

Description

Passivated high commutation triacs in a plastic envelope intended for use in circuits where high static and dynamic dV/dt and high dI/dt can occur. These devices will commute the full rated ms current at the maximum rated junction temperature without the aid of a snubber.

Symbol 		Simplified outline  TO-220	
Pin	Description		
1	Main terminal 1 (T1)		
2	Main terminal 2 (T2)		
3	gate (G)		
TAB	isolated		

Applications:

- ◆ Motor control
- ◆ Industrial and domestic lighting
- ◆ Heating
- ◆ Static switching

Features

- ◆ Blocking voltage to 600 V
- ◆ On-state RMS current to 20 A

SYMBOL	PARAMETER	Value	Unit
V_{DRM}	Repetitive peak off-state voltages	600	V
$I_T (RMS)$	RMS on-state current (full sine wave)	20	A
I_{TSM}	Non-repetitive peak on-state current (full cycle, T_j initial=25°C)	200	A

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{th(j-c)}$	Junction to case(AC)		-	2.1	-	°C/W
$R_{th(j-a)}$	Junction to ambient		-	60	-	°C/W

Limiting values in accordance with the Maximum system(IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MAX	Value	UNIT
V_{DRM}	Repetitive peak off-state Voltages	$T_j=125^{\circ}\text{C}$	-	600	V
$I_{T(RMS)}$	RMS on-state current	360° conduction angle $T_c=70^{\circ}\text{C}$	-	20	A
I_{TSM}	Non repetitive surge peak on-state current	T_j initial= 25°C	$t_p=8.3\text{ms}$	210	A
			$t_p=10\text{ms}$	200	A
I^2t	I^2t value	$T_p=10\text{ms}$	-	200	A^2S
DI/dt	Critical rate of rise of on-state current	Gate supply: $I_g=500\text{mA}$ $dI_g/dt=1\text{A/us}$	Repetitive $F=50\text{Hz}$	20	$\text{A}/\mu\text{s}$
			Non repetitive	100	
I_{DRM}	V_{DRM} rated	$T_j=25^{\circ}\text{C}$	0.01	-	mA
I_{RRM}	V_{RRM} rated	$T_j=125^{\circ}\text{C}$	3	-	mA
T_l	Maximum lead soldering temperature during 10s at 4.5mm form case		-	260	$^{\circ}\text{C}$
T_{stg}	Storage and operating junction temperature range		-40	150	$^{\circ}\text{C}$
T_j	Storage and operating junction temperature range		-40	125	$^{\circ}\text{C}$

$T_j=25^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	$V_D=12\text{V(DC)}$; $R_L=33\Omega$	$T_j=25^{\circ}\text{C}$	I-II-III	1	-	35 mA
V_{GT}			I-II-III	-	-	1.5 V
I_L	$I_G=1.2 I_{GT}$	$T_j=25^{\circ}\text{C}$	I-III	-	-	- mA
			II	-	-	- mA
			I-II-III	-	-	80 mA
I_H	$I_T=500\text{mA}$ Gate open	$T_j=25^{\circ}\text{C}$	-	-	50	mA
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3\text{K}\Omega$	$T_j=125^{\circ}\text{C}$	I-II-III	0.2	-	V
dV/dt	$V_D=67\%V_{DRM}$ gate open;	$T_j=125^{\circ}\text{C}$	250	500	-	$\text{V}/\mu\text{s}$
$(dv/dt)_c$	Without snubber	$T_j=125^{\circ}\text{C}$	11	22	-	A/ms

Dynamic Characteristics

$V_{TM(2)}$	$I_{TM}=28\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	-	-	1.70	V
t_{gt}	$V_D=V_{DRM}$ $I_G=500\text{mA}$ $dI_G/dt=3\text{A/us}$	$T_j=25^{\circ}\text{C}$	I-II-III	-	2	μs

Description

Fig. 1: Maximum RMS power dissipation versus RMS on-state current ($F = 50\text{Hz}$). (Curves are cut off by $(di/dt)_c$ limitation)

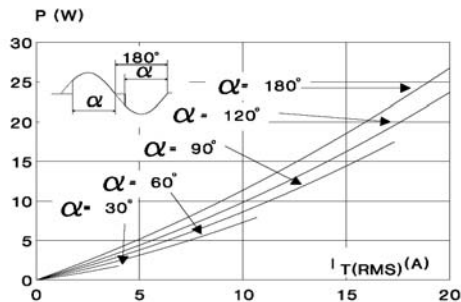


Fig. 2: Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

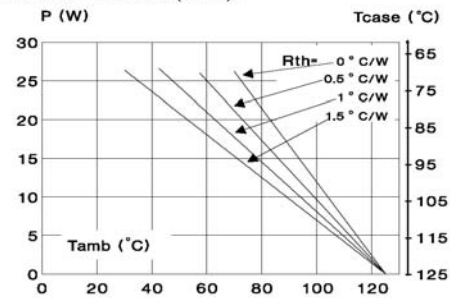


Fig. 3: Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

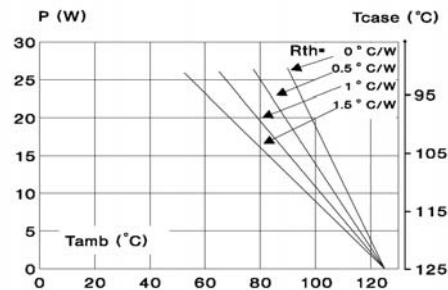


Fig. 4: RMS on-state current versus case temperature.

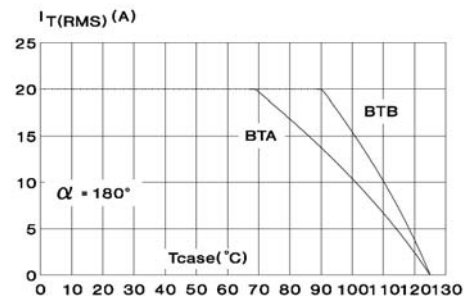


Fig. 5: Relative variation of thermal impedance versus pulse duration.

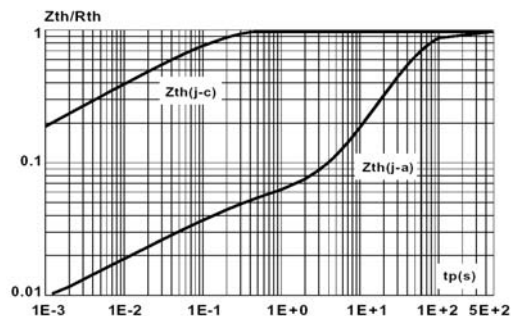
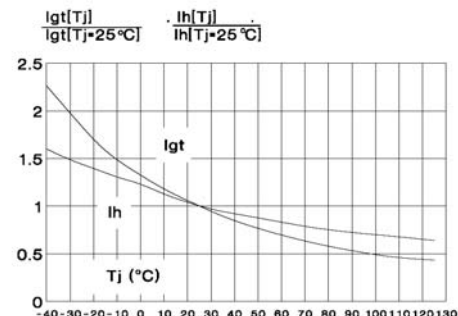


Fig. 6: Relative variation of gate trigger current and holding current versus junction temperature.



Description

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

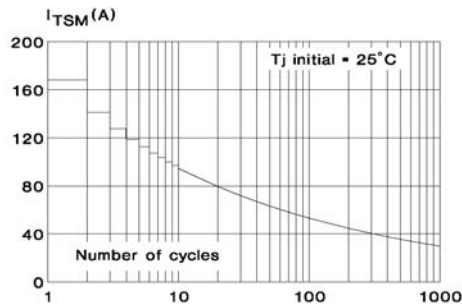


Fig. 8: Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t \leq 10$ ms, and corresponding value of I^2t .

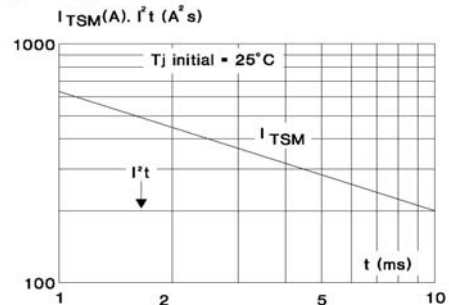
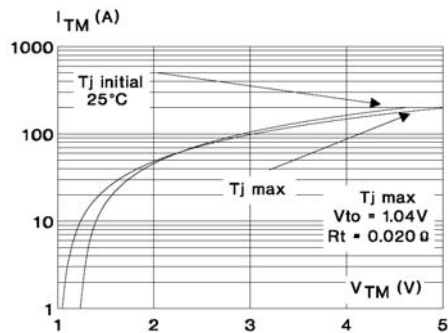
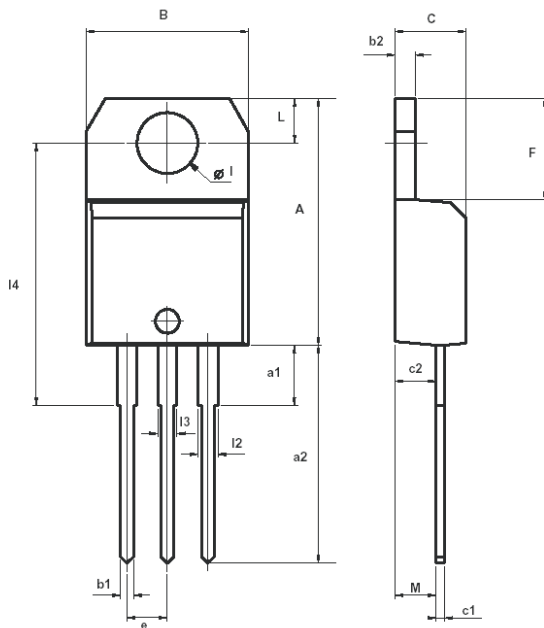


Fig. 9: On-state characteristics (maximum values).



MECHANICAL DATA

Dimensions in mm
Net Mass: 2 g



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
I	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	