

GENERAL 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 commutate the full rated rms current at the maximum rated junction temperature without the aid of a snubber.

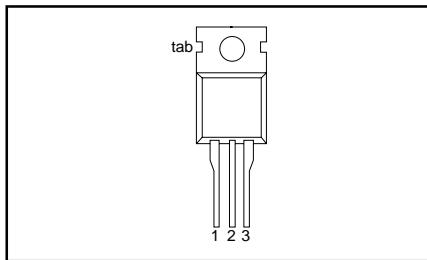
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{DRM}	BTA204- BTA204-	500D 500C 500	600E 600F 600	800D 800C 800	V
$I_{T(RMS)}$	Repetitive peak off-state voltages				
I_{TSM}	RMS on-state current	4	4	4	A
	Non-repetitive peak on-state current	25	25	25	A

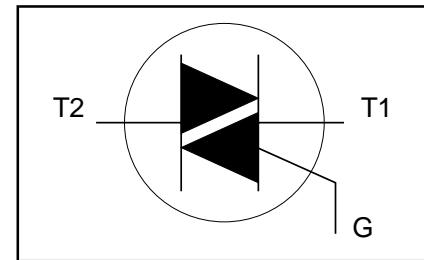
PINNING - TO220AB

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		-	-500 500 ¹	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{mb} \leq 107^\circ\text{C}$	-	-600 600 ¹	A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25^\circ\text{C}$ prior to surge		-800 800	
I^2t dl_t/dt	I^2t for fusing Repetitive rate of rise of on-state current after triggering	$t = 20\text{ ms}$ $t = 16.7\text{ ms}$ $t = 10\text{ ms}$ $I_{TM} = 6\text{ A}; I_G = 0.2\text{ A};$ $dl_G/dt = 0.2\text{ A}/\mu\text{s}$	- - - -	25 27 3.1 100	A A A ² s A/ μs
I_{GM} V_{GM} P_{GM} $P_{G(AV)}$	Peak gate current Peak gate voltage Peak gate power Average gate power	over any 20 ms period	- - - -	2 5 5 0.5	A V W W
T_{stg} T_j	Storage temperature Operating junction temperature	-40		150 125	°C °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
$R_{th\ j\cdot mb}$	Thermal resistance junction to mounting base	full cycle	-	-	3.0	K/W
$R_{th\ j\cdot a}$	Thermal resistance junction to ambient	half cycle in free air	-	60	3.7	K/W

STATIC CHARACTERISTICS

$T_j = 25^\circ C$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.		UNIT
I_{GT}	Gate trigger current ²	$V_D = 12 V; I_T = 0.1 A$	BTA204-		...B	...C	mA
		T2+ G+					
		T2+ G-					
I_L	Latching current	T2- G-					
		$V_D = 12 V; I_{GT} = 0.1 A$					
		T2+ G+					
I_H	Holding current	T2+ G-	BTA204-		30	20	mA
		T2- G-					
		$V_D = 12 V; I_{GT} = 0.1 A$					
V_T V_{GT}	On-state voltage Gate trigger voltage	T2- G-		0.25	1.4	30	20
		$I_T = 5 A$					
I_D	Off-state leakage current	$V_D = 12 V; I_T = 0.1 A$	BTA204-		0.7	1.7	V
		$V_D = 400 V; I_T = 0.1 A;$					
T_j	$T_j = 125^\circ C$	$T_j = 125^\circ C$					
		$V_D = V_{DRM(max)}; T_j = 125^\circ C$					
I_D	Off-state leakage current	$V_D = V_{DRM(max)}; T_j = 125^\circ C$	BTA204-	0.4	0.5	-	V
		$V_D = V_{DRM(max)}; T_j = 125^\circ C$					

DYNAMIC CHARACTERISTICS

$T_j = 25^\circ C$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	UNIT
dV_D/dt	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)}; T_j = 125^\circ C;$ exponential waveform; gate open circuit	1000	1000	-
dl_{com}/dt	Critical rate of change of commutating current	$V_{DM} = 400 V; T_j = 125^\circ C; I_{T(RMS)} = 4 A;$ $dV_{com}/dt = 20 V/\mu s$; gate open circuit	6	3	A/ms
t_{gt}	Gate controlled turn-on time	$I_{TM} = 12 A; V_D = V_{DRM(max)}; I_G = 0.1 A;$ $dl_G/dt = 5 A/\mu s$	-	2	μs

² Device does not trigger in the T2-, G+ quadrant.

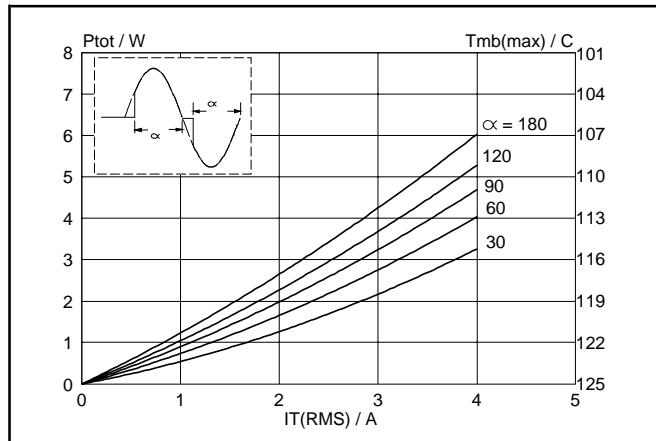


Fig.1. Maximum on-state dissipation, P_{tot} , versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

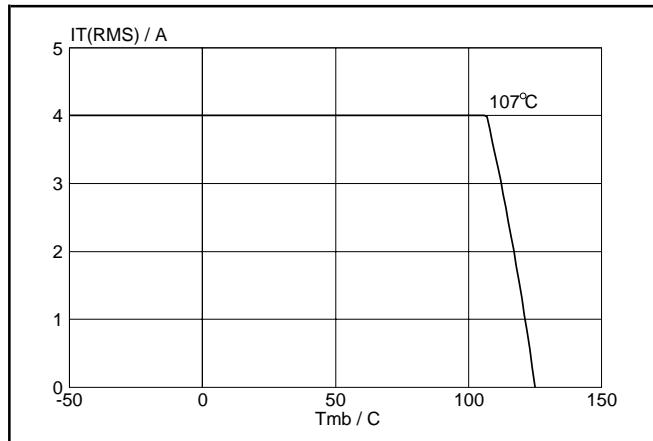


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

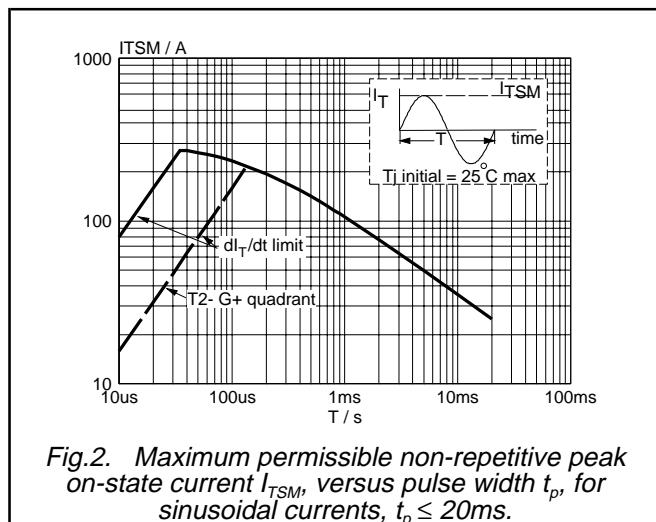


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \leq 20\text{ms}$.

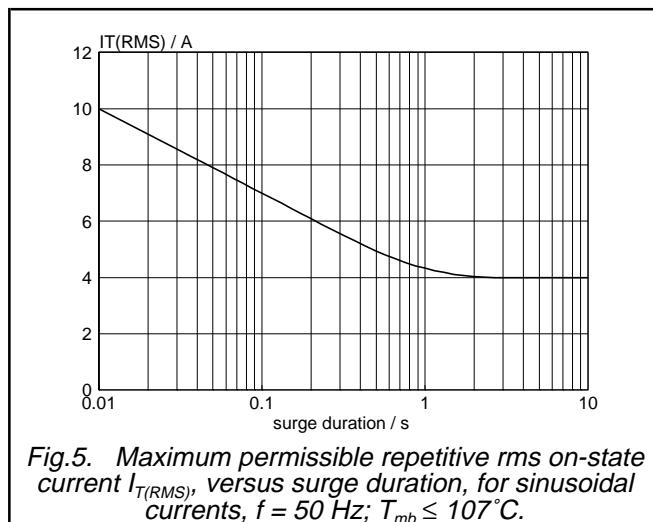


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50\text{ Hz}$; $T_{mb} \leq 107^\circ\text{C}$.

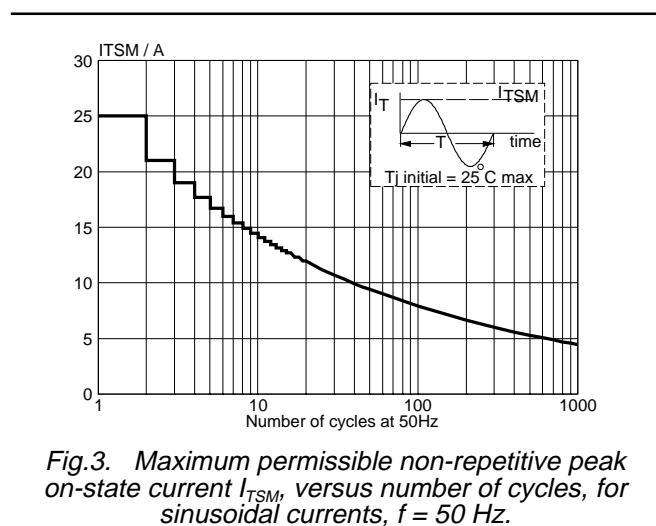


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50\text{ Hz}$.

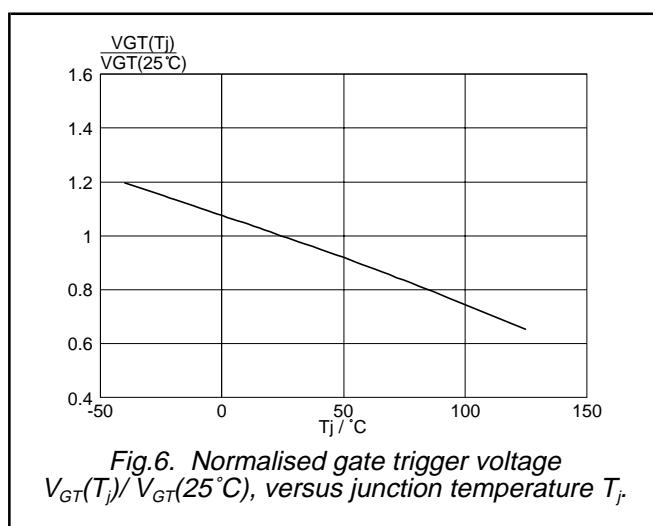


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25^\circ\text{C})$, versus junction temperature T_j .

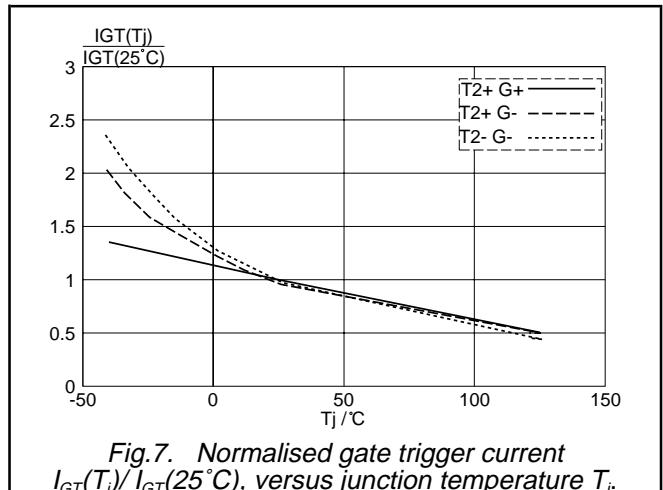


Fig.7. Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25^\circ C)$, versus junction temperature T_j .

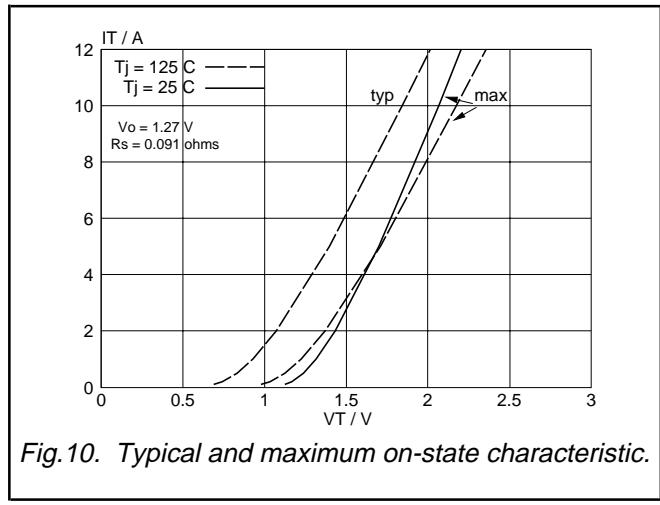


Fig.10. Typical and maximum on-state characteristic.

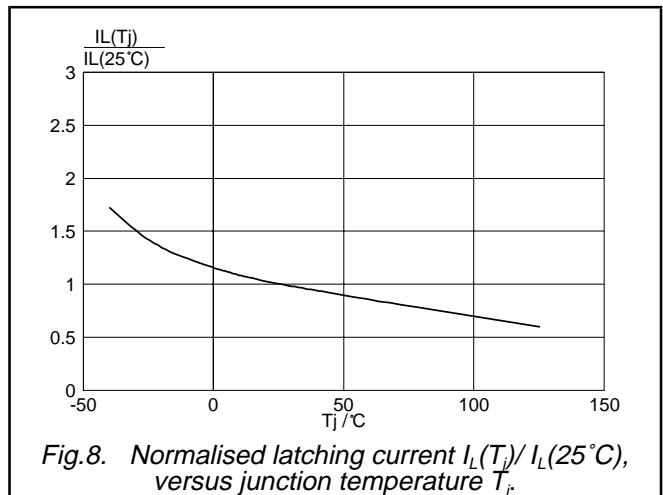


Fig.8. Normalised latching current $I_L(T_j)/I_L(25^\circ C)$, versus junction temperature T_j .

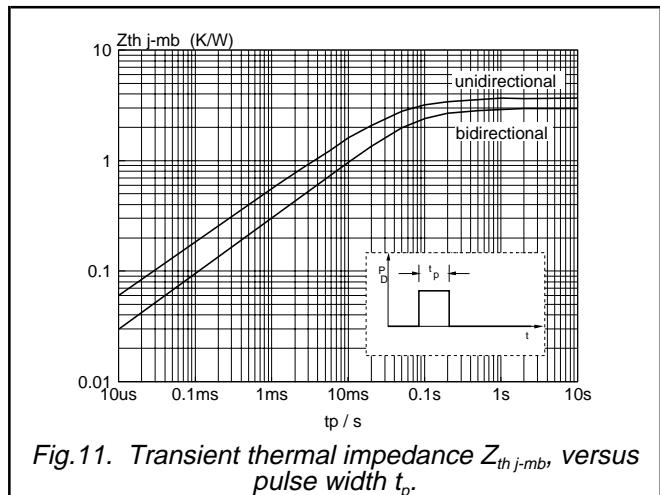


Fig.11. Transient thermal impedance $Z_{th,j-mb}$, versus pulse width t_p .

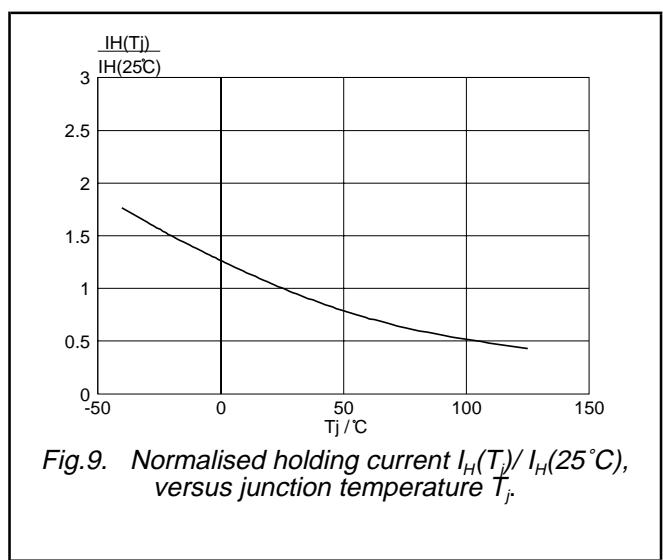


Fig.9. Normalised holding current $I_H(T_j)/I_H(25^\circ C)$, versus junction temperature T_j .

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

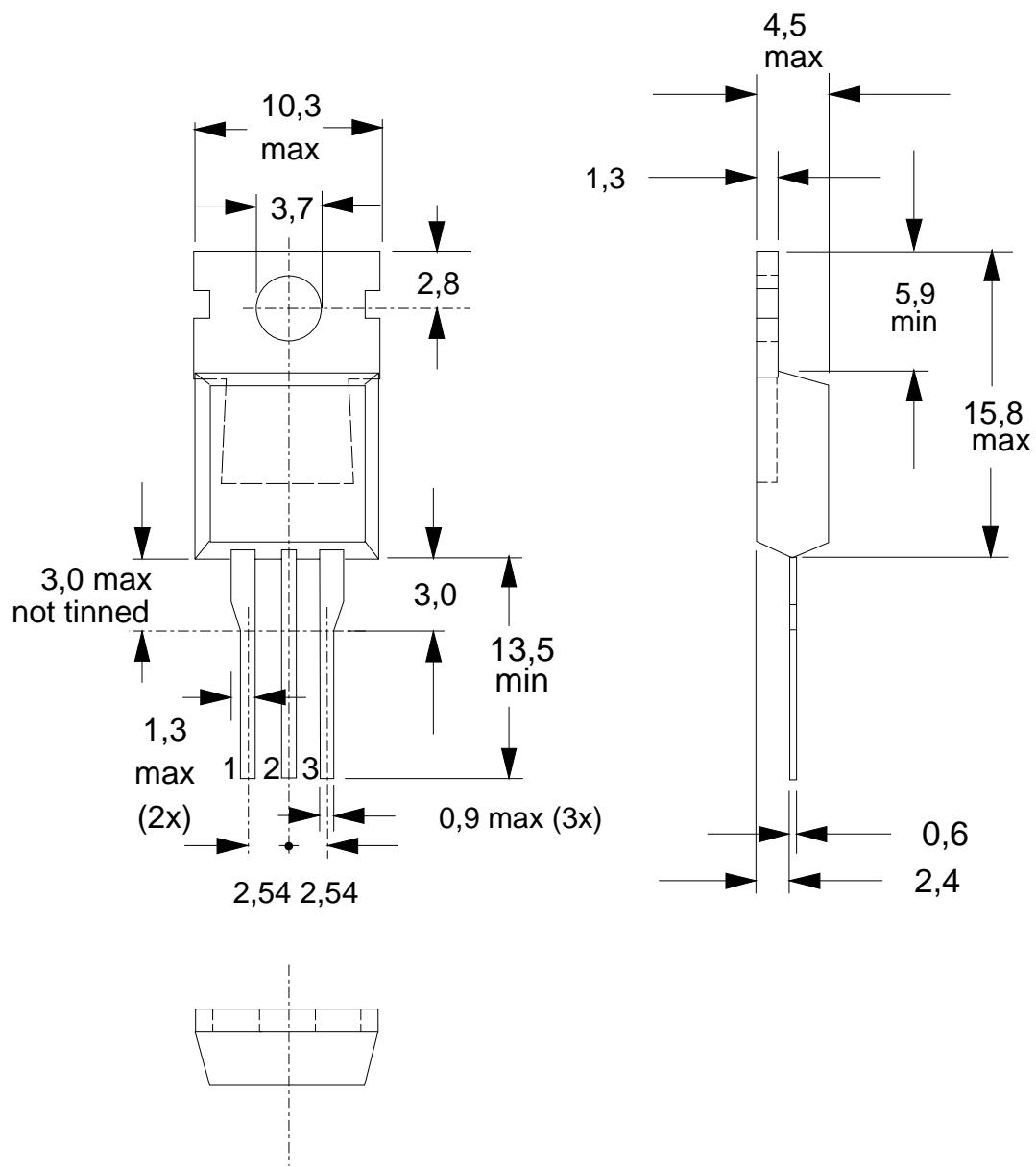


Fig.12. SOT78 (TO220AB). pin 2 connected to mounting base.

Notes

1. Refer to mounting instructions for SOT78 (TO220) envelopes.
2. Epoxy meets UL94 V0 at 1/8".