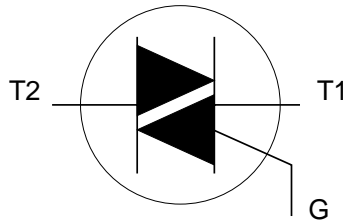


GENERAL DESCRIPTION

Glass passivated triacs in a full pack plastic envelope, intended for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

SYMBOL

**SOT186A
TO-220F**

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
V_{DRM}	Repetitive peak off-state voltages	BT136X-500	600	800	V
		BT136X-500F	600F	800F	
		BT136X-500G	600G	800G	
$I_{T(RMS)}$	RMS on-state current	4	4	4	A
I_{TSM}	Non-repetitive peak on-state current	25	25	25	A

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 ¹	600 ¹	800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{hs} \leq 92^\circ C$	-	4			A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25^\circ C$ prior to surge $t = 20$ ms	-	25			A
I^2t	I^2t for fusing	$t = 16.7$ ms	-	27			A
di_T/dt	Repetitive rate of rise of on-state current after triggering	$t = 10$ ms $I_{TM} = 6$ A; $I_G = 0.2$ A; $di_G/dt = 0.2$ A/ μ s	-	3.1			A ² s
I_{GM}	Peak gate current		-	50			A/ μ s
V_{GM}	Peak gate voltage		-	50			A/ μ s
P_{GM}	Peak gate power		-	50			A/ μ s
$P_{G(AV)}$	Average gate power		-	10			A/ μ s
T_{stg}	Storage temperature		-	2			A
T_j	Operating junction temperature		-	5			V
			-	5			W
		over any 20 ms period	-	0.5			W
			-40	150			$^\circ C$
			-	125			$^\circ C$

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 3 A/ μ 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

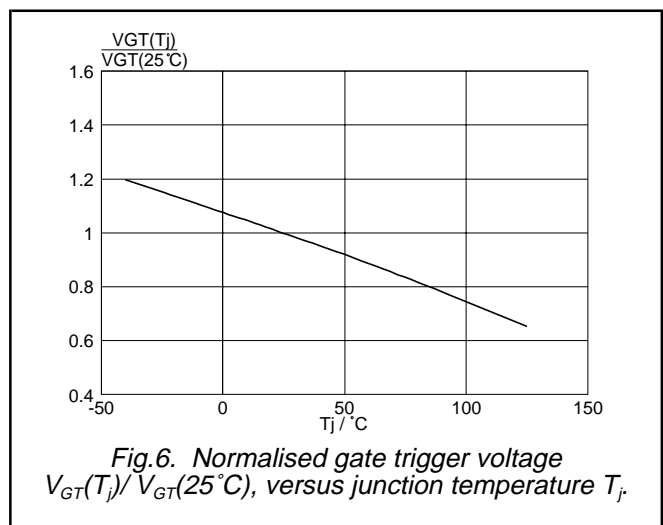
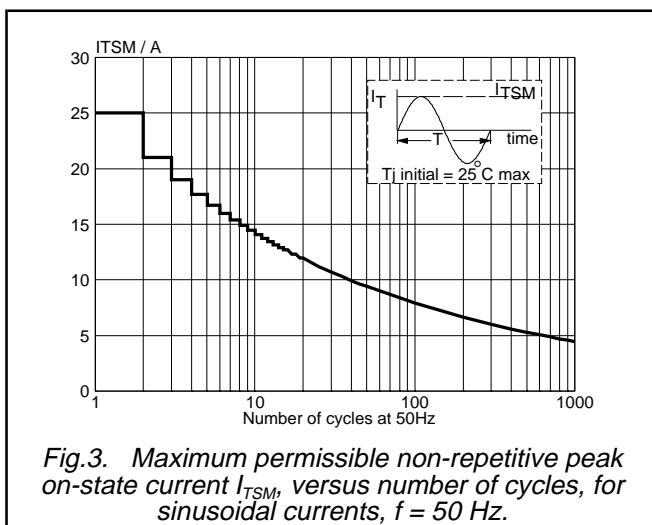
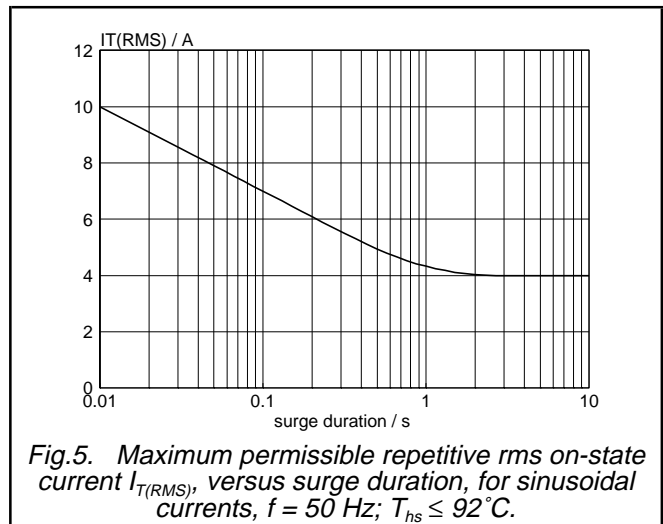
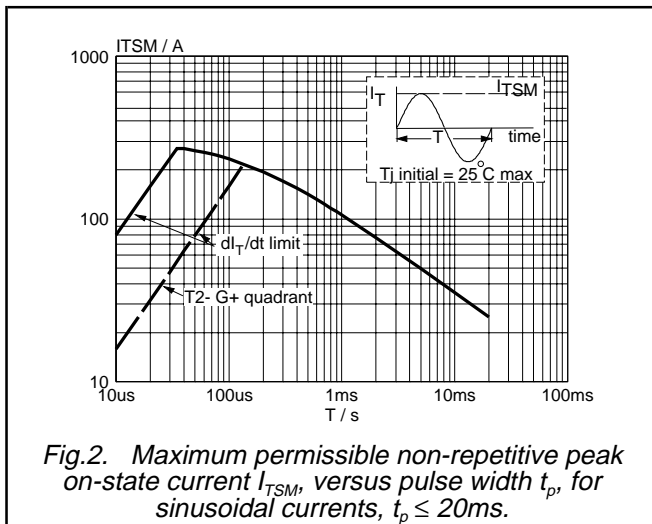
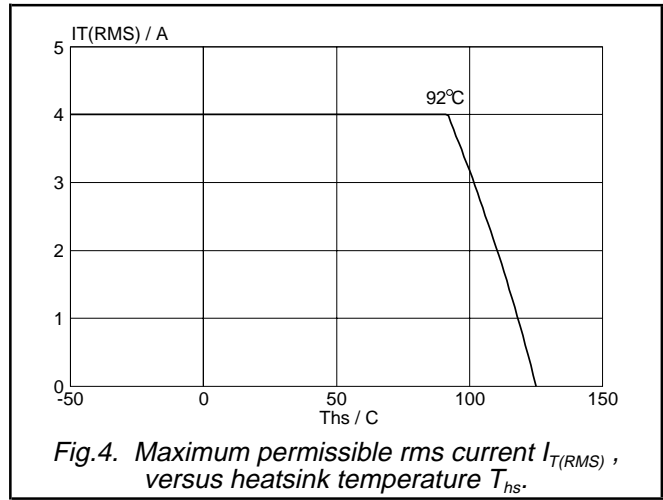
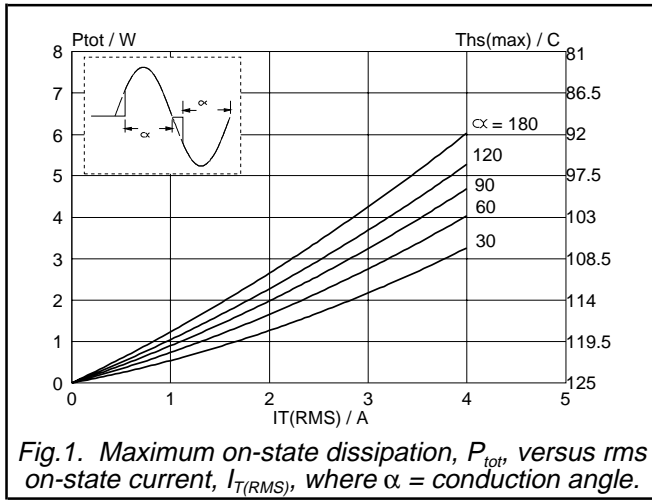
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j\text{-}hs}$	Thermal resistance junction to heatsink	full or half cycle with heatsink compound	-	-	5.5	K/W
$R_{th\ j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	7.2	K/W

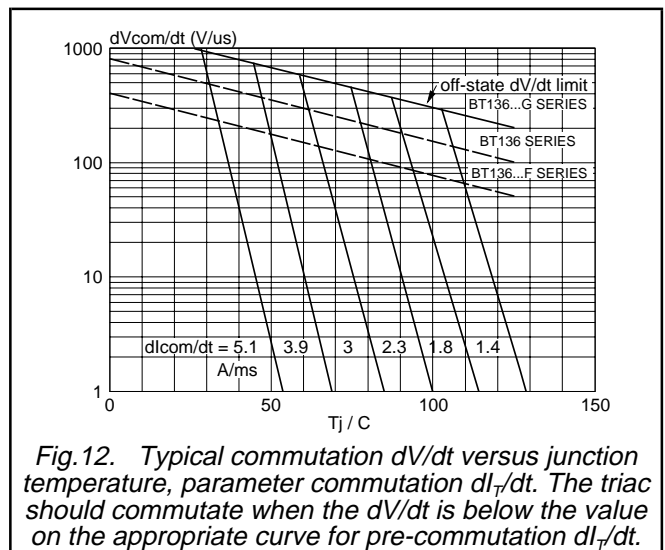
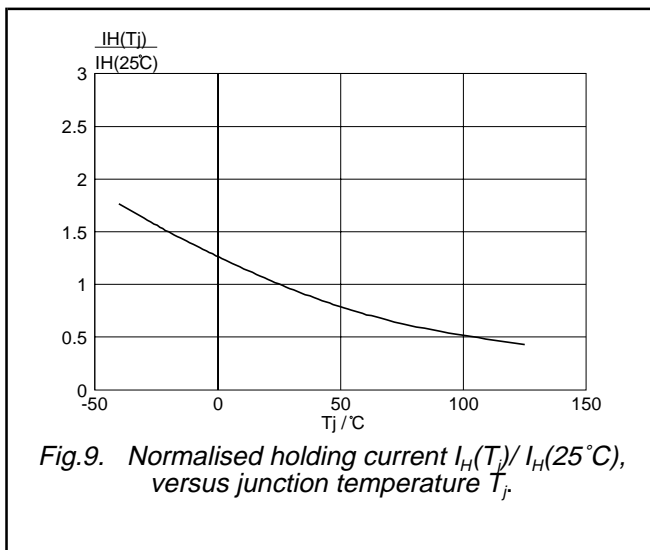
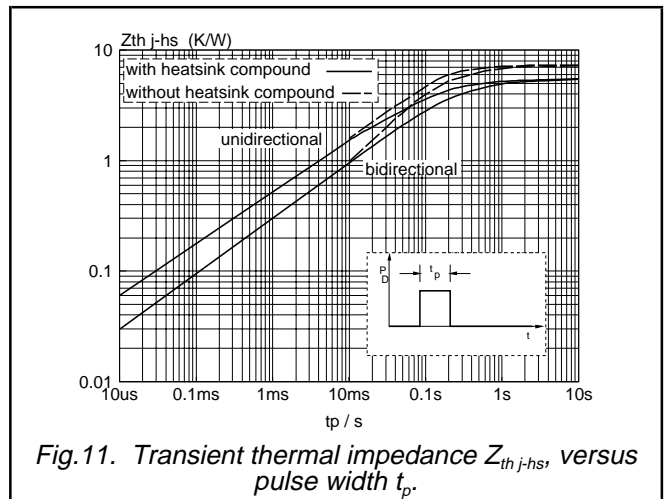
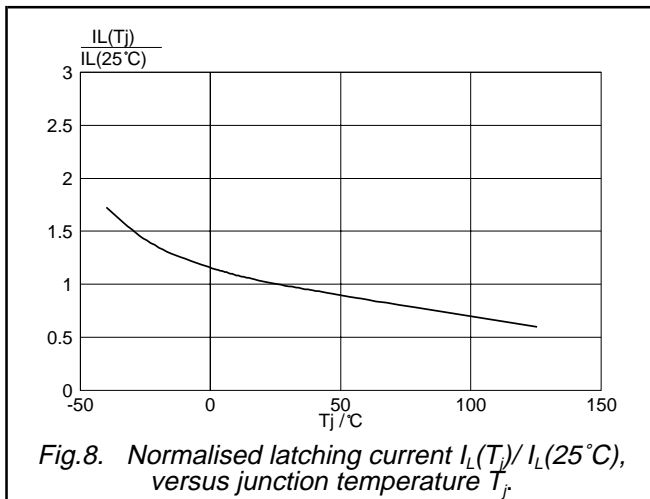
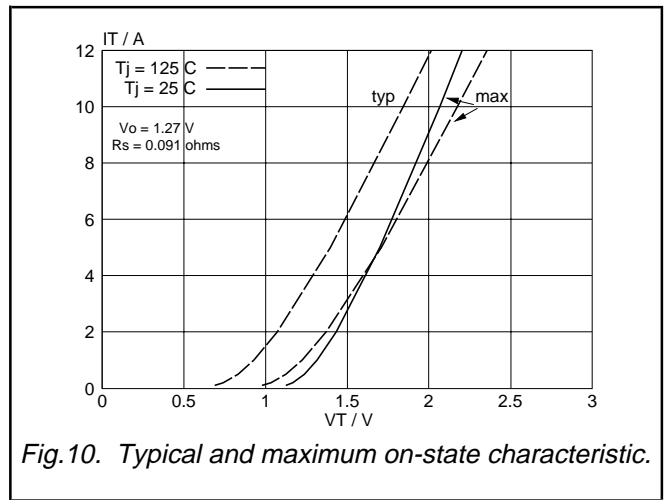
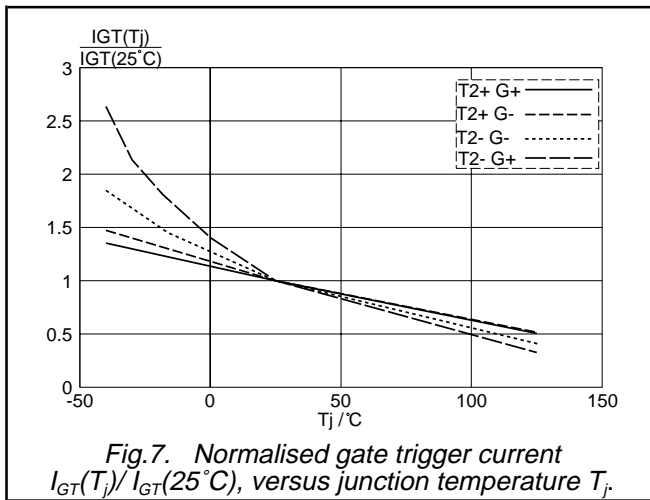
STATIC CHARACTERISTICS
 $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.			UNIT
I_{GT}	Gate trigger current	BT136X- $V_D = 12\text{ V}$; $I_T = 0.1\text{ A}$	...	...	...	...F	...G	
		T2+ G+	-	5	35	25	50	mA
		T2+ G-	-	8	35	25	50	mA
		T2- G-	-	11	35	25	50	mA
I_L	Latching current	$V_D = 12\text{ V}$; $I_{GT} = 0.1\text{ A}$	...	...	...	...	...
		T2- G+	-	30	70	70	100	mA
		T2+ G+	-	7	20	20	30	mA
		T2+ G-	-	16	30	30	45	mA
I_H	Holding current	$V_D = 12\text{ V}$; $I_{GT} = 0.1\text{ A}$	...	...	...	...	...
		T2- G-	-	5	20	20	30	mA
		T2- G+	-	7	30	30	45	mA
V_T	On-state voltage	$I_T = 5\text{ A}$	-	1.4	1.70			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.	MAX.	UNIT
dV_D/dt	Critical rate of rise of off-state voltage	BT136X- $V_{DM} = 67\% V_{DRM(max)}$; $T_j = 125\text{ }^{\circ}\text{C}$; exponential waveform; gate open circuit	...	...	...	250	-	V/ μs
dV_{com}/dt	Critical rate of change of commutating voltage	$V_{DM} = 400\text{ V}$; $T_j = 95\text{ }^{\circ}\text{C}$; $I_{T(RMS)} = 4\text{ A}$; $di_{com}/dt = 1.8\text{ A/ms}$; gate open circuit	-	-	10	50	-	V/ μs
t_{gt}	Gate controlled turn-on time	$I_{TM} = 6\text{ A}$; $V_D = V_{DRM(max)}$; $I_G = 0.1\text{ A}$; $di_G/dt = 5\text{ A}/\mu\text{s}$	-	-	-	2	-	μs





MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

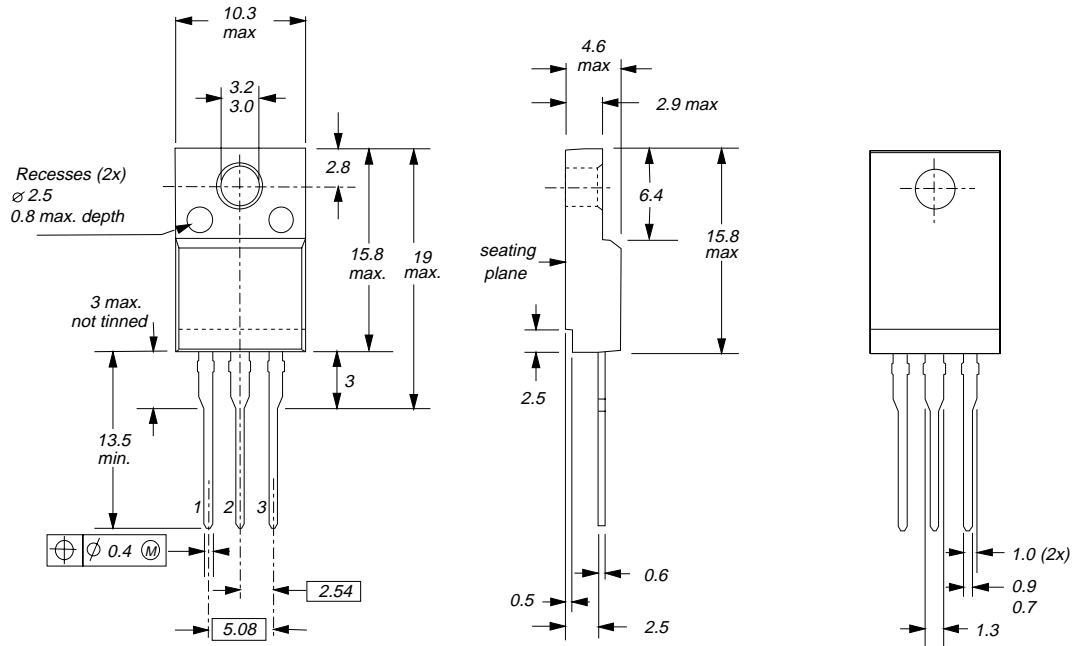


Fig. 13. SOT186A; The seating plane is electrically isolated from all terminals.

Notes

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