

## 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.

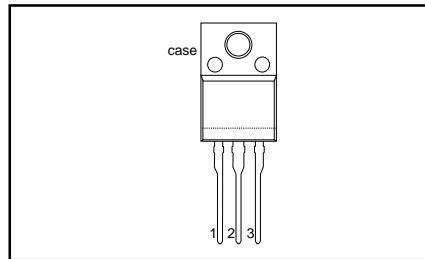
## QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
$V_{DRM}$	Repetitive peak off-state voltages	<b>500B</b> <b>500C</b> 500	<b>600B</b> <b>600C</b> 600	<b>800B</b> <b>800C</b> 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

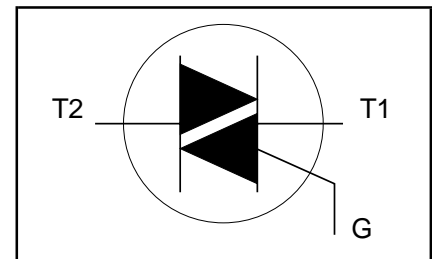
## PINNING - TO220F

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
				-500 500 <sup>1</sup>	-600 600 <sup>1</sup>	-800 800	
$V_{DRM}$	Repetitive peak off-state voltages		-				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 $t = 20\text{ ms}$	-	25			A
		$t = 16.7\text{ ms}$	-	27			A
$I^2t$	$I^2t$ for fusing	$t = 10\text{ ms}$	-	3.1			A <sup>2</sup> s
$dI_T/dt$	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 6\text{ A}; I_G = 0.2\text{ A}; dI_G/dt = 0.2\text{ A}/\mu\text{s}$	-	100			A/ $\mu\text{s}$
$I_{GM}$	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			$^\circ\text{C}$

<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/ $\mu\text{s}$ .

## 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
$R_{th\ j-hs}$	Thermal resistance junction to heatsink	full or half cycle with heatsink compound	-	-	5.5	K/W
$R_{th\ j-a}$	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

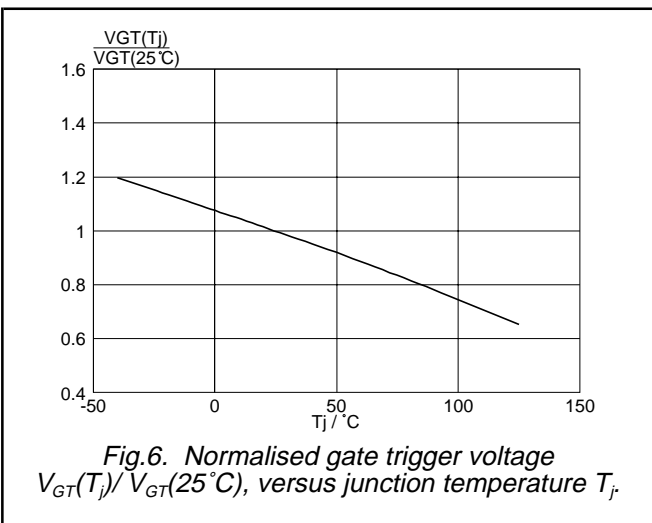
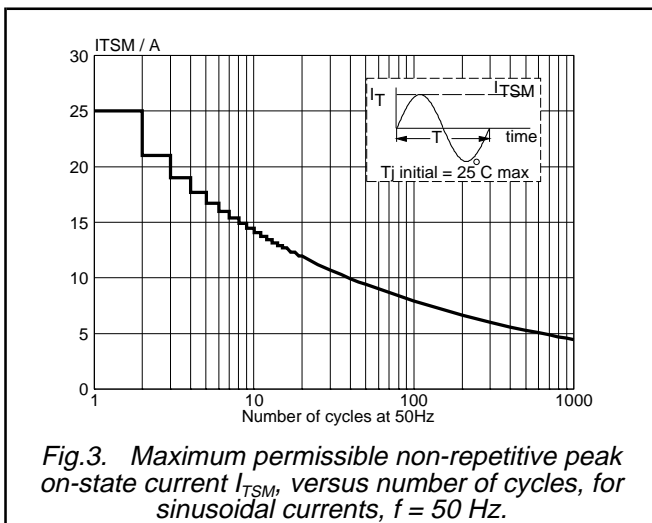
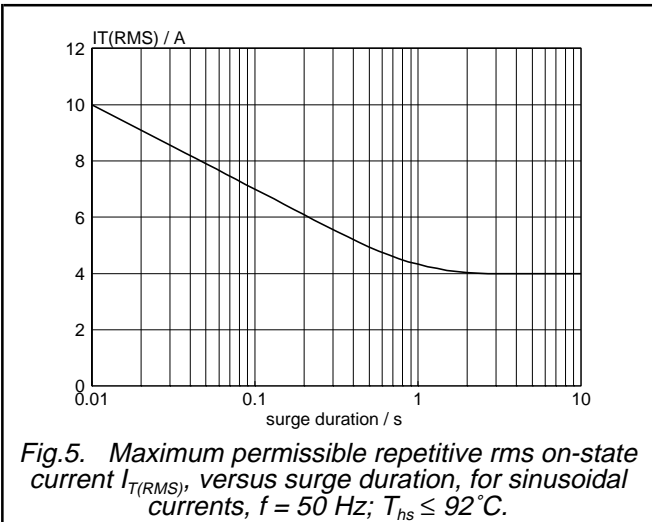
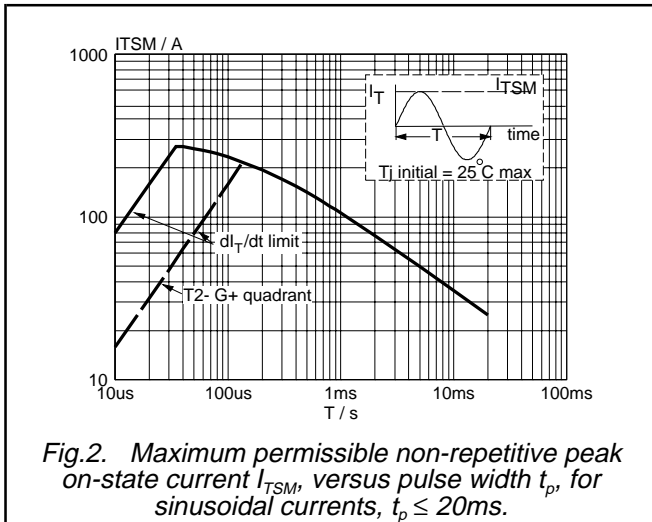
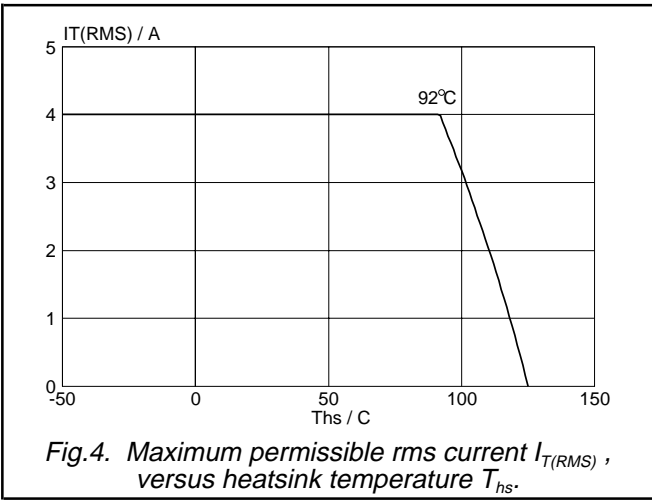
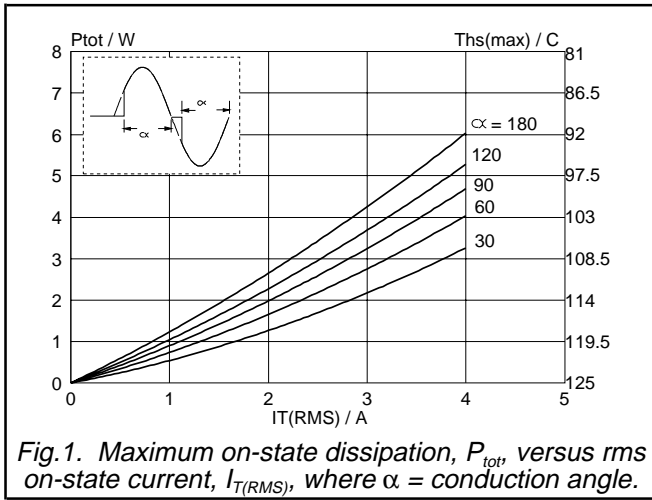
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.		UNIT
					...B	...C	
$I_{GT}$	Gate trigger current <sup>2</sup>	<b>BTA204X-</b>					
		$V_D = 12\text{ V}$ ; $I_T = 0.1\text{ A}$ T2+ G+	-	-	50	35	mA
		T2+ G- T2- G-	-	-	50	35	mA
$I_L$	Latching current	$V_D = 12\text{ V}$ ; $I_{GT} = 0.1\text{ A}$ T2+ G+	-	-	30	20	mA
		T2+ G-	-	-	45	30	mA
		T2- G-	-	-	30	20	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	$V_D = 12\text{ V}$ ; $I_T = 0.1\text{ A}$	-	0.7	1.5		V
		$V_D = 400\text{ V}$ ; $I_T = 0.1\text{ A}$ ; $T_j = 125\text{ }^{\circ}\text{C}$	0.25	0.4	-		V
$I_D$	Off-state leakage current	$V_D = V_{DRM(max)}$ ; $T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	0.5		mA

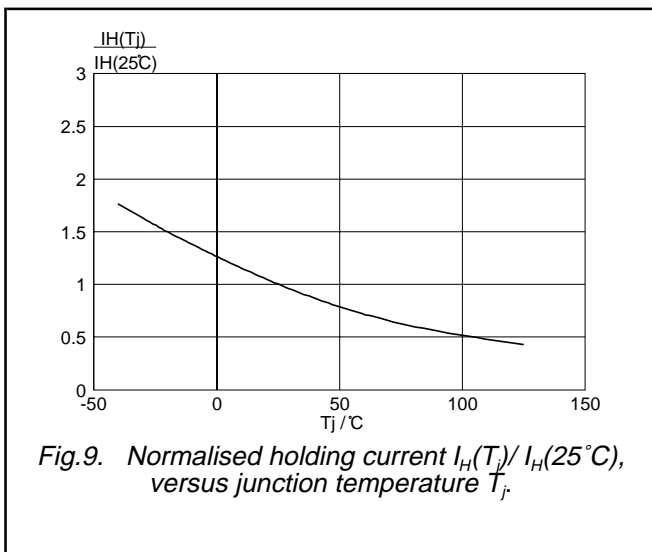
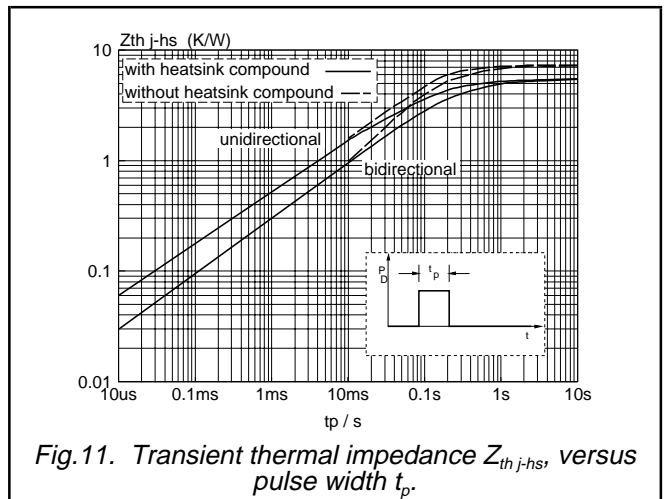
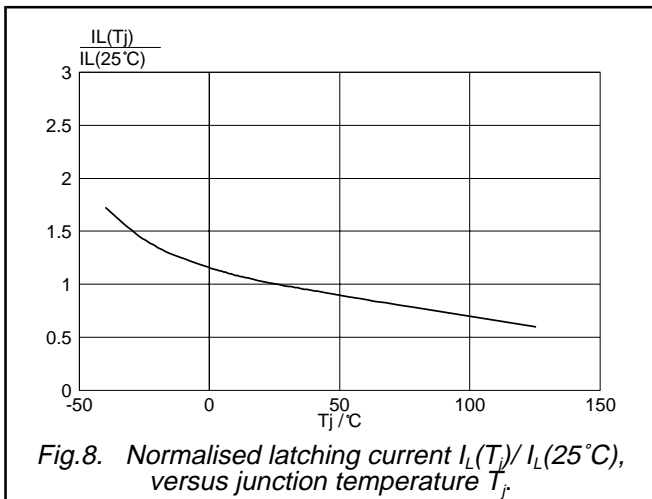
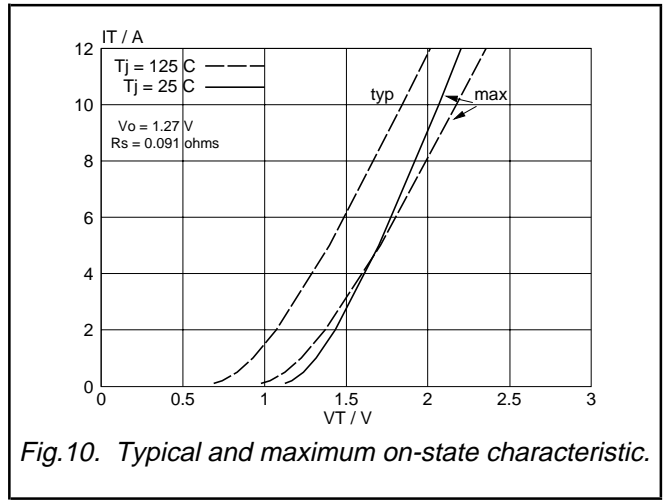
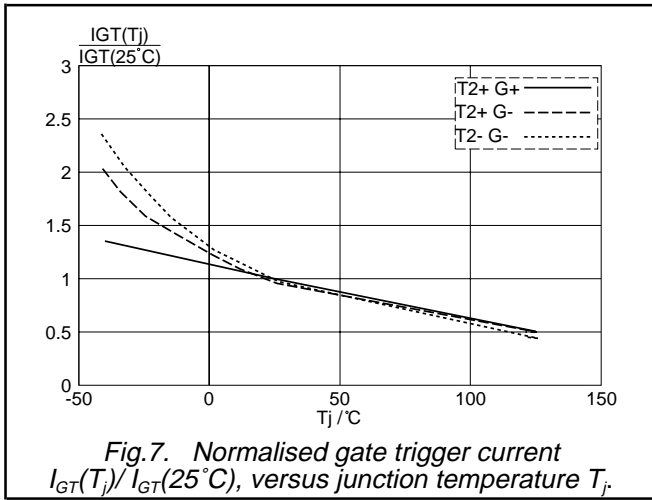
## DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.		TYP.	UNIT
			...B	...C		
$dV_D/dt$	Critical rate of rise of off-state voltage	<b>BTA204X-</b> $V_{DM} = 67\% V_{DRM(max)}$ ; $T_j = 125\text{ }^{\circ}\text{C}$ ; exponential waveform; gate open circuit	1000	1000	-	V/ $\mu\text{s}$
$dl_{com}/dt$	Critical rate of change of commutating current	$V_{DM} = 400\text{ V}$ ; $T_j = 125\text{ }^{\circ}\text{C}$ ; $I_{T(RMS)} = 4\text{ A}$ ; $dV_{com}/dt = 20\text{ V}/\mu\text{s}$ ; gate open circuit	6	3	-	A/ms
$t_{gt}$	Gate controlled turn-on time	$I_{TM} = 12\text{ A}$ ; $V_D = V_{DRM(max)}$ ; $I_G = 0.1\text{ A}$ ; $dl_G/dt = 5\text{ A}/\mu\text{s}$	-	-	2	$\mu\text{s}$

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





# MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

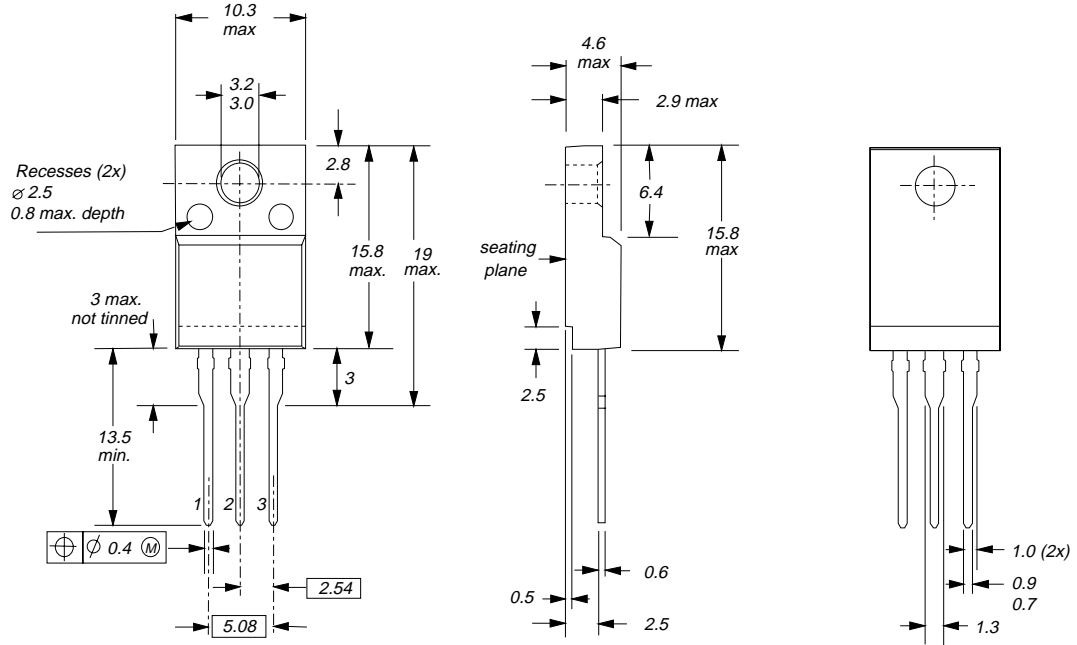


Fig.12. TO220F; The seating plane is electrically isolated from all terminals.

**Notes**

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