

## 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.

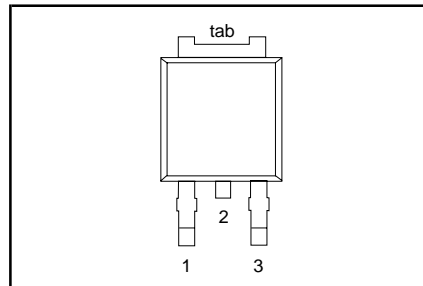
## QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
$V_{DRM}$	<b>BTA204S</b> (or BTA204M)- <b>BTA204S</b> (or BTA204M)- Repetitive peak off-state voltages	<b>500B</b>	<b>600B</b>	<b>800B</b>	V
		<b>500C</b>	<b>600C</b>	<b>800C</b>	
		500	600	800	
$I_{T(RMS)}$	RMS on-state current	4	4	4	A
$I_{TSM}$	Non-repetitive peak on-state current	25	25	25	A

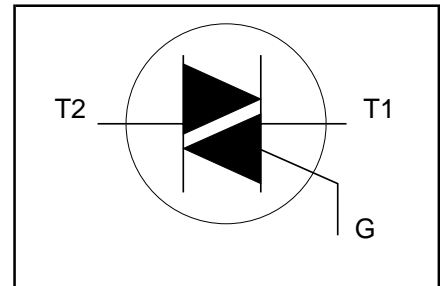
## PINNING - SOT428

PIN NUMBER	Standard S	Alternative M
1	MT1	gate
2	MT2	MT2
3	gate	MT1
tab	MT2	MT2

## PIN CONFIGURATION



## SYMBOL



## LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.			UNIT
				-500	-600	-800	
$V_{DRM}$	Repetitive peak off-state voltages		-	500 <sup>1</sup>	600 <sup>1</sup>	800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{mb} \leq 107^\circ\text{C}$	-	4			A
$I_{TSM}$	Non-repetitive peak on-state current	full sine wave; $T_j = 25^\circ\text{C}$ prior to surge	-	25			A
$I^2t$	$I^2t$ for fusing	$t = 20\text{ ms}$	-	27			A
$dI_T/dt$	Repetitive rate of rise of on-state current after triggering	$t = 10\text{ ms}$ $I_{TM} = 6\text{ A}; I_G = 0.2\text{ A};$ $dI_G/dt = 0.2\text{ A}/\mu\text{s}$	-	3.1			A <sup>2</sup> s
$I_{GM}$	Peak gate current		-	100			A/ $\mu\text{s}$
$V_{GM}$	Peak gate voltage		-	2			A
$P_{GM}$	Peak gate power		-	5			V
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	5			W
$T_{stg}$	Storage temperature		-40	0.5			W
$T_j$	Operating junction temperature		-	150			$^\circ\text{C}$
				125			$^\circ\text{C}$

<sup>1</sup> 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/ $\mu\text{s}$ .

## THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	full cycle	-	-	3.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	half cycle pcb (FR4) mounted; footprint as in Fig.2	-	-	3.7	K/W
			-	75	-	K/W

## STATIC CHARACTERISTICS

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

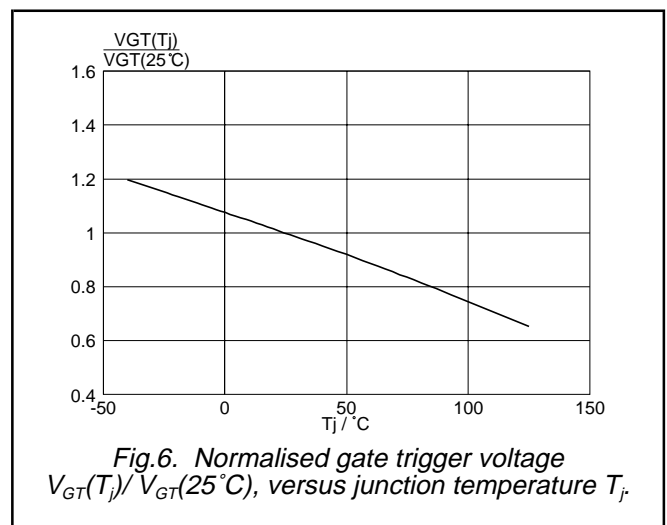
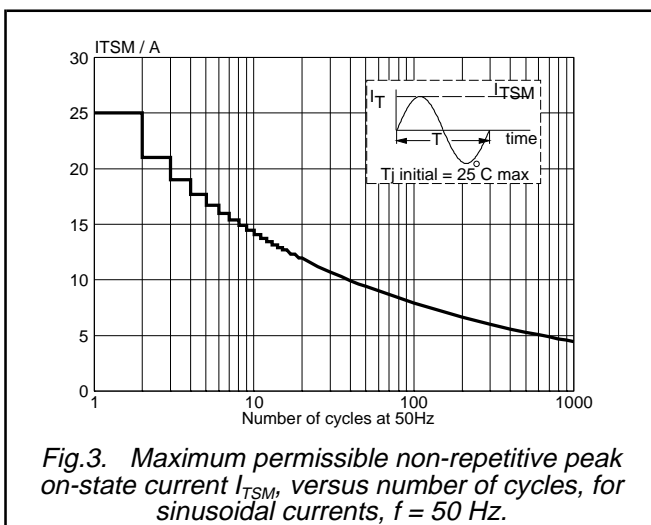
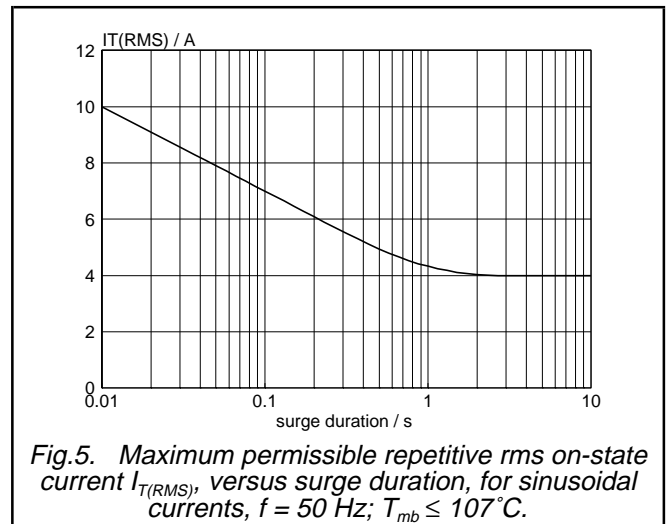
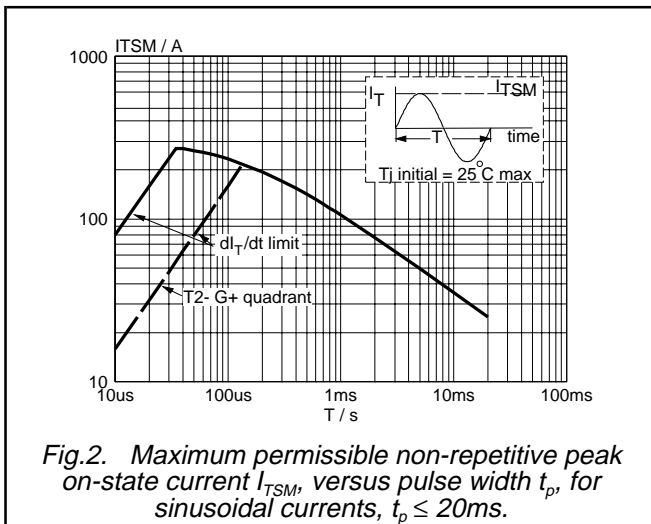
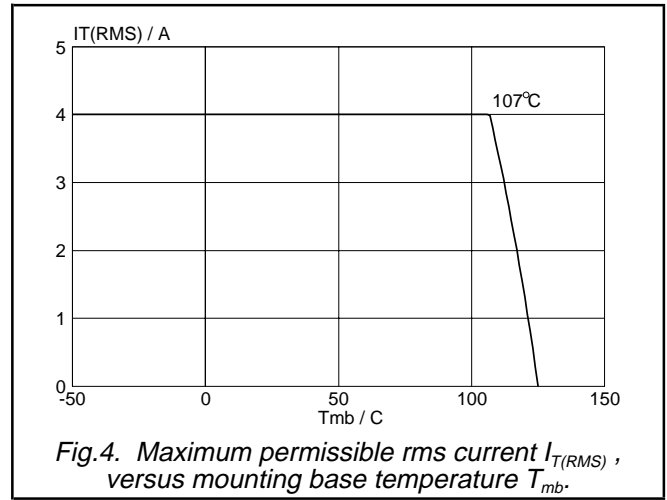
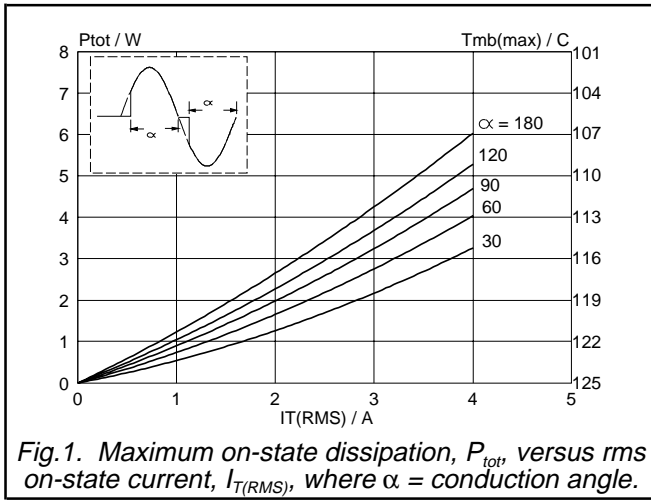
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		<b>BTA204</b> (or BTA204M)-			<b>...B</b>	<b>...C</b>
$I_{GT}$	Gate trigger current <sup>2</sup>	$V_D = 12\text{ V}$ ; $I_T = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	-	-	50	35
			-	-	50	35
			-	-	50	35
$I_L$	Latching current	$V_D = 12\text{ V}$ ; $I_{GT} = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	-	-	30	20
			-	-	45	30
			-	-	30	20
$I_H$	Holding current	$V_D = 12\text{ V}$ ; $I_{GT} = 0.1\text{ A}$	-	-	30	20
$V_T$	On-state voltage	$I_T = 5\text{ A}$	-	1.4	1.7	
$V_{GT}$	Gate trigger voltage	$V_D = 12\text{ V}$ ; $I_T = 0.1\text{ A}$ $V_D = 400\text{ V}$ ; $I_T = 0.1\text{ A}$ ; $T_j = 125\text{ °C}$	-	0.7	1.5	
			0.25	0.4	-	
$I_D$	Off-state leakage current	$V_D = V_{DRM(max)}$ ; $T_j = 125\text{ °C}$	-	0.1	0.5	

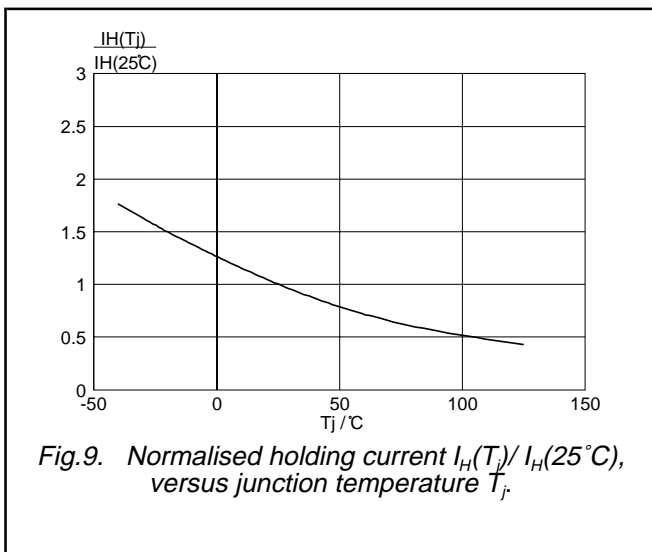
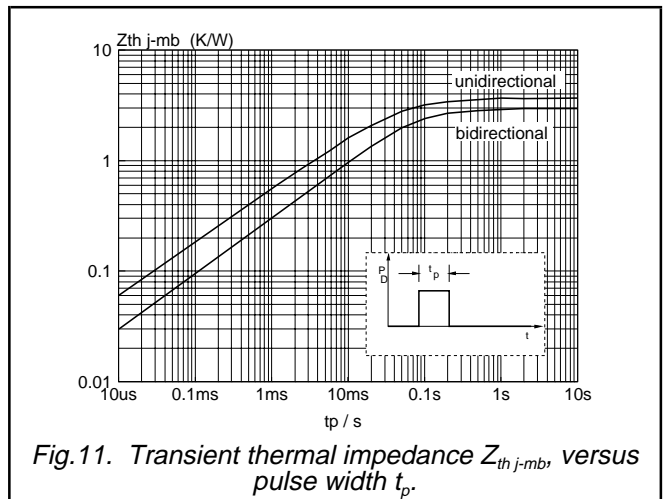
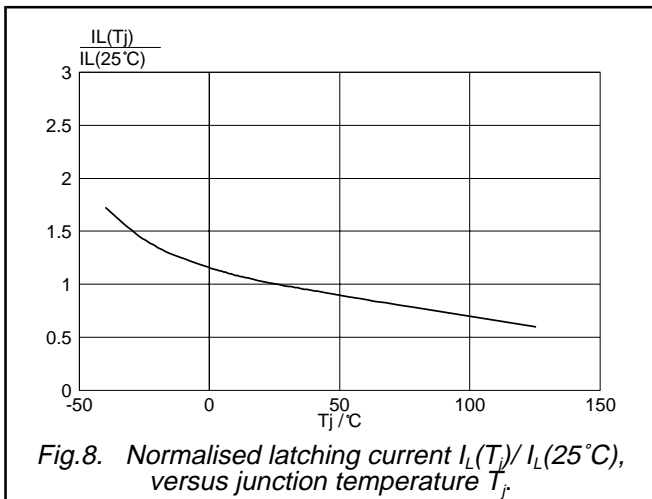
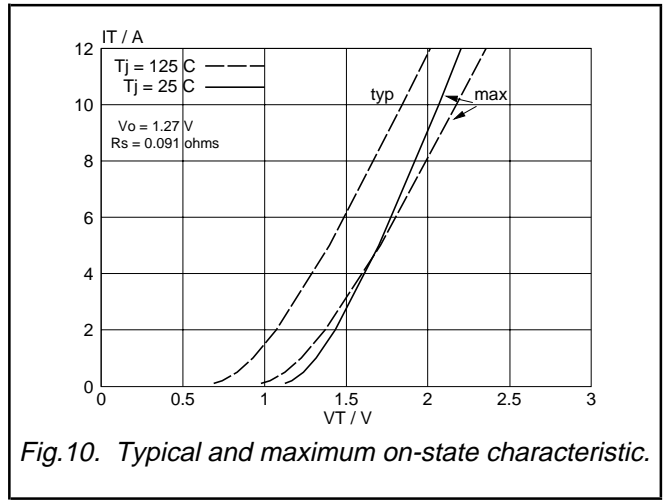
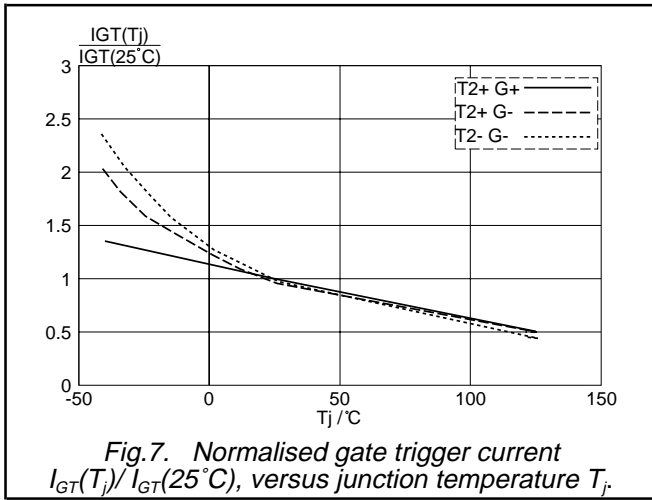
## DYNAMIC CHARACTERISTICS

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

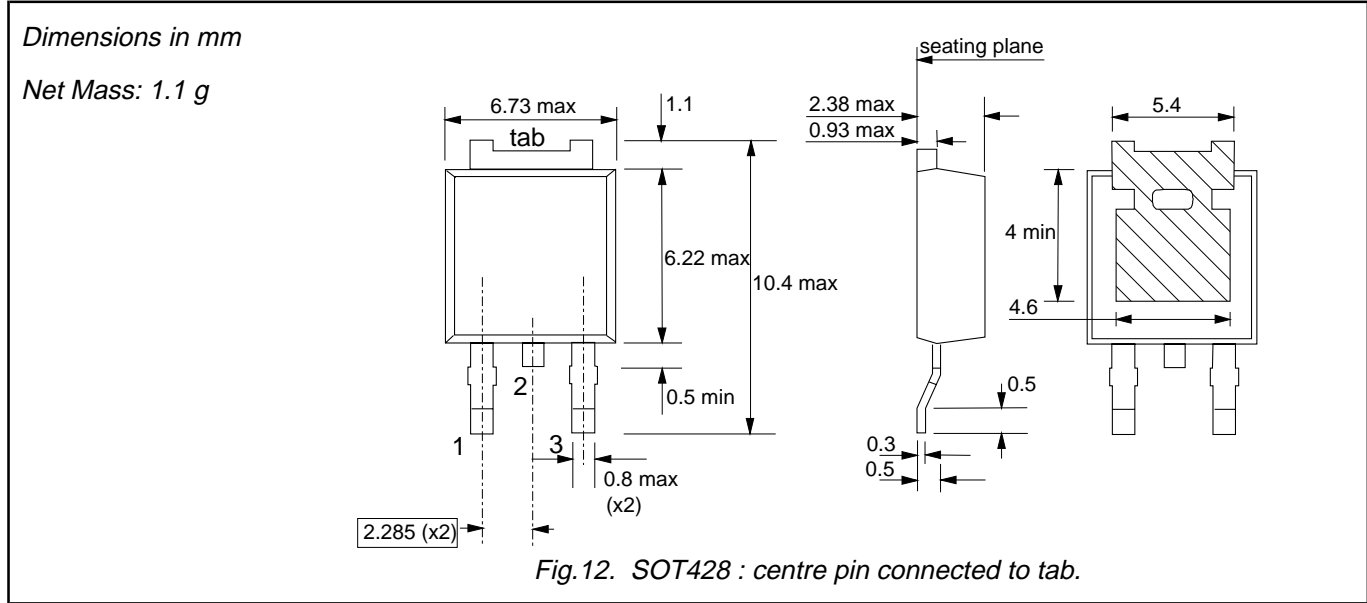
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	UNIT	
		<b>BTA204S</b> (or BTA204M)-			<b>...B</b>	<b>...C</b>
$dV_D/dt$	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)}$ ; $T_j = 125\text{ °C}$ ; exponential waveform; gate open circuit	1000	1000	-	V/ $\mu$ s
$dI_{com}/dt$	Critical rate of change of commutating current	$V_{DM} = 400\text{ V}$ ; $T_j = 125\text{ °C}$ ; $I_{T(RMS)} = 4\text{ A}$ ; $dV_{com}/dt = 20\text{ V}/\mu\text{s}$ ; 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	$\mu$ s

<sup>2</sup> Device does not trigger in the T2-, G+ quadrant.

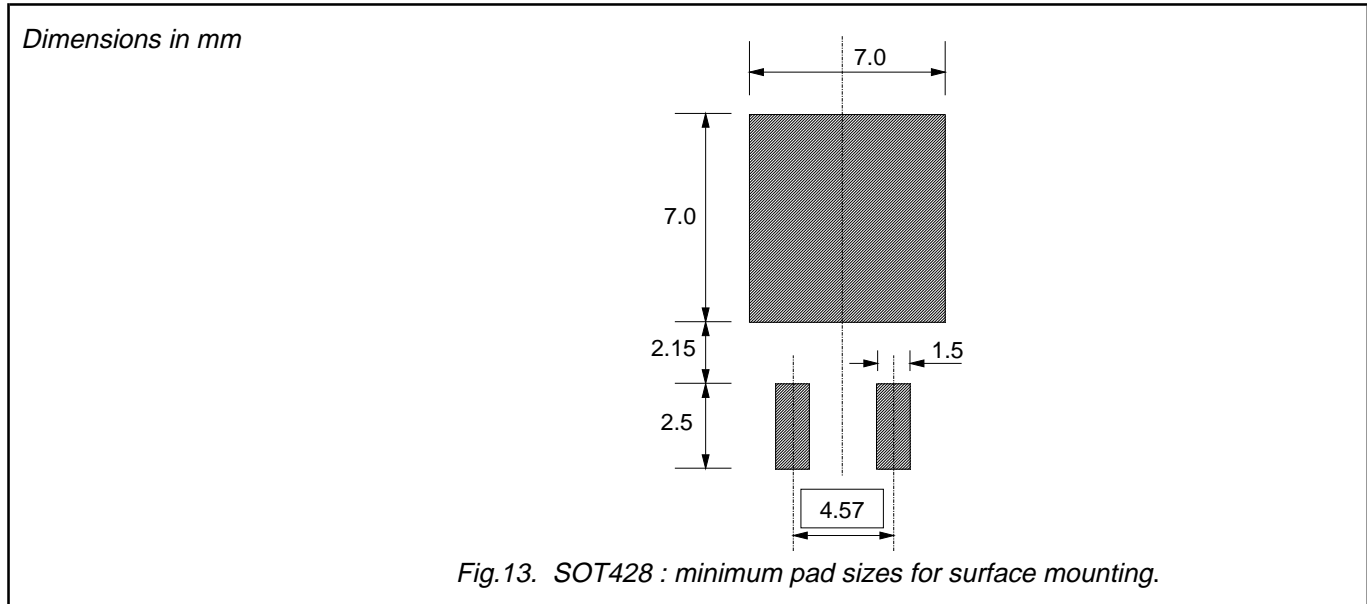




**MECHANICAL DATA**



**MOUNTING INSTRUCTIONS**



**Notes**

1. Plastic meets UL94 V0 at 1/8".