



# 4A 600V BIDIRECTIONAL TRIACS

## Description:

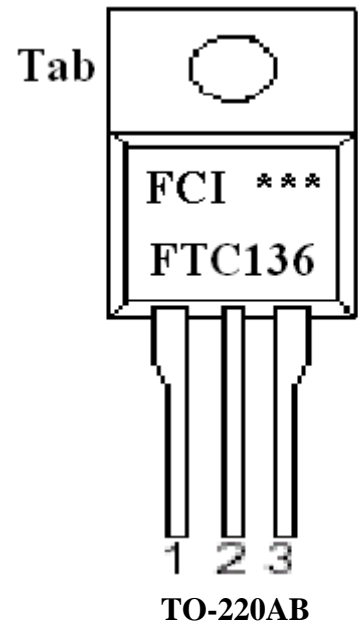
Passivated triacs in a Plastic envelop, intended for use in applications requiring high bidirectional transient and blocking voltage capability and **high thermal cycling performance**. Typical applications include motor control, industrial and domestic lighting, heating and static switching

### FTC131

V<sub>DRM</sub> 600V

I<sub>T(RMS)</sub> 4A

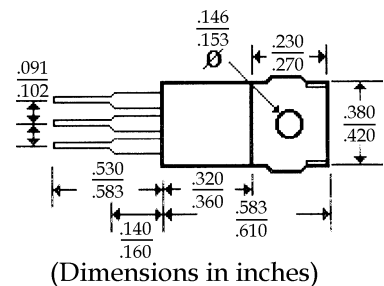
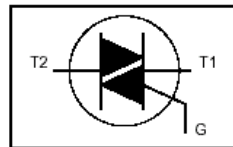
I<sub>TSM</sub> 25A



PINNING - TO220AB

PIN	DESCRIPTION
1	main terminal 1
2	main terminal 2
3	gate
tab	main terminal 2

SYMBOL



## LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>DRM</sub>	Repetitive peak off-state voltages		-	600 <sup>1</sup>	V
I <sub>T(RMS)</sub>	RMS on-state current	full sine wave; T <sub>mb</sub> ≤ 107 °C	-	4	A
I <sub>TSM</sub>	Non-repetitive peak on-state current	full sine wave; T <sub>j</sub> = 25 °C prior to surge	-	25	A
		t = 20 ms	-	27	A
		t = 16.7 ms	-	3.1	A <sup>2</sup> s
i <sup>2</sup> t	i <sup>2</sup> t for fusing	t = 10 ms	-		
di <sub>r</sub> /dt	Repetitive rate of rise of on-state current after triggering	I <sub>TM</sub> = 6 A; I <sub>G</sub> = 0.2 A; di <sub>o</sub> /dt = 0.2 A/μs	-		
		T2+ G+	-	50	A/μs
		T2+ G-	-	50	A/μs
		T2- G-	-	50	A/μs
		T2- G+	-	10	A/μs
I <sub>GM</sub>	Peak gate current		-	2	A
V <sub>GM</sub>	Peak gate voltage		-	5	V
P <sub>GM</sub>	Peak gate power		-	5	W
P <sub>G(AV)</sub>	Average gate power	over any 20 ms period	-	0.5	W
T <sub>stg</sub>	Storage temperature		-40	150	°C
T <sub>j</sub>	Operating junction temperature		-	125	°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 3 A/μs.



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### THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{\theta j-nb}$	Thermal resistance junction to mounting base	full cycle	-	-	3.0	K/W
$R_{\theta j-a}$	Thermal resistance junction to ambient	half cycle in free air	-	60	3.7	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	BT136- $V_D = 12\text{ V}; I_T = 0.1\text{ A}$	-	-	...	...F
		T2+ G+	-	5	35	25
		T2+ G-	-	8	35	25
		T2- G-	-	11	35	25
		T2- G+	-	30	70	70
$I_L$	Latching current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$	-	-	-	-
		T2+ G+	-	7	20	20
		T2+ G-	-	16	30	30
		T2- G-	-	5	20	20
		T2- G+	-	7	30	30
$I_H$	Holding current	$V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$	-	5	15	15
$V_T$	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
$dV_p/dt$	Critical rate of rise of off-state voltage	BT136- $V_{DM} = 67\% V_{DRM(max)}; T_j = 125\text{ }^\circ\text{C}$ ; exponential waveform; gate open circuit	100	...	250	-
				50		V/ $\mu\text{s}$
$dV_{comm}/dt$	Critical rate of change of commutating voltage	$V_{DM} = 400\text{ V}; T_j = 95\text{ }^\circ\text{C}$ ; $I_{T(RMS)} = 4\text{ A}$ ; $dI_{comm}/dt = 1.8\text{ A/ms}$ ; gate open circuit	-	-	50	-
$t_{gt}$	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	-
						$\mu\text{s}$



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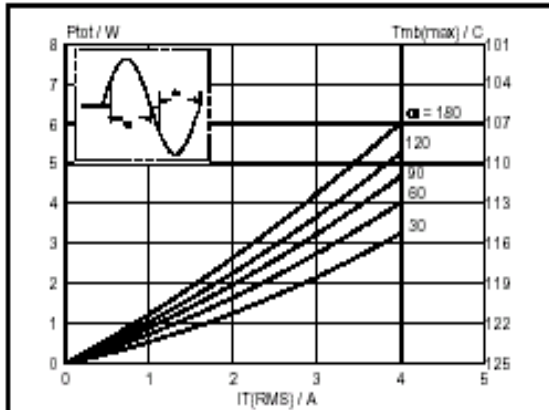


Fig. 1. Maximum on-state dissipation,  $P_{tot}$ , versus rms on-state current,  $I_{T(RMS)}$ , where  $\alpha$  = conduction angle.

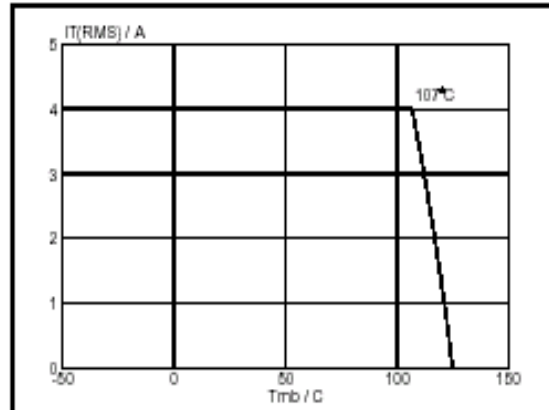


Fig. 4. Maximum permissible rms current  $I_{T(RMS)}$ , versus mounting base temperature  $T_{mb}$ .

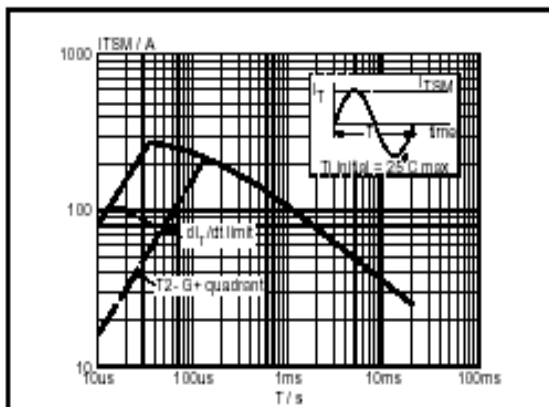


Fig. 2. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus pulse width  $t_p$ , for sinusoidal currents,  $t_p \leq 20\text{ms}$ .

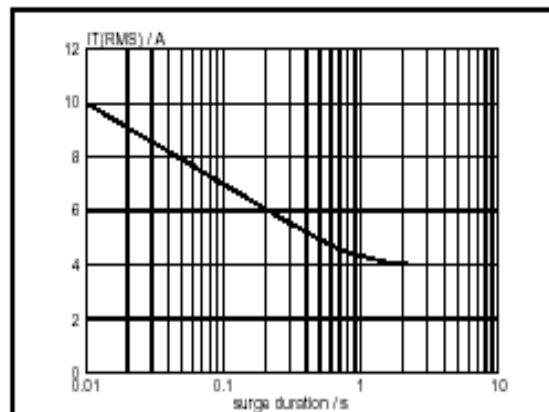


Fig. 5. Maximum permissible repetitive rms on-state current  $I_{T(RMS)}$ , versus surge duration, for sinusoidal currents,  $f = 50\text{ Hz}$ ;  $T_{mb} \leq 107^\circ\text{C}$ .

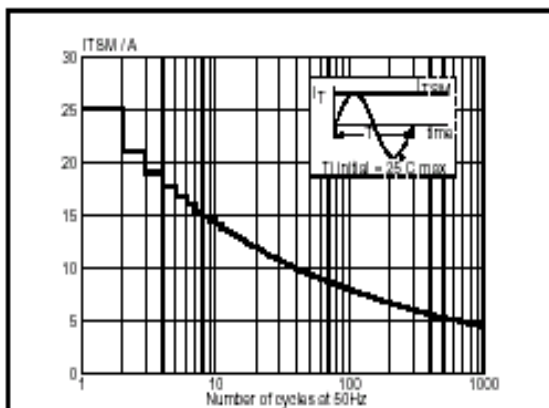


Fig. 3. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus number of cycles, for sinusoidal currents,  $f = 50\text{ Hz}$ .

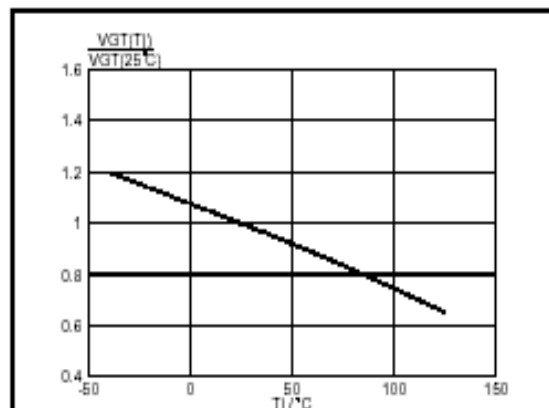


Fig. 6. Normalised gate trigger voltage  $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$ , versus junction temperature  $T_j$ .



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