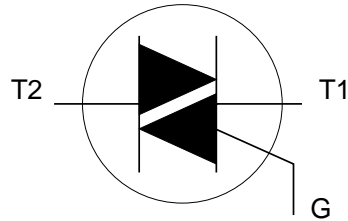


**KERSEMI ELECTRONIC CO.,LTD.**
**GENERAL DESCRIPTION**

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	<b>500</b>	<b>600</b>	<b>800</b>	V
		<b>500F</b>	<b>600F</b>	<b>800F</b>	
		<b>500G</b>	<b>600G</b>	<b>800G</b>	
$I_{T(RMS)}$	RMS on-state current	8	8	8	A
$I_{TSM}$	Non-repetitive peak on-state current	65	65	65	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 <sup>1</sup>	600 <sup>1</sup>	800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{hs} \leq 73^\circ C$	-	8			A
$I_{TSM}$	Non-repetitive peak on-state current	full sine wave; $T_j = 25^\circ C$ prior to surge $t = 20$ ms	-	65			A
		$t = 16.7$ ms	-	71			A
		$t = 10$ ms	-	21			A
$I^2t$	$I^2t$ for fusing		-	21			A <sup>2</sup> s
$di_T/dt$	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 12$ A; $I_G = 0.2$ A; $di_G/dt = 0.2$ A/ $\mu$ s	-	50			A/ $\mu$ s
		T2+ G+	-	50			A/ $\mu$ s
		T2+ G-	-	50			A/ $\mu$ s
		T2- G-	-	50			A/ $\mu$ s
		T2- G+	-	10			A/ $\mu$ 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			$^\circ C$
$T_j$	Operating junction temperature		-	125			$^\circ C$

<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/ $\mu$ 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**

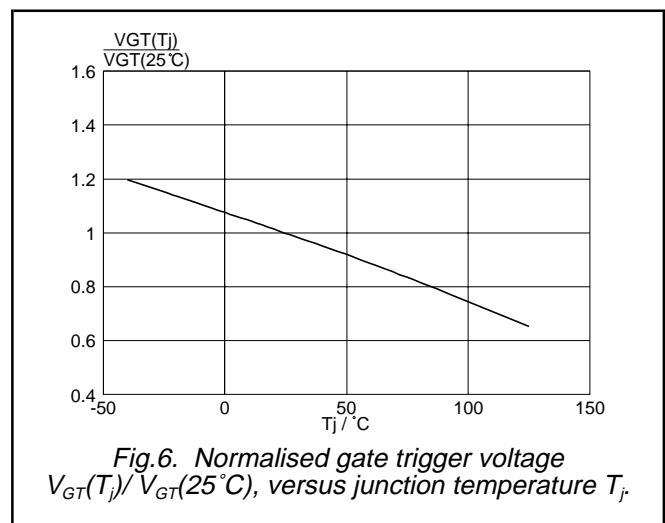
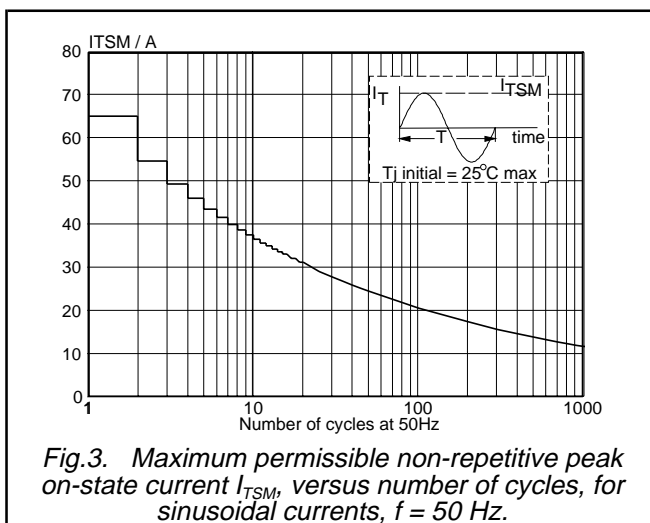
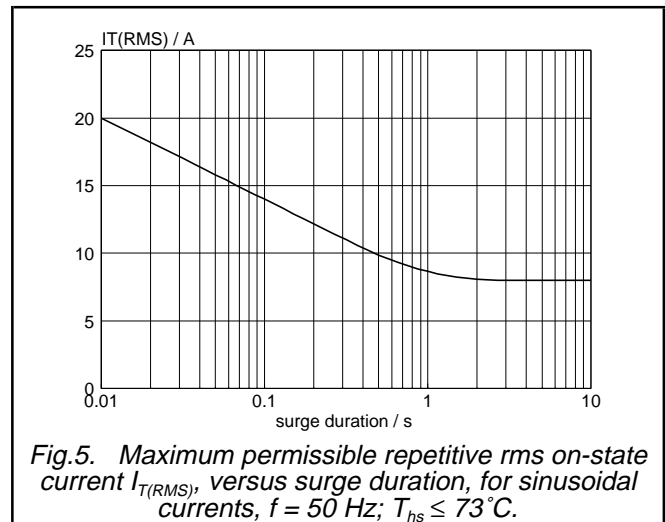
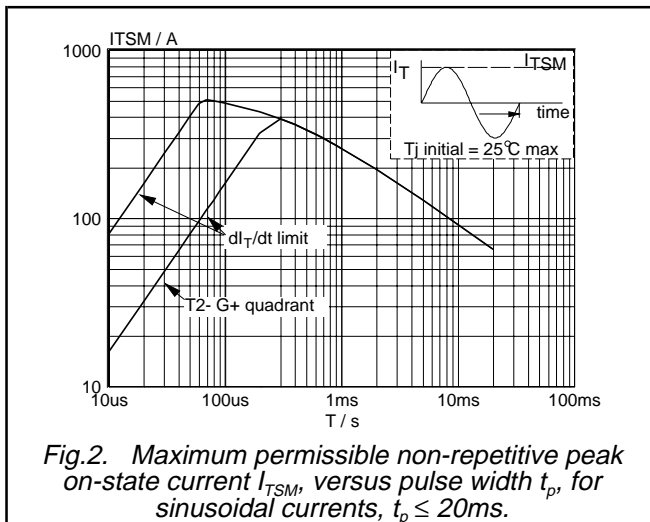
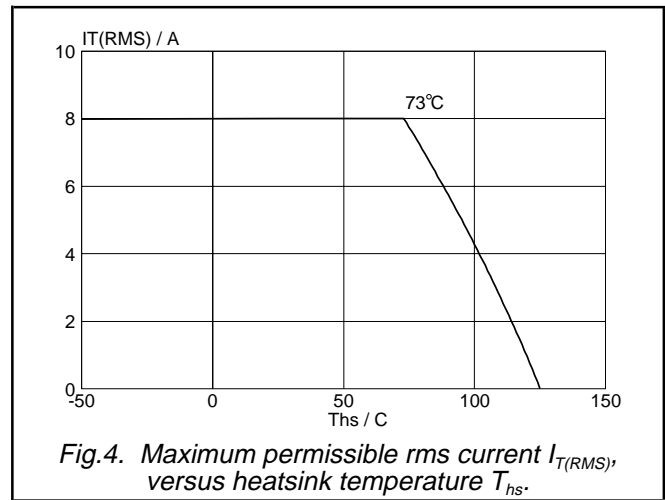
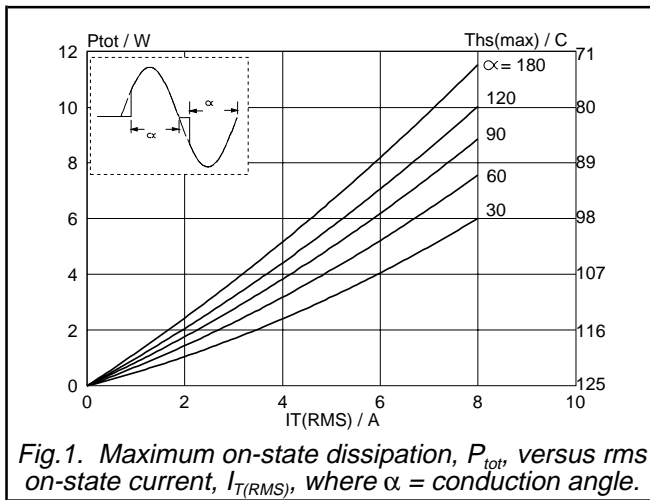
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\text{-}j\text{-}hs}$	Thermal resistance junction to heatsink	full or half cycle with heatsink compound	-	-	4.5	K/W
$R_{th\text{-}j\text{-}a}$	Thermal resistance junction to ambient	without heatsink compound in free air	-	55	6.5	K/W

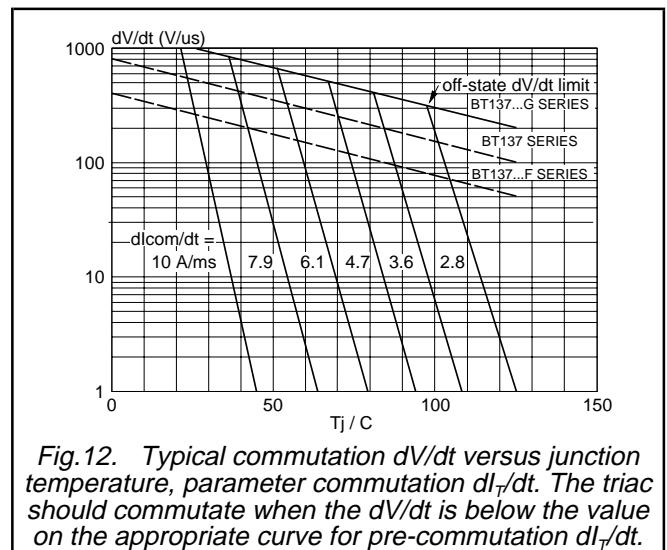
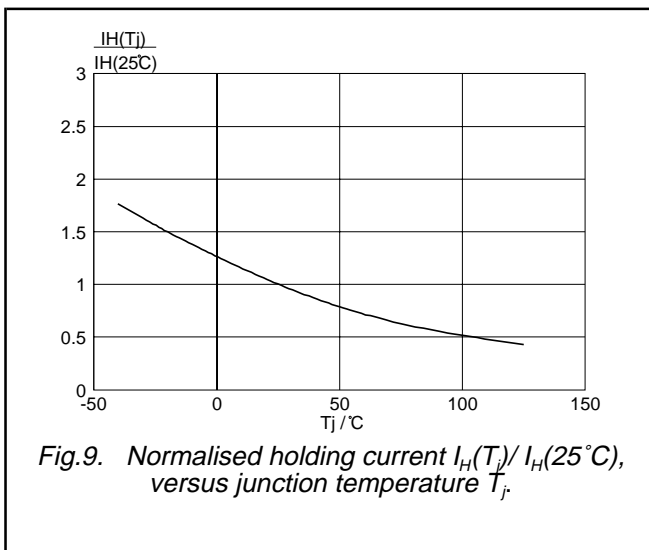
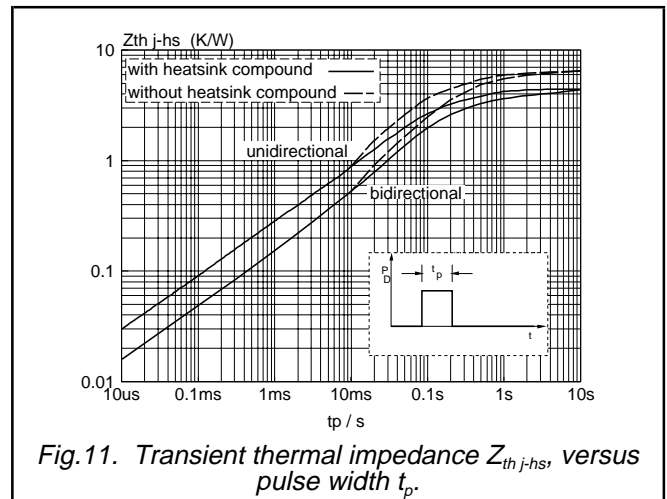
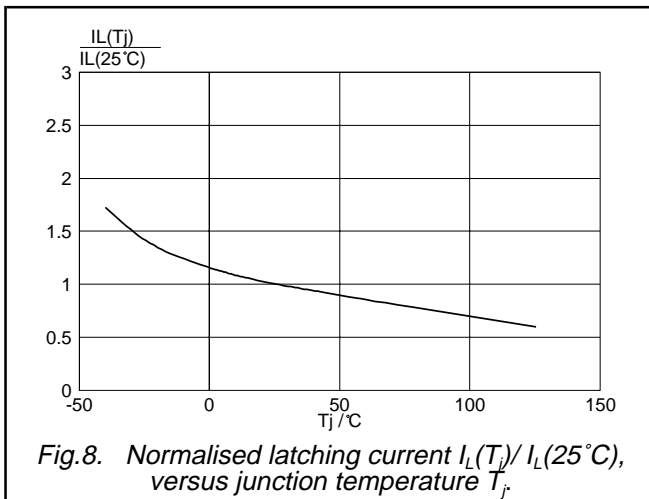
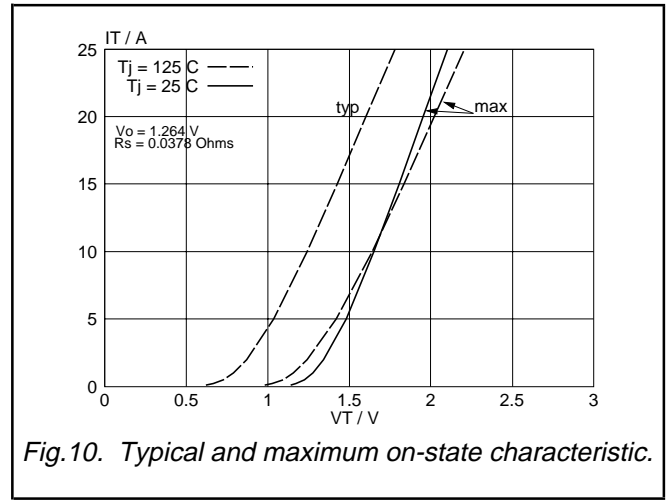
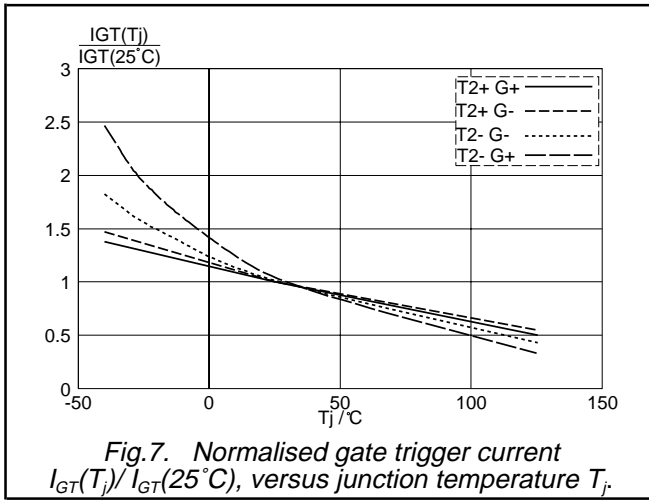
**STATIC CHARACTERISTICS**
 $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.			UNIT
$I_{GT}$	Gate trigger current	$V_D = 12\text{ V}$ ; $I_T = 0.1\text{ A}$ <b>BT137X-</b> T2+ G+ T2+ G- T2- G- T2- G+	-	5	...	...F	...G	mA
			-	8	35	25	50	
			-	11	35	25	50	
			-	30	70	70	100	
$I_L$	Latching current	$V_D = 12\text{ V}$ ; $I_{GT} = 0.1\text{ A}$ T2+ G+ T2+ G- T2- G- T2- G+	-	7	30	30	45	mA
			-	16	45	45	60	
			-	5	30	30	45	
			-	7	45	45	60	
$I_H$	Holding current	$V_D = 12\text{ V}$ ; $I_{GT} = 0.1\text{ A}$	-	5	20	20	40	mA
$V_T$	On-state voltage	$I_T = 10\text{ A}$	-	1.3	1.65			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	<b>BT137X-</b> $V_{DM} = 67\% V_{DRM(max)}$ ; $T_j = 125\text{ }^{\circ}\text{C}$ ; exponential waveform; gate open circuit	...	...F	...G	250	-	V/ $\mu\text{s}$
$dV_{com}/dt$	Critical rate of change of commutating voltage	$V_{DM} = 400\text{ V}$ ; $T_j = 95\text{ }^{\circ}\text{C}$ ; $I_{T(RMS)} = 8\text{ A}$ ; $di_{com}/dt = 3.6\text{ A/ms}$ ; gate open circuit	-	-	10	20	-	V/ $\mu\text{s}$
$t_{gt}$	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	-	$\mu\text{s}$

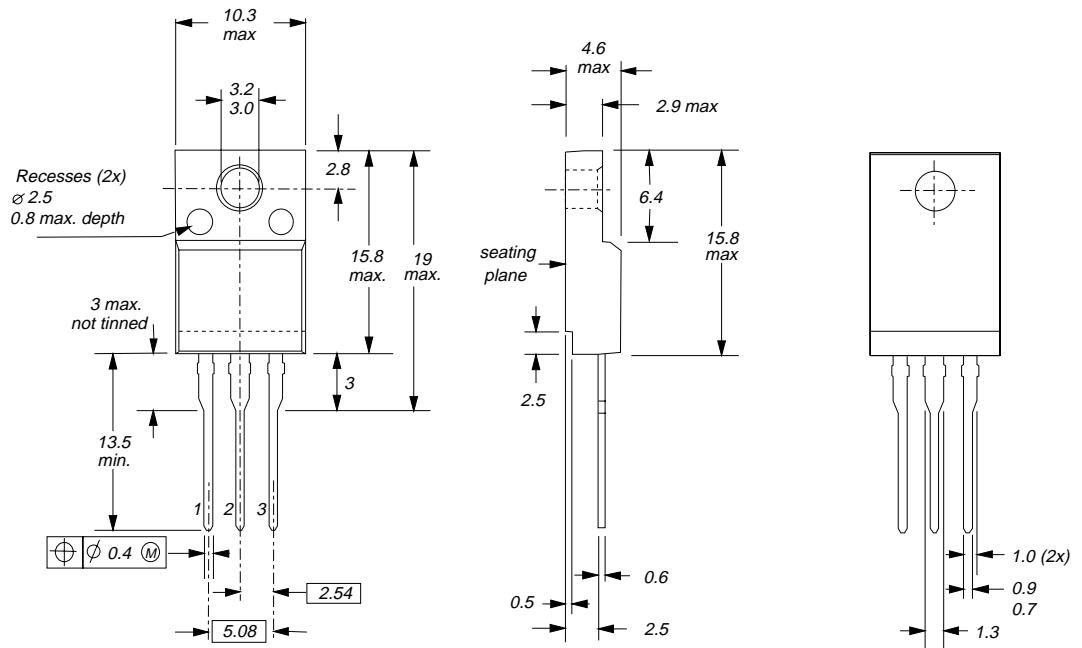




**MECHANICAL DATA**

*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".