BTA/BTB16

16A TRIACS

Description

● Package：TO-220AB

● Available either in through-hole or surface-mount packages, the BTA/BTB16 is suitable for general purpose AC switching. They can be used as an ON/OFF function in application such as static relays, heating regulation ,Induction motor starting circuits…or for phase control operation in light dimmers, motor speed controllers.

DRAWING

BTA16   BTB16

(Insulated)
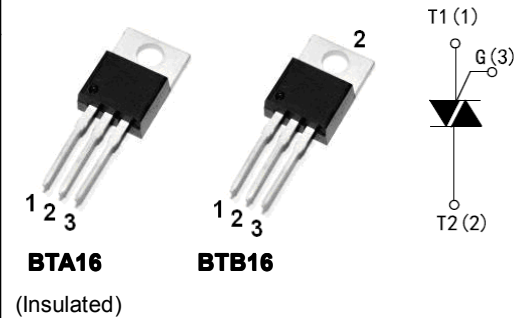
Absolute Maximum Ratings

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current(full since wave)	TO-220AB	TC=100℃	16	A
		TO-220AB Ins.	TC=85℃		
I_{TSM}	Non repetitive surge peak on-state current(full cycle, Tj initial=25℃)	F=50Hz	t=20ms	160	A
		F=60Hz	t=16.7ms	168	
I^2t	I^2t Value for fusing	tp=10ms		144	A^2s
DI/DT	Critical rate of rise of on-state current $IG=2X_{IGT,tr≤100ns}$	F=120Hz	Tj=125℃	50	A/us
VDSM/VRSM	Non repetitive surge peak off-state voltage	tp=10ms	Tj=25℃	Vdrm / vrrm + 100V	V
IGM	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 (Tj=25℃,unless otherwise specified)

Snubberless™ and Logic Level(3 quadrants)

Symbol	Test conditions	Quadrant	BTA16		Unit
I_{GT}(1)	V_D=12V R_L=33Ω	I - II -III	MAX	50	mA
V_{GT}		I - II -III	MAX	1.3	V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩTj=125℃	I - II -III	MIN	0.2	V
IH(2)	IT=500mA		MAX	50	mA
IL	I_G=1.2I_{GT}	I -III	MAX	70	mA
		II		80	
Dv / Dt(2)	VD=67%V_{DRM} Gate open Tj=125℃		MIN	1000	V/us
(DI/dt)c(2)	(Dv/dt)c=0.1 V/us Tj=125℃		MIN	-	A/ms
	(Dv/dt)c=10V/us Tj=125℃			-	
	Without snubber Tj=125℃			14	

Standard (4 Quadrants)

Symbol	Test conditions	Quadrant		BTA12	Unit
IGT(1)	VD=12V RL=33Ω	I - II -III	MAX	50	mA
		IV		100	
VGT		ALL	MAX	1.3	V
VGD	VD=VDRM RL=3.3KΩTj=125℃	ALL	MIN	0.2	V
IH(2)	IT=500mA		MAX	50	mA
IL	IG=1.2IGT	I -III- IV	MAX	60	mA
		II		120	
(DI/dt)(2)	VD=67%VDRM Gate open Tj=125℃		MIN	400	V/us
(DI/dt)c(2)	(Dv/dt)c=7 A/ms Tj=125℃		MIN	10	V/us

Static Characteristics

Symbol	Test conditions			Value	Unit
VTM(2)	ITM=11A tp=380us	TJ=25℃	MAX	1.55	V
Vto(2)	Threshold voltage	TJ=125℃	MAX	0.85	V
Rd(2)	Dynamic resistance	TJ=125℃	MAX	25	mΩ
IDRM	VDRM=VRRM	TJ=25℃		5	uA
IRRM		TJ=125℃	MAX	2	mA
VDRM/VRRM	Voltage	TJ=25℃	MIN	600 and 800	V

Note 1: minimum IGT is guaranted at 5% of IGT max

**Note 2**: for both polarities of A2 referenced to A1

Thermal Resistances

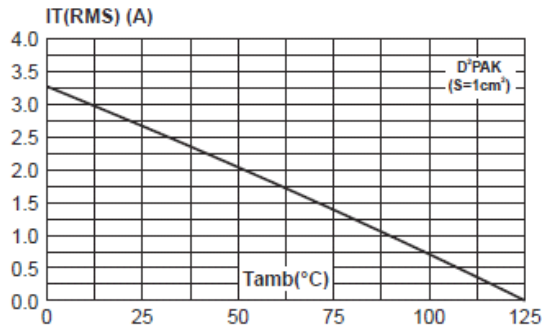| Symbol	Parameter		Value	Unit
Rth(j-c)	Junction to case(AC)	TO-220AB	1.2	℃/W
		TO-220AB(Insulated)	2.1	
Rth(j-a)	Junction to ambient	TO-220AB/ TO-220AB(Insulated)	60	℃/W

Typical Characteristics

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).
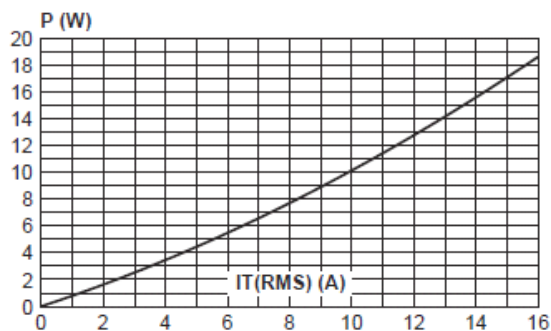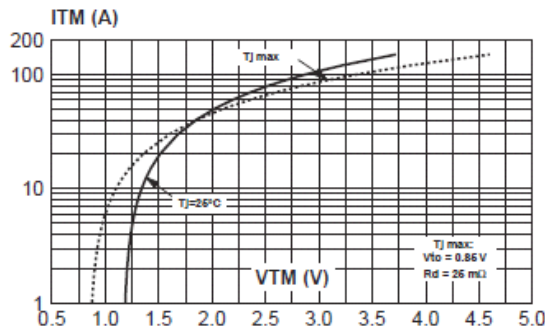
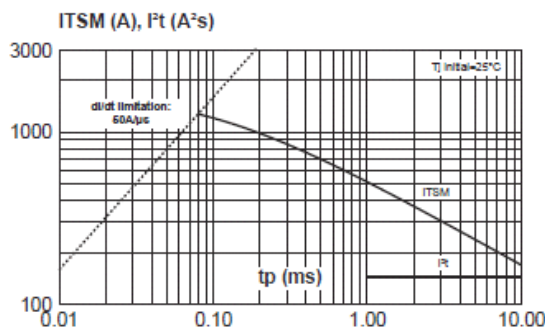Fig. 2-1: RMS on-state current versus case temperature (full cycle).
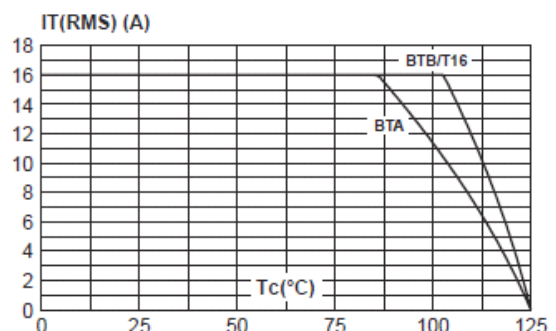
Fig. 2-2: D²PAK RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35 µm), full cycle.
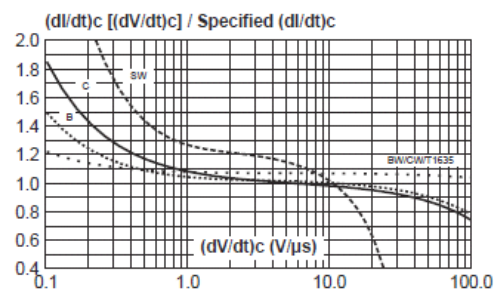

Fig. 3: Relative variation of thermal impedance versus pulse duration.

Fig. 4: On-state characteristics (maximum values)
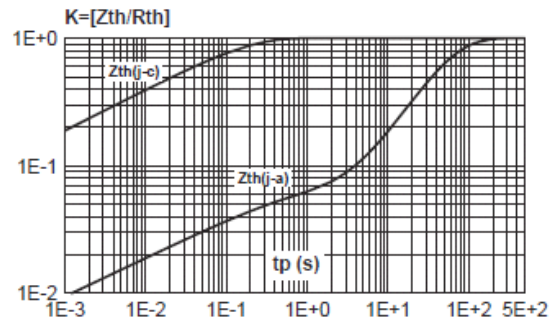
Fig. 5: Surge peak on-state current versus number of cycles.

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).
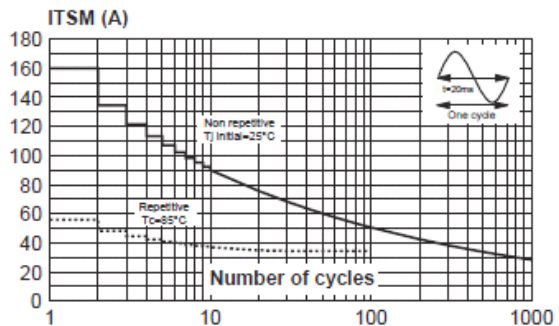

Fig. 8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values).

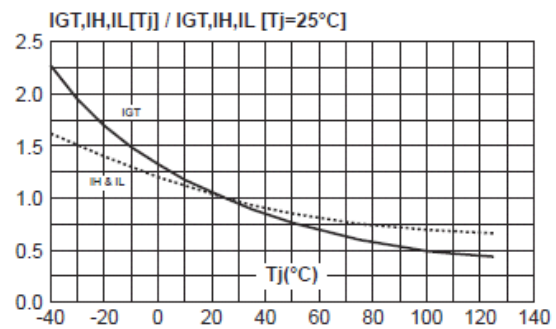**Fig. 9:** Relative variation of critical rate of decrease of main current versus junction temperature.
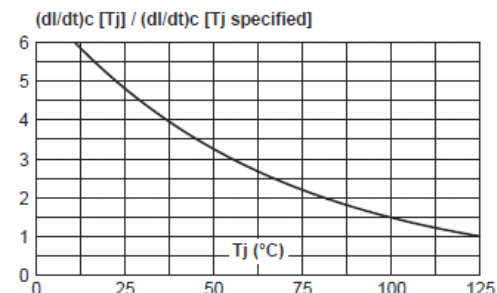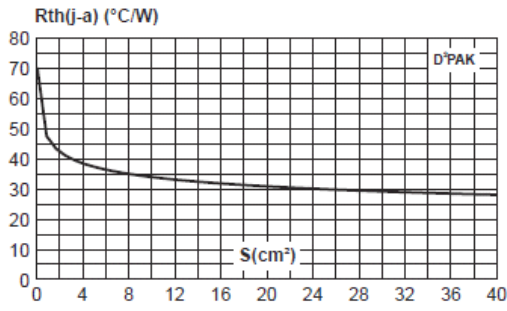
Fig. 10: D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 μm).

Package Mechanical Data