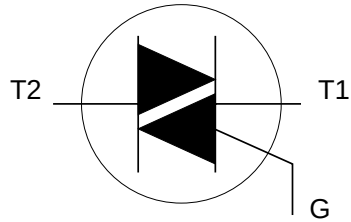


GENERAL DESCRIPTION

Glass passivated triacs in a plastic envelope suitable for surface mounting, intended for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

SYMBOL



SOT-223



QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{DRM}	Repetitive peak off-state voltages	500	600	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

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		-	-500 500 ¹	-600 600 ¹	-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
		$t = 16.7\text{ ms}$	-	0.5			A ² s
I^2t	I^2t for fusing	$t = 10\text{ ms}$	-	50			A/μs
di_t/dt	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 1.5\text{ A}$; $I_G = 0.2\text{ A}$; $di_G/dt = 0.2\text{ A}/\mu\text{s}$	-	50			A/μs
		T2+ G+	-	50			A/μs
		T2+ G-	-	50			A/μs
		T2- G-	-	10			A/μs
		T2- G+	-	2			A
I_{GM}	Peak gate current		-	5			V
V_{GM}	Peak gate voltage		-	5			W
P_{GM}	Peak gate power		-	0.5			W
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	150			°C
T_{stg}	Storage temperature		-40	125			°C
T_j	Operating junction temperature		-				

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 3 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:14	- -	156 70	- -	K/W K/W

STATIC CHARACTERISTICS

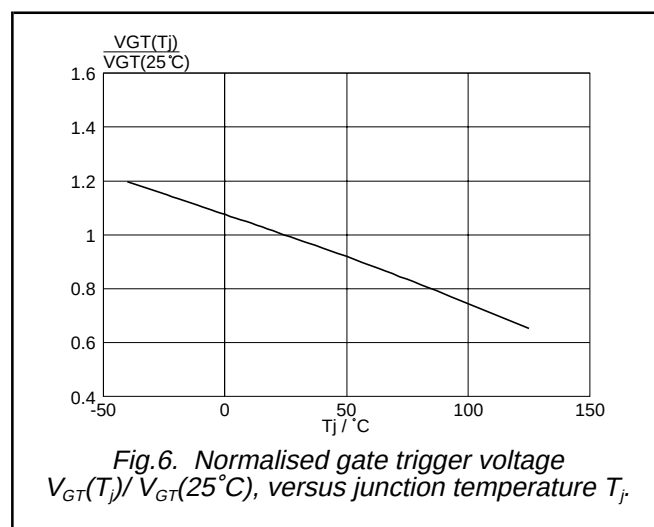
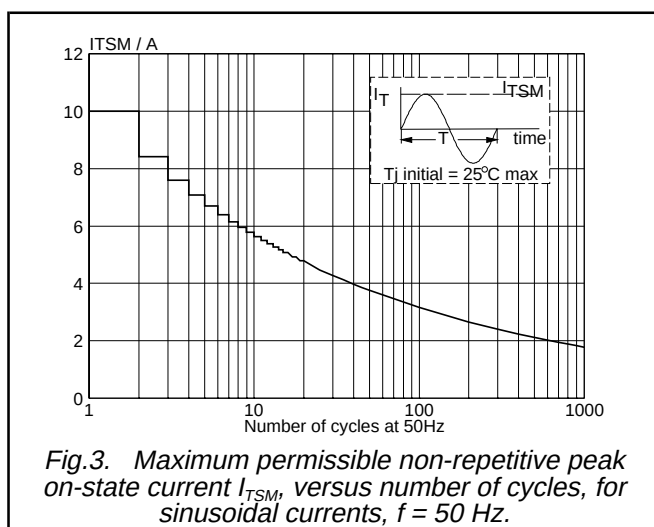
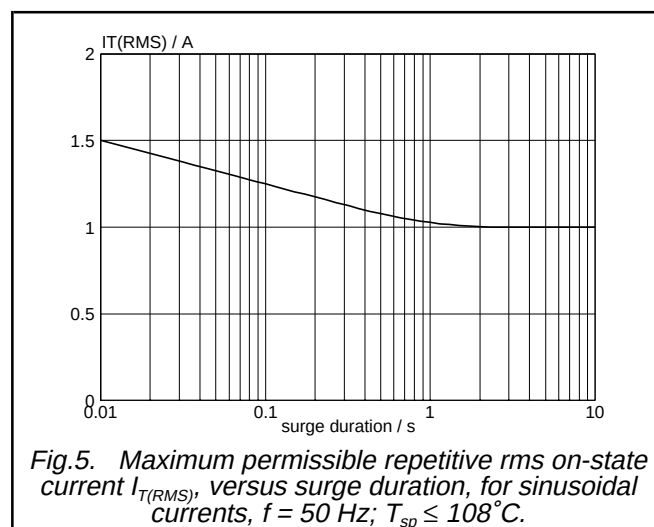
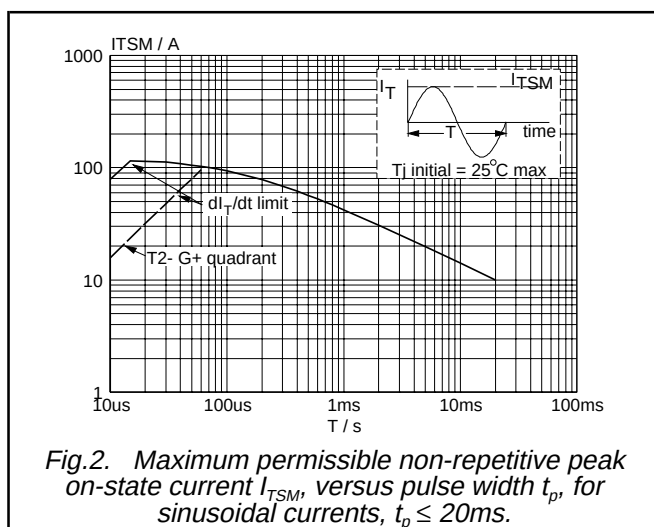
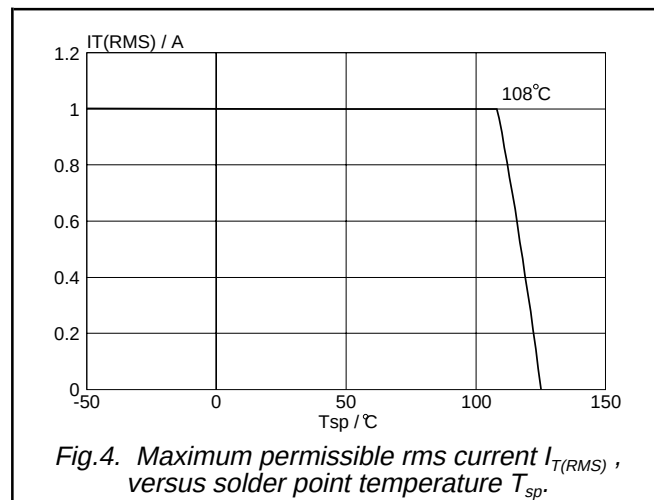
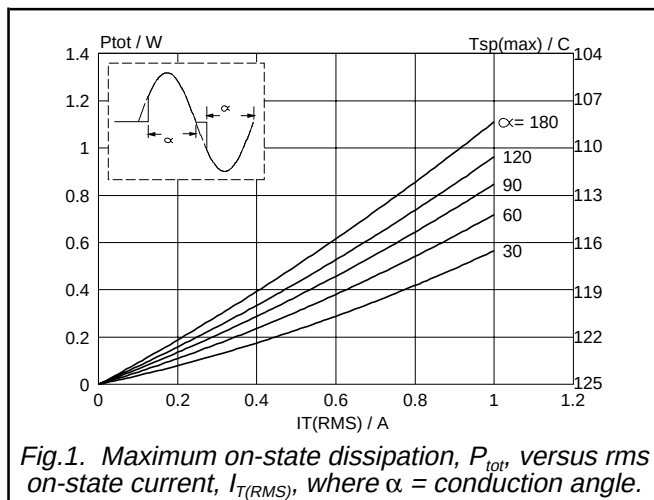
$T_j = 25\ ^\circ\text{C}$ unless otherwise stated

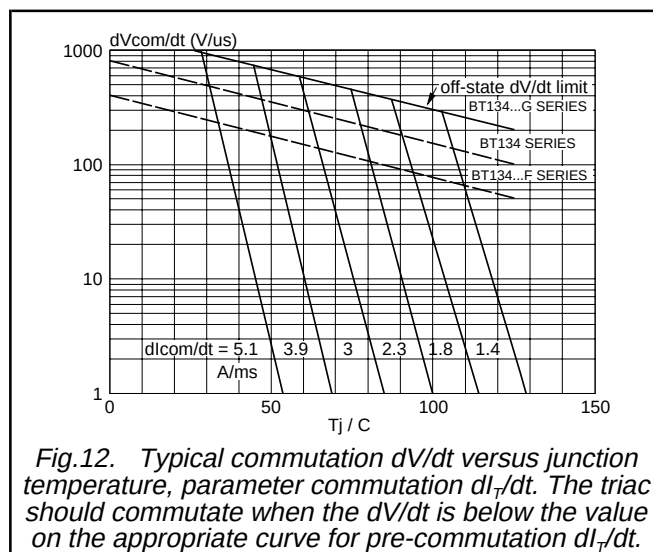
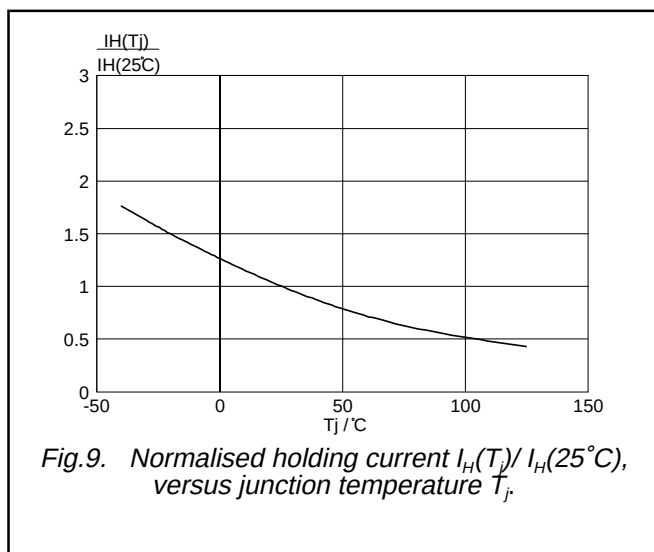
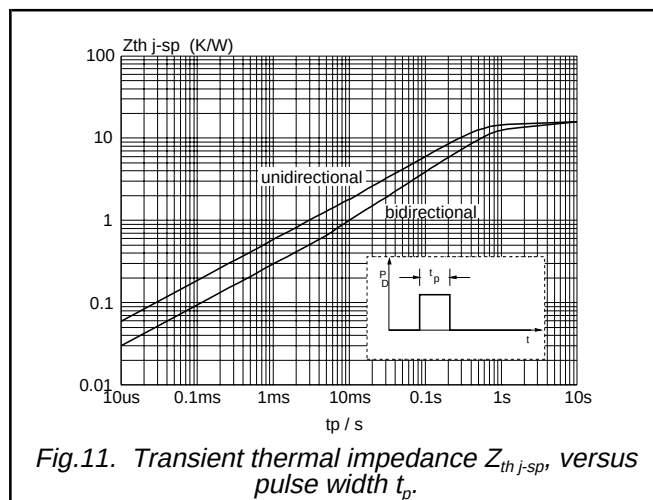
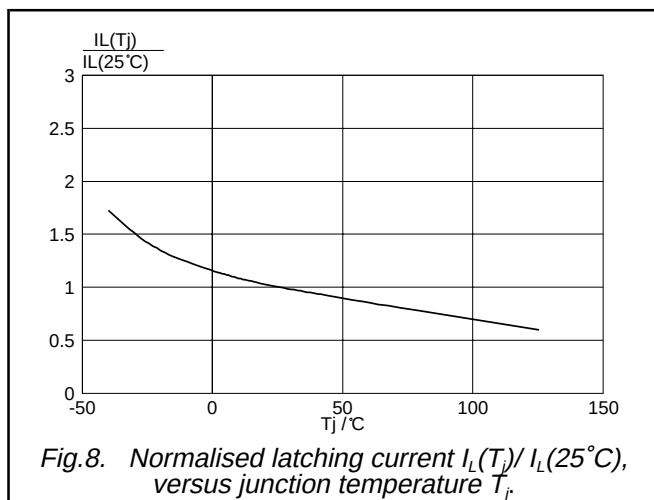
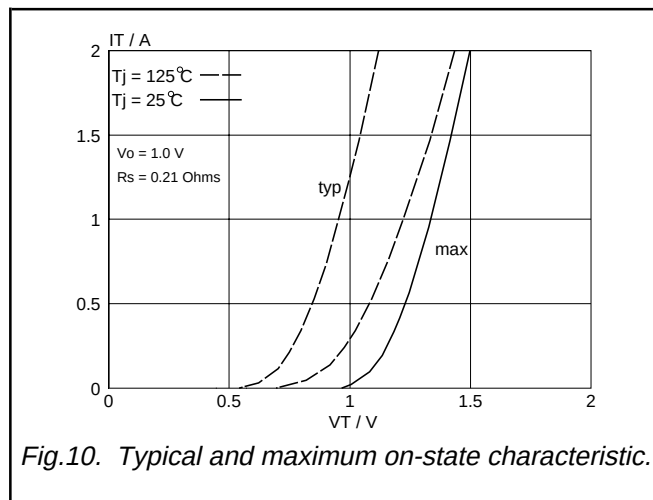
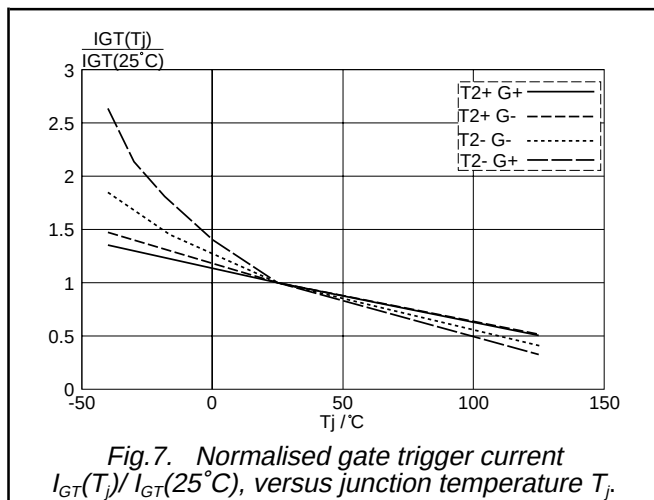
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.			UNIT
I_{GT}	Gate trigger current	BT134W- $V_D = 12\text{ V}; I_T = 0.1\text{ A}$			...	...F	...G	
		T2+ G+	-	5	35	25	50	mA
		T2+ G-	-	8	35	25	50	mA
		T2- G-	-	11	35	25	50	mA
I_L	Latching current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$						
		T2- G+	-	30	70	70	100	mA
		T2+ G+	-	7	20	20	30	mA
		T2+ G-	-	16	30	30	45	mA
I_H	Holding current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$						
		T2- G-	-	5	20	20	30	mA
		T2- G+	-	7	30	30	45	mA
			-	5	15	15	30	mA
V_T	On-state voltage	$I_T = 2\text{ A}$	-	1.2	1.50			V
V_{GT}	Gate trigger voltage	$V_D = 12\text{ V}; I_T = 0.1\text{ A}$	-	0.7	1.5			V
		$V_D = 400\text{ V}; I_T = 0.1\text{ A};$ $T_j = 125\ ^\circ\text{C}$	0.25	0.4	-			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.	MAX.	UNIT
dV_D/dt	Critical rate of rise of off-state voltage	BT134W- $V_{DM} = 67\% V_{DRM(max)};$ $T_j = 125\ ^\circ\text{C};$ exponential waveform; gate open circuit	...	...	...			
			100	50	200	250	-	V/ μs
dV_{com}/dt	Critical rate of change of commutating voltage	$V_{DM} = 400\text{ V}; T_j = 95\ ^\circ\text{C};$ $I_{T(RMS)} = 1\text{ A};$ $di_{com}/dt = 1.8\text{ A/ms};$ gate open circuit	-	-	10	50	-	V/ μs
t_{gt}	Gate controlled turn-on time	$I_{TM} = 1.5\text{ A};$ $V_D = V_{DRM(max)}; I_G = 0.1\text{ A};$ $di_G/dt = 5\text{ A}/\mu\text{s};$	-	-	-	2	-	μs





MOUNTING INSTRUCTIONS

Dimensions in mm.

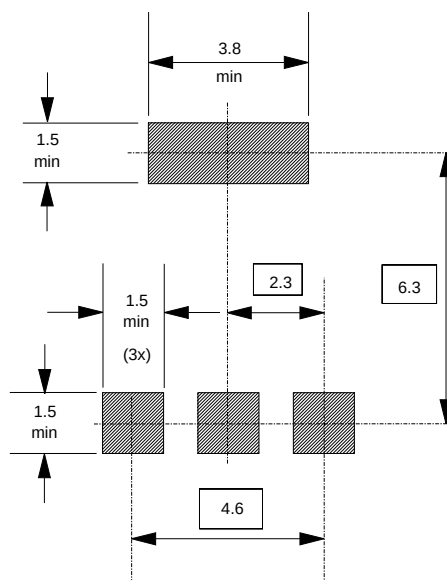


Fig.13. soldering pattern for surface mounting SOT223.

PRINTED CIRCUIT BOARD

Dimensions in mm.

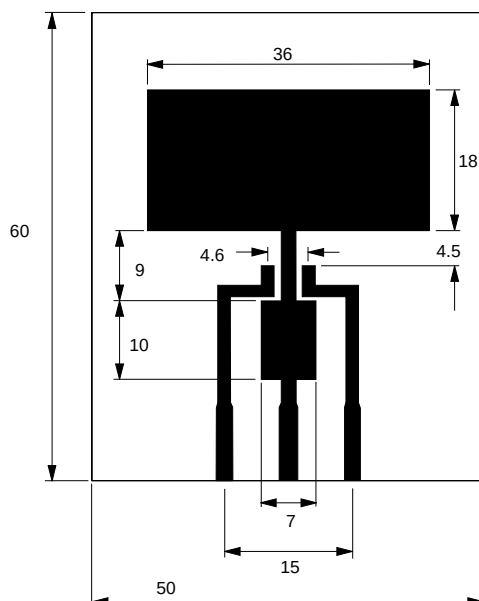


Fig.14. PCB for thermal resistance and power rating for SOT223.
PCB: FR4 epoxy glass (1.6 mm thick), copper laminate (35 μ m thick).

MECHANICAL DATA

Dimensions in mm

Net Mass: 0.11 g

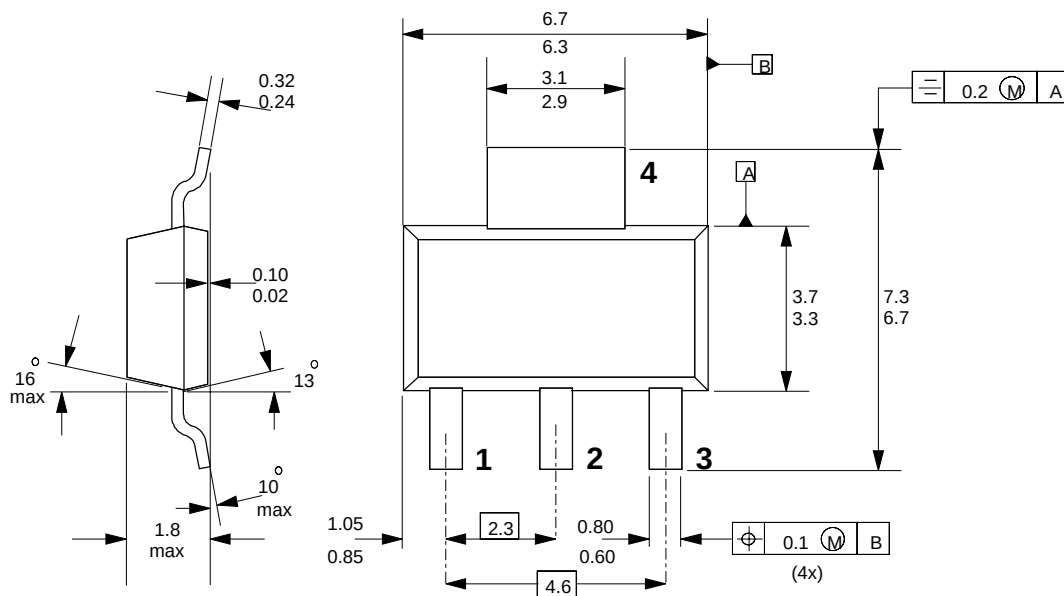


Fig.15. SOT223 surface mounting package.

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".