

GENERAL DESCRIPTION

Passivated high commutation triacs in a plastic full pack envelope 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.

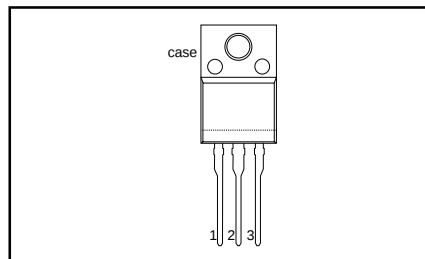
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{DRM}	BTA204X- BTA204X- Repetitive peak off-state voltages	500B 500C 500	600D 600E 600	800B 800C 800	V
$I_{T(RMS)}$	RMS on-state current	4	4	4	A
I_{TSM}	Non-repetitive peak on-state current	25	25	25	A

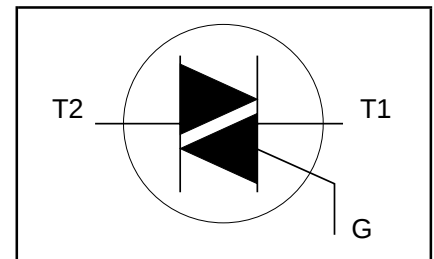
PINNING - TO220F

PIN	DESCRIPTION
1	main terminal 1
2	main terminal 2
3	gate
case	isolated

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; $T_{HS} \leq 92^\circ\text{C}$	-	4			A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_J = 25^\circ\text{C}$ prior to surge	-	25			A
		$t = 20\text{ ms}$	-	27			A
I^2t	I^2t for fusing	$t = 16.7\text{ ms}$	-	3.1			A ² s
dI_T/dt	Repetitive rate of rise of on-state current after triggering	$t = 10\text{ ms}$ $I_{TM} = 6\text{ A}; I_G = 0.2\text{ A}; dI_G/dt = 0.2\text{ A}/\mu\text{s}$	-	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 .

ISOLATION LIMITING VALUE & CHARACTERISTIC

$T_{hs} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60\text{ Hz}$; sinusoidal waveform; $R.H. \leq 65\%$; clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\text{-}j\text{-}hs}$	Thermal resistance junction to heatsink	full or half cycle with heatsink compound	-	-	5.5	K/W
$R_{th\text{-}j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	7.2	K/W

STATIC CHARACTERISTICS

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

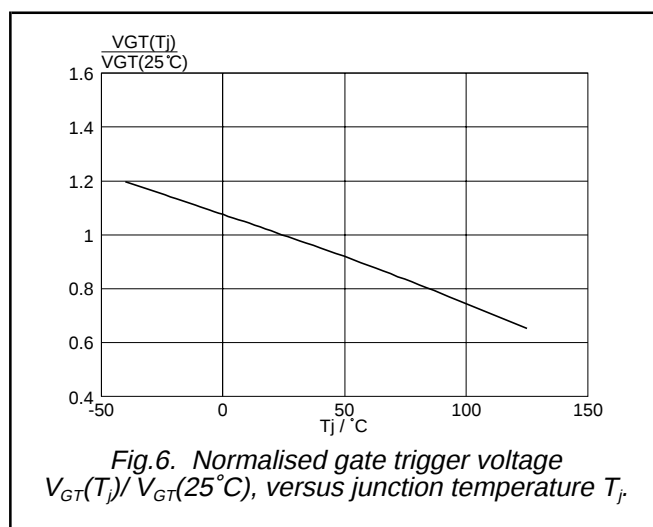
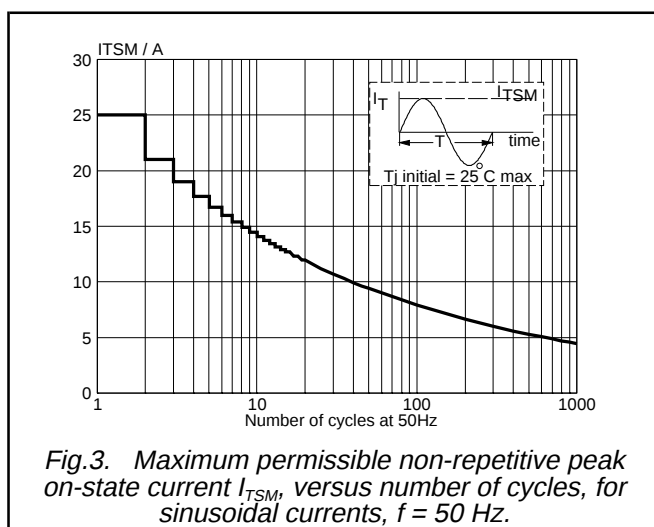
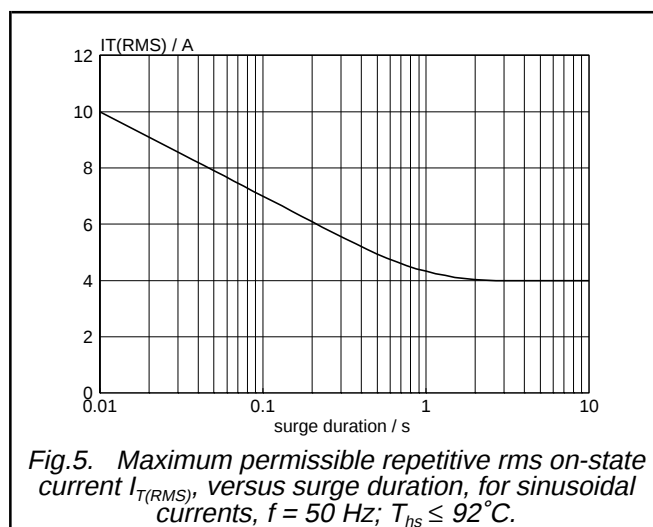
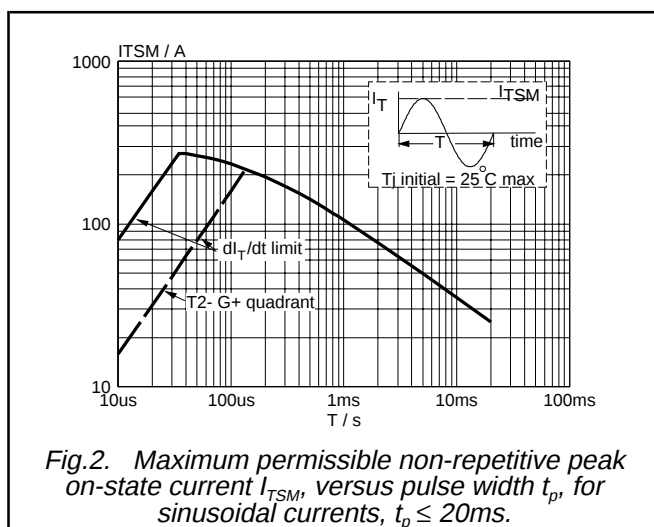
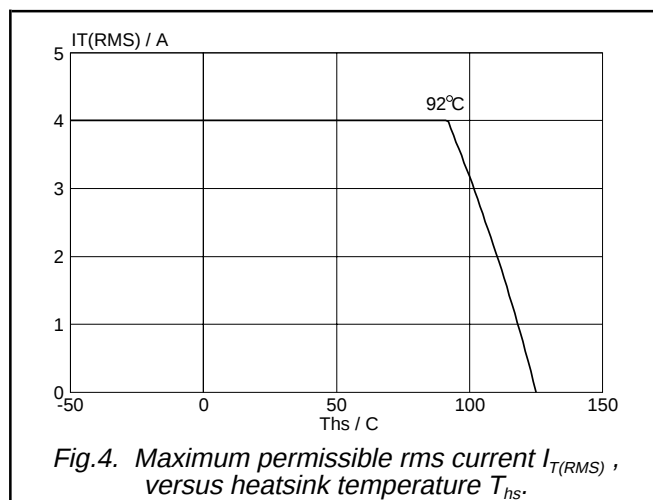
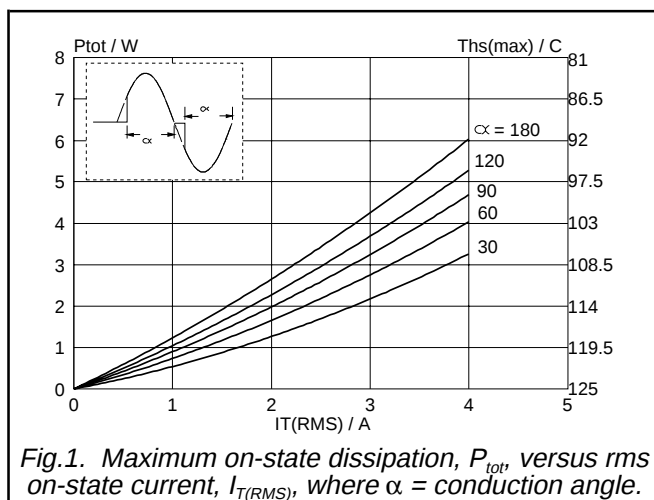
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
		BTA204X-			...B ...C	
I_{GT}	Gate trigger current ²	$V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	- - -	- - -	50 50 50	35 35 35 mA mA mA
I_L	Latching current	$V_D = 12\text{ V}$; $I_{GT} = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G-	- - -	- - -	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	$I_T = 5\text{ A}$	-	1.4	1.7	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

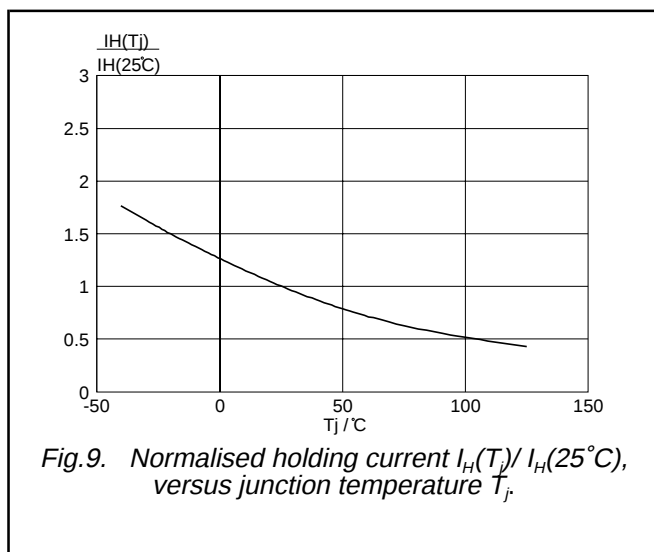
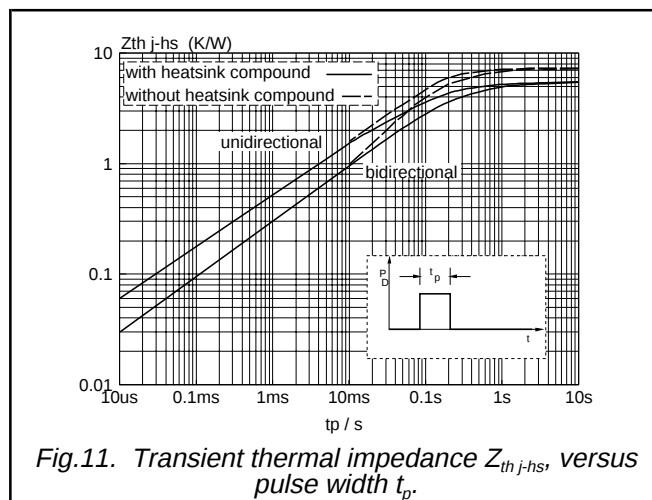
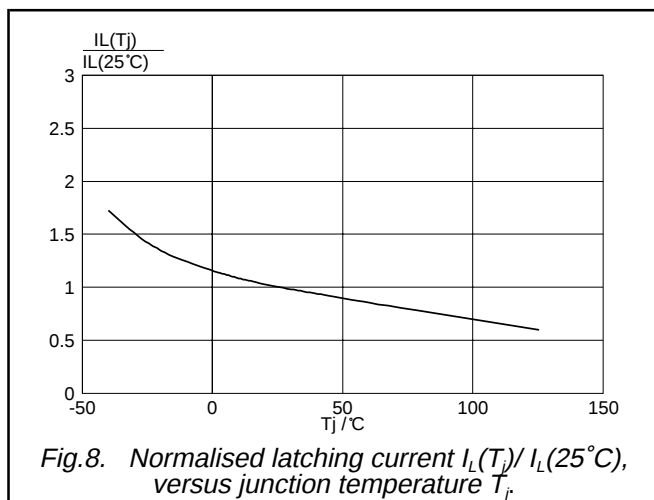
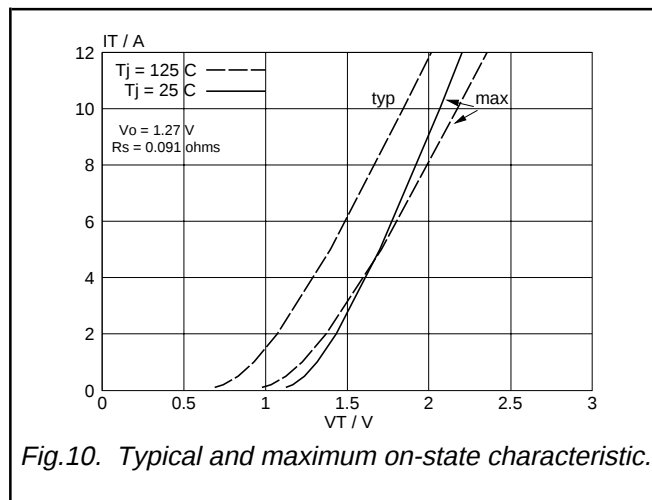
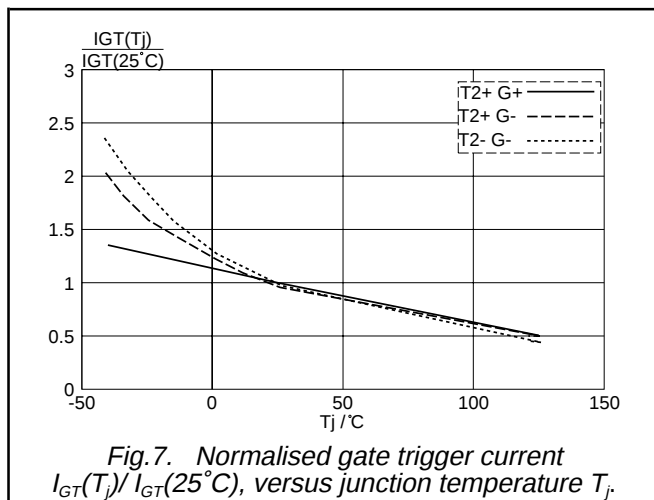
DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.		TYP.	UNIT
		BTA204X-	...B	...C		
dV _D /dt	Critical rate of rise of off-state voltage	V _{DM} = 67% V _{DRM(max)} ; T _j = 125 °C; exponential waveform; gate open circuit	1000	1000	-	V/μs
di _{com} /dt	Critical rate of change of commutating current	V _{DM} = 400 V; T _j = 125 °C; I _{T(RMS)} = 4 A; dV _{com} /dt = 20V/μs; 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; di _G /dt = 5 A/μs	-	-	2	μs

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





MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

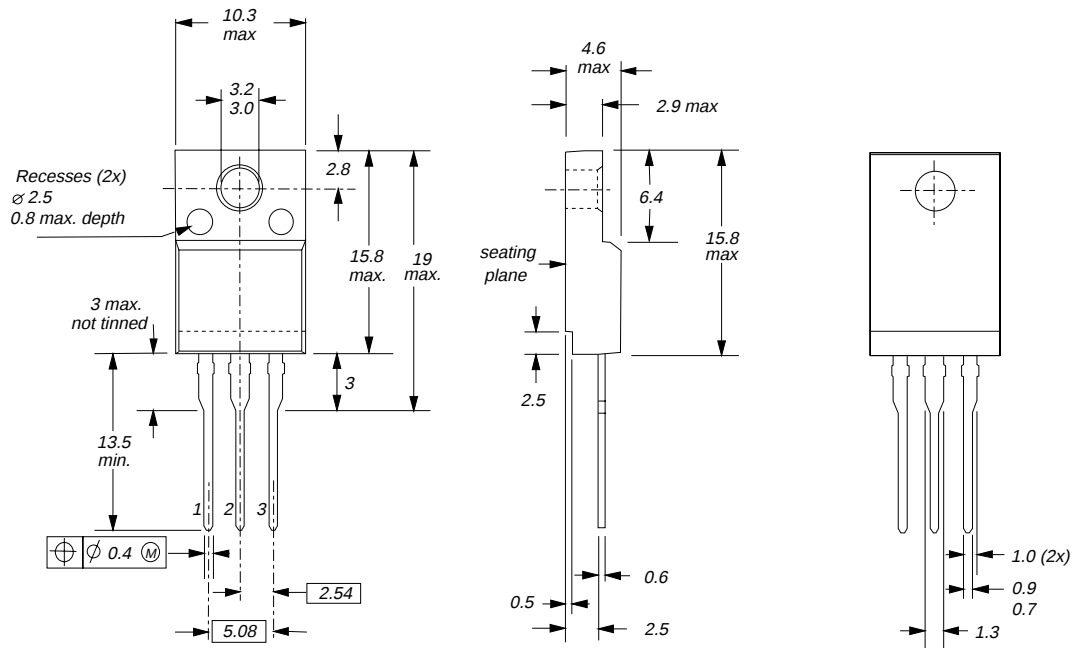


Fig.12. TO220F; The seating plane is electrically isolated from all terminals.

Notes

1. Refer to mounting instructions for F-pack envelopes.
2. Epoxy meets UL94 V0 at 1/8".