

1、Description

Glass passivated high commutation triacs in a full pack, 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 rms current at the maximum rated junction temperature, without the aid of a snubber.

2、Applications



Typical applications include motor control, industrial and domestic lighting, heating and static switching.

- Heating regulation
- Motor control
- Phase control

3、Features

- Blocking voltage to 800 V
- On-state RMS current to 12A
- Ultra low gate trigger current
- Low cost package.

4、Pinning information

PIN	Description	Simplified outline	Symbol
1	main terminal 1 (T1)	 TO-220	
2	main terminal 2 (T2)		
3	gate (G)		
tab	main terminal		

5、Quick reference data

SYMBOL	PARAMETER	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages	800	V
$I_{T(RMS)}$	RMS on-state current	12	A
I_{TSM}	Non-repetitive peak on-state current	90	A

6、Thermal characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	full cycle	-	-	1.5	K/W
		half cycle	-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air		60	-	K/W

7. Limiting value

Limiting values in accordance with the Maximum System(IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages		-	800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{mb} \leq 102\text{ }^{\circ}\text{C}$	-	12	A
	Non-repetitive peak on-state current	full sine wave; $T_j = 25\text{ }^{\circ}\text{C}$	-	90	A
		prior to surge $t = 20\text{ ms}$ $t = 16.7\text{ ms}$	-	105	A
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	45	A^2s
di_T/dt	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 12\text{ A}$; $I_G = 0.2\text{ A}$; $DI_G/dt = 0.2\text{ A/s}$			
		T2+ G+	-	100	$\text{A}/\mu\text{s}$
		T2+ G- T2- G-	-	100	$\text{A}/\mu\text{s}$
I_{GM}	Peak gate current		-	2	A
V_{GM}	Peak gate voltage		-	8	V
P_{GM}	Peak gate power		-	16	W
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	0.35	W
T_{stg}	Storage temperature		-40	150	$^{\circ}\text{C}$
T_j	Junction temperature		-40	125	$^{\circ}\text{C}$

8. Characteristics

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT	
Static characteristics							
I _{GT}	Gate trigger current	V _D = 12 V; I _T = 0.1A	T2+ G+	-	10	mA	
			T2+ G-	-	10	mA	
			T2- G-	-	10	mA	
			T2- G+	-	25	mA	
I _L	Latching current	V _D = 12 V; I _{GT} = 0.1A	T2+ G+		20	mA	
			T2+ G-	-	50	mA	
			T2- G-	-	20	mA	
			T2- G+	-	30	mA	
I _H	Holding current	V _D = 12 V; I _{GT} = 0.15A	-	20	50	mA	
V _T	On-state voltage	I _T = 17A	-	-	1.85	V	
V _{GT}	Gate trigger voltage	V _D = 12 V; I _T = 0.1A	T2+ G+	0.5	0.80	1.5	V
			T2+ G-	0.5	0.78	1.5	V
			T2- G-	0.5	0.70	1.5	V
			T2- G+	-	-	2.0	V
Dynamic Characteristics							
dV _D /dt	Critical rate of rise of off-state voltage	V _{DM} = 67% V _{DRM(max)} ; T _j = 125 °C; Exponential wave form; gate open circuit	250	500	-	V/μs	
di _{com} /dt	Critical rate of change of commutating current	V _D = 400 V; T _j = 125 °C I _{T(RMS)} =4.4A; Commutating dv/dt = 18 V/ s, Without snubber; gate open circuit	6.5	-	-	A/ms	
di/dt	Repetitive Critical Rate of Rise of On-State Current	I _{PK} = 50 A; PW = 40 sec; di _G /dt = 200 mA/ sec; f = 60 Hz	-	-	10	A/μs	

9. Electrical Characteristics Curve

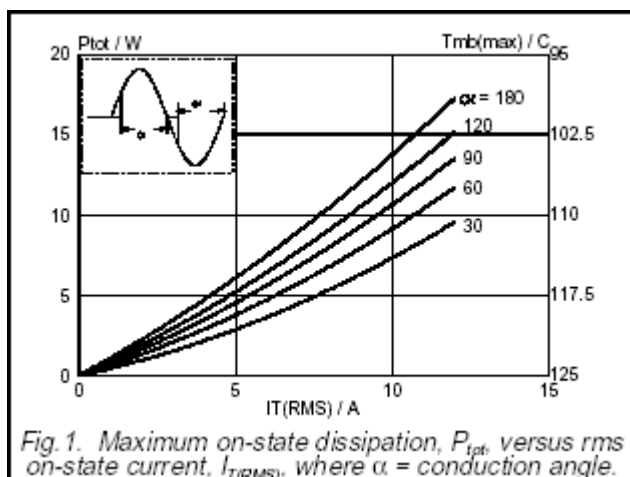


Fig. 1. Maximum on-state dissipation, P_{tpt} , versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

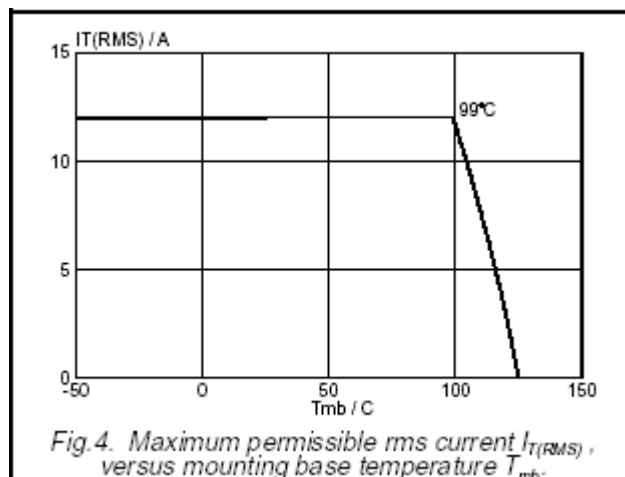


Fig. 4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

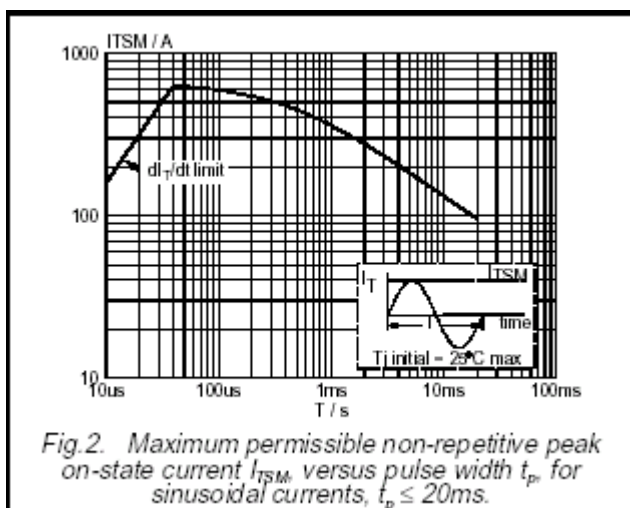


Fig. 2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 20 \text{ ms}$.

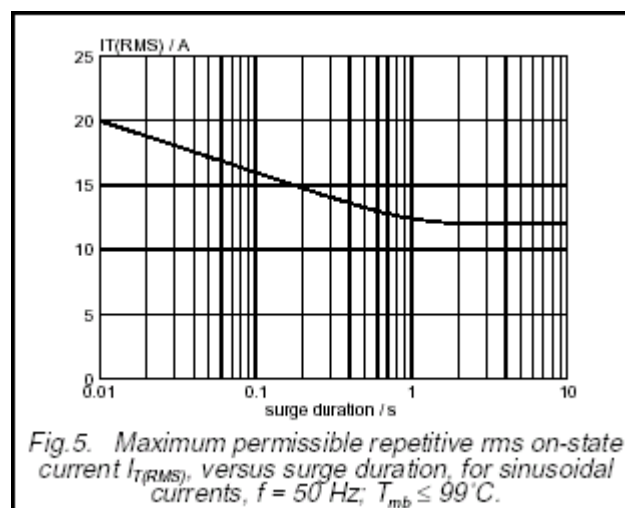


Fig. 5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50 \text{ Hz}$; $T_{mb} \leq 99^\circ C$.

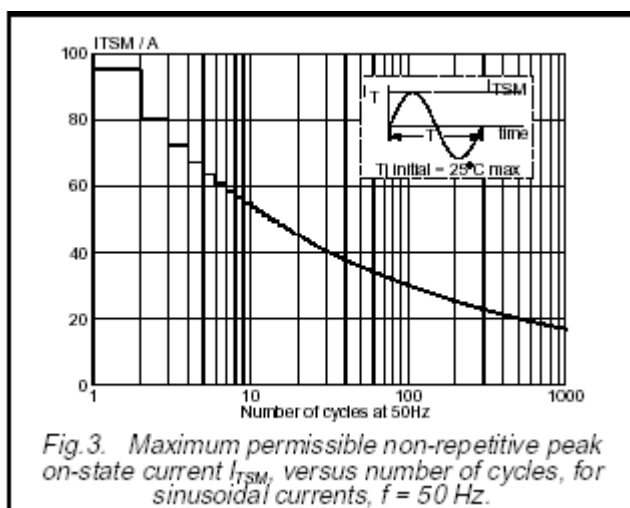


Fig. 3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50 \text{ Hz}$.

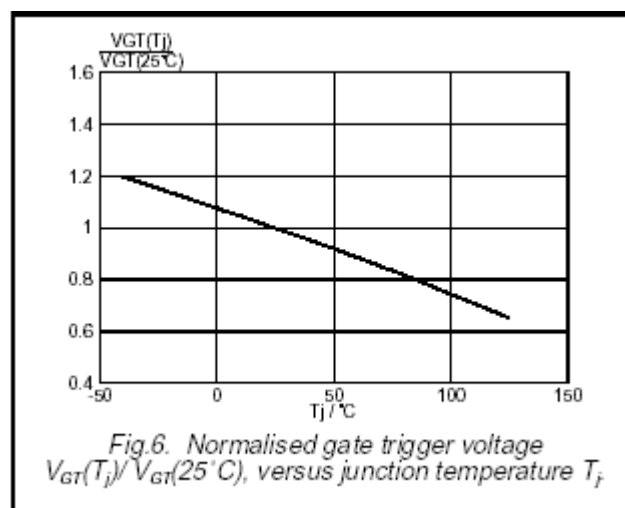
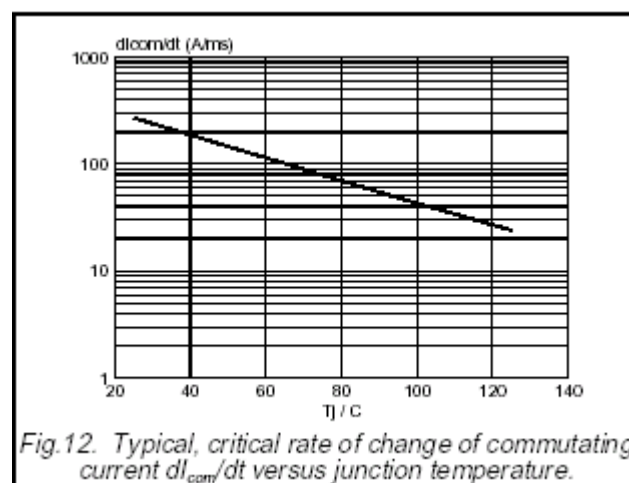
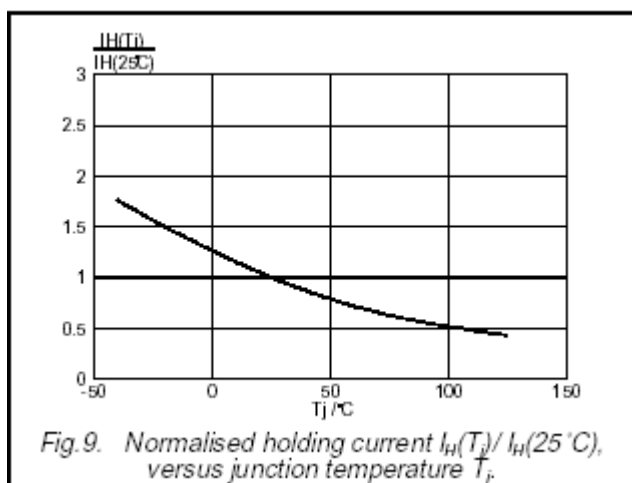
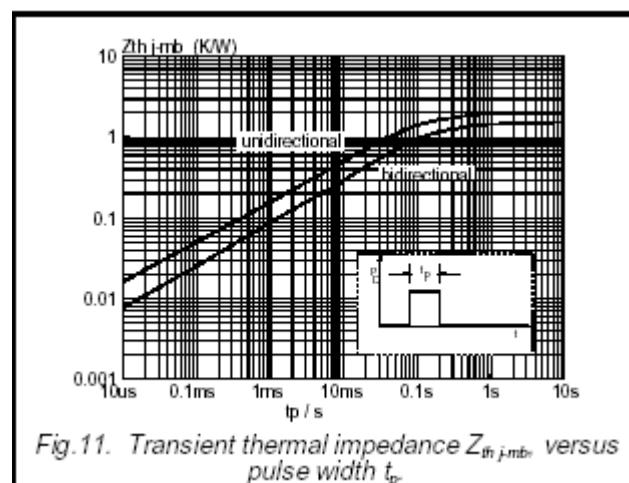
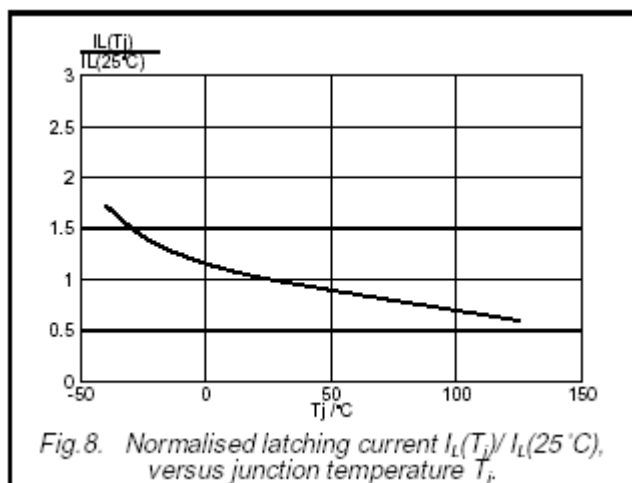
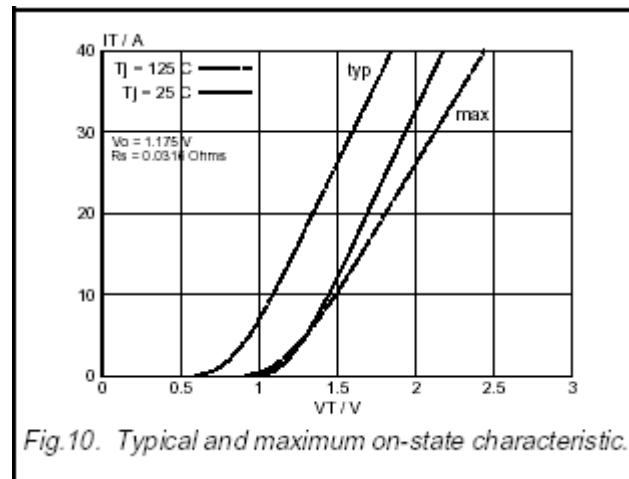
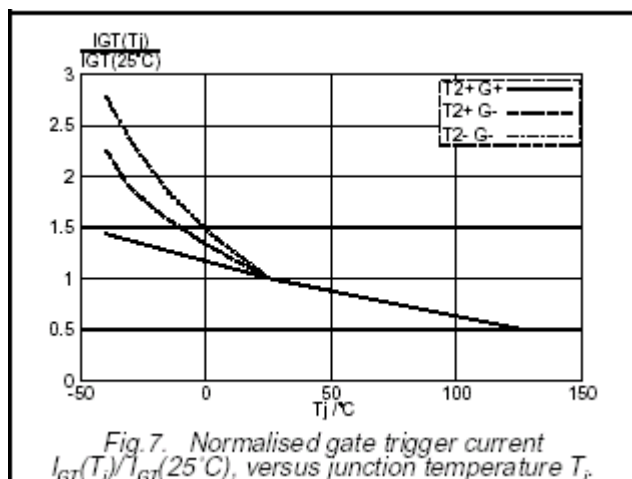
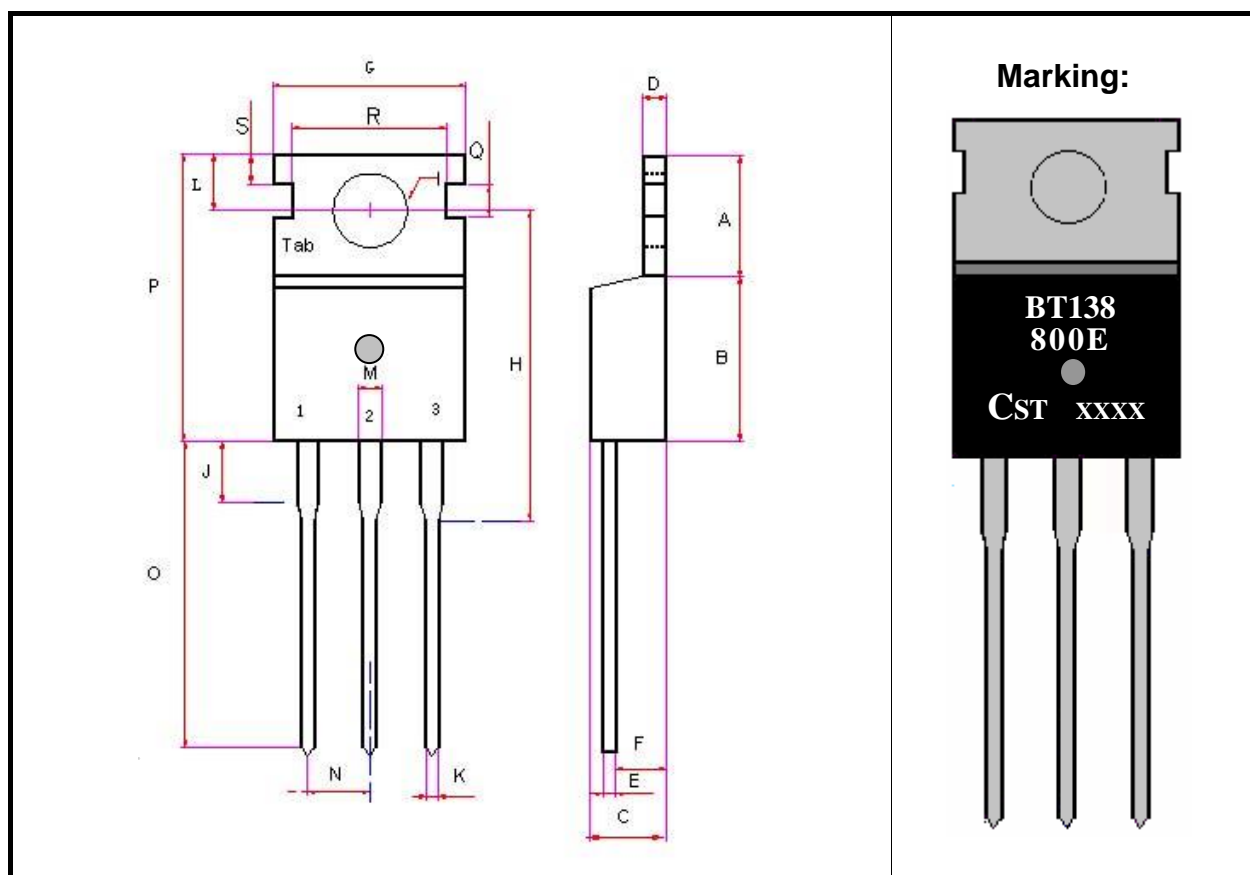


Fig. 6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25^\circ C)$, versus junction temperature T_j .



10、Package outline(TO-220)



DIM	Inches			Millimeters		
	Min	Type	Max	Min	Type	Max
A	0.226	0.258	0.301	5.75	6.55	7.65
B	0.349	0.362	0.369	8.86	9.20	9.38
C	0.171	0.178	0.183	4.35	4.53	4.65
D	0.046	0.051	0.055	1.16	1.30	1.40
E	0.018	0.020	0.026	0.45	0.51	0.65
F	0.070	0.094	0.105	1.785	2.40	2.675
G	0.367	0.394	0.415	9.31	10.00	10.55
H	-	-	0.640	-	-	16.25
I	-	0.143	0.152	-	3.62	3.85
J	0.087	0.108	0.127	2.22	2.75	3.22
K	0.027	0.031	0.035	0.68	0.8	0.88
L	0.093	-	0.128	2.36	-	3.24
M	0.046	0.048	0.057	1.18	1.22	1.44
N	-	0.100	0.104	-	2.54	2.65
O	0.485	0.514	0.546	12.32	13.05	13.88
P	0.593	0.616	0.648	15.07	15.65	16.47
Q	0.057	0.067	0.073	1.46	1.7	1.86
R	0.320	0.344	0.360	8.14	8.75	9.14
S	0.046	0.051	0.058	1.17	1.3	1.47