

GENERAL DESCRIPTION

Passivated guaranteed commutation triacs in a plastic envelope intended for use in motor control circuits or with other highly inductive loads. These devices balance the requirements of commutation performance and gate sensitivity. The "sensitive gate" E series and "logic level" D series are intended for interfacing with low power drivers, including micro controllers.

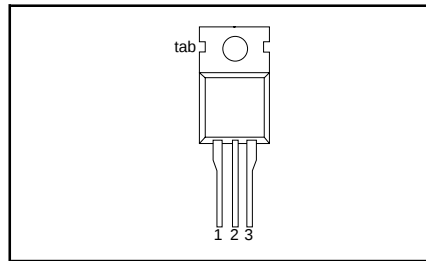
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
V_{DRM}	BTA212- BTA212- BTA212- Repetitive peak off-state voltages	600D 600E 600F 600	800E 800F 800	V
$I_{T(RMS)}$	RMS on-state current	12	12	A
I_{TSM}	Non-repetitive peak on-state current	95	95	A

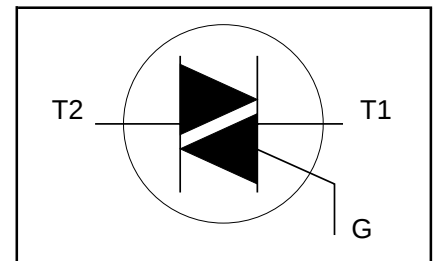
PINNING - TO220AB

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		-	-600 600¹	-800 800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{mb} \leq 99^\circ\text{C}$	-	12		A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25^\circ\text{C}$ prior to surge	-	95		A
		$t = 20\text{ ms}$	-	105		A
		$t = 16.7\text{ ms}$	-	45		A ² s
		$t = 10\text{ ms}$	-	100		A/μs
I^2t	I^2t for fusing	$I_{TM} = 20\text{ A}; I_G = 0.2\text{ A};$ $di_G/dt = 0.2\text{ A}/\mu\text{s}$	-	2		A
dI_T/dt	Repetitive rate of rise of on-state current after triggering		-	5		V
I_{GM}	Peak gate current		-	5		W
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		-			°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 15 A/μs.

THERMAL RESISTANCES

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

STATIC CHARACTERISTICS

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

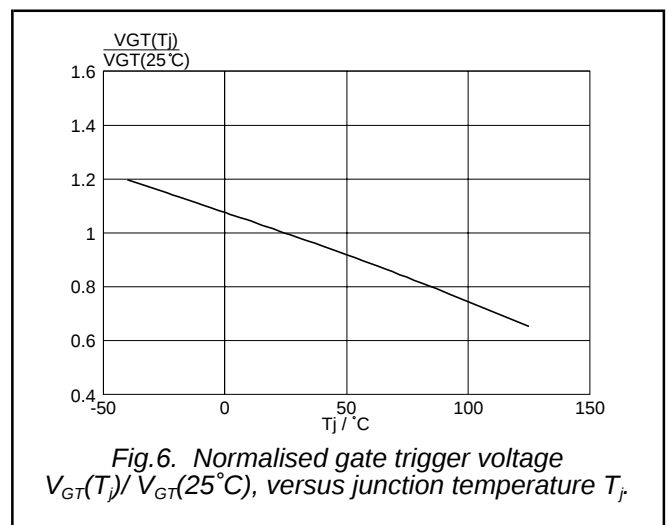
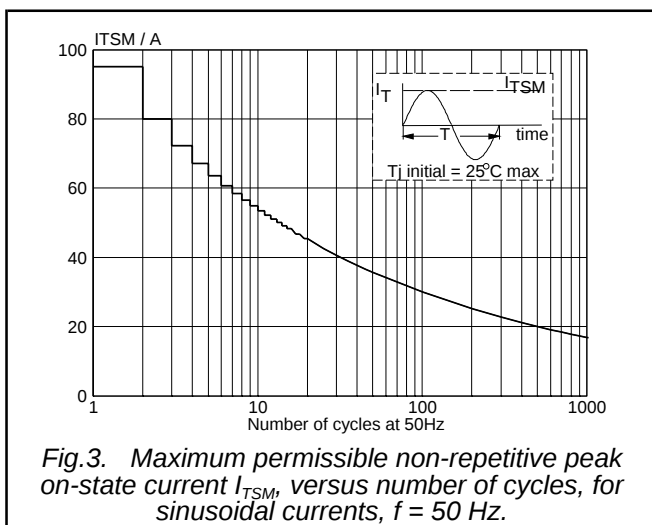
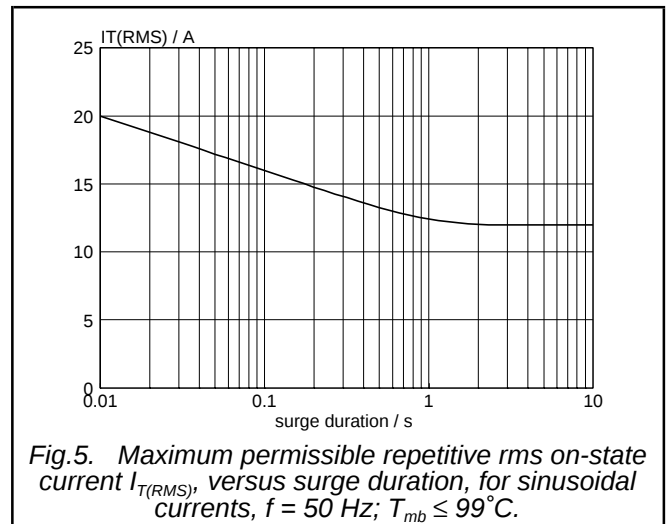
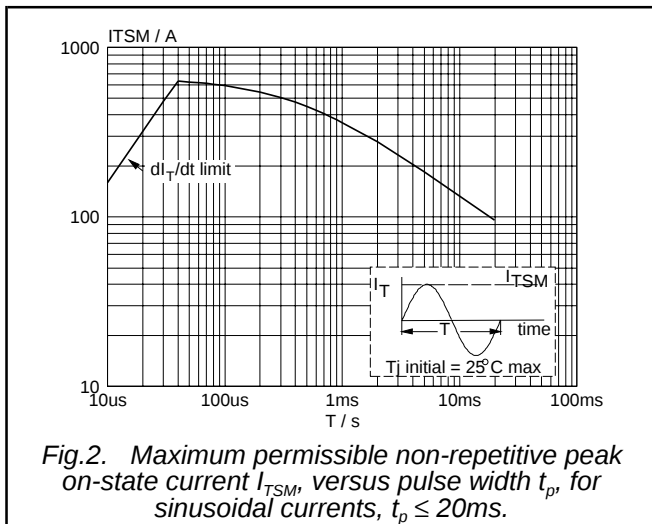
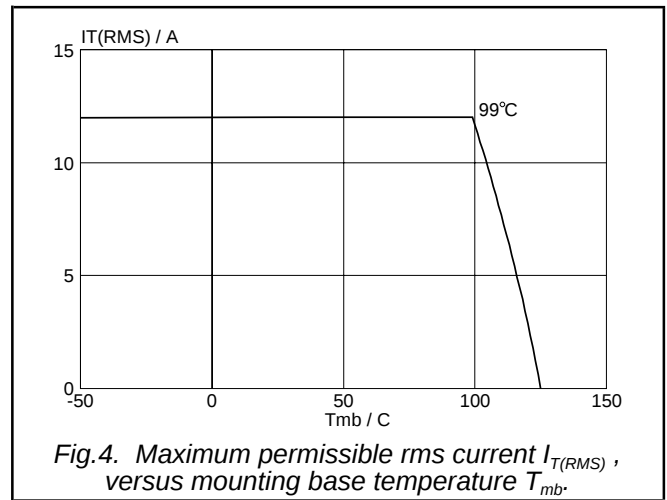
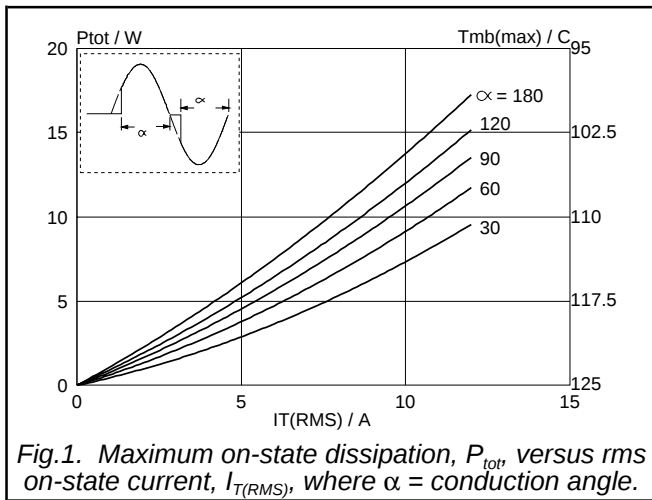
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.			UNIT
		BTA212-		...D	...D	...E	...F	
I_{GT}	Gate trigger current ²	$V_D = 12\text{ V}; I_T = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	- - -	1.0 2.2 3.3	5 5 5	10 10 10	25 25 25	mA mA mA
I_L	Latching current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	- - -	6 6 9	15 25 25	25 30 30	30 40 40	mA mA mA
I_H	Holding current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$	-	3.8	15	25	30	mA
V_T	On-state voltage	$I_T = 17\text{ A}$	-	1.3	1.6			V
V_{GT}	Gate trigger voltage	$V_D = 12\text{ V}; I_T = 0.1\text{ A}$ $V_D = 400\text{ V}; I_T = 0.1\text{ A};$ $T_j = 125\text{ }^{\circ}\text{C}$	- 0.25	0.7 0.4	1.5 -			V V
I_D	Off-state leakage current	$V_D = V_{DRM(max)};$ $T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	0.5			mA

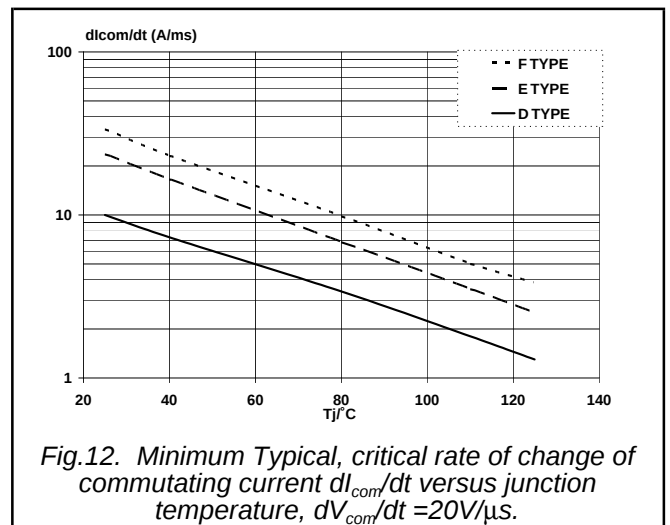
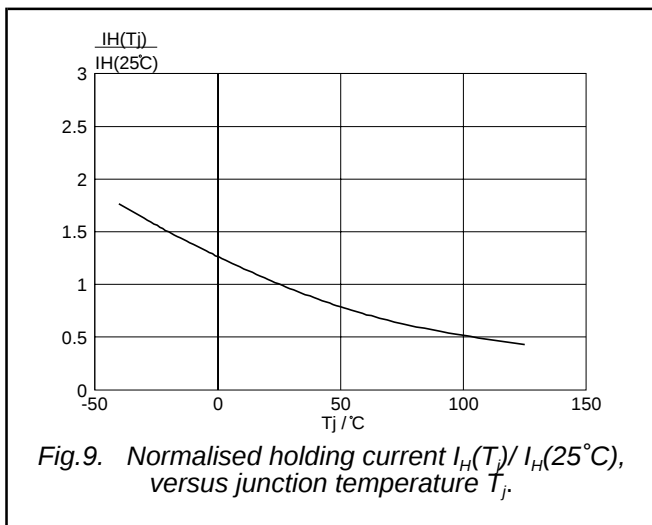
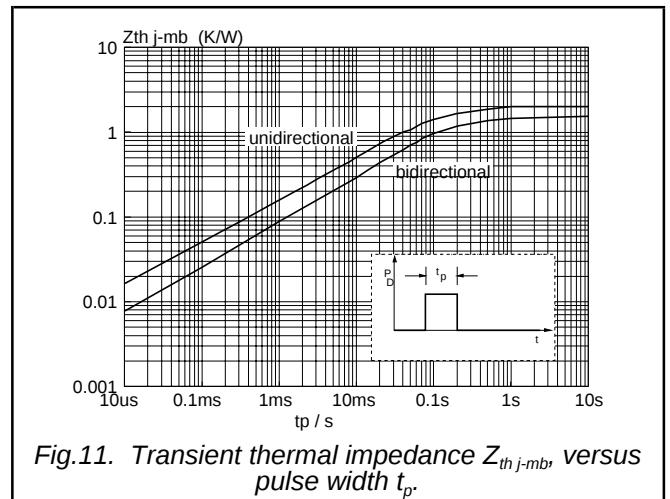
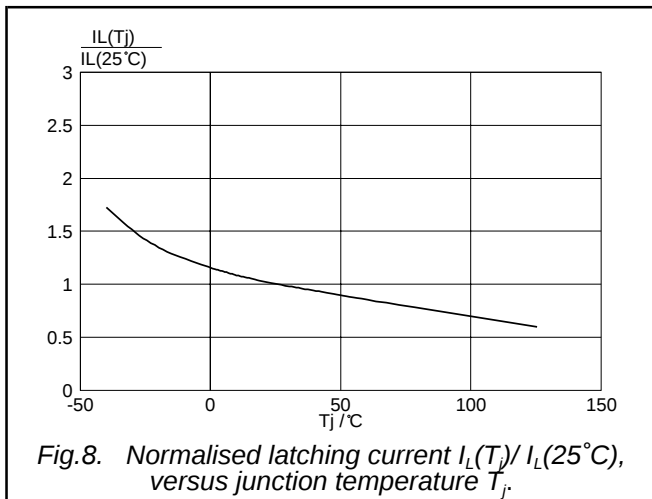
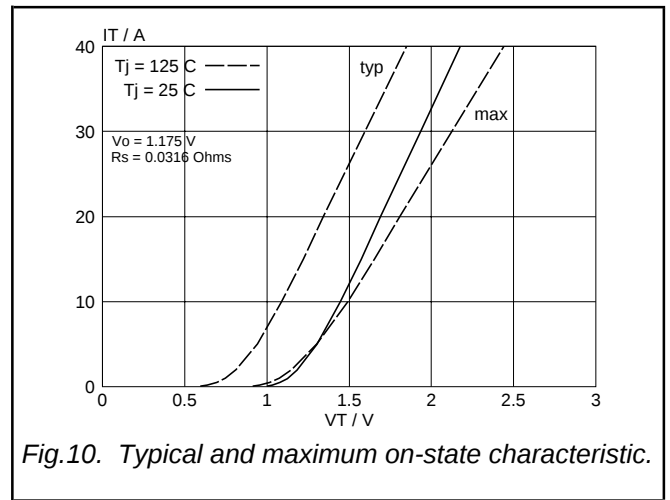
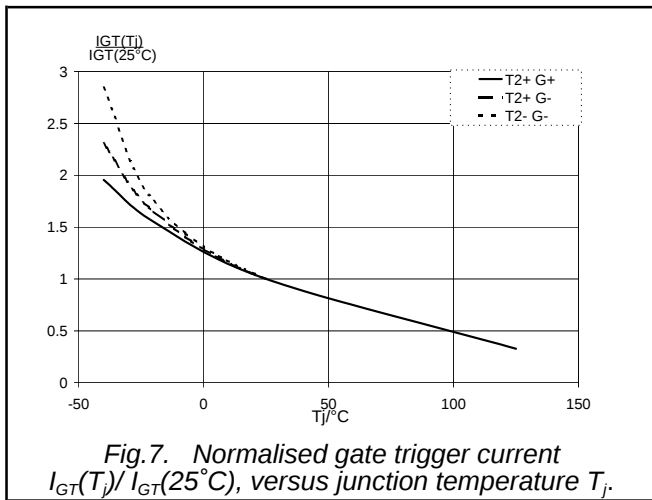
DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.			TYP.	MAX.	UNIT
		BTA212-	...D	...E	...F	...D		
dV_D/dt	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)};$ $T_j = 110\text{ }^{\circ}\text{C};$ exponential waveform; gate open circuit	20	60	70	30	-	V/ μs
dI_{com}/dt	Critical rate of change of commutating current	$V_{DM} = 400\text{ V}; T_j = 110\text{ }^{\circ}\text{C};$ $I_{T(RMS)} = 12\text{ A};$ $dV_{com}/dt = 20\text{ V}/\mu\text{s};$ gate open circuit	1.8	3.5	5	3	-	A/ms
dI_{com}/dt	Critical rate of change of commutating current	$V_{DM} = 400\text{ V}; T_j = 110\text{ }^{\circ}\text{C};$ $I_{T(RMS)} = 12\text{ A};$ $dV_{com}/dt = 0.1\text{ V}/\mu\text{s};$ gate open circuit	5	16	19	100	-	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

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





MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

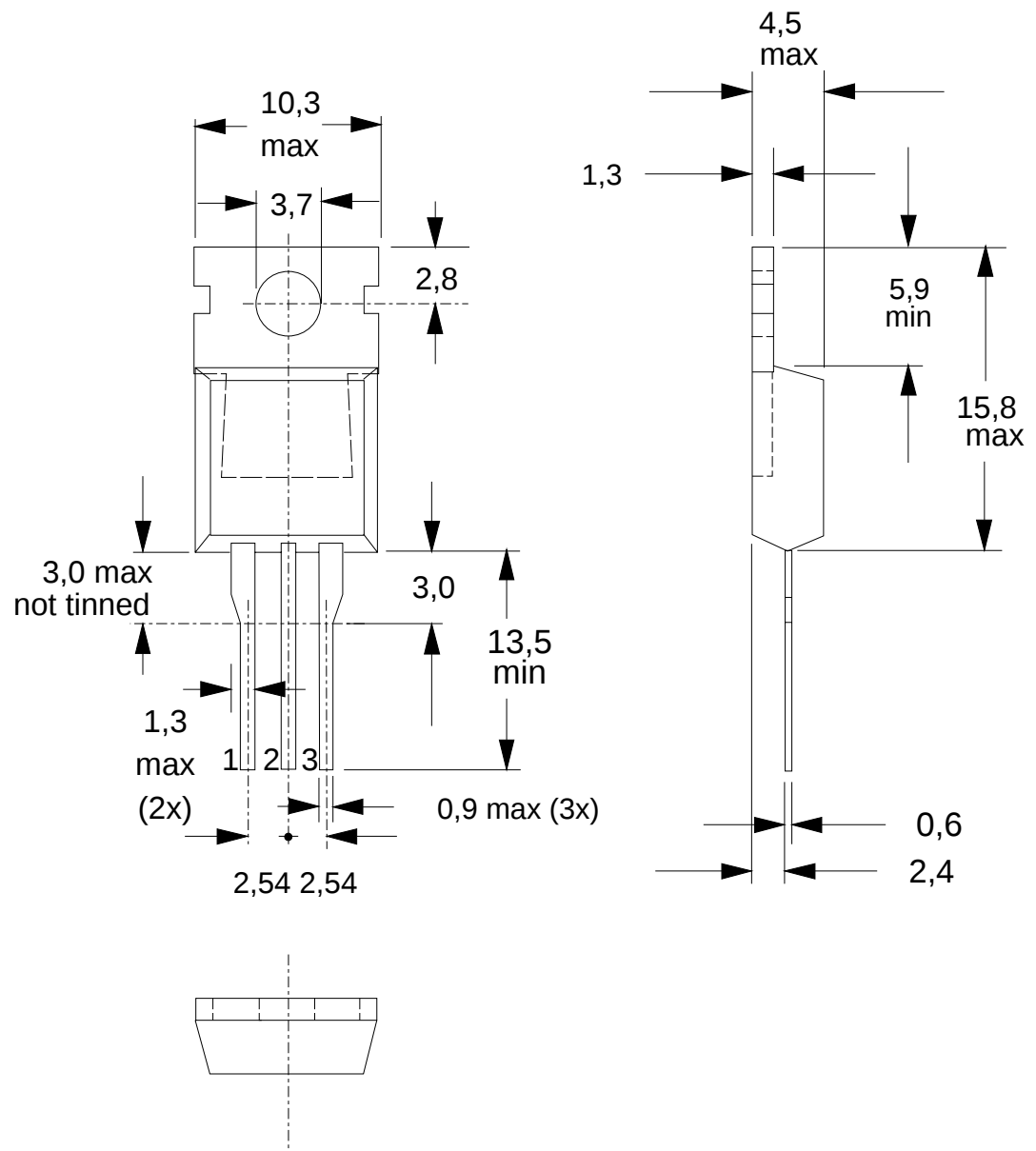


Fig.13. SOT78 (TO220AB). pin 2 connected to mounting base.

Notes

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