

GENERAL DESCRIPTION

Passivated high commutation triacs in a plastic envelope suitable for surface mounting 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.

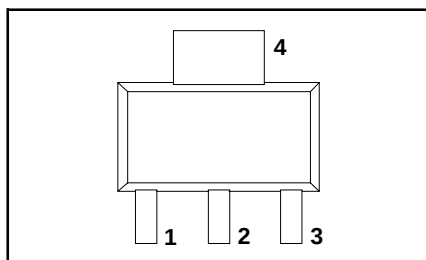
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{DRM}	BTA204W- BTA204W- Repetitive peak off-state voltages	500B 500C 500	600D 600E 600	800B 800C 800	V
$I_{T(RMS)}$	RMS on-state current	1	1	1	A
I_{TSM}	Non-repetitive peak on-state current	10	10	10	A

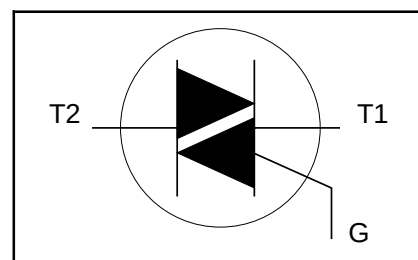
PINNING - SOT223

PIN	DESCRIPTION
1	main terminal 1
2	main terminal 2
3	gate
tab	main terminal 2

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
V_{DRM}	Repetitive peak off-state voltages		-	-500 500¹	-600 600¹	-800 800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{sp} \leq 108^\circ\text{C}$	-	1			A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25^\circ\text{C}$ prior to surge	-	10			A
		$t = 20\text{ ms}$	-	11			A
I^2t	I^2t for fusing	$t = 16.7\text{ ms}$	-	0.5			A ² s
dI_T/dt	Repetitive rate of rise of on-state current after triggering	$t = 10\text{ ms}$ $I_{TM} = 1.5\text{ A};$ $I_G = 0.2\text{ A};$ $dI_G/dt = 0.2\text{ A}/\mu\text{s}$	-	100			A/ μs
I_{GM}	Peak gate current		-	2			A
V_{GM}	Peak gate voltage		-	5			V
P_{GM}	Peak gate power		-	5			W
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	0.5			W
T_{stg}	Storage temperature		-40	150			$^\circ\text{C}$
T_j	Operating junction temperature		-	125			$^\circ\text{C}$

¹ Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed 6 A/ μs .

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-sp}$	Thermal resistance junction to solder point	full or half cycle	-	-	15	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	pcb mounted; minimum footprint pcb mounted; pad area as in fig:2	- -	156 70	- -	K/W K/W

STATIC CHARACTERISTICS

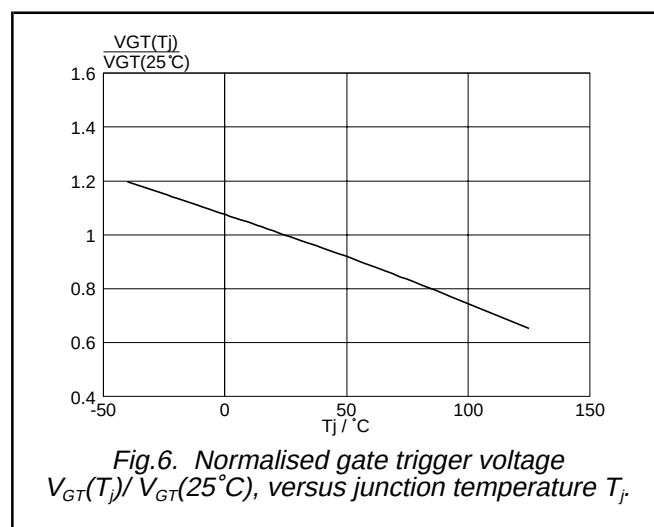
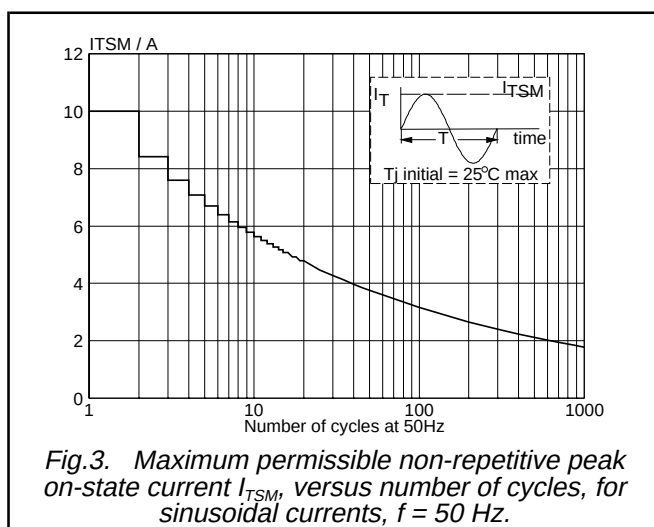
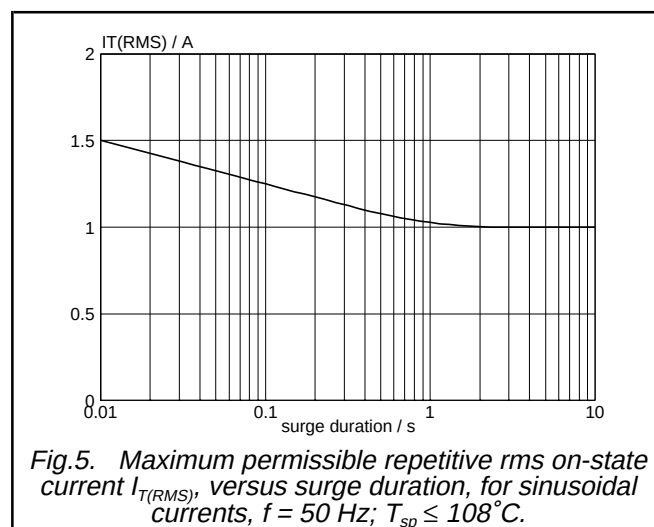
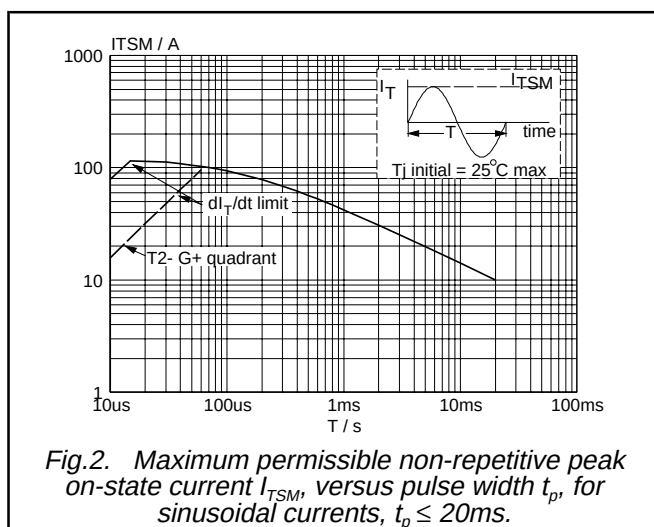
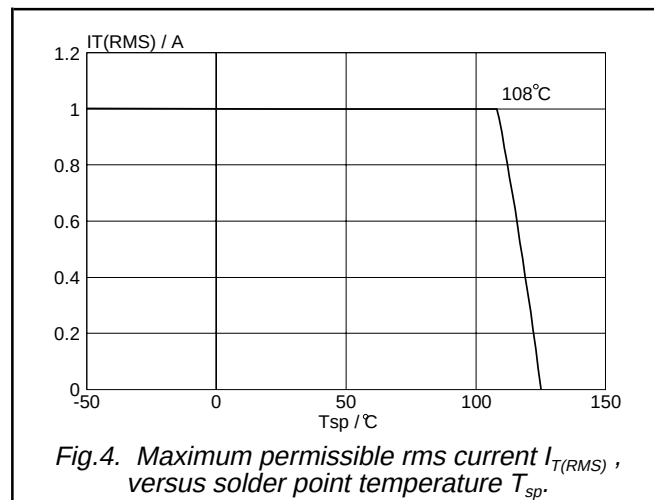
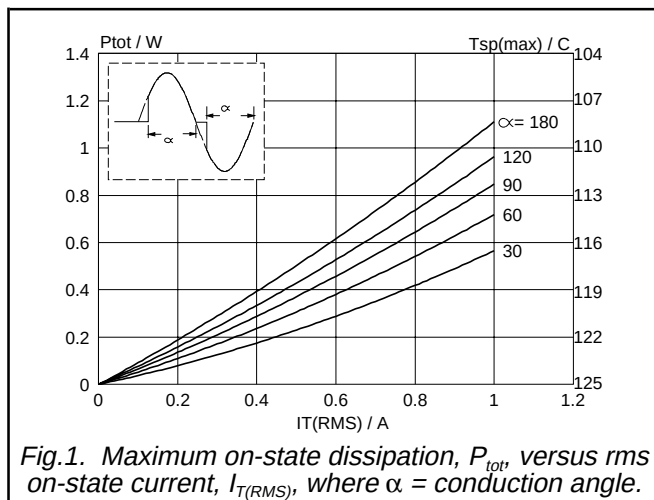
$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

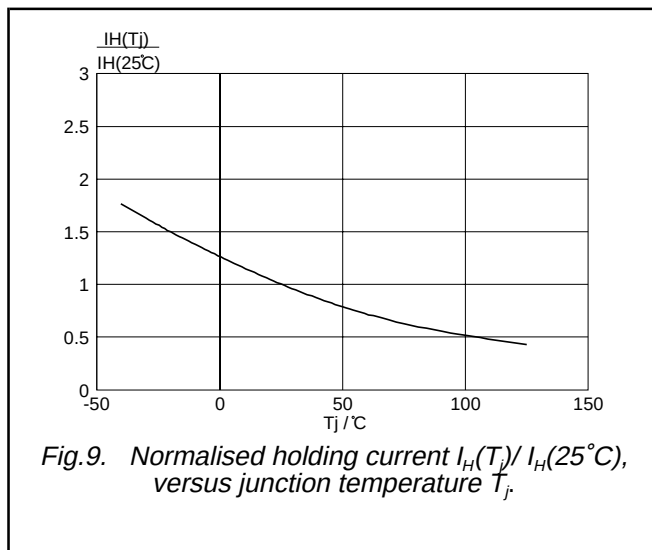
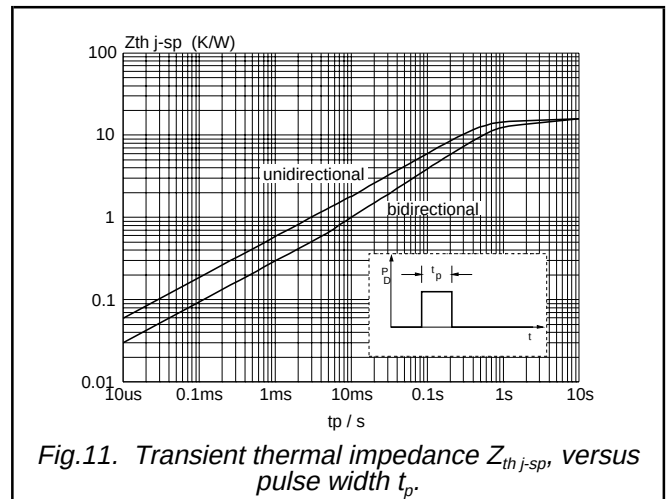
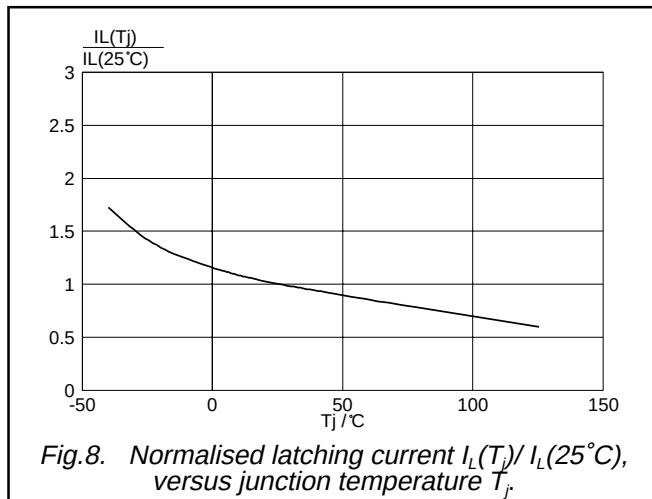
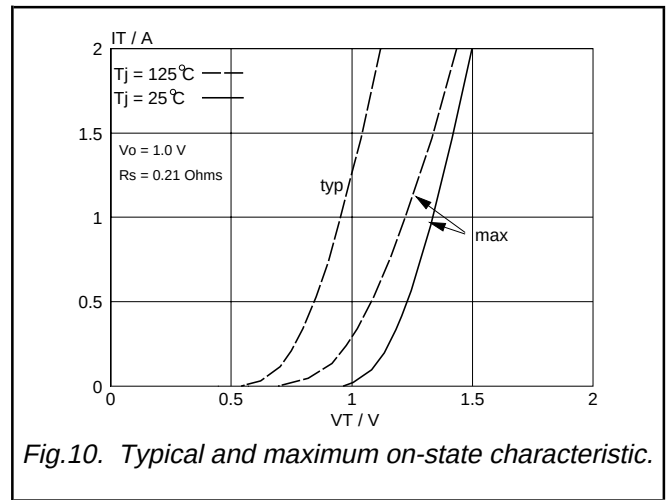
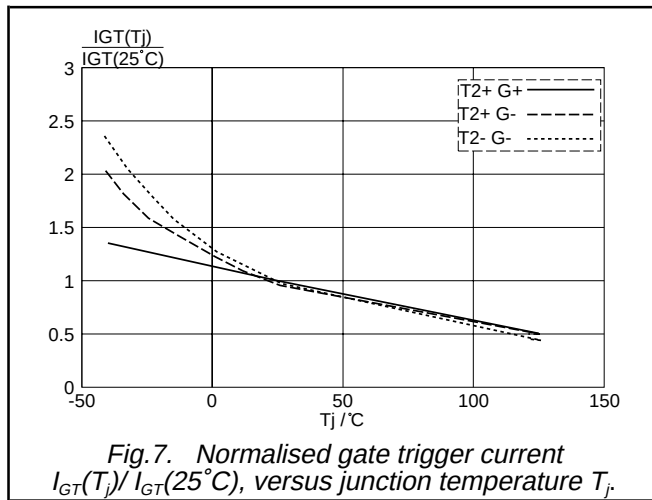
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.		UNIT
		BTA204W-			...B	...C	
I_{GT}	Gate trigger current ²	$V_D = 12\text{ V}; I_T = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	- - -	- - -	50 50 50	35 35 35	mA mA mA
I_L	Latching current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	- - -	- - -	30 45 30	20 30 20	mA mA mA
I_H	Holding current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$	-	-	30	20	mA
V_T	On-state voltage	$I_T = 2\text{ A}$	-	1.2	1.5		V
V_{GT}	Gate trigger voltage	$V_D = 12\text{ V}; I_T = 0.1\text{ A}$ $V_D = 400\text{ V}; I_T = 0.1\text{ A};$ $T_j = 125\ ^\circ\text{C}$	- 0.25	0.7 0.4	1.5 -		V V
I_D	Off-state leakage current	$V_D = V_{DRM(max)}; T_j = 125\ ^\circ\text{C}$	-	0.1	0.5		mA

DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.		TYP.	UNIT
		BTA204W-	...B	...C		
dV_D/dt	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)}; T_j = 125\ ^\circ\text{C};$ exponential waveform; gate open circuit	1000	1000	-	V/ μs
dI_{com}/dt	Critical rate of change of commutating current	$V_{DM} = 400\text{ V}; T_j = 125\ ^\circ\text{C}; I_{T(RMS)} = 1\text{ A};$ $dV_{com}/dt = 20\text{ V}/\mu\text{s};$ gate open circuit	6	3	-	A/ms
t_{gt}	Gate controlled turn-on time	$I_{TM} = 12\text{ A}; V_D = V_{DRM(max)}; I_G = 0.1\text{ A};$ $dI_G/dt = 5\text{ A}/\mu\text{s}$	-	-	2	μs





MOUNTING INSTRUCTIONS

Dimensions in mm.

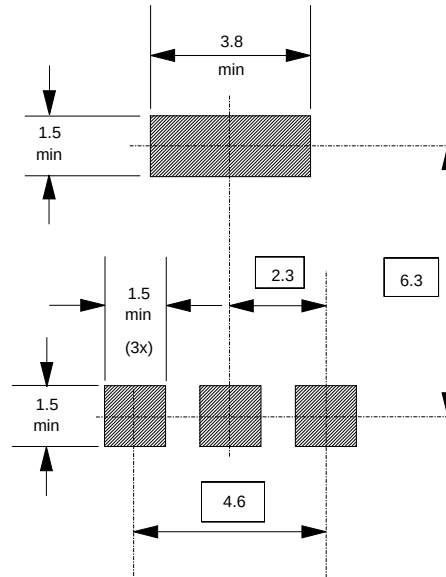


Fig.12. soldering pattern for surface mounting SOT223.

MECHANICAL DATA

Dimensions in mm

Net Mass: 0.11 g

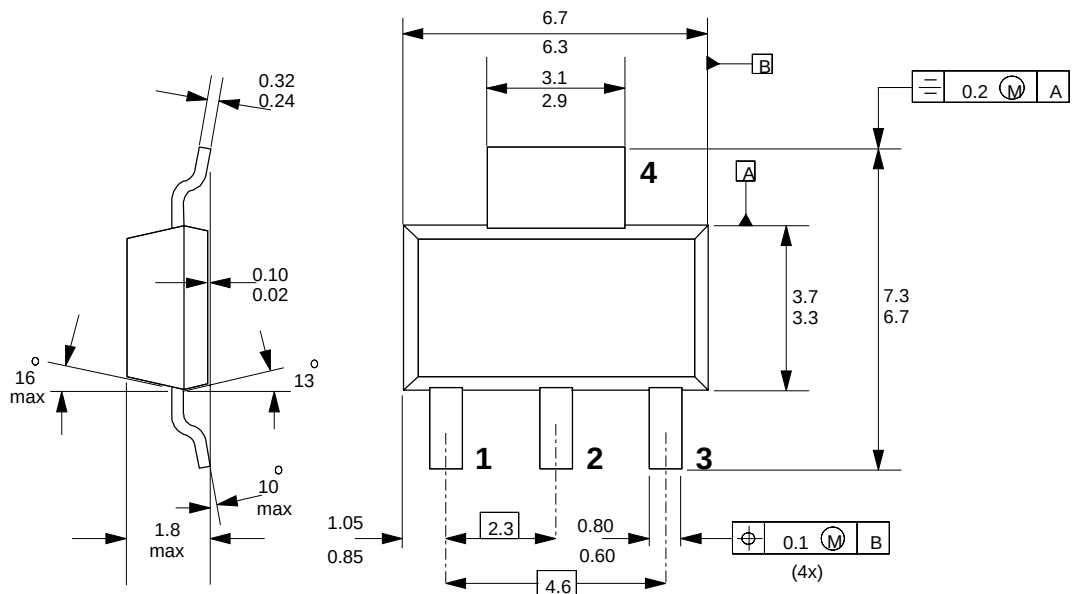


Fig.13. SOT223 surface mounting package.

Notes

1. For further information, refer to Philips publication SC18 " SMD Footprint Design and Soldering Guidelines".
Order code: 9397 750 00505.
2. Epoxy meets UL94 V0 at 1/8".