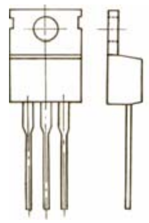
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

TO-220 Plastic-Encapsulate Transistors

TO-220

1. ANODE
2. ANODE
3. GATE



1 2 3
A1 A2 G

BTB12 TRIAC

MAIN FEATURES

Symbol	value	unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600	V
$I_{GT(Q1)}$	5 to 50	mA

DESCRIPTION

The BTA/BTB12 and T12 triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers,...

The snubberless versions are specially recommended for use on inductive loads, thanks to their high commutation performances. Logic level versions are designed to interface directly with low power drivers such as microcontrollers.

ABSOLUTE MAXIMUM RATINGS

symbol	parameter			value	unit
$I_{T(RMS)}$	RMS on-state current(full sine wave)	D^2 PAK/TO-220AB	T_C=105℃	12	A
		TO-220 ins.	T_C=90℃		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, Tj initial=25℃)	F=50Hz	t=20ms	120	A
		F=60Hz	t=16.7ms	126	
I_{GM}	Peak gate current	tp=20us	Tj=125℃	4	A
$P_{G(AV)}$	Average gate power dissipation		Tj=125℃	1	W
T_{stg}	Storage junction temperature range			-40 to +150	℃
T_j	Operating junction temperature range			-40 to +125	

ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)

Parameter		Symbol	Test conditions		MIN	MAX	UNIT
Rated repetitive peak off-state voltage		V_{DRM},V_{RRM}	I_D=10μA		600		V
Rated repetitive peak off-state current		I_{DRM}, I_{RRM}	V_{DRM}=V_{RRM}			10	μA
On-state voltage		V_{TM}	I_T=16A			1.7	V
Gate trigger current	Ⅰ	I_{GT}	T_2(+), G(+)	V_D=12V R_L=100Ω		30	mA
	Ⅱ		T_2(+), G(-)			30	mA
	Ⅲ		T_2(-), G(-)			30	mA
	Ⅳ		T_2(-), G(+)			-	mA
Gate trigger voltage	Ⅰ	V_{GT}	T_2(+), G(+)	V_D=12V R_L=100Ω		1.45	V
	Ⅱ		T_2(+), G(-)			1.45	V
	Ⅲ		T_2(-), G(-)			1.45	V
	Ⅳ		T_2(-), G(+)			-	V
Holding current		I_H	I_T =500mA I_G=50mA			50	mA

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).

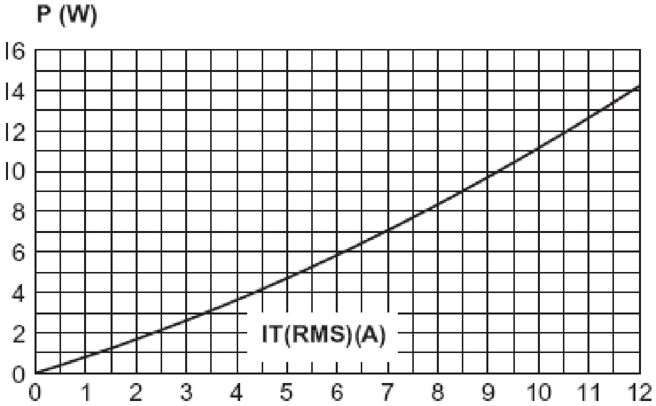


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

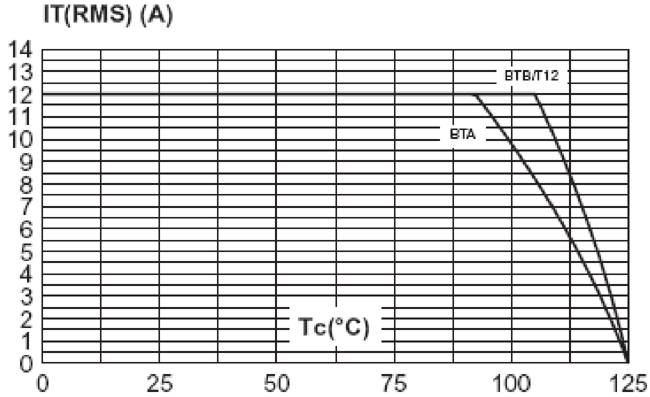


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm),full cycle.

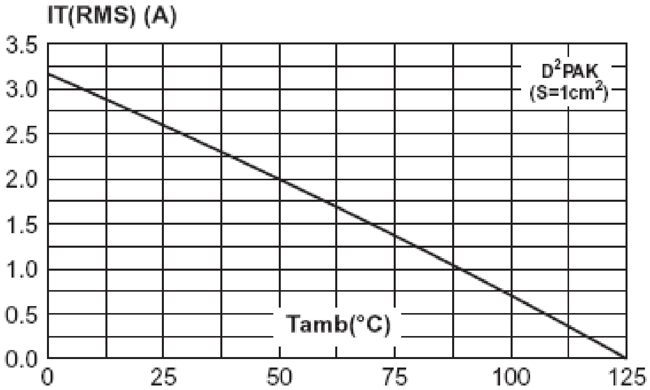


Fig. 3: Relative variation of thermal impedance versus pulse duration.

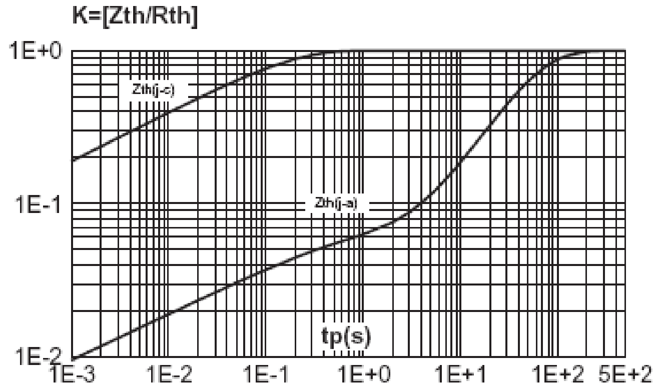


Fig. 4: On-state characteristics (maximum values).

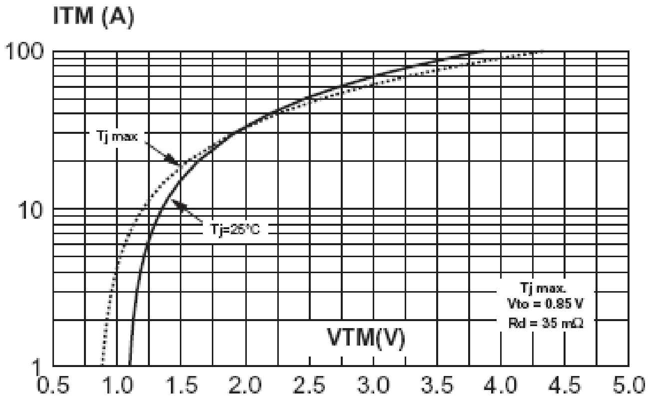


Fig. 5: Surge peak on-state current versus number of cycles.

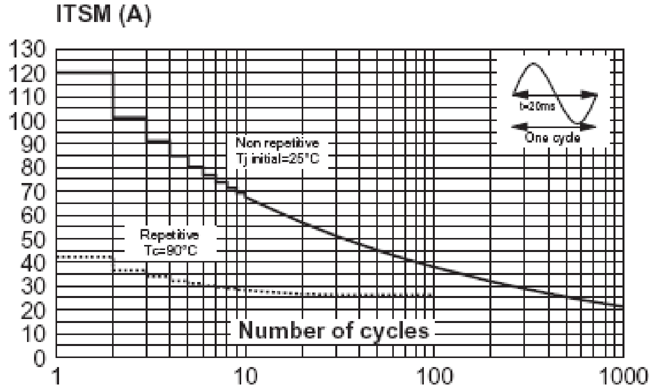


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms, and corresponding value of I²t.

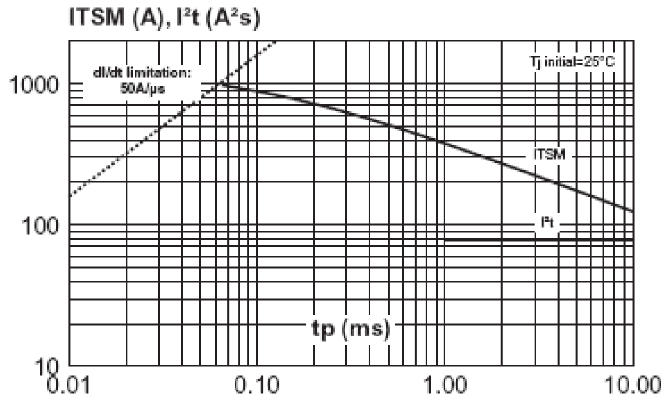


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

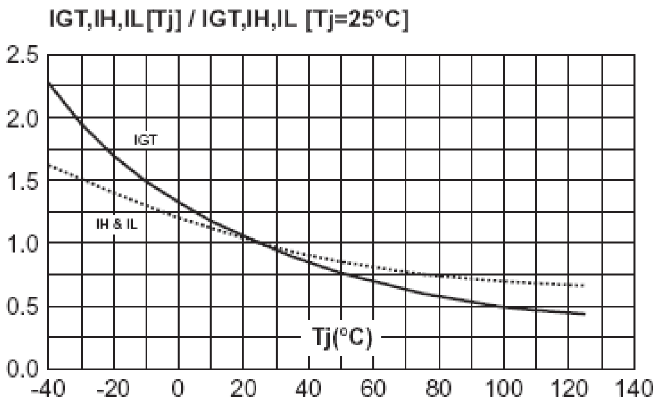


Fig. 8-1: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values) (BW/CW/T1235).

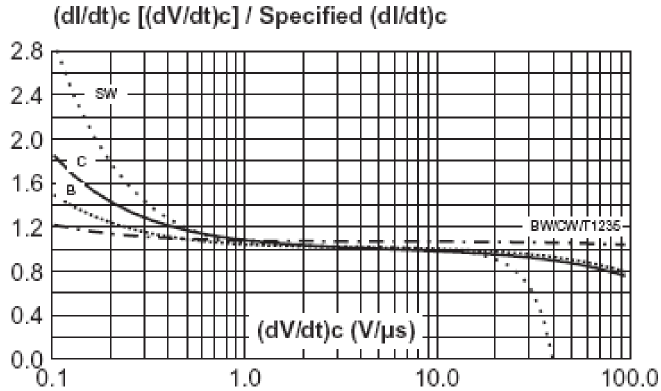


Fig. 8-2: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values) (TW).

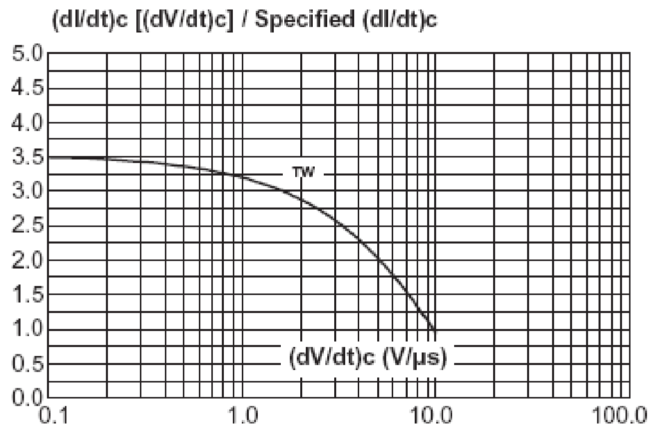


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

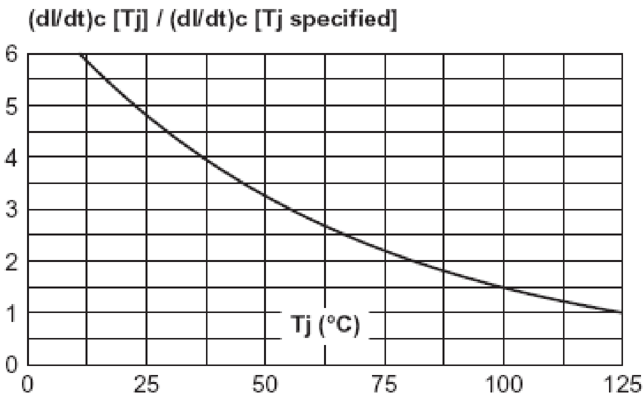


Fig. 10: D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 µm).