

DATA SHEET

BT136X series Triacs

Product specification

June 2001



Triacs

BT136X series

GENERAL DESCRIPTION

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.

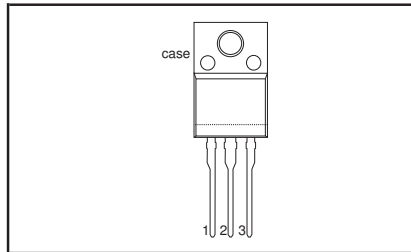
QUICK REFERENCE DATA

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

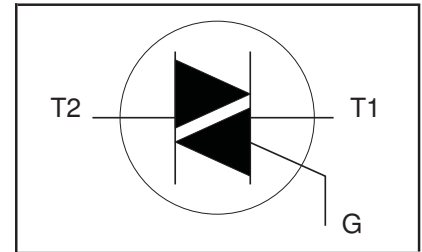
PINNING - SOT186A

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
				-600 600 ¹	-800 800	
V_{DRM}	Repetitive peak off-state voltages		-			V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{hs} \leq 92 \text{ }^\circ\text{C}$	-	4		A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25 \text{ }^\circ\text{C}$ 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 ² s
dI_T/dt	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 6 \text{ A}$; $I_G = 0.2 \text{ A}$; $dI_G/dt = 0.2 \text{ A}/\mu\text{s}$				
		T2+ G+	-	50		A/ μs
		T2+ G-	-	50		A/ μs
		T2- G-	-	50		A/ μs
		T2- G+	-	10		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 3 A/ μs .

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ISOLATION LIMITING VALUE & CHARACTERISTICT_{hs} = 25 °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 = 50-60 Hz; sinusoidal waveform; R.H. ≤ 65% ; clean and dustfree	-	-	2500	V
C _{isol}	Capacitance from T2 to external heatsink	f = 1 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 CHARACTERISTICST_j = 25 °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.		UNIT
I _{GT}	Gate trigger current	BT136X- V _D = 12 V; I _T = 0.1 A		F	
		T2+ G+	-	5	35	25	mA
		T2+ G-	-	8	35	25	mA
		T2- G-	-	11	35	25	mA
		T2- G+	-	30	70	70	mA
I _L	Latching current	V _D = 12 V; I _{GT} = 0.1 A					
		T2+ G+	-	7	20	20	mA
		T2+ G-	-	16	30	30	mA
		T2- G-	-	5	20	20	mA
		T2- G+	-	7	30	30	mA
I _H	Holding current	V _D = 12 V; I _{GT} = 0.1 A	-	5	15	15	mA
V _T	On-state voltage	I _T = 5 A	-	1.4	1.70		V
V _{GT}	Gate trigger voltage	V _D = 12 V; I _T = 0.1 A	-	0.7	1.5		V
		V _D = 400 V; I _T = 0.1 A;	0.25	0.4	-		V
I _D	Off-state leakage current	T _j = 125 °C V _D = V _{DRM(max)} ; T _j = 125 °C	-	0.1	0.5		mA

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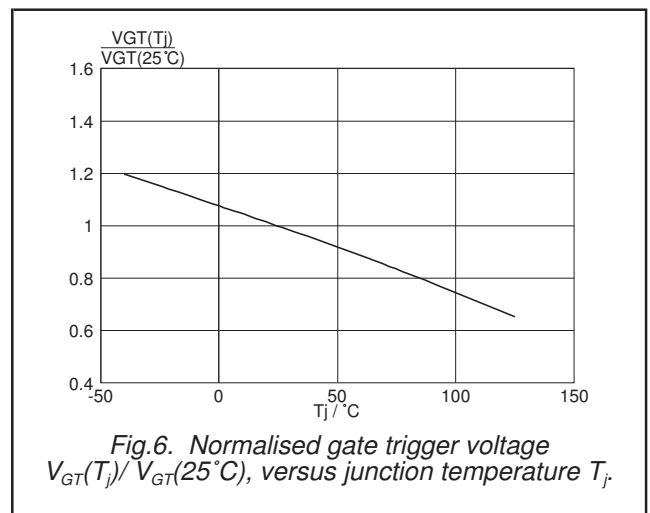
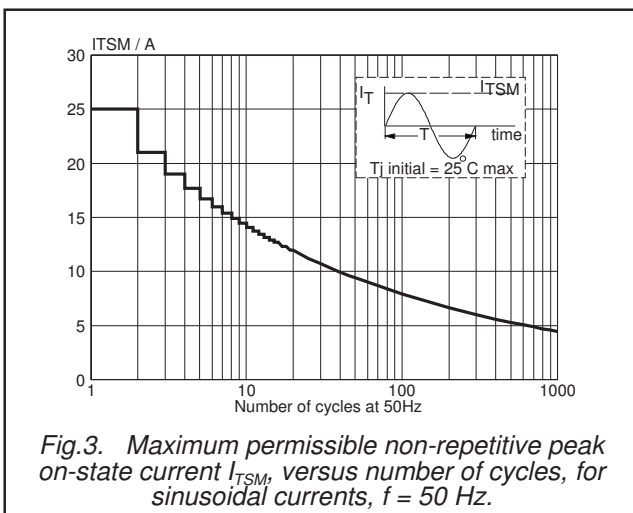
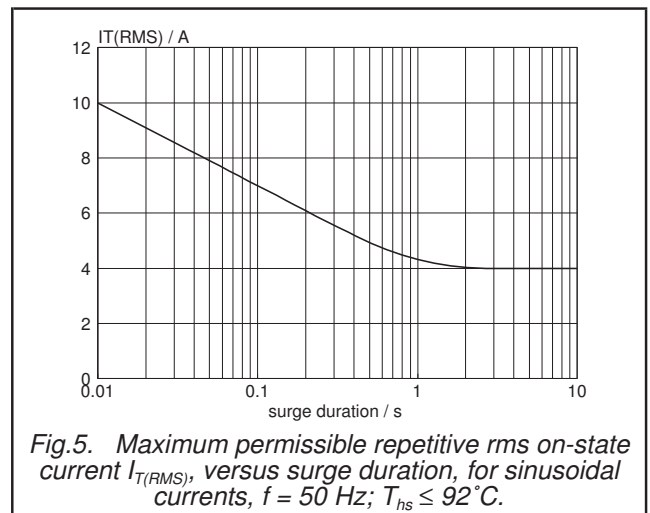
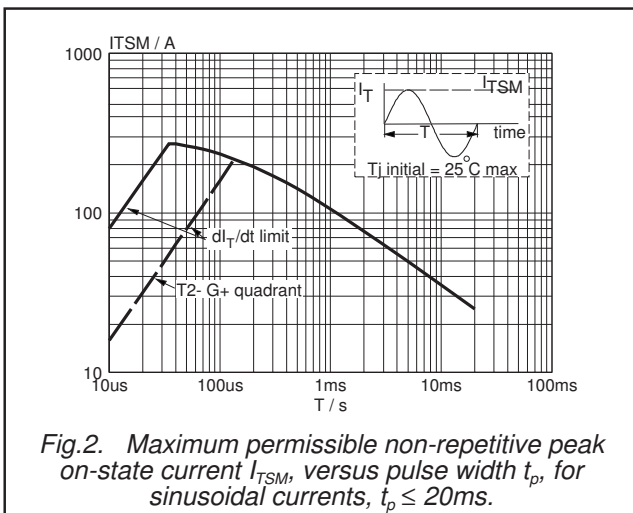
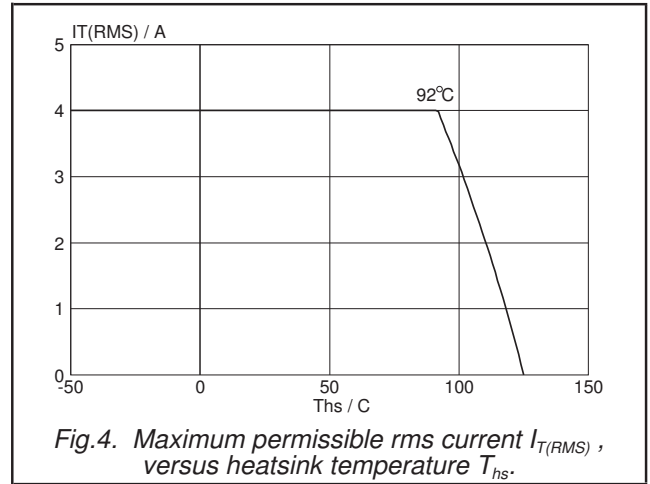
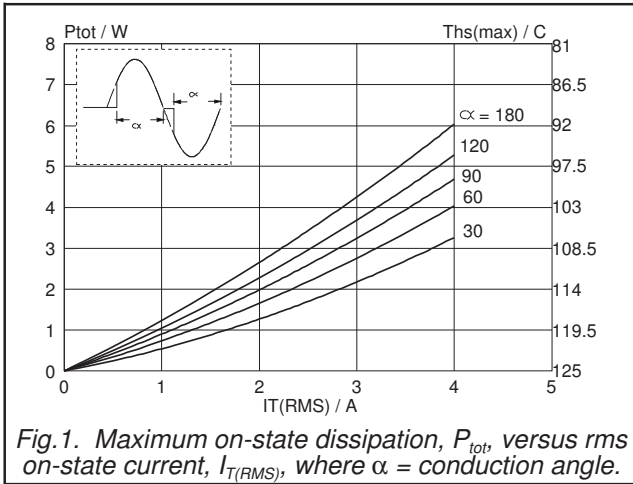
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DYNAMIC CHARACTERISTICST_j = 25 °C unless otherwise stated

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 °C; exponential waveform; gate open circuit	100	50	250	-	V/μs
dV _{com} /dt	Critical rate of change of commutating voltage	V _{DM} = 400 V; T _j = 95 °C; I _{T(RMS)} = 4 A; dI _{com} /dt = 1.8 A/ms; gate open circuit	-	-	50	-	V/μs
t _{gt}	Gate controlled turn-on time	I _{TM} = 6 A; V _D = V _{DRM(max)} ; I _G = 0.1 A; dI _G /dt = 5 A/μs	-	-	2	-	μs

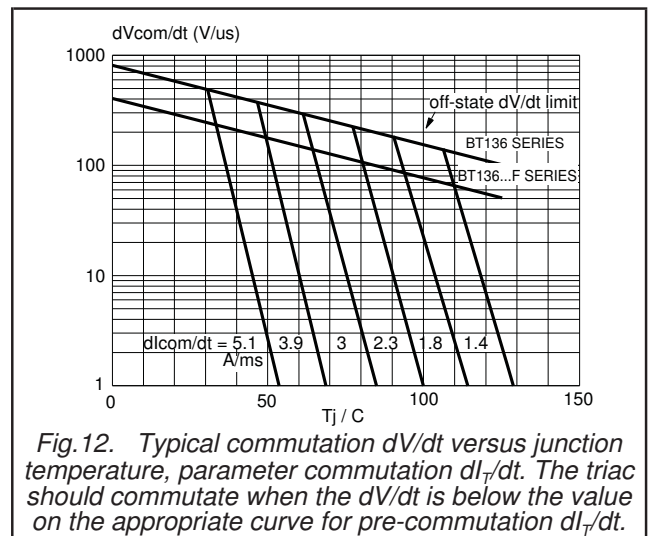
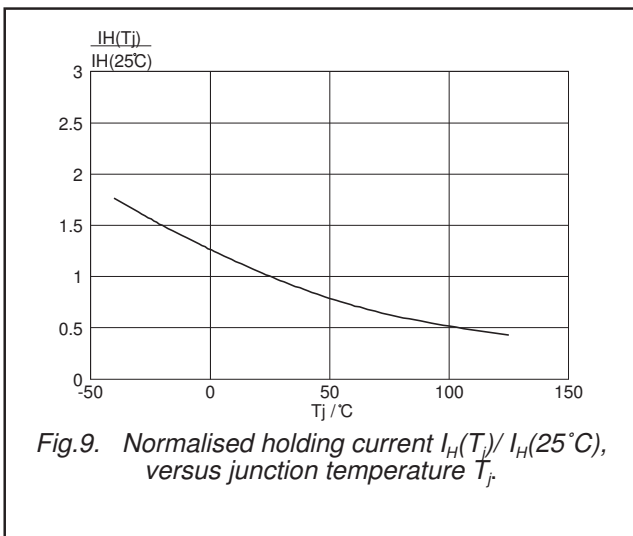
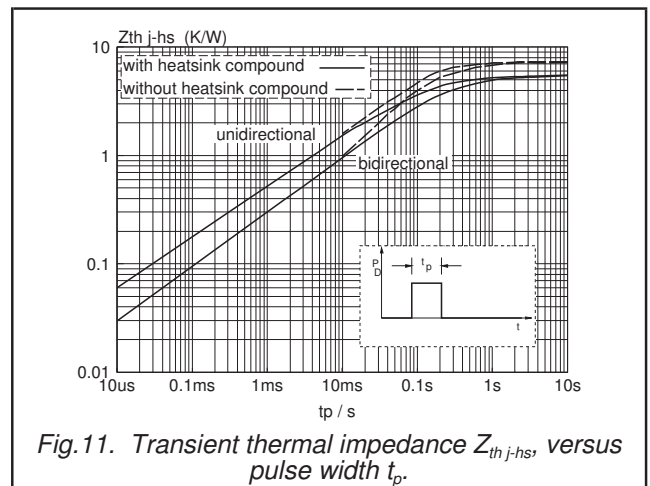
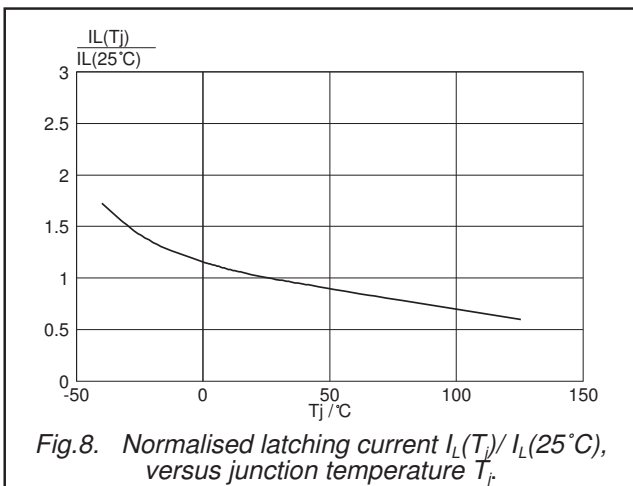
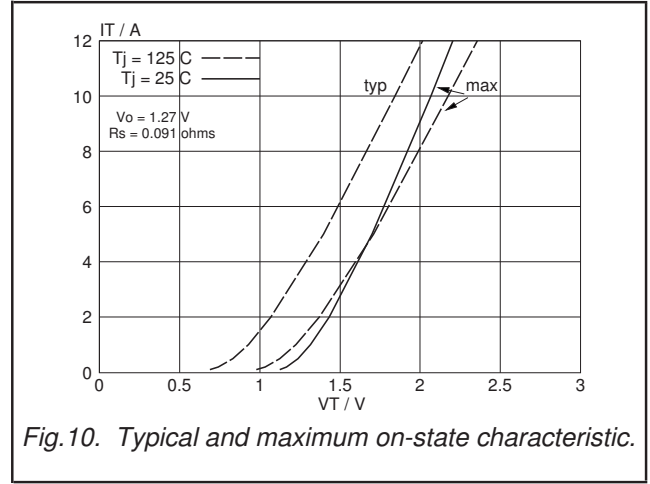
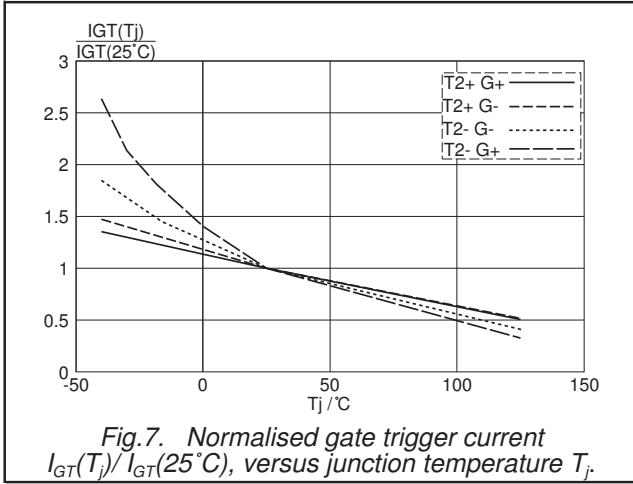
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MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

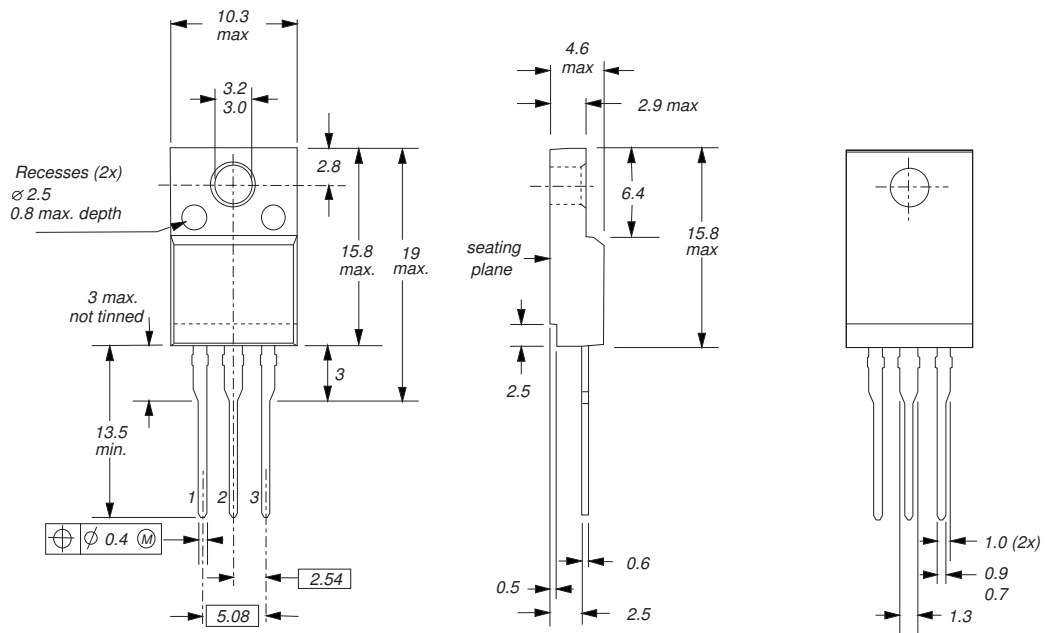


Fig. 13. SOT186A; The seating plane is electrically isolated from all terminals.

Notes

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

Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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For sales offices addresses send e-mail to: salesaddresses@nxp.com

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