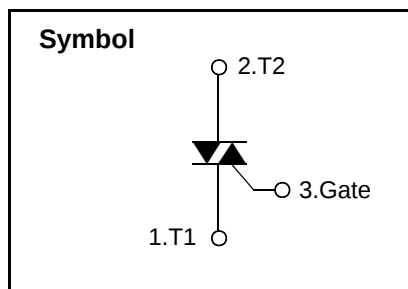
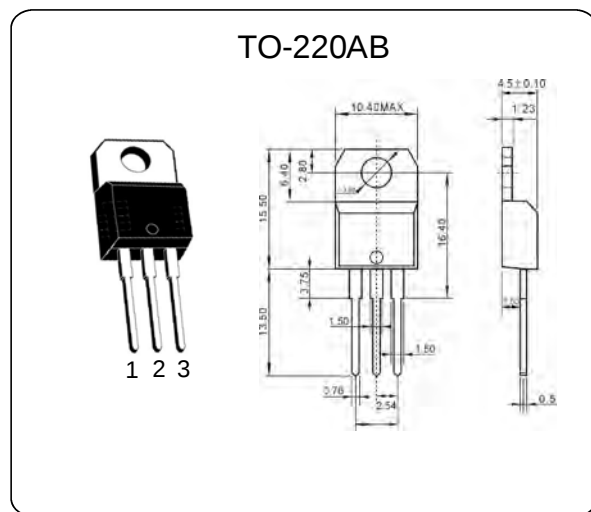


Bi-Directional Triode Thyristor

Designed for high performance full-wave ac control applications where high noise immunity and high commutating di/dt are required.

Features

- Blocking Voltage to 800V
- On-State Current Rating of 8A RMS at 100°C
- Uniform Gate Trigger Currents in Three Quadrants
- High Immunity to dV/dt-1500V/us minimum at 125°C
- Minimizes Snubber Networks for Protection
- Industry Standard TO-220AB Package
- High Commutating di/dt- 4.0A/ms minimum at 125°C
- Internally Isolated (2500VRMS)
- These are Pb-Free Devices



Absolute Maximum Ratings

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current(full sine wave)	TO-220AB	$T_C=110^{\circ}C$	8	A
		TO-220AB Ins.	$T_C=100^{\circ}C$		
I_{TSM}	Non repetitive surge peak on-state current(full cycle, T_j initial= $25^{\circ}C$)	F=50Hz	t=20ms	80	A
		F=60Hz	t=16.7ms	84	
I^2t	I^2t Value for fusing	tp=10ms		36	A ² s
DI/DT	Critical rate of rise of on-state current $I_G=2X_{IGT, tr \leq 100ns}$	F=120Hz	$T_j=125^{\circ}C$	50	A/us
I_{GM}	Peak gate current	tp=20us	$T_j=125^{\circ}C$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j=125^{\circ}C$	1	W
T_{stg}	Storage junction temperature range			-40 to +150	$^{\circ}C$
T_j	Operating junction temperature range			-40 to +125	



BTA08-800C

Electrical Characteristics(Tj=25°C,unless otherwise specified)

Snubberless™ and Logic Level(3 quadrants)

Symbol	Test conditions	Quadrant	BTA08-800C		Unit
I _{GT} (1)	V _D =12V R _L =30Ω	I - II -III -IV	MAX	35	mA
V _{GT}		I - II -III -IV	MAX	1.3	V
V _{GD}	V _D =V _{DRM} R _L =3.3KΩTj=125°C	I - II -III -IV	MIN	0.2	V
I _H (2)	IT=100mA		MAX	50	mA
I _L	I _G =1.2I _{GT}	I - II -III -IV	MAX	70	mA
		II		80	
Dv / Dt(2)	V _D =67%V _{DRM} Gate open Tj=125°C		MIN	1000	V/us
(DI/dt)c(2)	(Dv/dt)c=0.1 V/us Tj=125°C		MIN	-	A/ms
	(Dv/dt)c=10V/us Tj=125°C			-	
	Without snubber Tj=125°C			7	

Standard (4Quadrants)

Symbol	Test conditions	Quadrant	BTA08-800C		Unit
IGT(1)	VD=12V RL=30Ω	I - II -III	MAX	35	mA
VGT		IV		50	
VGD	VD=VDRM RL=3.3KΩTj=125°C	ALL	MAX	1.3	V
IH(2)	IT=500mA		MIN	0.2	V
IL	IG=1.2IGT	I -III- IV	MAX	50	mA
		II		100	
(DI/dt)(2)	VD=67%VDRM Gate open Tj=125°C		MIN	400	V/us
(DI/dt)c(2)	(Dv/dt)c=3.5 A/ms Tj=125°C		MIN	10	V/us

Static Characteristics

Symbol	Test conditions			Value	Unit
VTM(2)	ITM=11A tp=380us	TJ=25°C	MAX	1.55	V
Vto(2)	Threshold voltage	TJ=125°C	MAX	0.85	V
Rd(2)	Dynamic resistance	TJ=125°C	MAX	50	mΩ
I _{DRM}	V _{DRM} =V _{R_{RM}}	TJ=25°C	MAX	5	uA
I _{RRM}		TJ=125°C		1	mA
V _{DRM} /V _{RRM}	Voltage	TJ=25°C	MIN	800	V

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

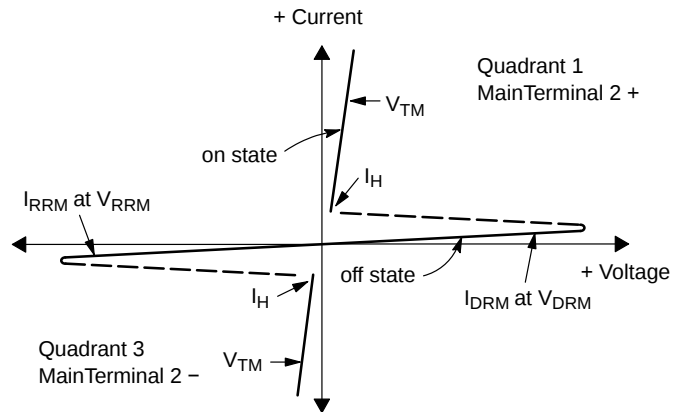
Note 2: for both polarities of A2 referenced to A1

Thermal Resistances

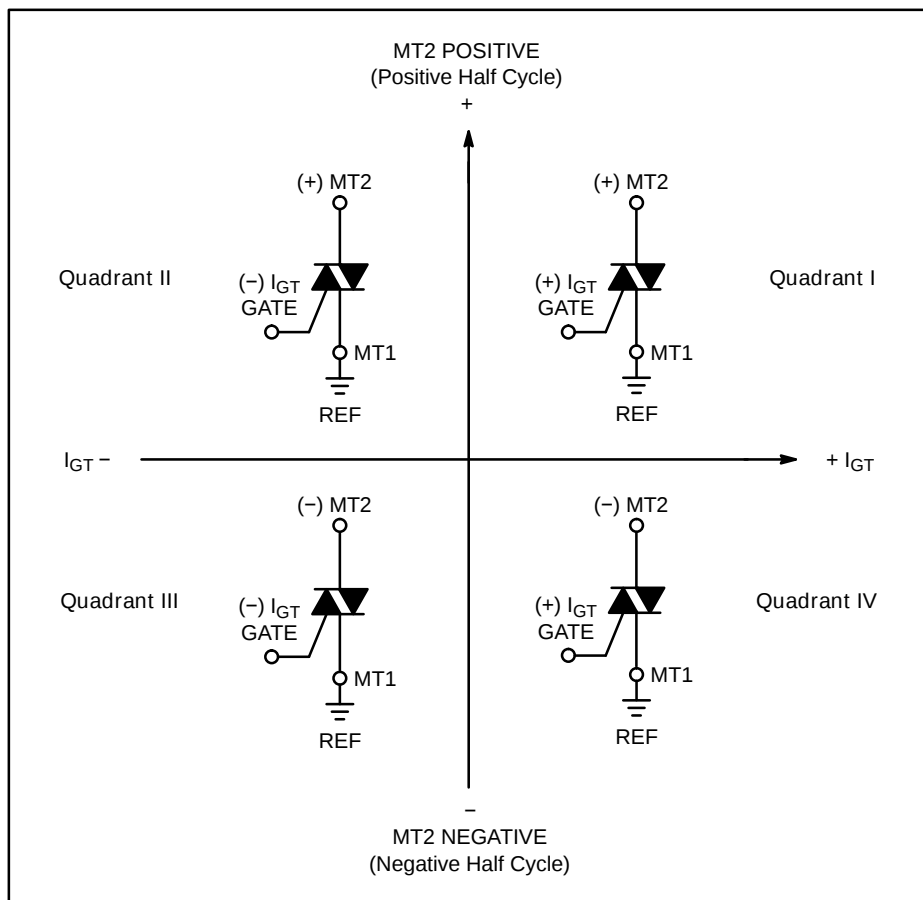
Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case(AC)	TO-220AB	1.6	°C/W
		TO-220AB(Insulated)	2.5	
R _{th(j-a)}	Junction to ambient	TO-220AB/ TO-220AB(Insulated)	60	°C/W

Voltage Current Characteristic of Triacs (Bidirectional Device)

Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



Quadrant Definitions for a Triac



All polarities are referenced to MT1.
With in-phase signals (using standard AC lines) quadrants I and III are used.

Description

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

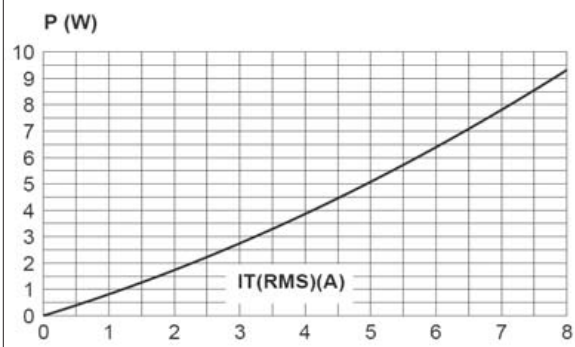


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

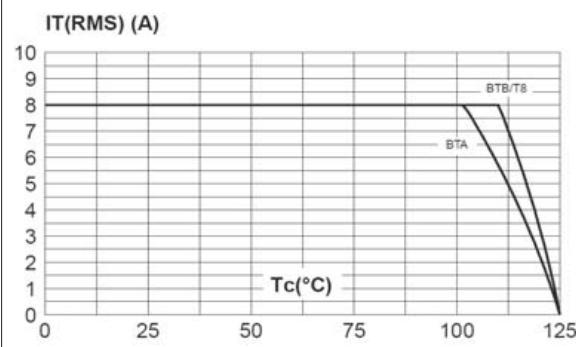


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm), full cycle.

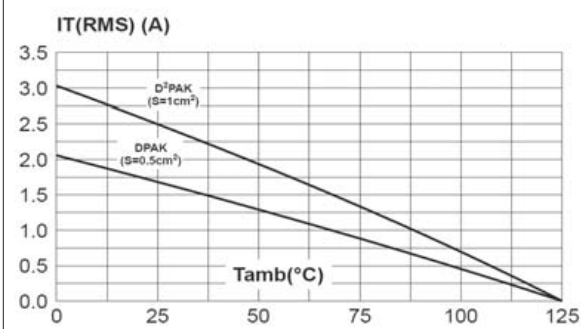


Fig. 3: Relative variation of thermal impedance versus pulse duration.

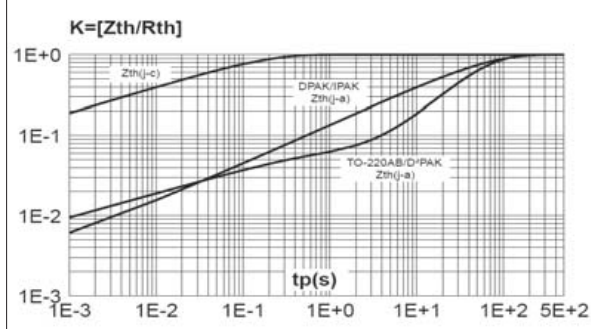


Fig. 4: On-state characteristics (maximum values).

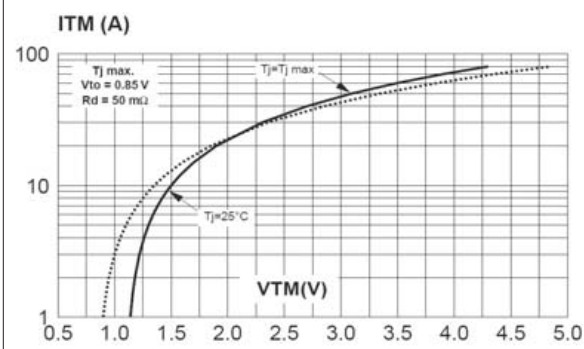
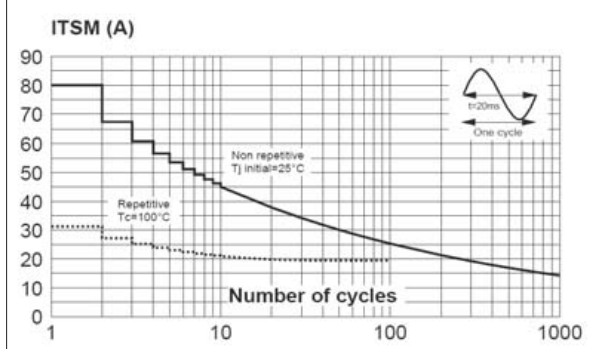


Fig. 5: Surge peak on-state current versus number of cycles.



Description

Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

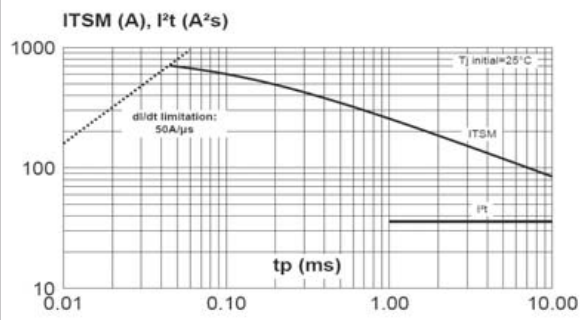


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

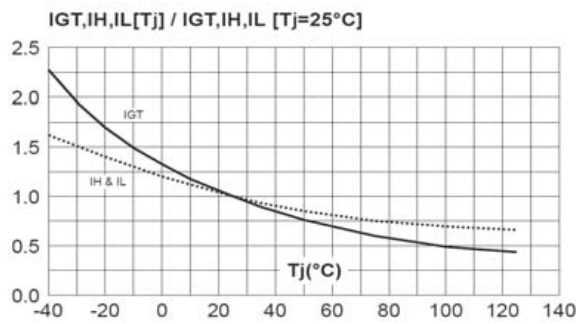


Fig. 8-1: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values). Snubberless & Logic Level Types

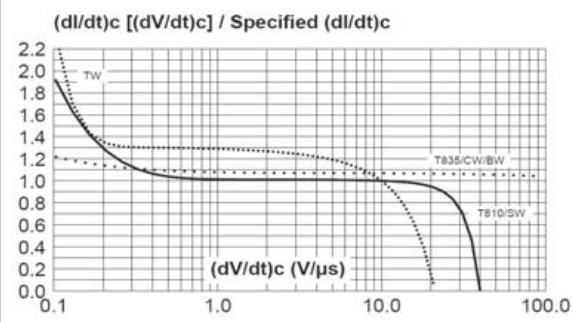


Fig. 8-2: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values). Standard Types

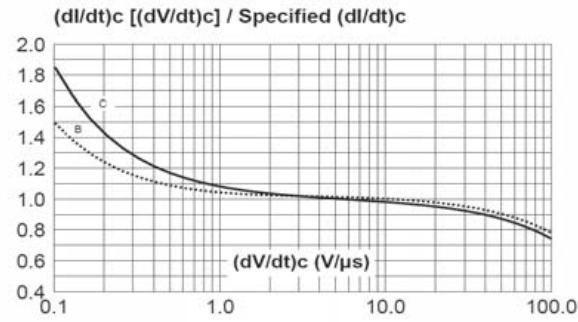


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

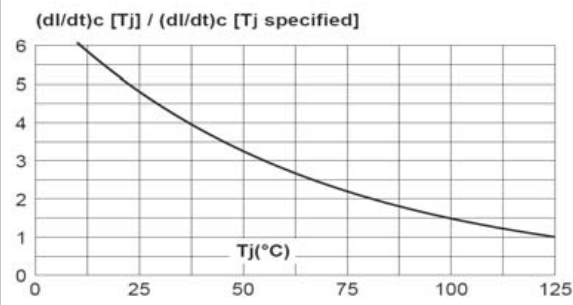


Fig. 10: DPAK and D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 μm).

