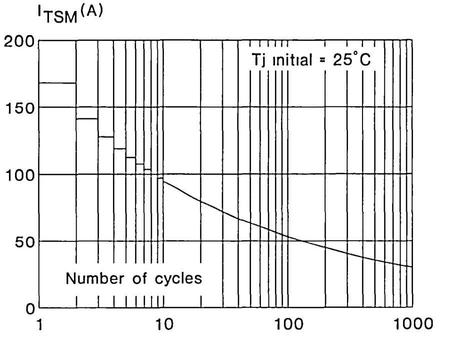


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

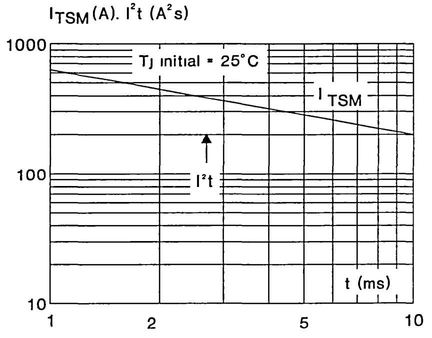
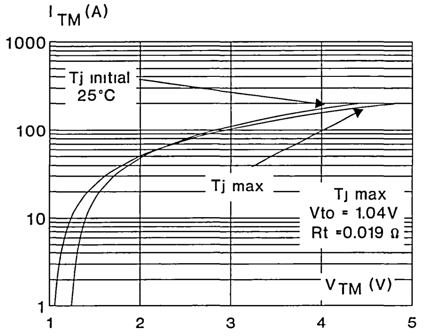
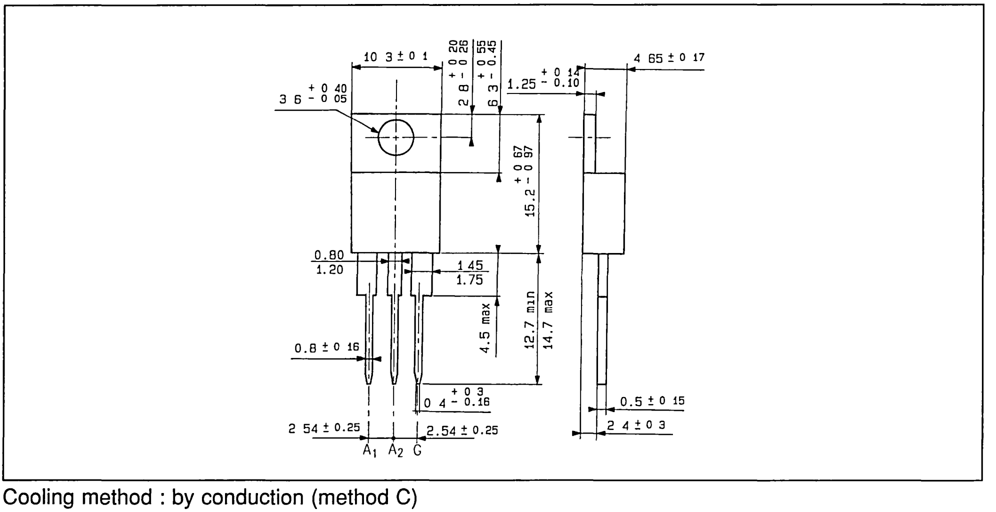


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



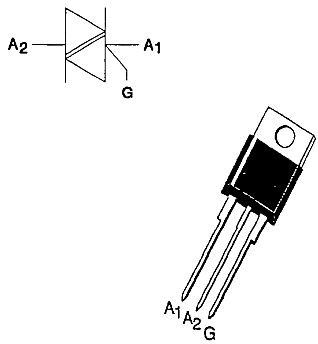
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

BTB24 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 22A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 250A
- V_{DRM} UP TO 800V



TO 220 AB
(Plastic)

DESCRIPTION

The BTB24 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 85 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	262	A
		tp = 10 ms	250	
I^2t	I^2t value	tp = 10 ms	312.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTB24-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	1.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.1	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	CW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	2	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	50	-	mA
			II	TYP	90	-	
			I-II-III	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	75	50	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.80		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	3		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	22	13	A/ms
				TYP	44	26	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTB (Uninsulated)	25	400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

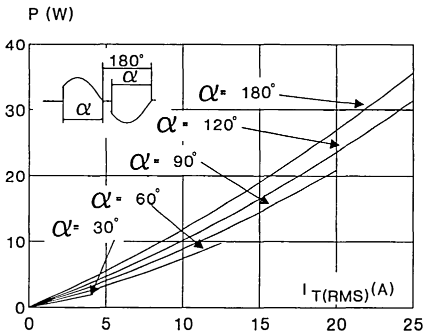


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

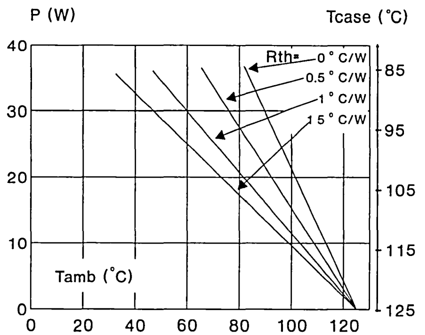


Fig.3 : RMS on-state current versus case temperature.

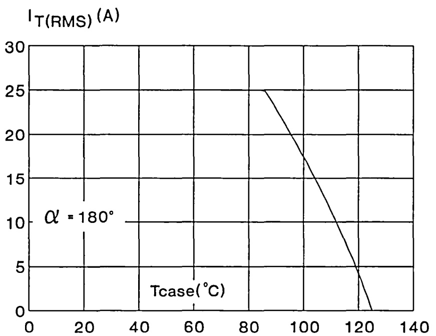


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

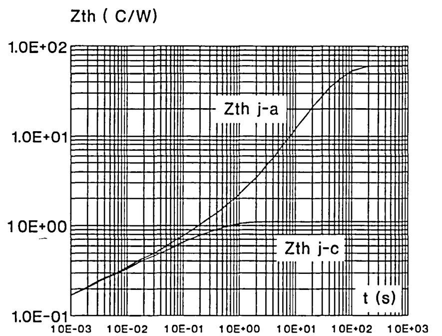


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

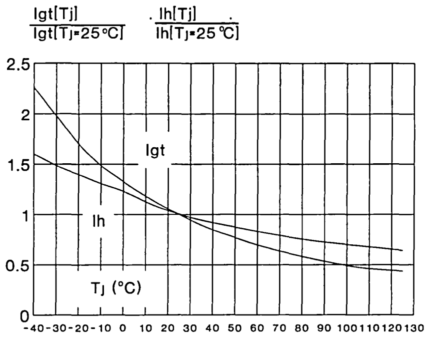


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

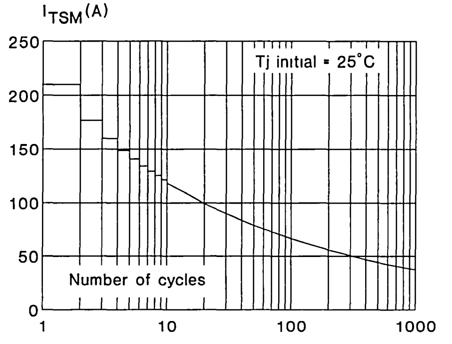


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

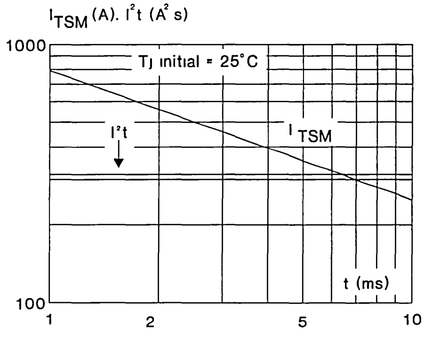
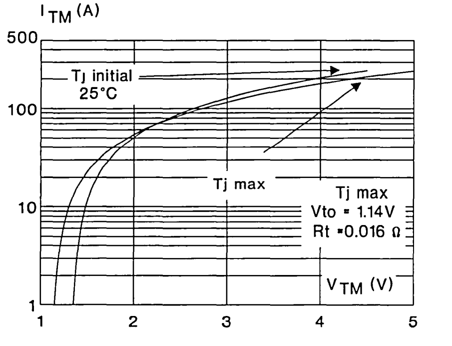
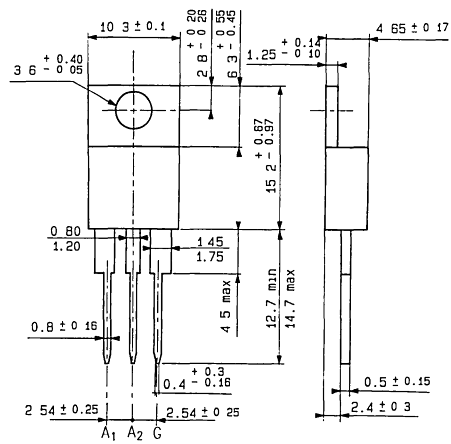


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 220 AB Plastic



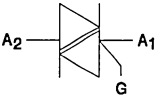
Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g
Polarity : N A

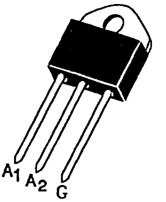
BTA26 A/B
BTB26 B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





TOP 3
(Plastic)

DESCRIPTION

The BTA26 A/B / BTB26 B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 90 °C	25	A
		BTB	Tc = 90 °C	30	
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	260	A
			tp = 10 ms	250	
I^2t	I^2t value		tp = 10 ms	312.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs		Repetitive F = 50 Hz	10	A/µs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA26-...A/B / BTB26-... B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		50	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	1.5	°C/W
		BTB	1.1	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	1.1	°C/W
		BTB	0.8	

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 10A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix A	Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	50	mA
			IV	MAX	150	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2.5		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	70	60	mA
			II		200	180	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	80	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.7		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	6		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250	250	V/µs
(dV/dt)c *	(dI/dt)c = 11.1A/ms BTA (dI/dt)c = 13.3A/ms BTB	Tj=125°C		MIN	10		V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	A	B
BTA (Insulated)	26	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)	30	400		X
		600		X
		700		X
		800		X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation) (BTA)

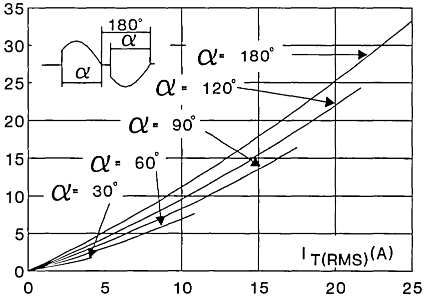


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

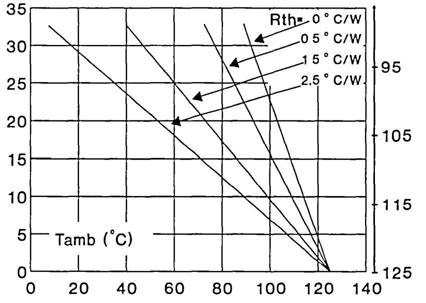


Fig.3 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation) (BTB)

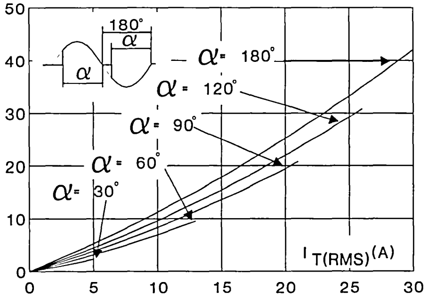


Fig.4 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

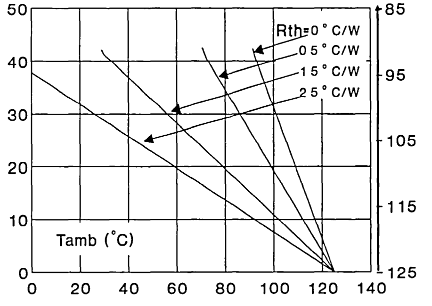


Fig.5 : RMS on-state current versus case temperature. (BTA)

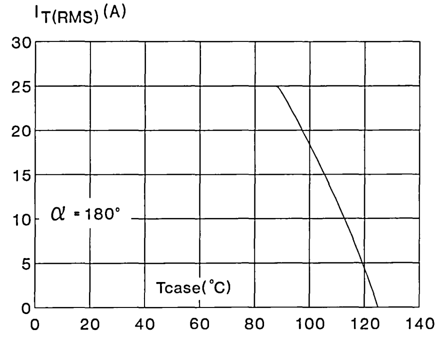


Fig.6 : RMS on-state current versus case temperature. (BTB)

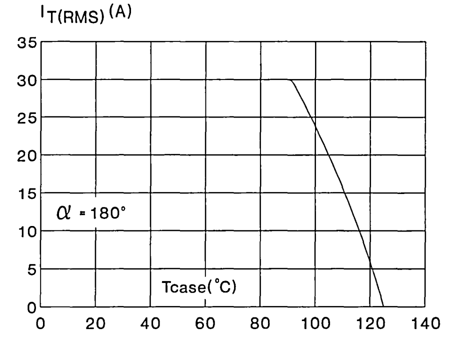


Fig.7 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.
(Zth j-c : BTA version only)

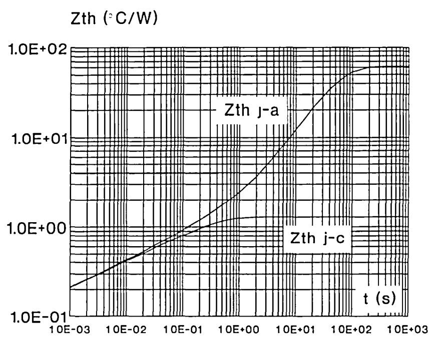


Fig.8 : Relative variation of gate trigger current and holding current versus junction temperature.

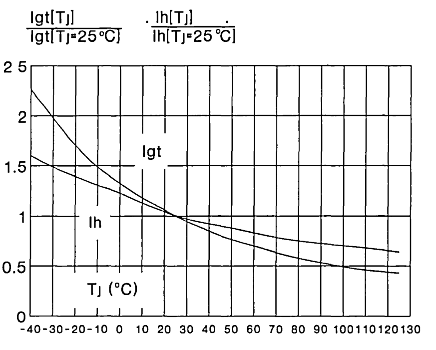


Fig.9 : Non Repetitive surge peak on-state current versus number of cycles.

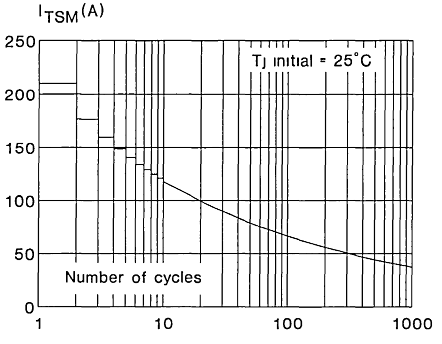
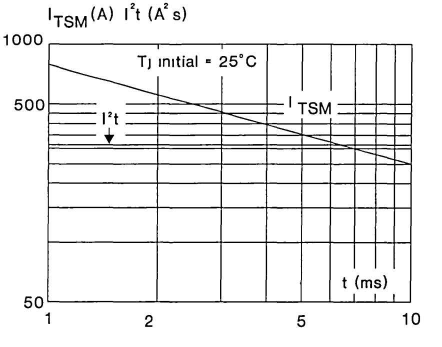
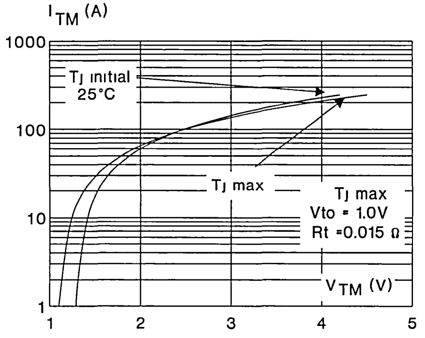


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.



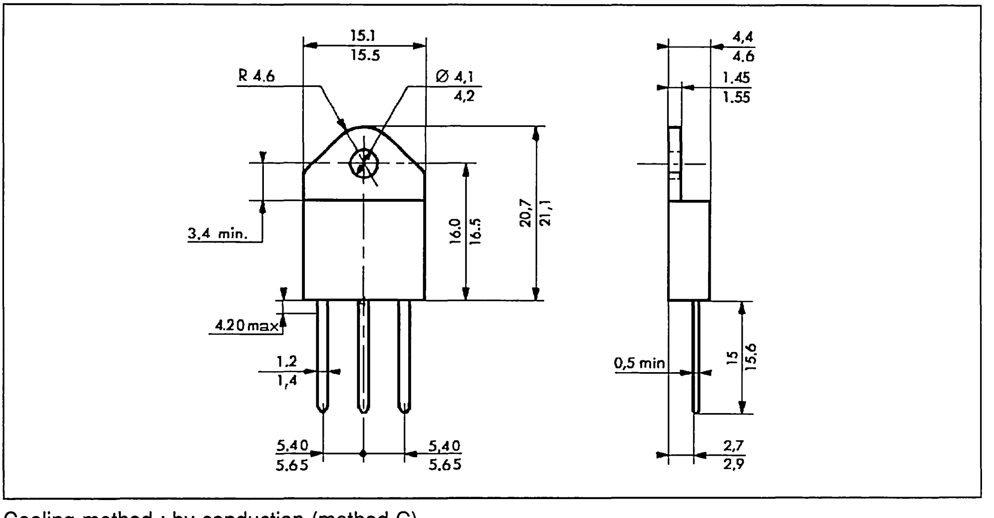
SGS-THOMSON MICROELECTRONICS

Fig.11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic



Cooling method : by conduction (method C)

Marking : type number

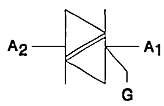
Weight : 5 g

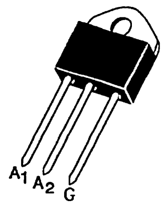
BTA26 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c > 22A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 250A
- V_{DRM} UP TO 800V
- BTA Family :
  INSULATING VOLTAGE = 2500V(RMS)
  (UL RECOGNIZED : E81734)





TOP 3
(Plastic)

DESCRIPTION

The BTA26 BW/CW triacs use high performance glass passivated chips technology.
The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 85 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	262	A
		tp = 10 ms	250	
I^2t	I^2t value	tp = 10 ms	312.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTA26-... BW/CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	50	°C/W
Rth (j-c) DC	Junction to case for DC	1.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.1	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 4A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix		Unit
					BW	CW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MIN	2	2	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI$_G$/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	50	-	mA
			II	TYP	90	-	
			I-II-III	MAX	-	80	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	75	50	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.80		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	3		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj=125°C		MIN	22	13	A/ms
				TYP	44	26	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	BW	CW
BTA (Insulated)	25	400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

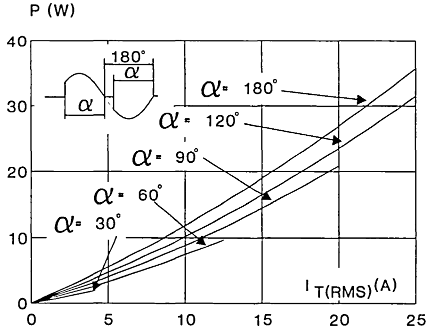


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

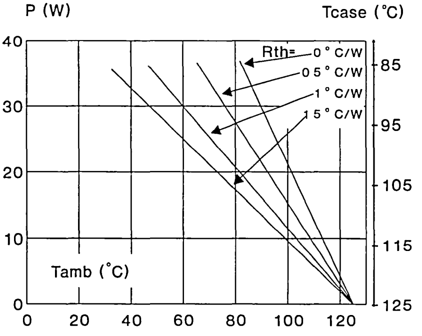


Fig.3 : RMS on-state current versus case temperature.

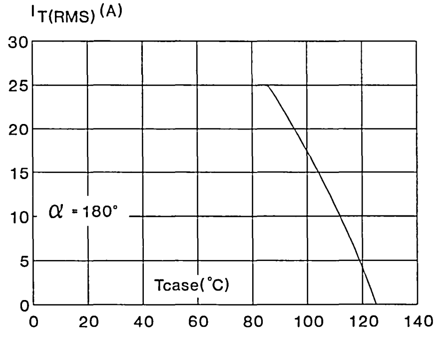


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

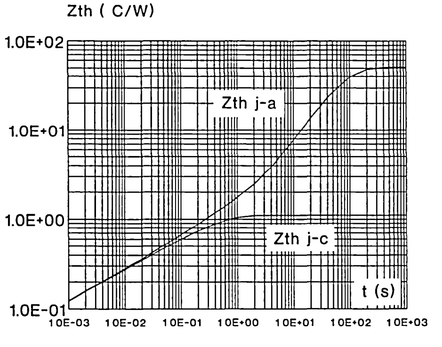


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

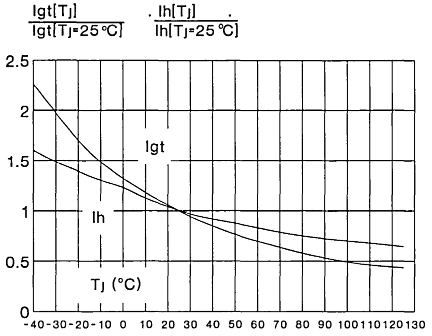


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

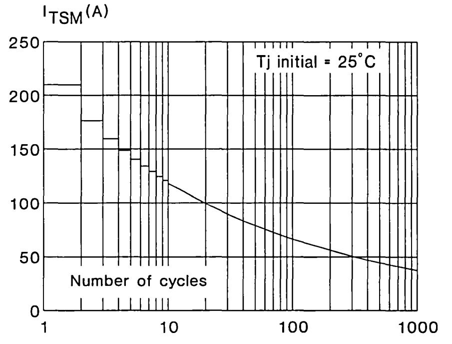


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

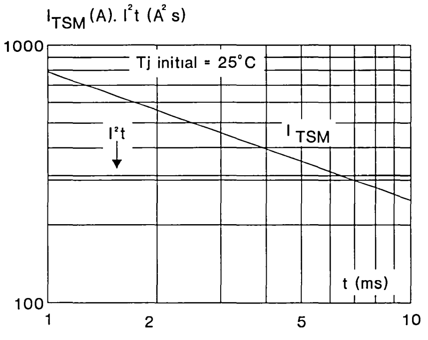
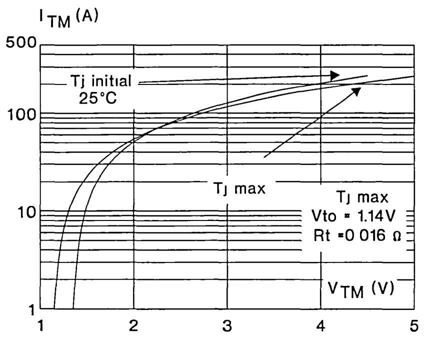


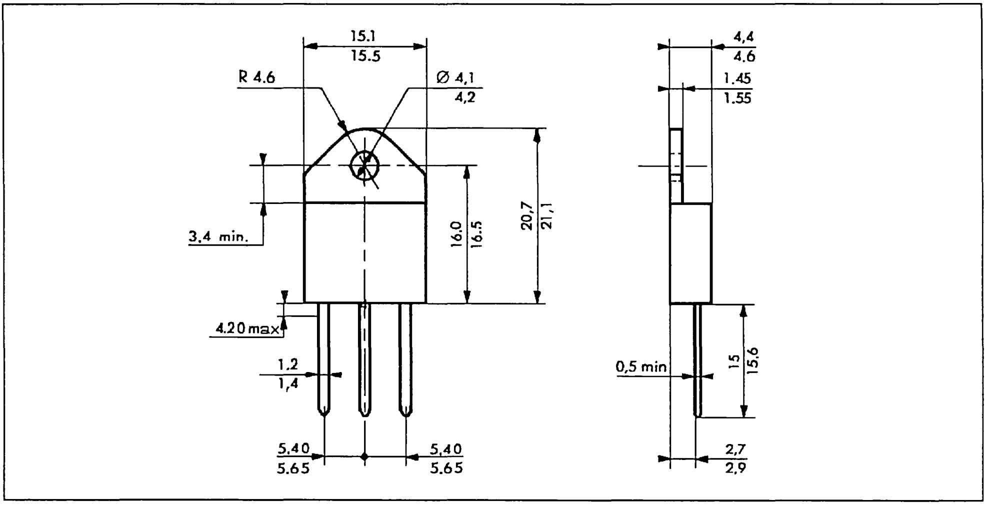
Fig.8 : On-state characteristics (maximum values).



SGS-THOMSON MICROELECTRONICS

PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g
Polarity : N A

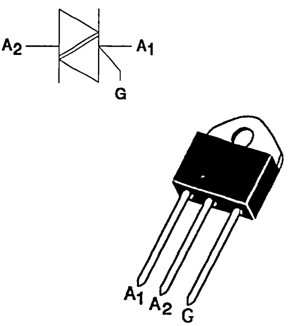
SGS-THOMSON MICROELECTRONICS

TPDV 625 ---> 1225

ALTERNISTORS

FEATURES

- HIGH COMMUTATION : > 88 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : EB81734)
- HIGH VOLTAGE CAPABILITY : V_{DRM} = 1200 V



TOP 3
(Plastic)

DESCRIPTION

The TPDV 625 ---> 1225 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 85 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	390	A
		tp = 8.3 ms	250	
		tp = 10 ms	230	
I^2t	I^2t value	tp = 10 ms	265	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1.5A di_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TPDV				Unit
		625	825	1025	1225	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Contact to ambient	50	°C/W
Rth (j-c) DC	Junction to case for DC	1.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.1	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 8A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	150	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		TYP	50	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=125°C		MAX	8	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=125°C		MIN	20	A/ms
	(dV/dt)c = 10V/µs				88	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

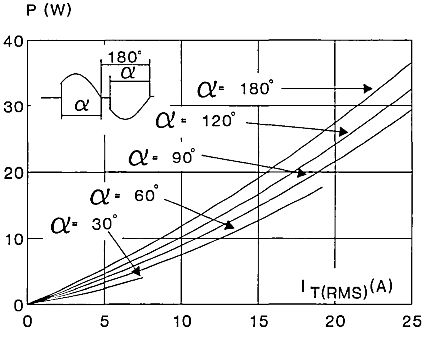


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

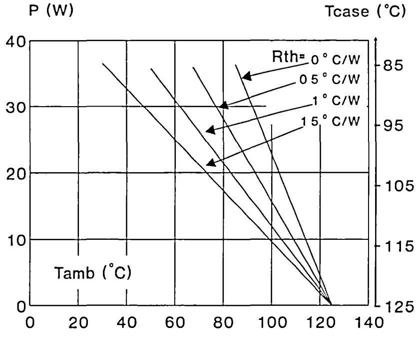


Fig.3 : RMS on-state current versus case temperature.

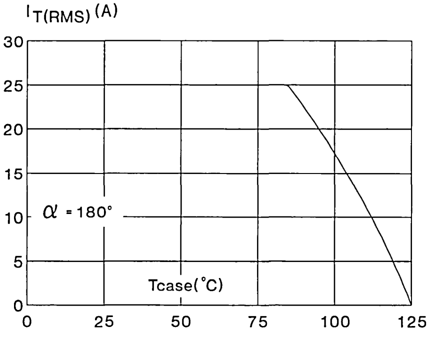


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

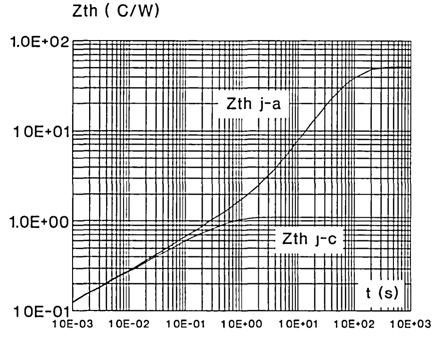


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

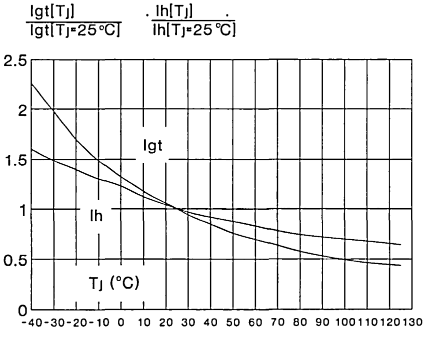


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

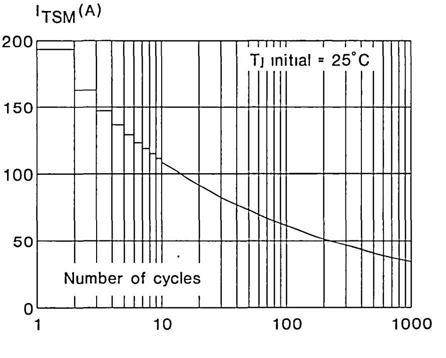


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

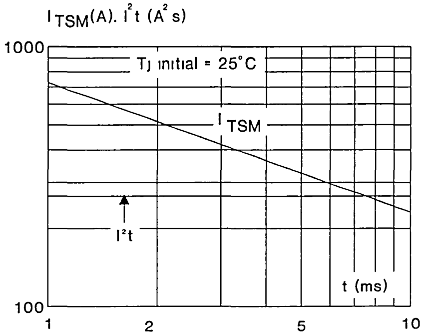


Fig.8 : On-state characteristics (maximum values).

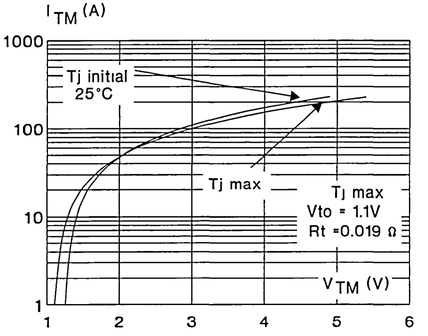
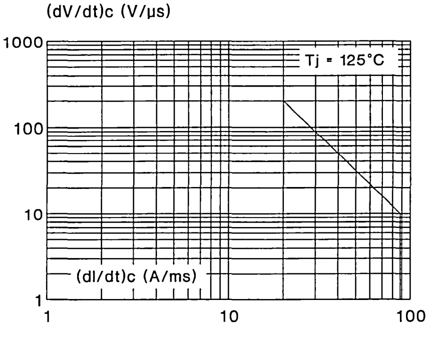
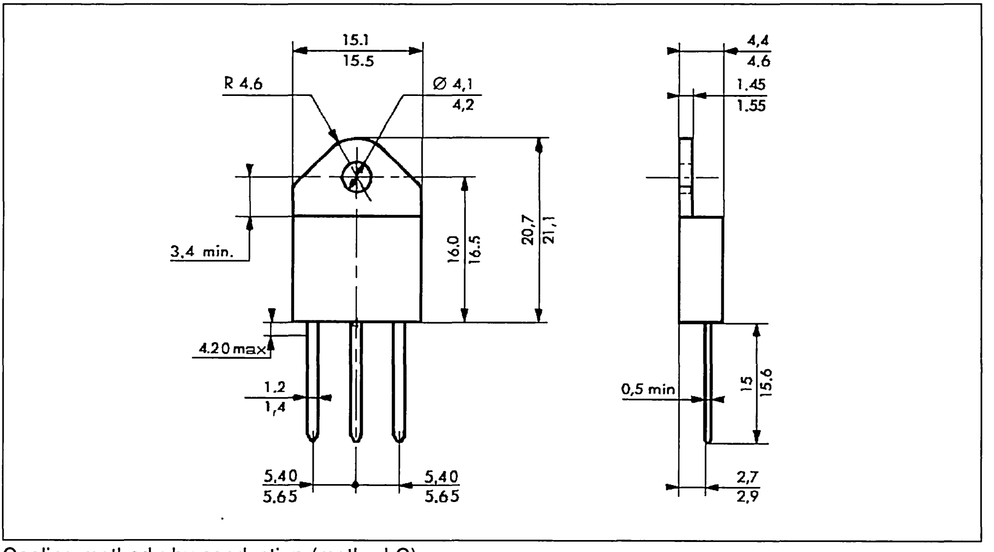


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic



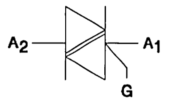
Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g

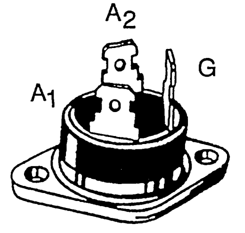
TODV 625 ---> 1225

ALTERNISTORS

FEATURES

- HIGH COMMUTATION : > 88 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : EB1734)
- HIGH VOLTAGE CAPABILITY : V_{DRM} = 1200 V





RD 91
(Plastic)

DESCRIPTION

The TODV 625 ---> 1225 use high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 80 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	390	A
		tp = 8.3 ms	250	
		tp = 10 ms	230	
I^2t	I^2t value	tp = 10 ms	265	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1.5A dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TODV				Unit
		625	825	1025	1225	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) with grease	0.1	°C/W
Rth (j-c) DC	Junction to case for DC	1.6	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.2	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 8A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	150	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		TYP	50	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=125°C		MAX	8	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=125°C		MIN	20	A/ms
	(dV/dt)c = 10V/µs				88	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

SGS-THOMSON MICROELECTRONICS

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

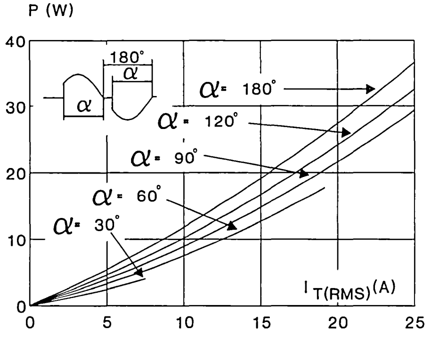


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

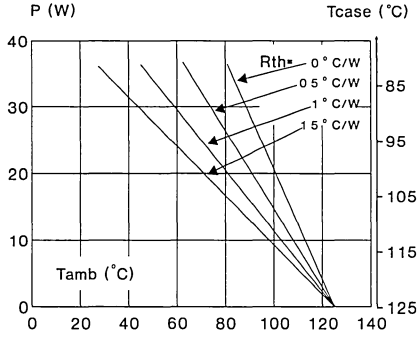


Fig.3 : RMS on-state current versus case temperature.

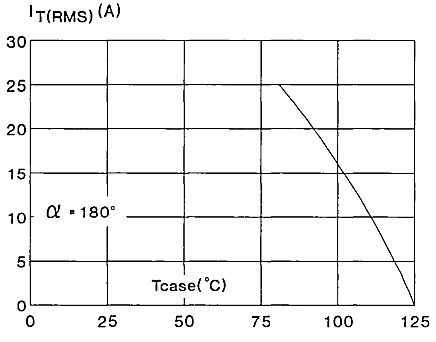


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

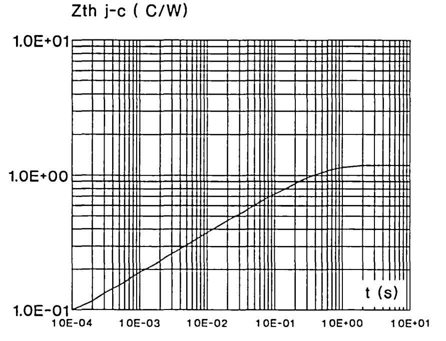


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

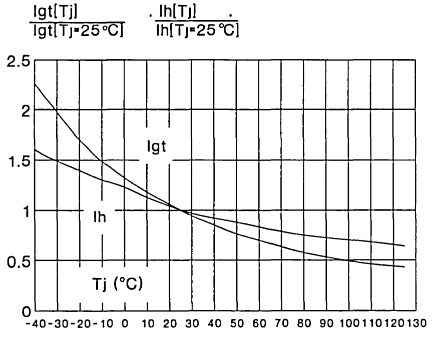


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

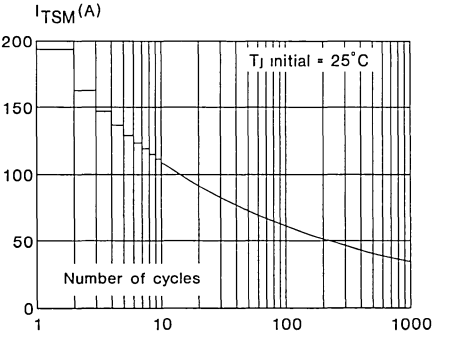


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

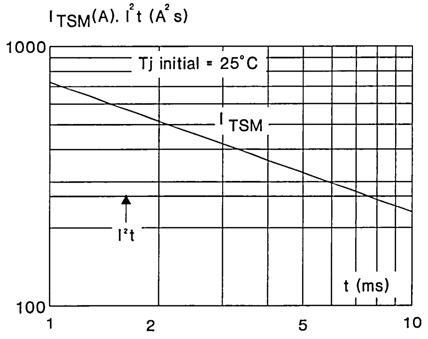


Fig.8 : On-state characteristics (maximum values).

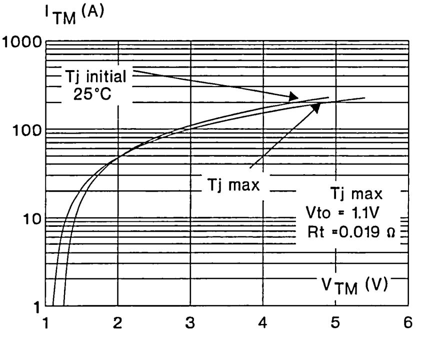
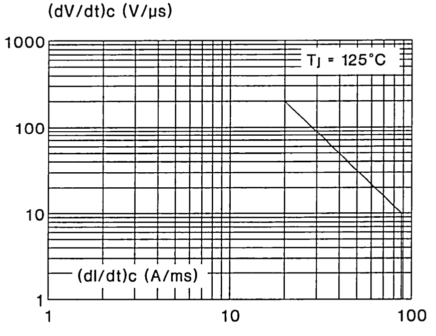
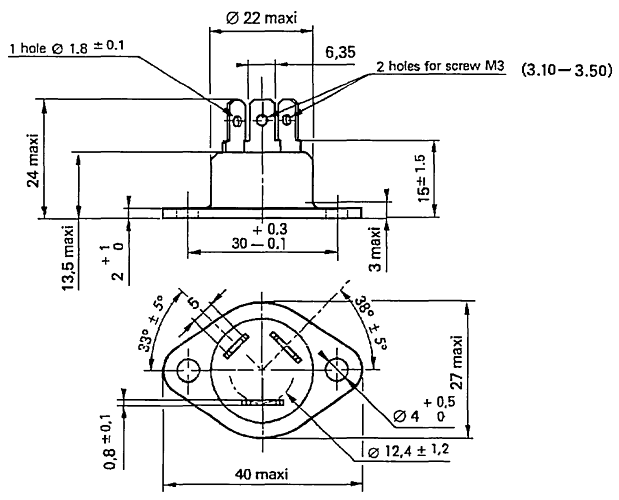


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

RD 91 Plastic



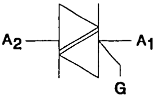
Cooling method : by conduction (method C)
Marking : type number
Weight : 15 g

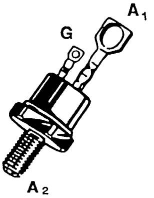
TRAL 1125D ---> 3825D

STANDARD TRIACS

FEATURES

- I_{GT} SPECIFIED IN FOUR QUADRANTS
- EXCELLENT THERMAL IMPEDANCE PACKAGE
- HIGH COMMUTATION, (dV/dt)c > 10 V/µs





TO 48
(Metal)

DESCRIPTION

The TRAL 1125D ---> 3825D are high performance passivated glass triac technology. These high power triac on TO 48 package are well adapted for use on 220 V and 380 V main, suitable for applications such : motor control, heating control, light dimmer...

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 90 °C	25	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	262	A
		tp = 10 ms	250	
I^2t	I^2t value	tp = 10 ms	312.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1A dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TRAL				Unit
		1125D	2225D	3325D	3825D	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) for recommended stud torque	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.2	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 6A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	mA
			IV	MAX	150	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	3	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj=25°C		MAX	2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=110°C		MAX	5	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	V/µs
(dV/dt)c *	(dI/dt)c = 11.2A/ms	Tj=100°C		MIN	10	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

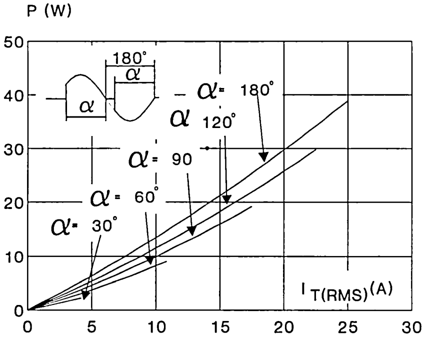


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

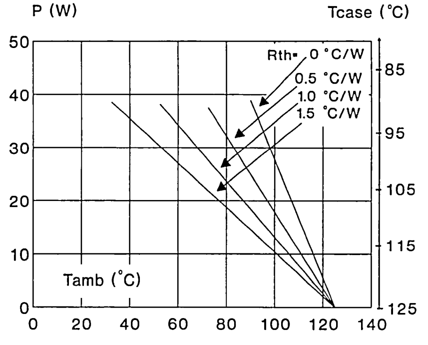


Fig.3 : RMS on-state current versus case temperature.

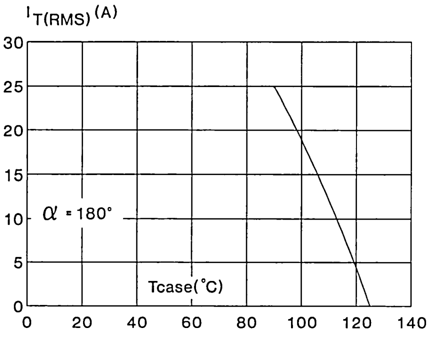


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

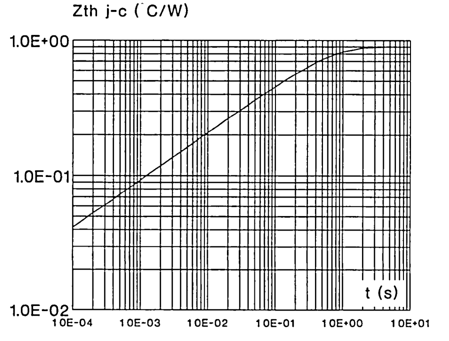


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

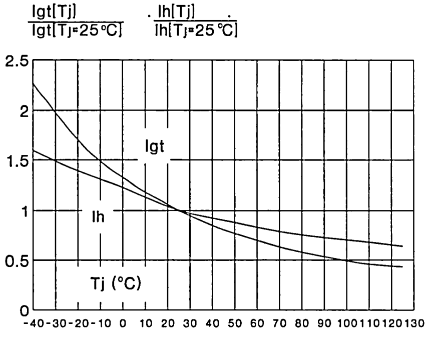


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

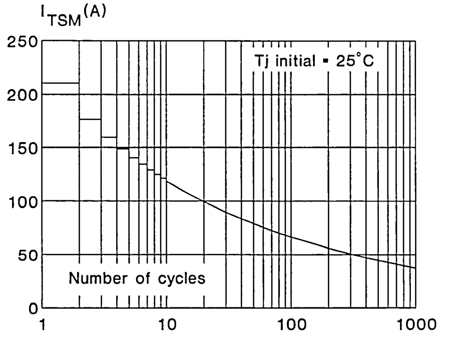


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

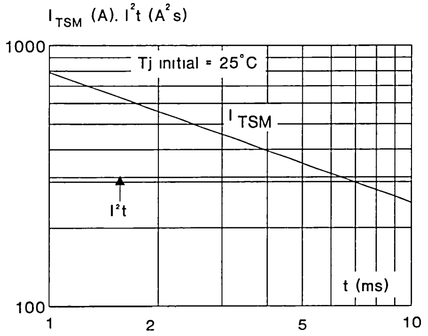
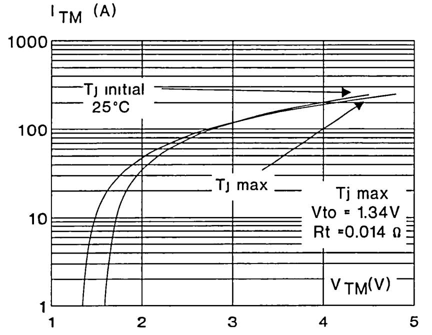
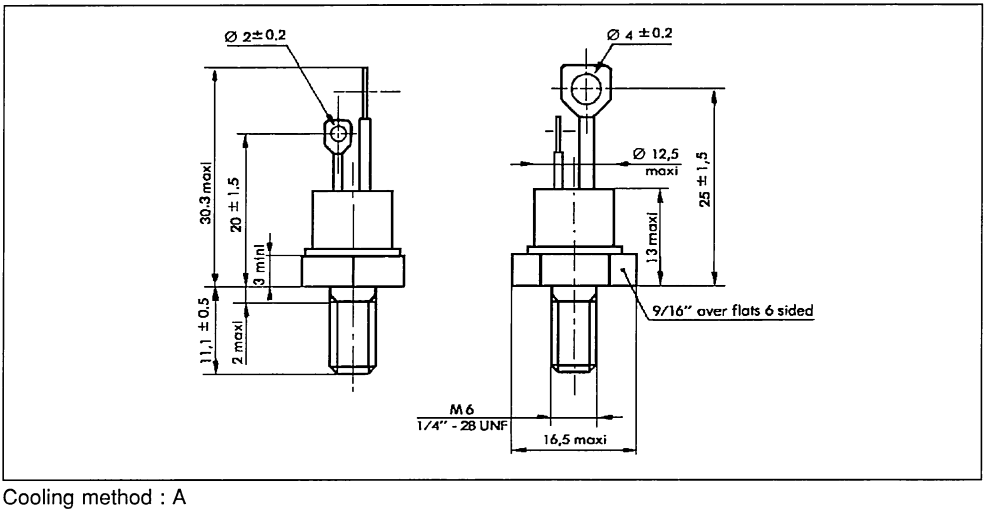


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A

Marking : type number

Weight : 13.5 g

Polarity : ANODE (or A_2) to case

TRIAC > 25 A FAMILY

STANDARD							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
	BTB26-xxx B	50	50	50	100	400 to 800 (30A)	TOP 3
BTA25-xxx B		50	50	50	100	400 to 800 (30A)	RD 91
BTA25-xxx A		100	100	100	150	400 to 800 (30A)	RD 91
BTA40-xxx B		50	50	50	100	400 to 800 (40A)	RD 91
BTA40-xxx A		100	100	100	150	400 to 800 (40A)	RD 91
BTA41-xxx B		50	50	50	100	400 to 800 (40A)	TOP 3
BTA41-xxx A		100	100	100	150	400 to 800 (40A)	TOP 3
	BTB41-xxx B	50	50	50	100	400 to 800 (45A)	TOP 3

ALTERNISTORS						
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)			V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III		
TPDV xx40		200	200	200	600 to 1200 (40A)	TOP 3
TODV xx40		200	200	200	600 to 1200 (40A)	RD 91
	TGDV 6xx	200	200	200	600 to 1200 (60A)	TO 65

METAL CAN							
INSULATED	UNINSULATED	SENSITIVITY I_{GT} (mA)				V_{RRM} Range (V)	PACKAGE
		Q I	Q II	Q III	Q IV		
	TRALxx35 D	100	100	100	150	200 to 700 (35A)	TO 48
	TGAL6xx	100	100	100	150	400 to 1000 (60A)	TO 65

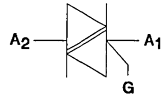
TRIGGER
DB3 / DB4 / DC34
TMMDB3

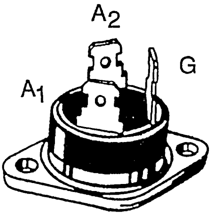
BTA25 A/B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





RD 91
(Plastic)

DESCRIPTION

The BTA25 A/B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 80 °C	30	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	260	A
		tp = 10 ms	250	
I^2t	I^2t value	tp = 10 ms	312.5	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA di_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTA25-... A/B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-c) DC	Junction to case for DC	1.5	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	1.1	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 10A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix A	Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	50	mA
			IV	MAX	150	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2.5		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	70	60	mA
			II		200	180	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	80	mA
V_{TM} *	I_{TM}= 42A tp= 380µs	Tj=25°C		MAX	1.8		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	6		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250		V/µs
(dV/dt)c *	(dI/dt)c = 13.3A/ms	Tj=125°C		MIN	10		V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	A	B
BTA (Insulated)	30	400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

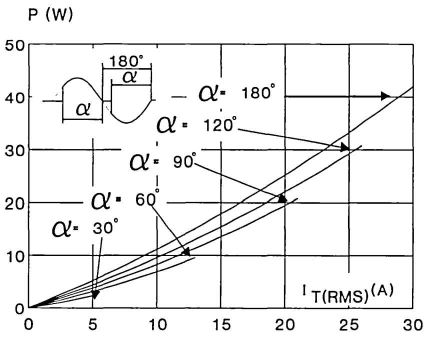


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

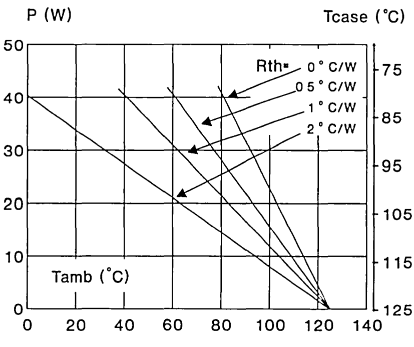


Fig.3 : RMS on-state current versus case temperature.

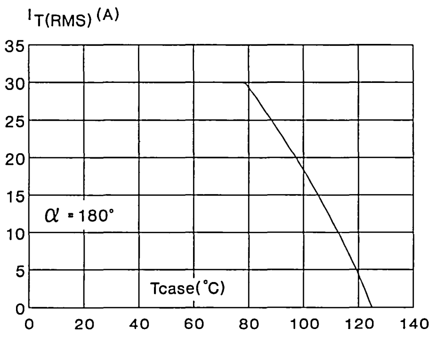


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

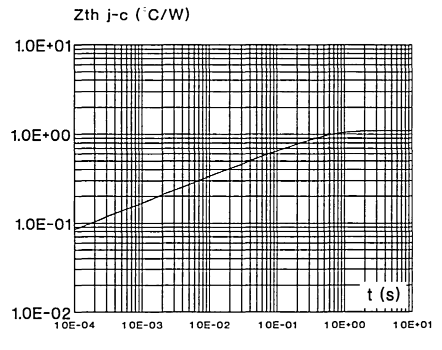


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

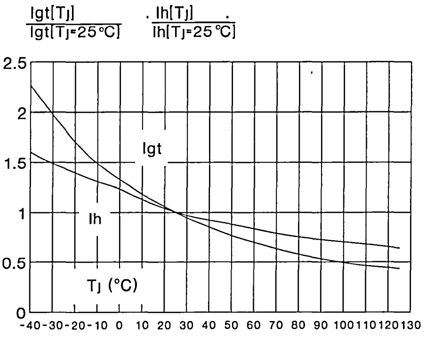


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

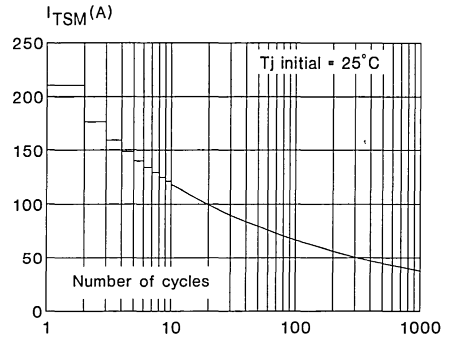


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

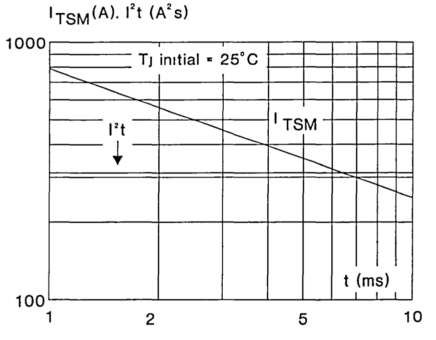
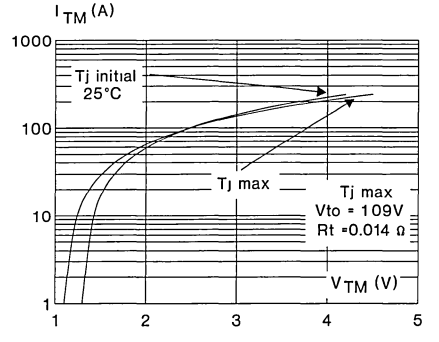
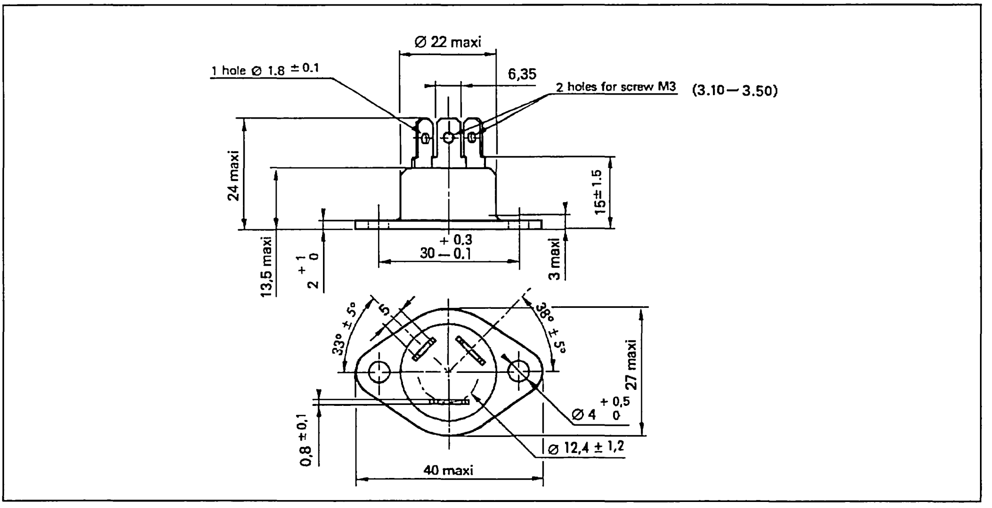


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

RD 91 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 15 g
Polarity : N A

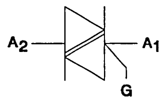
SGS-THOMSON MICROELECTRONICS

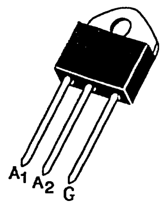
BTA41 A/B
BTB41 B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/μs
- BTA Family :
  INSULATING VOLTAGE = 2500V(RMS)
  (UL RECOGNIZED : E81734)





TOP 3
(Plastic)

DESCRIPTION

The BTA41 A/B / BTB41 B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	Tc = 75 °C	40	A
		BTB	Tc = 85 °C	45	
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp = 8.3 ms	315	A
			tp = 10 ms	300	
I^2t	I^2t value		tp = 10 ms	450	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/μs		Repetitive F = 50 Hz	10	A/μs
			Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	°C

Symbol	Parameter	BTA41-...A/B / BTB41-... B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		50	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	1.2	°C/W
		BTB	0.8	
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	BTA	0.9	°C/W
		BTB	0.6	

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 10A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix A	Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	50	mA
			IV	MAX	150	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2.5		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	70	60	mA
			II		200	180	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	80	mA
V_{TM} *	I_{TM}= 60A tp= 380µs	Tj=25°C		MAX	1.8		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	6		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250	250	V/µs
(dV/dt)c *	(dI/dt)c = 18A/ms BTA (dI/dt)c = 20A/ms BTB	Tj=125°C		MIN	10		V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	A	B
BTA (Insulated)	41	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)	45	400		X
		600		X
		700		X
		800		X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation) (BTA)

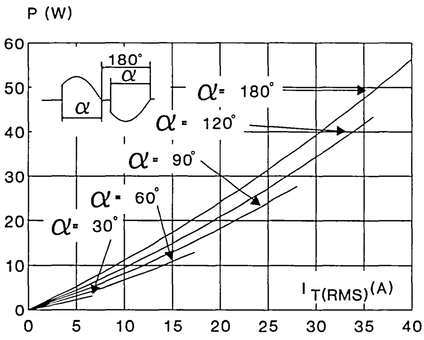


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

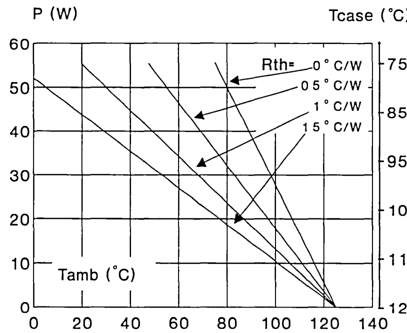


Fig.3 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation) (BTB)

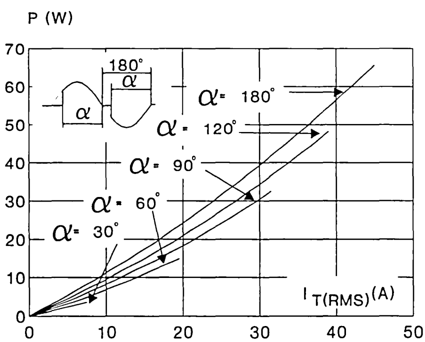


Fig.4 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

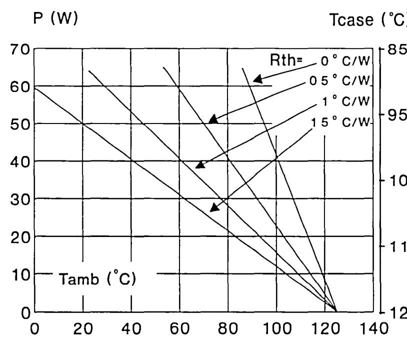


Fig.5 : RMS on-state current versus case temperature. (BTA)

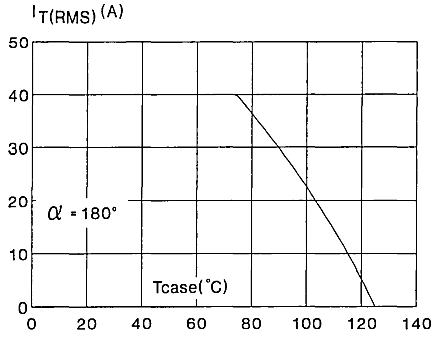


Fig.6 : RMS on-state current versus case temperature. (BTB)

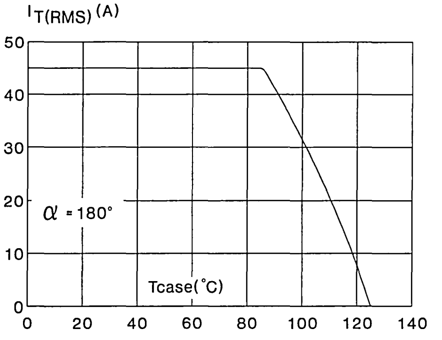


Fig.7 : Thermal transient impedance junction to case and junction to ambient versus pulse duration. (Zth j-c : BTA version only)

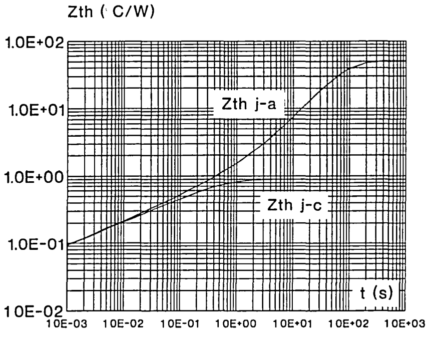


Fig.8 : Relative variation of gate trigger current and holding current versus junction temperature.

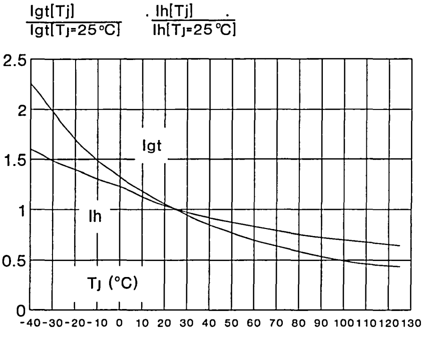


Fig.9 : Non Repetitive surge peak on-state current versus number of cycles.

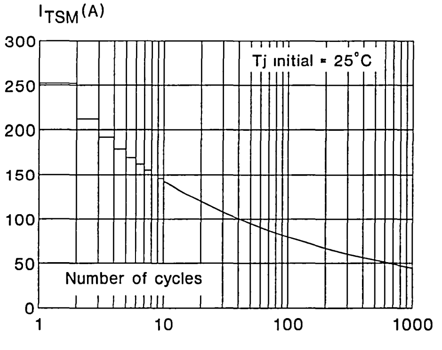
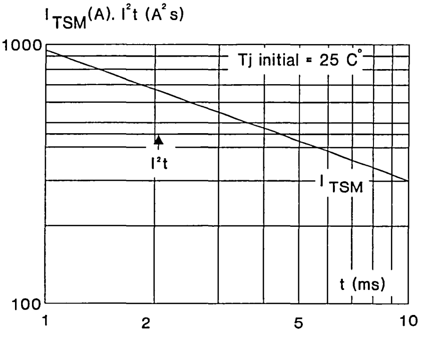
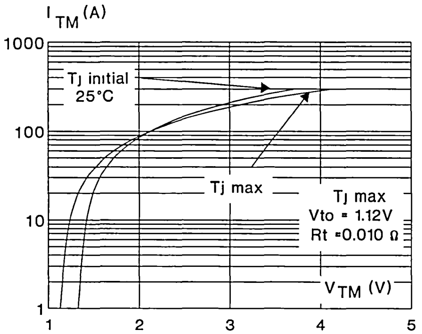


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.



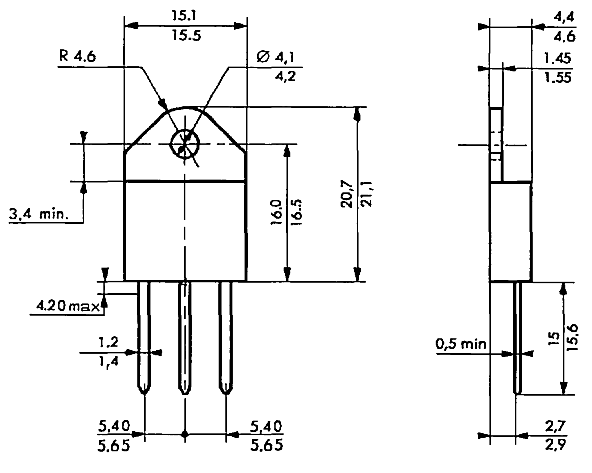
SGS-THOMSON MICROELECTRONICS

Fig.11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g
Polarity : N A

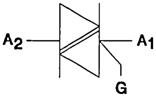
SGS-THOMSON MICROELECTRONICS

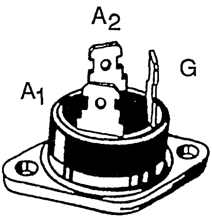
BTA40 A/B

STANDARD TRIACS

FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION : (dV/dt)c > 10V/µs
- BTA Family :
  INSULATING VOLTAGE = 2500V$_{(RMS)}$
  (UL RECOGNIZED : E81734)





RD 91
(Plastic)

DESCRIPTION

The BTA40 A/B triac family are high performance glass passivated PNPN devices.
These parts are suitables for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	40	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	315	A
		tp = 10 ms	300	
I^2t	I^2t value	tp = 10 ms	450	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 500mA dI_G/dt = 1A/µs	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTA40-... A/B				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-c) DC	Junction to case for DC	1.2	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 10A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Suffix A	Suffix B	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	50	mA
			IV	MAX	150	100	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2		V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	2.5		µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	70	60	mA
			II		200	180	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	80	mA
V_{TM} *	I_{TM}= 60A tp= 380µs	Tj=25°C		MAX	1.8		V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.01		mA
		Tj=125°C		MAX	6		
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250		V/µs
(dV/dt)c *	(dI/dt)c = 18A/ms	Tj=125°C		MIN	10		V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

ORDERING INFORMATION

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification	
	A	V	A	B
BTA (Insulated)	40	400	X	X
		600	X	X
		700	X	X
		800	X	X

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

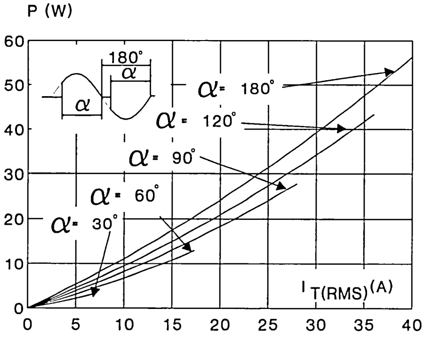


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

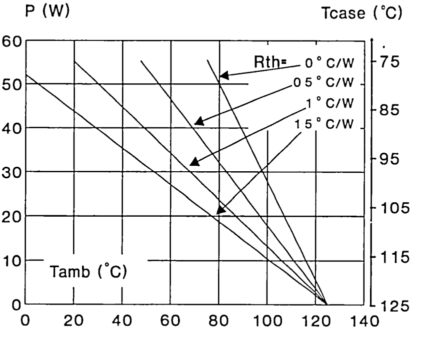


Fig.3 : RMS on-state current versus case temperature.

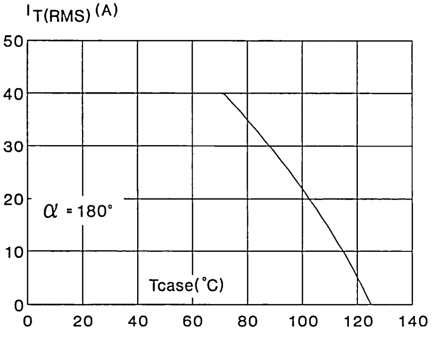


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

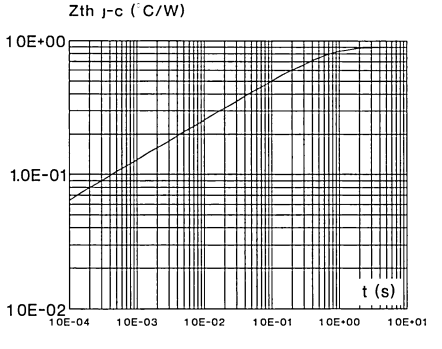


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

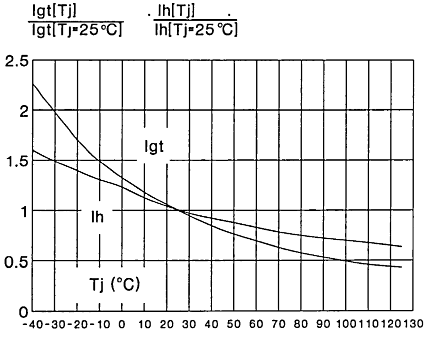


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

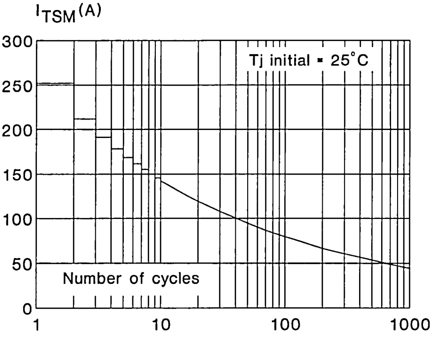


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

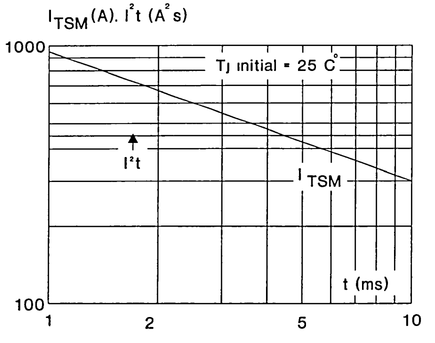
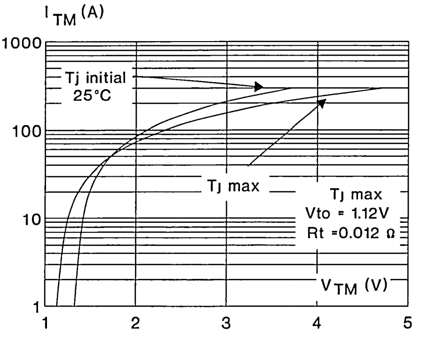
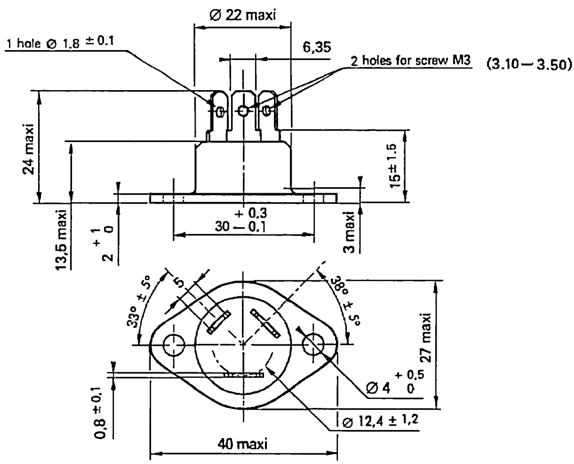


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

RD 91 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 15 g
Polarity : N A

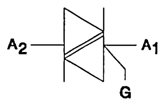
SGS-THOMSON
MICROELECTRONICS

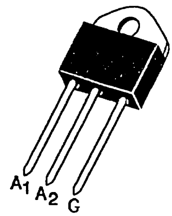
TPDV 640 ---> 1240

ALTERNISTORS

FEATURES

- HIGH COMMUTATION : > 142 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : EB81734)
- HIGH VOLTAGE CAPABILITY : V_{DRM} = 1200 V





TOP 3
(Plastic)

DESCRIPTION

The TPDV 640 ---> 1240 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	40	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	590	A
		tp = 8.3 ms	370	
		tp = 10 ms	350	
I^2t	I^2t value	tp = 10 ms	610	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1.5A dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TPDV				Unit
		640	840	1040	1240	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Contact to ambient	50	°C/W
Rth (j-c) DC	Junction to case for DC	1.2	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 8A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	200	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		TYP	50	mA
V_{TM} *	I_{TM}= 60A tp= 380µs	Tj=25°C		MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=125°C		MAX	8	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=125°C		MIN	35	A/ms
	(dV/dt)c = 10V/µs				142	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

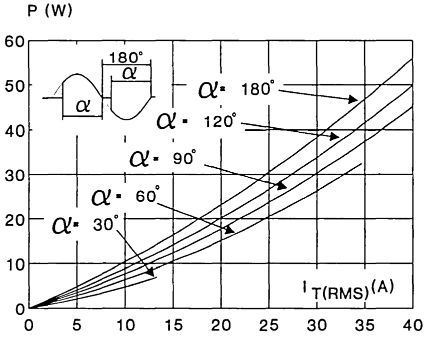


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

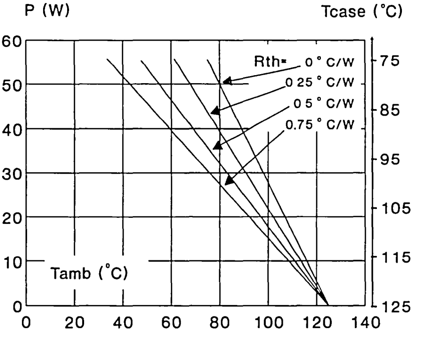


Fig.3 : RMS on-state current versus case temperature.

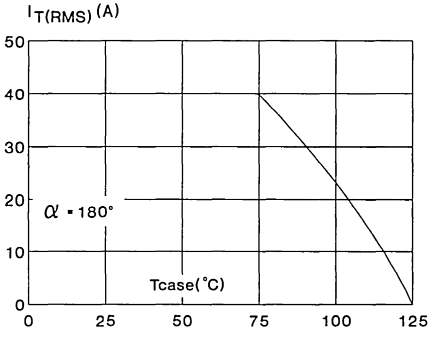


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

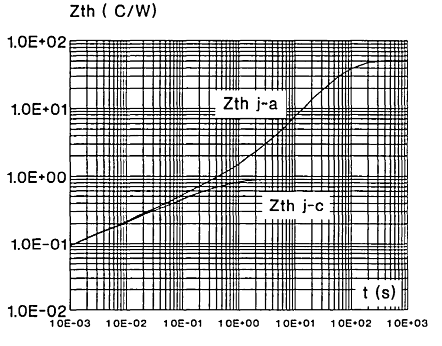


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

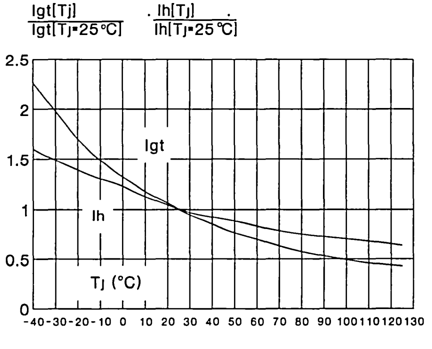


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

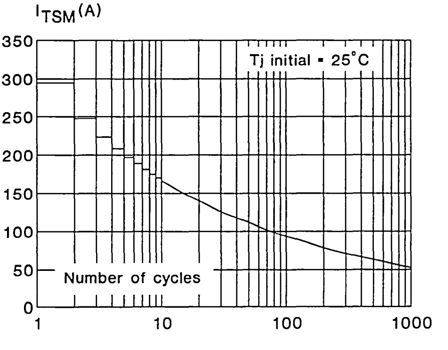


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

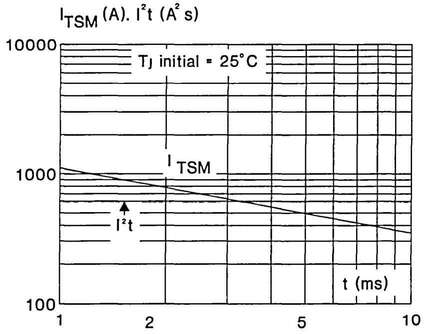


Fig.8 : On-state characteristics (maximum values).

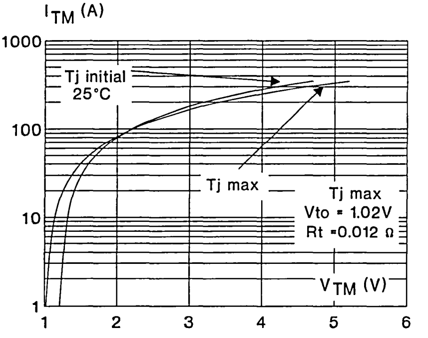
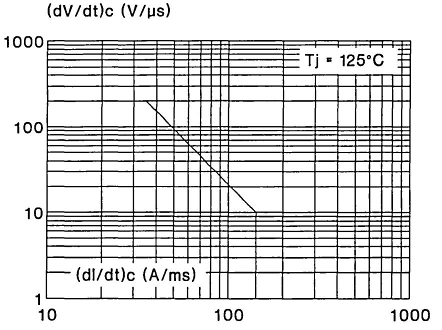
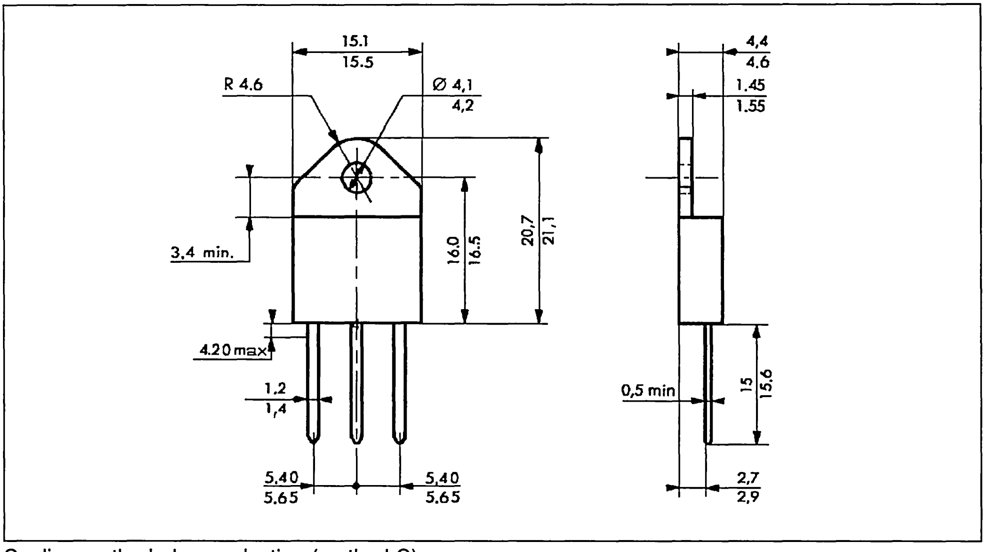


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

TOP 3 Plastic



Cooling method : by conduction (method C)
Marking : type number
Weight : 5 g

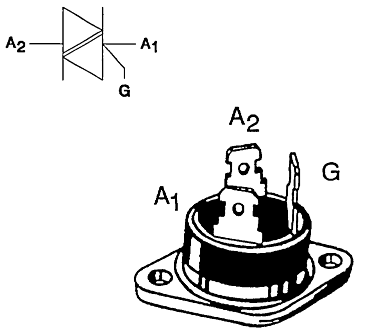
SGS-THOMSON MICROELECTRONICS

TODV 640 ---> 1240

ALTERNISTORS

FEATURES

- HIGH COMMUTATION : > 142 A/ms (400Hz)
- INSULATING VOLTAGE = 2500V$_{(RMS)}$ (UL RECOGNIZED : EB1734)
- HIGH VOLTAGE CAPABILITY : V_{DRM} = 1200 V



RD 91
(Plastic)

DESCRIPTION

The TODV 640 ---> 1240 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	40	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	590	A
		tp = 8.3 ms	370	
		tp = 10 ms	350	
I^2t	I^2t value	tp = 10 ms	610	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1.5A dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TODV				Unit
		640	840	1040	1240	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) with grease	0.1	°C/W
Rth (j-c) DC	Junction to case for DC	1.2	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 8A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	200	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		TYP	50	mA
V_{TM} *	I_{TM}= 60A tp= 380µs	Tj=25°C		MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=125°C		MAX	8	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=125°C		MIN	35	A/ms
	(dV/dt)c = 10V/µs				142	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

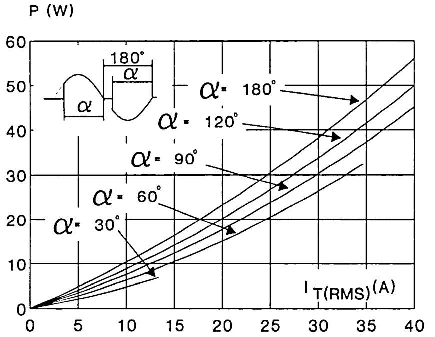


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

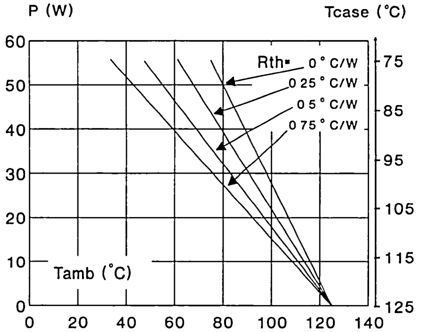


Fig.3 : RMS on-state current versus case temperature.

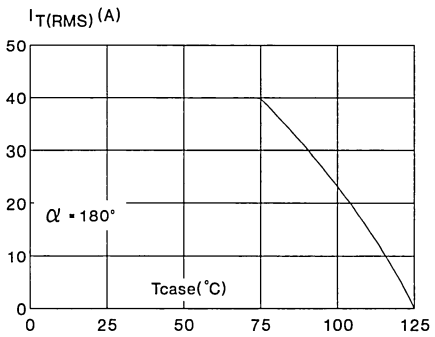


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

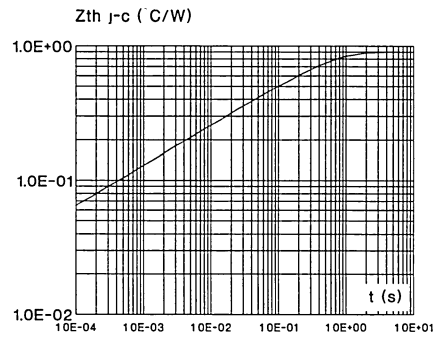


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

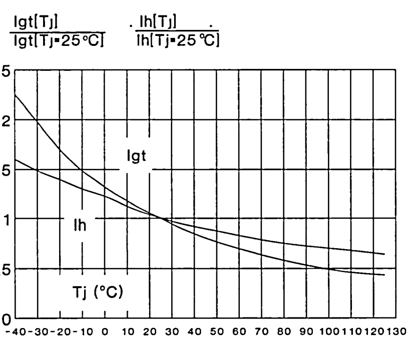


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

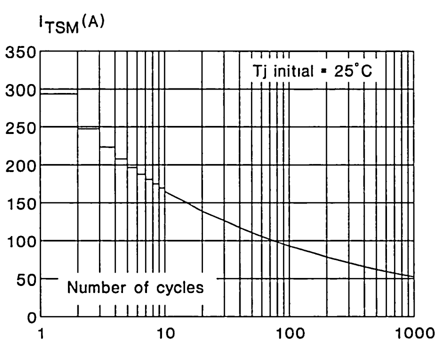


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

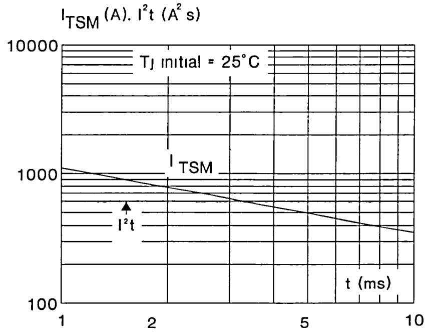


Fig.8 : On-state characteristics (maximum values).

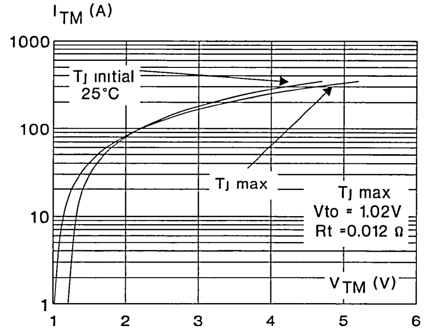
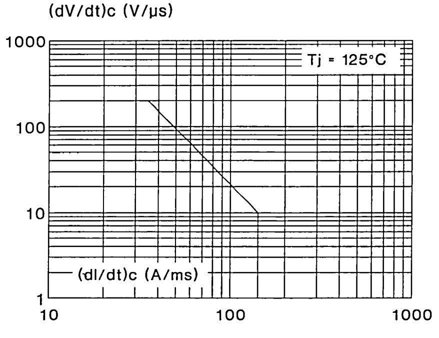
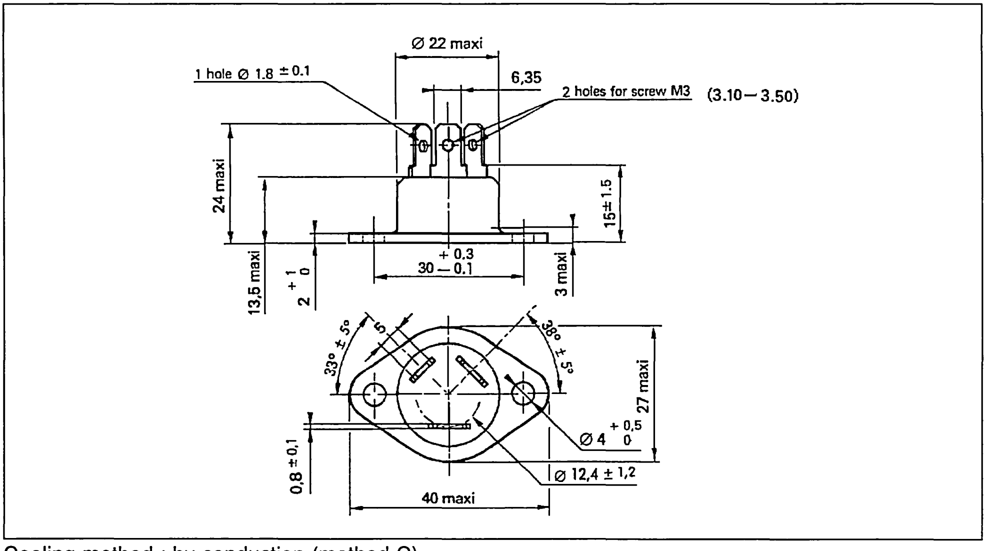


Fig.9 : Safe operating area.



PACKAGE MECHANICAL DATA (in millimeters)

RD 91 Plastic



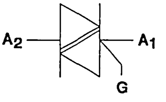
Cooling method : by conduction (method C)
Marking : type number
Weight : 15 g

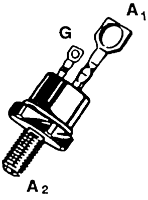
TRAL 1135D ---> 3835D

STANDARD TRIACS

FEATURES

- I_{GT} SPECIFIED IN FOUR QUADRANTS
- EXCELLENT THERMAL IMPEDANCE PACKAGE
- HIGH COMMUTATION, (dV/dt)c > 10 V/µs





TO 48
(Metal)

DESCRIPTION

The TRAL 1135D ---> 3835D use high performance passivated glass triac technology. These high power triacs on TO 48 package are well adapted for use on 220 V and 380 V main, suitable for applications such : motor control, heating control, light dimmer...

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 80 °C	35	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	330	A
		tp = 10 ms	300	
I^2t	I^2t value	tp = 10 ms	450	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1A di_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TRAL				Unit
		1135D	2235D	3335D	3835D	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) for recommended stud torque	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.1	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.8	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 6A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	mA
			IV	MAX	150	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	3	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 53A tp= 380µs	Tj=25°C		MAX	2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=110°C		MAX	4	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	V/µs
(dV/dt)c *	(dI/dt)c = 15.5A/ms	Tj=110°C		MIN	10	V/µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

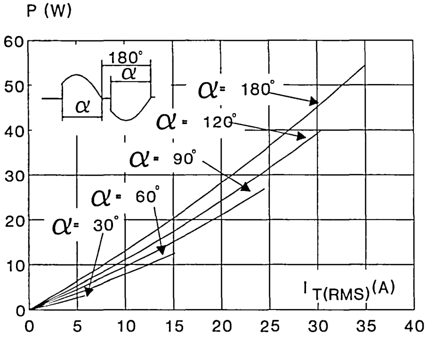


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

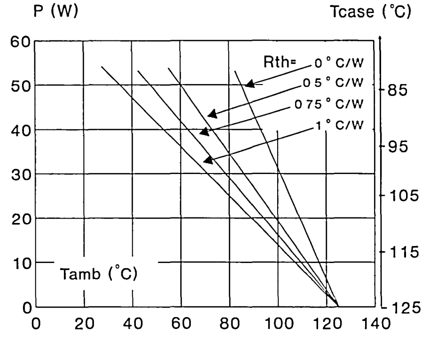


Fig.3 : RMS on-state current versus case temperature.

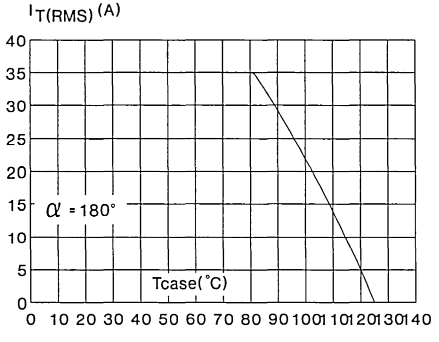


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

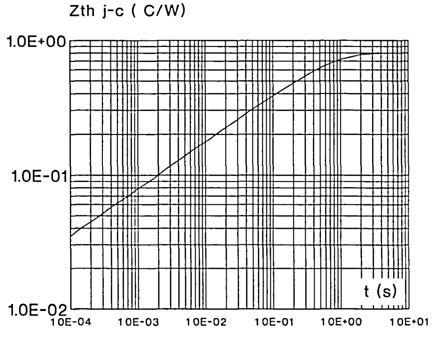


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

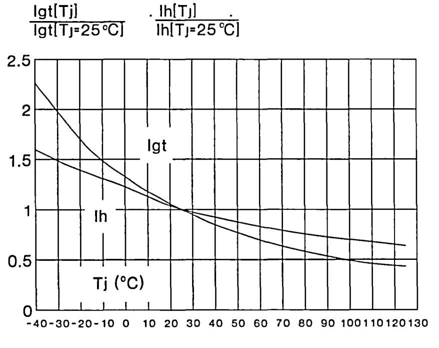


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

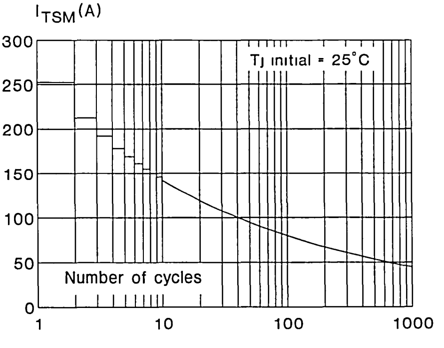


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

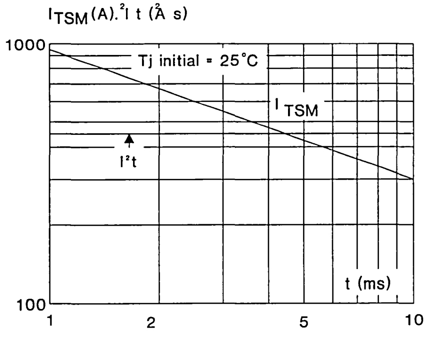
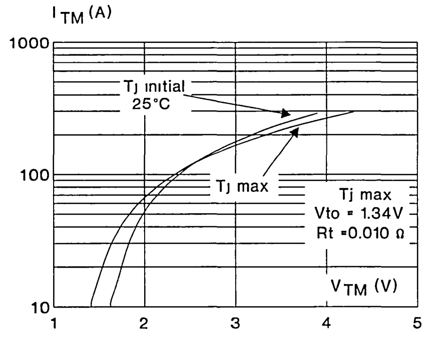
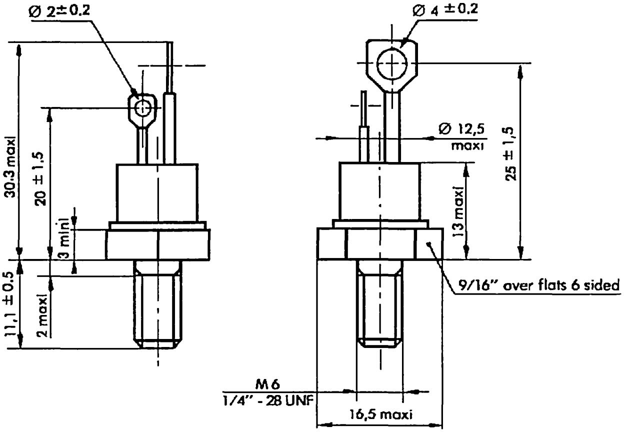


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A

Marking : type number

Weight : 13.5 g

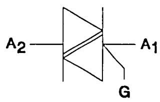
Polarity : ANODE (or A_2) to case

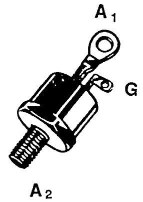
TGAL 604 ---> 610

STANDARD TRIACS

FEATURES

- I_{GT} SPECIFIED IN FOUR QUADRANTS
- EXCELLENT THERMAL IMPEDANCE PACKAGE
- HIGH VOLTAGE CAPABILITY, V_{DRM} : 1000 V





TO 65
(Metal)

DESCRIPTION

The TGAL 604 ---> 610 use high performance passivated glass triac technology. These high power triacs on TO 65 package are well adapted for use on 220 V and 380 V main, suitable for applications such : motor control, heating control, light dimmer...

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	60	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	550	A
		tp = 10 ms	500	
I^2t	I^2t value	tp = 10 ms	1250	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1A dI_G/dt = 1A/µs	Repetitive F = 50 Hz	50	A/µs
		Non Repetitive	300	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TGAL				Unit
		604	606	608	610	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) for recommended stud torque	0.3	°C/W
Rth (j-c) DC	Junction to case for DC	0.7	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.55	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 μs) I_{GM} = 6A (tp = 20 μs) V_{GM} = 16V (tp = 20 μs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-III	MAX	100	mA
			II-IV	MAX	150	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/μs	Tj=25°C	I-II-III-IV	TYP	3	μs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 100A tp= 380μs	Tj=25°C		MAX	2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=125°C		MAX	10	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	250	V/μs
(dV/dt)c *	(dI/dt)c = 26.7A/ms	Tj=125°C		MIN	10	V/μs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

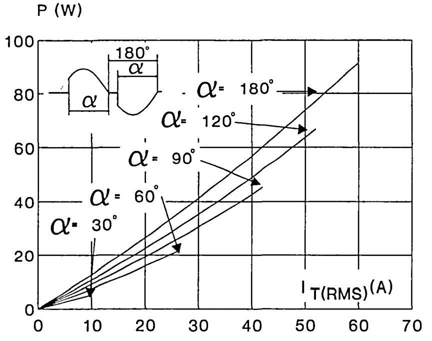


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

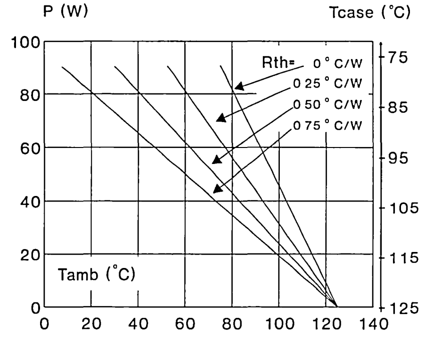


Fig.3 : RMS on-state current versus case temperature.

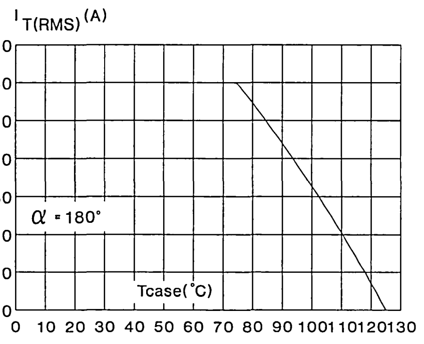


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

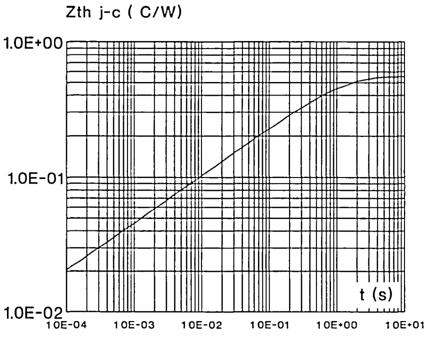


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

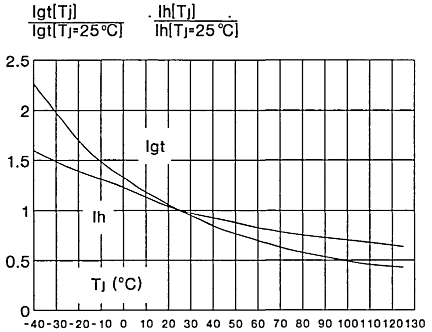


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

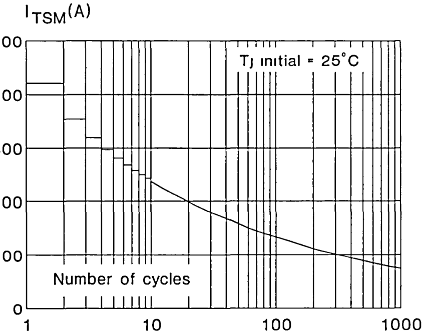


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

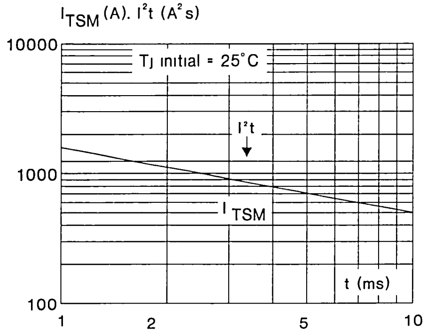
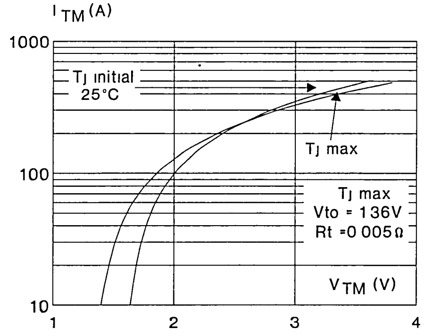
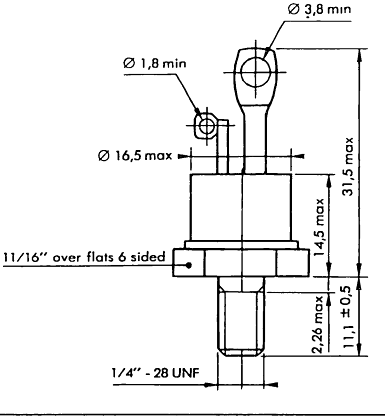


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal



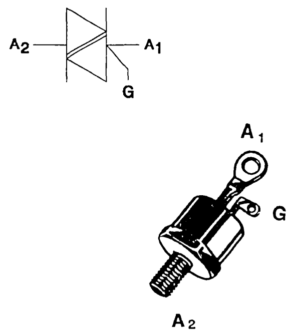
Cooling method : by conduction (method C)
Marking : type number
Weight : 19 g
Polarity : ANODE (or A_2) to case

TGDV 606 ---> 612

ALTERNISTORS

FEATURES

- HIGH COMMUTATION : > 213 A/ms (400Hz)
- HERMETIC PACKAGE : TO 65 Metal
- HIGH VOLTAGE CAPABILITY : V_{DRM} = 1200 V



TO 65
(Metal)

DESCRIPTION

The TGDV 606 ---> 612 use a high performance passivated glass alternistor technology. Featuring very high commutation levels and high surge current capability, this family is well adapted to power control on inductive load (motor, transformer...)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 75 °C	60	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 2.5 ms	840	A
		tp = 8.3 ms	550	
		tp = 10 ms	500	
I^2t	I^2t value	tp = 10 ms	1250	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1.5A dI_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TGDV				Unit
		606	**608**	**610**	**612**	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) for recommended stud torque	0.3	°C/W
Rth (j-c) DC	Junction to case for DC	0.7	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.55	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\,(AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 8A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	200	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=125°C	I-II-III	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III	TYP	2.5	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		TYP	50	mA
V_{TM} *	I_{TM}= 85A tp= 380µs	Tj=25°C		MAX	2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=100°C		MAX	5	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=125°C		MIN	500	V/µs
(dI/dt)c *	(dV/dt)c = 200V/µs	Tj=100°C		MIN	50	A/ms
	(dV/dt)c = 10V/µs				213	

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

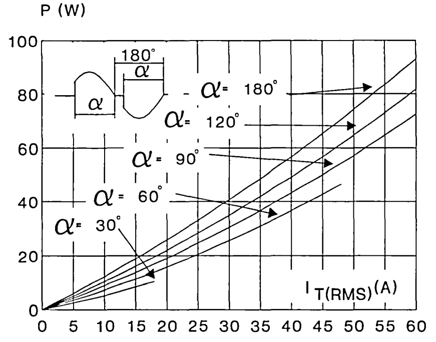


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

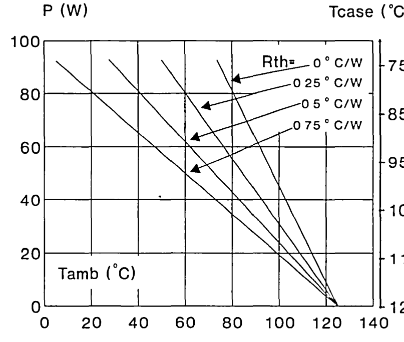


Fig.3 : RMS on-state current versus case temperature.

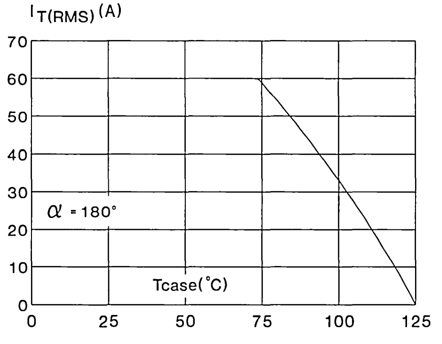


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

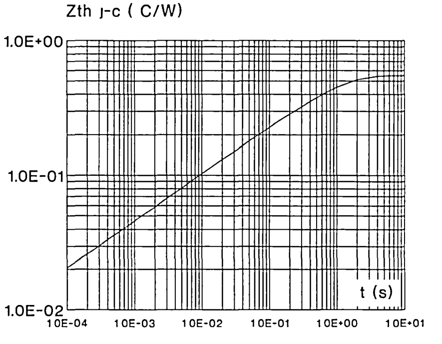


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

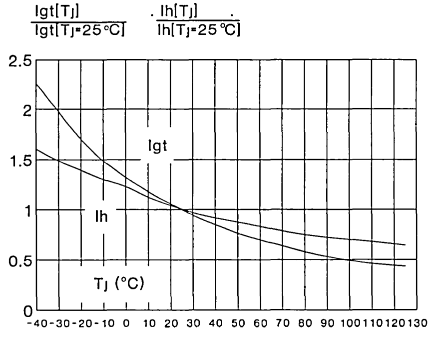


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

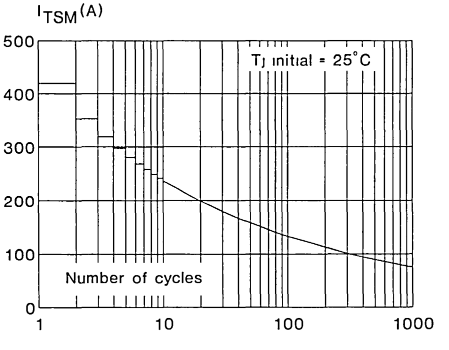


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

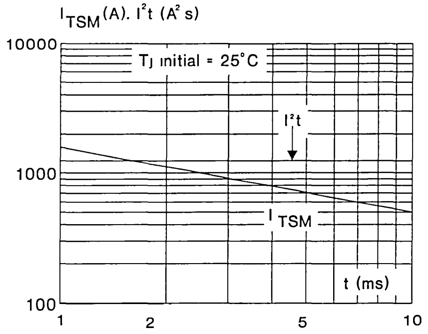


Fig.8 : On-state characteristics (maximum values).

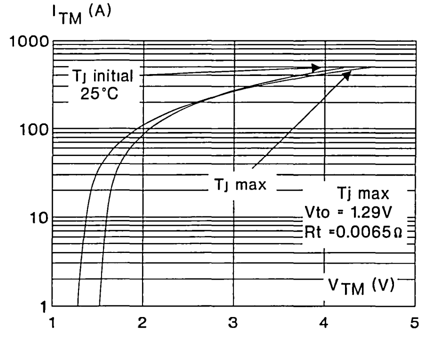
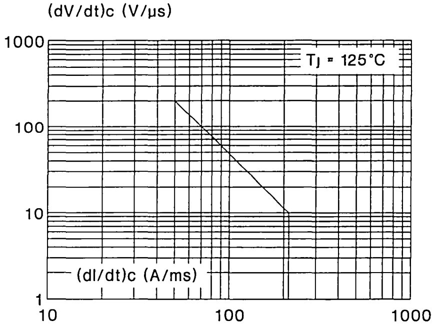


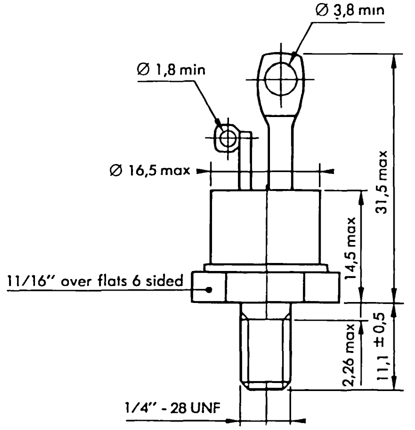
Fig.9 : Safe operating area.



SGS-THOMSON MICROELECTRONICS

PACKAGE MECHANICAL DATA (in millimeters)

TO 65 Metal



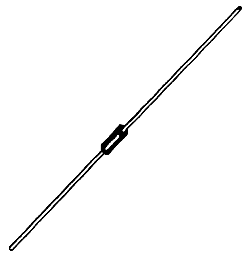
Cooling method : by conduction (method C)
Marking : type number
Weight : 19 g

DB3 / DB4 / DC34

TRIGGER DIODES

FEATURES

- V_{BO} : 32V / 34V / 40V VERSIONS
- BREAKOVER VOLTAGE SYMETRY : ± 3V max
- LOW BREAKOVER CURRENT : 100µA max



DO 35
(Glass)

DESCRIPTION

High reliability glass passivation insuring parameter stability and protection against junction contamination.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
P	Power dissipation on printed circuit (L = 10 mm)	Ta = 50 °C	150	mW
I_{TRM}	Repetitive peak on-state current	tp = 20 µs F= 100 Hz	2	A
Tstg Tj	Storage and operating junction temperature range		- 40 to + 125 - 40 to + 110	°C °C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R_{th} (j-a)	Junction to ambient	400	°C/W
R_{th} (j-l)	Junction-leads	150	°C/W

ELECTRICAL CHARACTERISTICS (Tj = 25°C)

Symbol	Parameter	Test Conditions		Suffix			Unit
				DB3	DC34	DB4	
V_{BO}	Breakover voltage *	C = 22nF ** see diagram 1	MIN	28	30	35	V
			TYP	32	34	40	
			MAX	36	38	45	
$[\lvert +V_{BO}\rvert - \lvert -V_{BO}\rvert]$	Breakover voltage symmetry	C = 22nF ** see diagram 1	MAX	± 3			V
$\lvert\Delta V\pm\rvert$	Dynamic breakover voltage *	$\Delta I = [I_{BO}$ to $I_F = 10$ mA] see diagram 1	MIN	5			V
V_O	Output voltage *	see diagram 2	MIN	5			V
I_{BO}	Breakover current *	C = 22nF **	MAX	100	50	100	µA
tr	Rise time *	see diagram 3	TYP	1.5			µs
I_B	Leakage current *	$V_B = 0.5\ V_{BO}$ max see diagram 1	MAX	10			µA

* Electrical characteristic applicable in both forward and reverse directions.
** Connected in parallel with the devices..

DIAGRAM 1 : Current-voltage characteristics

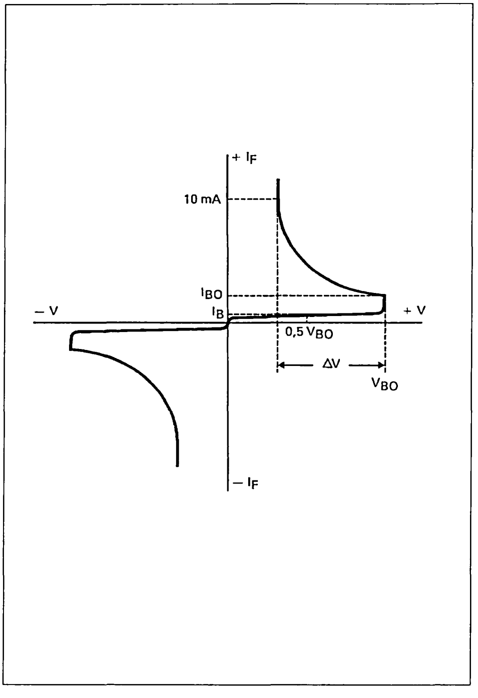


DIAGRAM 2 : Test circuit for output voltage

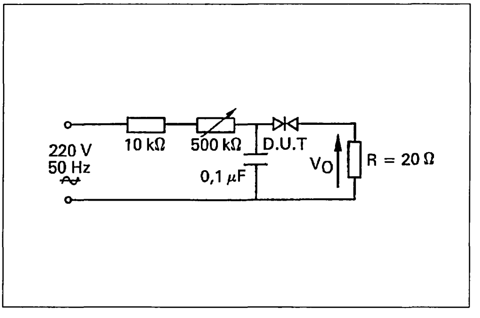


DIAGRAM 3 : Test circuit see diagram 2.
Adjust R for Ip = 0.5A

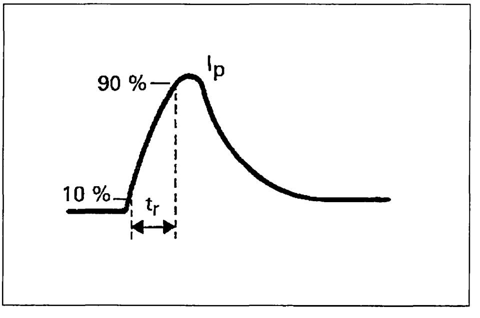


Fig.1 : Power dissipation versus ambient temperature (maximum values)

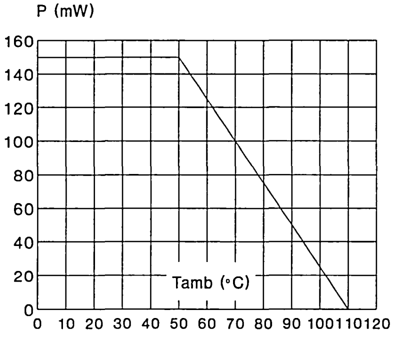


Fig.2 : Relative variation of V_{BO} versus junction temperature (typical values)

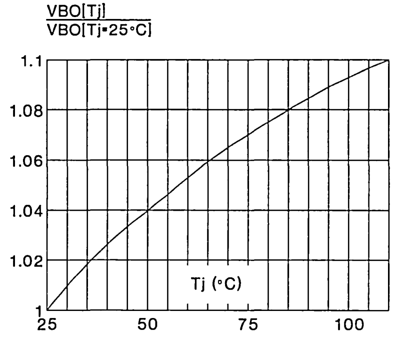
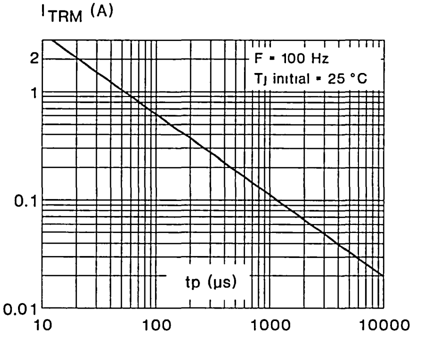
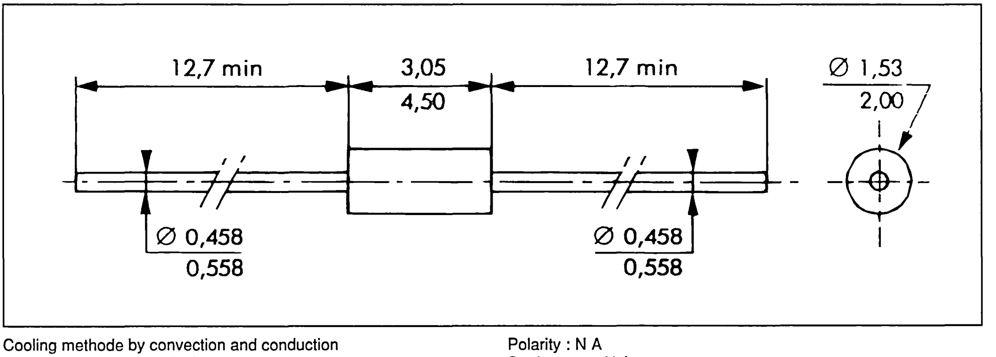


Fig.3 : Peak pulse current versus pulse duration (maximum values)



PACKAGE MECHANICAL DATA (in millimeters)
DO 35 Glass



Cooling methode by convection and conduction
Marking : Without (painting)
Weight : 0.15 g

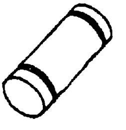
Polarity : N A
Stud torque : N A

TMMDB3

TRIGGER DIODES

FEATURES

- V_{BO} : 32V VERSION
- BREAKOVER VOLTAGE SYMETRY : ± 3V max
- LOW BREAKOVER CURRENT : 100µA max



MINIMELF
(Glass)

DESCRIPTION

High reliability glass passivation insuring parameter stability and protection against junction contamination.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
P	Power dissipation on printed circuit (L = 10 mm)	Ta = 50 °C	150	mW
I_{TRM}	Repetitive peak on-state current	tp = 20 µs F= 100 Hz	2	A
Tstg Tj	Storage and operating junction temperature range		- 40 to + 125 - 40 to + 110	°C °C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j\text{-}a)}$	Junction to ambient	400	°C/W
$R_{th\ (j\text{-}l)}$	Junction to tie-point	300	°C/W

ELECTRICAL CHARACTERISTICS (Tj = 25°C)

Symbol	Parameter	Test Conditions		Suffix TMMDB3	Unit
V_{BO}	Breakover voltage *	C = 22nF ** see diagram 1	MIN	28	V
			TYP	32	
			MAX	36	
$[I+V_{BO}I-I-V_{BO}I]$	Breakover voltage symmetry	C = 22nF ** see diagram 1	MAX	± 3	V
$I\Delta V\pm I$	Dynamic breakover voltage *	ΔI = [I_{BO} to I_F = 10 mA] see diagram 1	MIN	5	V
V_O	Output voltage *	see diagram 2	MIN	5	V
I_{BO}	Breakover current *	C = 22nF **	MAX	100	µA
tr	Rise time *	see diagram 3	TYP	1.5	µs
I_B	Leakage current *	V_B = 0.5 V_{BO} max see diagram 1	MAX	10	µA

* Electrical characteristic applicable in both forward and reverse directions.
** Connected in parallel with the devices..

DIAGRAM 1 : Current-voltage characteristics

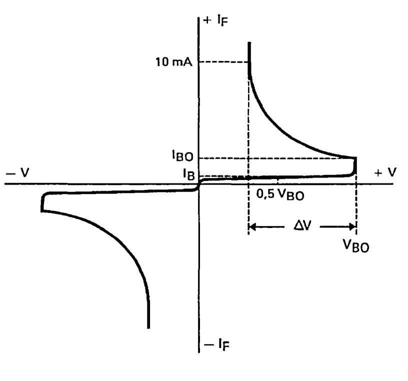


DIAGRAM 2 : Test circuit for output voltage

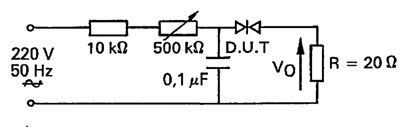


DIAGRAM 3 : Test circuit see diagram 2.
Adjust R for Ip = 0.5A

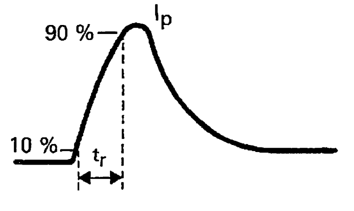


Fig.1 : Power dissipation versus ambient temperature (maximum values)

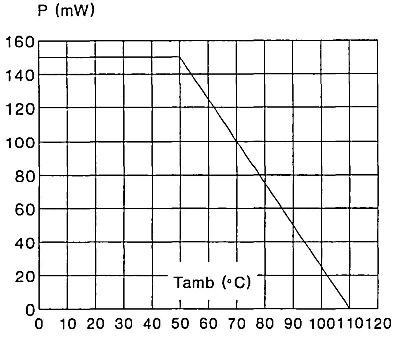


Fig.2 : Relative variation of V_{BO} versus junction temperature (typical values)

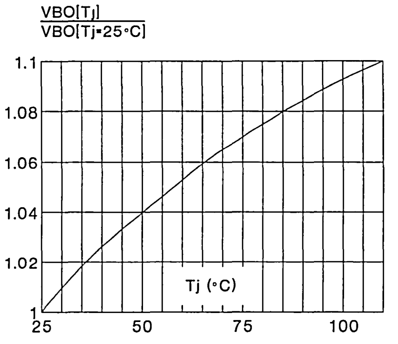
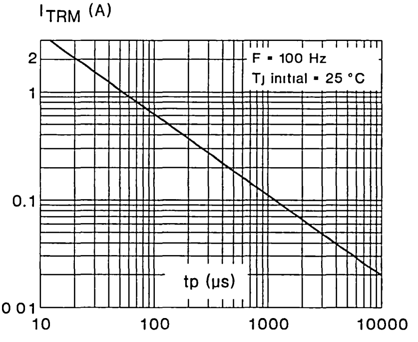
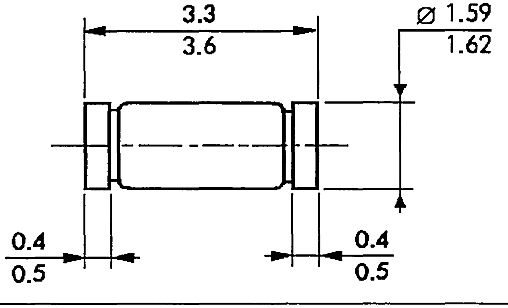


Fig.3 : Peak pulse current versus pulse duration (maximum values)



PACKAGE MECHANICAL DATA (in millimeters)
MINIMELF Glass



Cooling methode by convection and conduction
Marking : Clear
Weight : 0.05 g

Polarity : N A
Stud torque : N A

PACKAGE SELECTION

MATERIAL TYPE	Case	$I_{T(RMS)}$ (A)	Type (1)	SCR'S				TRIACS						
				Sensitive Gate	Standard	Overvoltage Protection	Fast Switchs	Logic Level	Snubberless	Sensitive Gate	Standard	Light Dimmer	Alternistor	Diac
PLASTIC	TO 92	0.8	HOLE U	x						x				
	SOT 223	1	SMD U	x						x				
	TL	3 - 4	HOLE U	x	x					x	x			
	SOT 82	4	HOLE U						x					
	SOT 194	4	SMD U						x					
	ISOWATT 220	4	HOLE I						x					
	TO220 AB	4 - 25	HOLE I/U	x	x	x		x	x	x	x	x	x	
	RD 91	25 - 40	HOLE I		x						x		x	
	TOP 3	25 - 55	HOLE I/U		x				x		x		x	
	ISOTOP	50 - 70 *	SCREW I		x									
METAL	TO 64	7.4	STUD		x									
	TO 48	25 - 50	STUD		x	x	x				x			
	TO 65	60 - 63	STUD		x		x				x		x	
GLASS	DO 35	-	AXIAL LEADS											x
	Minimelf	-	SMD											x

(1) I = Insulated / U = Unisulated

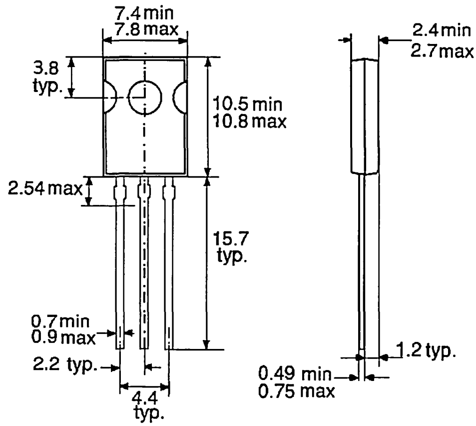
* + Diode

PACKAGE / $I_{T(RMS)}$ (A)	PLASTIC UNINSULATED							PLASTIC INSULATED					METAL CASE		
	TO 92	SOT 223	TL	SOT 194	SOT 82	TO220 AB	TOP 3	ISOWATT220	TO220 AB	TOP 3	RD 91	ISOTOP	TO 64	TO 48	TO 65
0.8															
1															
3															
4															
6															
8															
10															
12															
16															
25															
35															
40															
50															
55															
60															
63															
70															

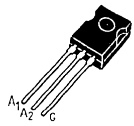
PLASTIC MEDIUM POWER

Dimensions in millimeters

SOT 82



TRIAC

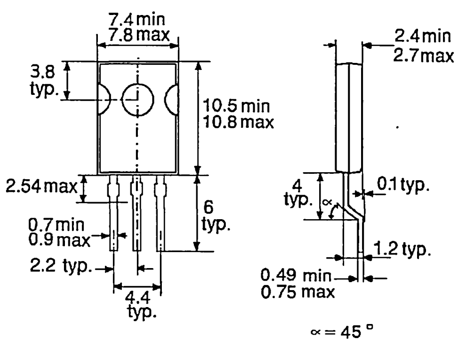


Cooling methode : C
Marking : Type number
Weight : 0.72 g
Polarity : N A
Stud torque : N A

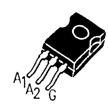
PLASTIC MEDIUM POWER

Dimensions in millimeters

SOT 194



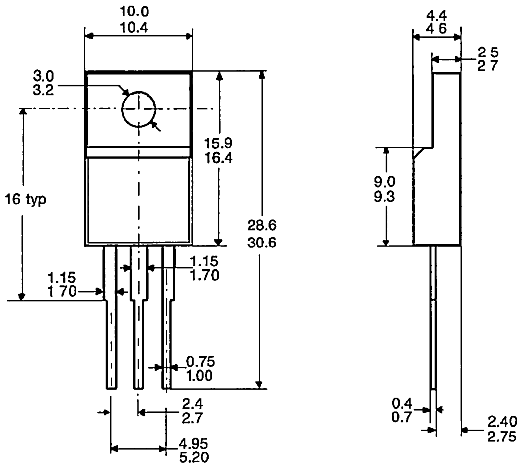
TRIAC



Cooling methode : C
Marking : Type number
Weight : 0.68 g
Polarity : N A
Stud torque : N A

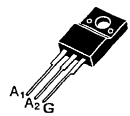
PLASTIC MEDIUM POWER

Dimensions in millimeters



ISOWATT220

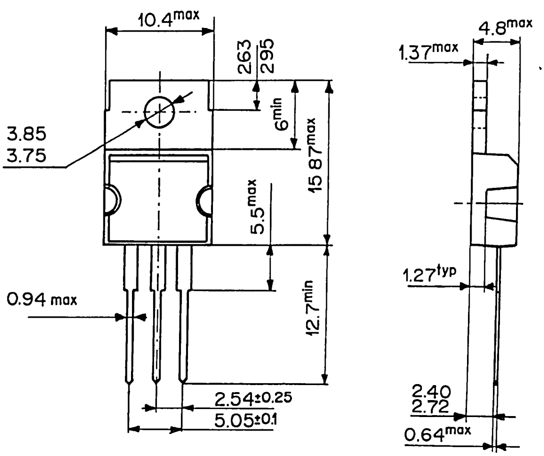
TRIAC



Cooling methode : C
Marking : Type number
Weight : 2.1 g
Polarity : N A
Stud torque : N A

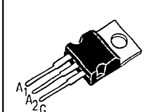
PLASTIC MEDIUM POWER (T4.. T FAMILY ONLY)

Dimensions in millimeters



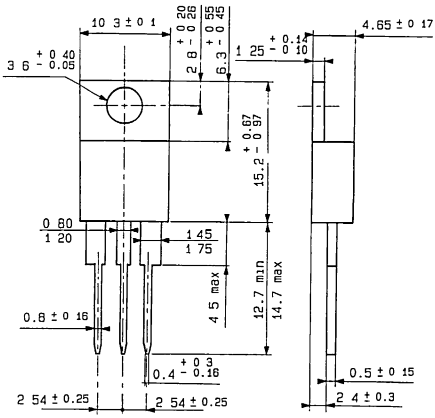
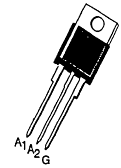
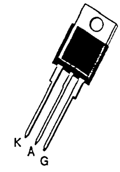
TO220 AB

TRIAC



Cooling methode : C
Marking : Type number
Weight : 2 g
Polarity : N A
Stud torque : N A

PLASTIC MEDIUM POWER (EXEPTED T4.. T FAMILY)

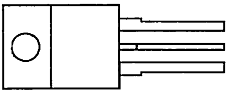
Dimensions in millimeters	TO220 AB
	TRIAC  SCR 

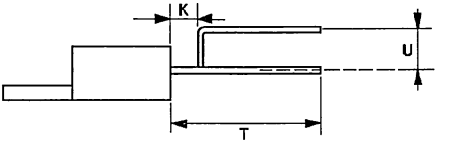
Cooling methode : C
Marking : Type number
Weight : 2 g
Polarity : N A
Stud torque : N A

LEAD FORMING
PLASTIC MEDIUM POWER (EXEPTED T4.. T FAMILY)

MOUNTING IN "THROUGH HOLE " BOARDS

OPTION 1
"/F5"





DIMENSIONS				
	millimeters		inches	
	MIN.	MAX.	MIN.	MAX.
K	1.65	2.41	0.065	0.095
U	2.92	3.30	0.115	0.130
T	8.96	11.00	0.353	0.433

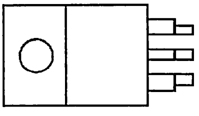
TO220

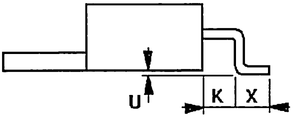
TRIAC

SCR

SURFACE MOUNT ISOLATED AND NON ISOLATED TYPES

OPTION 2
"/F2"





DIMENSIONS				
	millimeters		inches	
	MIN.	MAX.	MIN.	MAX.
K	2.03	2.54	0.080	0.100
U	0.00	0.25	0.000	0.010
X	2.79	3.30	0.110	0.130

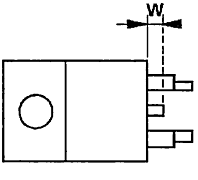
TO220

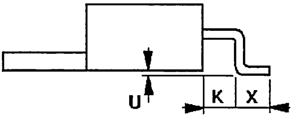
TRIAC

SCR

SURFACE MOUNT ANODE CONNECTED TO HEAT SINK NON ISOLATED TYPES

OPTION 3
"/F3"





DIMENSIONS				
	millimeters		inches	
	MIN.	MAX.	MIN.	MAX.
K	2.03	2.54	0.080	0.100
U	0.00	0.25	0.000	0.010
X	2.79	3.30	0.110	0.130
W	0.00	2.00	0.000	0.079

TO220

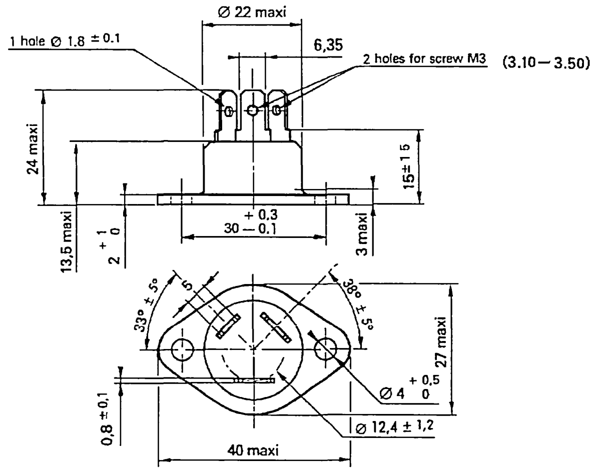
TRIAC

SCR

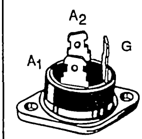
PLASTIC HIGH POWER

Dimensions in millimeters

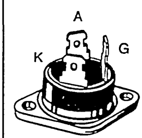
RD 91



TRIAC



SCR

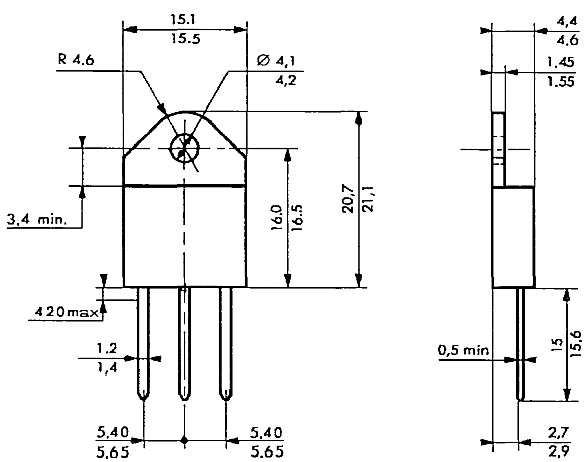


Cooling methode : C
Marking : Type number
Weight : 15 g
Polarity : N A
Stud torque : N A

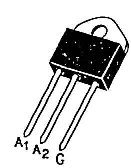
PLASTIC HIGH POWER

Dimensions in millimeters

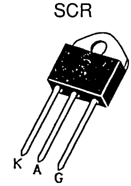
TOP 3



TRIAC



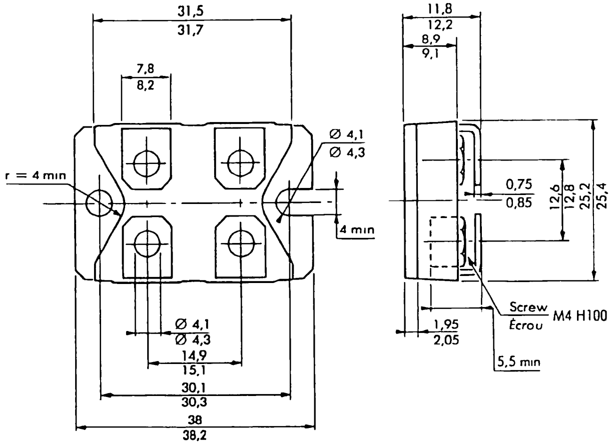
SCR



Cooling methode : C
Marking : Type number
Weight : 5 g
Polarity : N A
Stud torque : N A

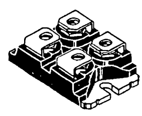
PLASTIC HIGH POWER

Dimensions in millimeters



ISOTOP

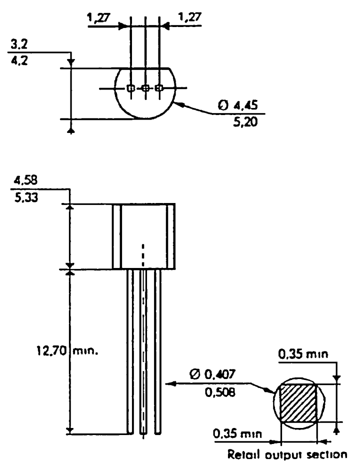
SCR



Cooling methode : C
Marking : Type number
Weight : 28.5 g
Polarity : N A
Stud torque : 13 kg.cm (max 15 kg.cm)

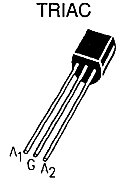
PLASTIC LOW POWER

Dimensions in millimeters

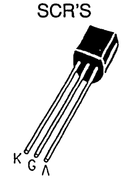


TO 92

TRIAC



SCR'S

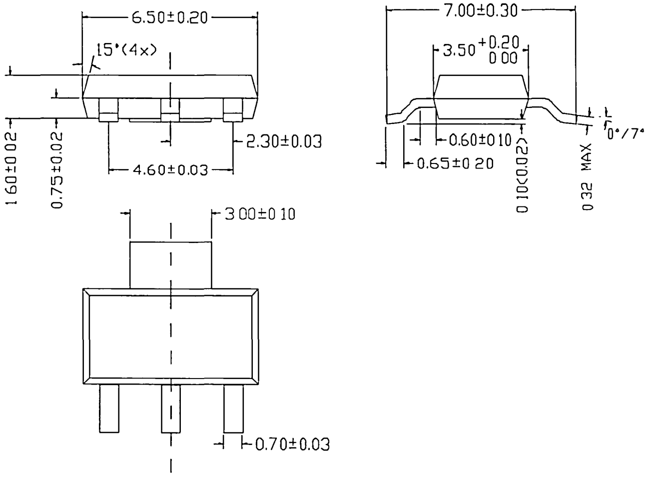


Cooling methode : C
Marking : Type number
Weight : 0.2 g
Polarity : N A
Stud torque : N A

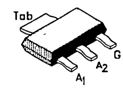
PLASTIC LOW POWER

SOT 223

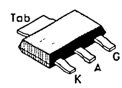
Dimensions in millimeters



TRIAC



SCR

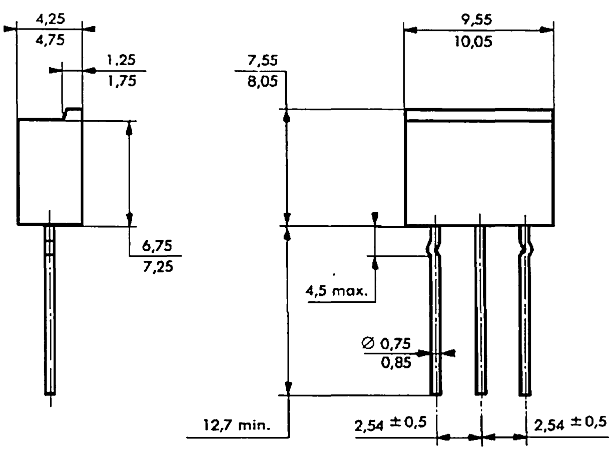


Cooling methode : C
Marking : Type number
Weight : 0.11 g
Polarity : N A
Stud torque : N A

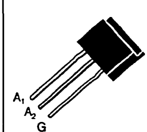
PLASTIC LOW POWER

TL

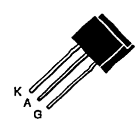
Dimensions in millimeters



TRIAC



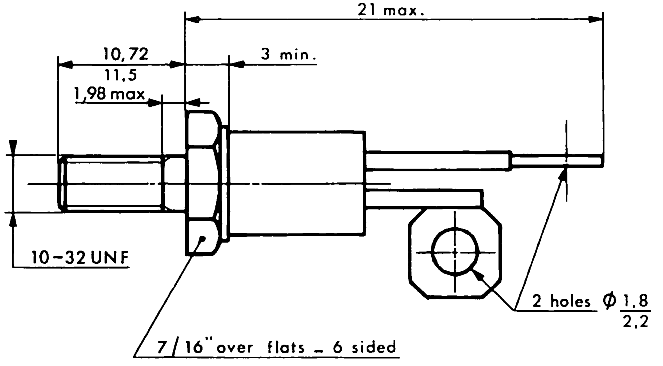
SCR'S



Cooling methode : A
Marking : Type number
Weight : 0.8 g
Polarity : N A
Stud torque : N A

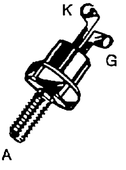
METAL

Dimensions in millimeters



TO 64

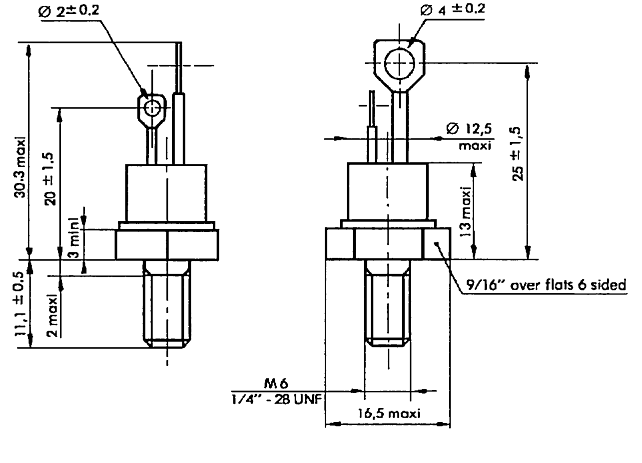
SCR



Cooling methode : C
Marking : Type number
Weight : 5 g
Polarity : Anode to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

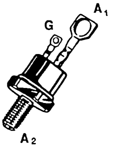
METAL

Dimensions in millimeters

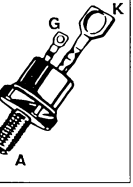


TO 48

TRIAC



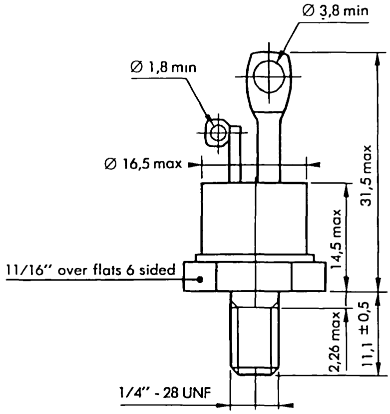
SCR'S



Cooling methode : A
Marking : Type number
Weight : 13.5 g
Polarity : Anode (or A_2) to case
Stud torque : 3.5 m∧N min / 3.8 m∧N max

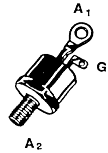
METAL

Dimensions in millimeters

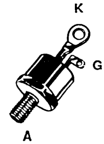


TO 65

TRIAC

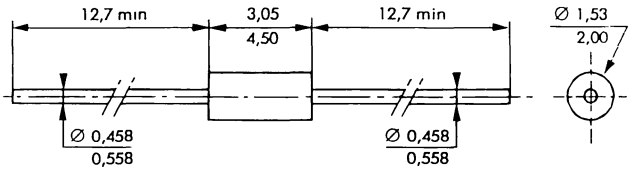


SCR



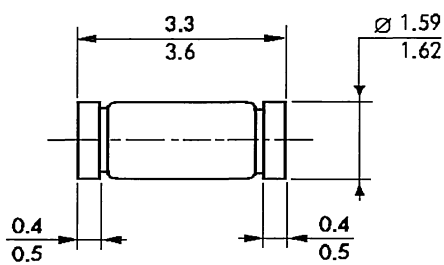
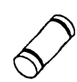
Cooling methode : C
Marking : Type number
Weight : 19 g
Polarity : Anode (or A_2) to case
Stud torque : 3.5 mΛN min / 3.8 mΛN max

GLASS

Dimensions in millimeters	DO 35
	DIAC 

Cooling methode by convection and conduction
Marking : Without (painting)
Weight : 0.15 g
Polarity : N A
Stud torque : N A

GLASS

Dimensions in millimeters	Minimelf
	DIAC 

Cooling methode by convection and conduction
Marking : Clear
Weight : 0.05 g
Polarity : N A
Stud torque : N A

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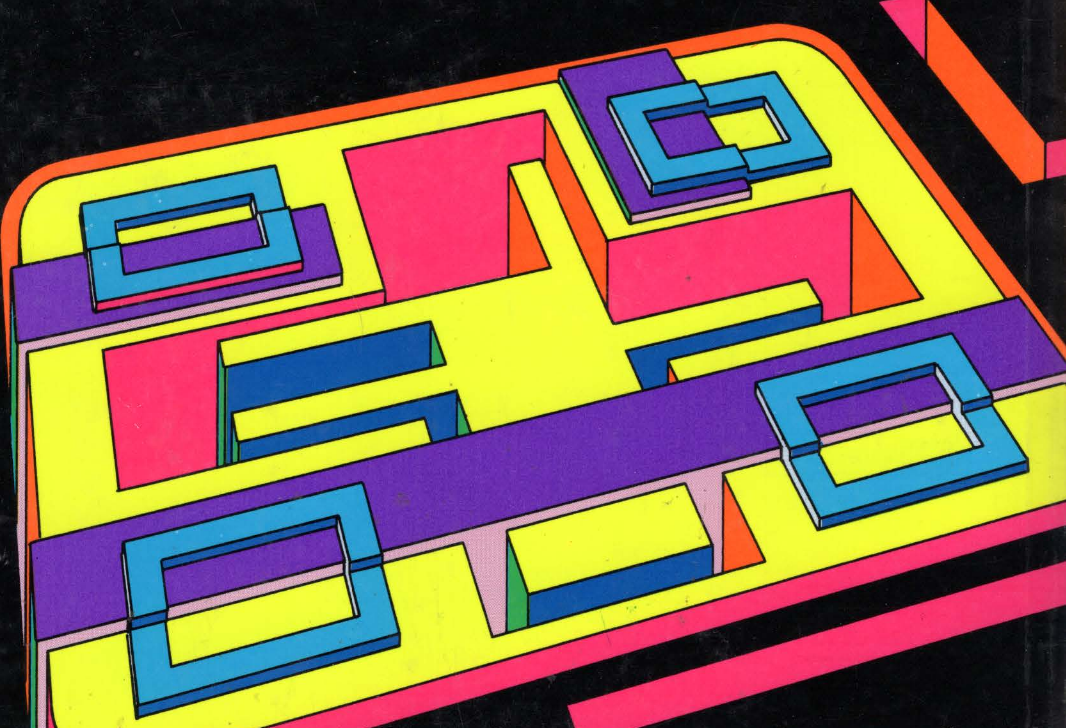

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