

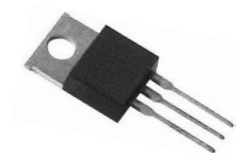
VOLTAGE 600/800 V

CURRENT 8.0 A

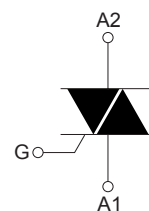
Features

Medium current Triac
Low thermal resistance with clip bonding
Low thermal resistance insulation ceramic for insulated BTA
High commutation (4Q) or very high commutation
(3Q, Snubberless™) capability

BTA series UL1557 certified (file ref: 81734)
Packages are RoHS (2002/95/EC) compliant
insulated tab (BTA series, rated at 2500 V_{RMS})



TO-220AB



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

Symbol	Parameter			Value	Unit
V _{DRM}	Repetitive peak off-state voltage			600 / 800	V
V _{RRM}	Repetitive peak reverse voltage			600 / 800	V
I _{T(RMS)}	RMS on-state current (full sine wave)	I _{PAK} , D _{PAK} , TO-220AB, D ² PAK	T _c = 110 °C	8	A
		TO-220AB Ins.	T _c = 100 °C		
I _{TSM}	Non repetitive surge peak on-state current (full cycle, T _j initial = 25 °C)	f = 50 Hz	t = 20 ms	80	A
		f = 60 Hz	t _p = 16.7 ms	84	
I ² t	I ² t value for fusing		t _p = 10 ms	36	A ² s
di/dt	Critical rate of rise of on-state current I _G = 2 x I _{GT} , tr ≤ 100 ns	f = 120 Hz	T _j = 125 °C	50	A/μs
I _{GM}	Peak gate current	t _p = 20 μs	T _j = 125 °C	4	A
P _{G(AV)}	Average gate power dissipation		T _j = 125 °C	1	W
T _{stg}	Storage junction temperature range			-40 to +150	°C
T _j	Operating junction temperature range			-40 to +125	°C

Electrical Characteristics (T_j=25°C unless otherwise specified)

- standard (4 quadrants)

Symbol	Parameter	Quadrant		BTA08/BTB08		Unit
				C	B	
I _{GT} ⁽¹⁾	V _D = 12 V, R _L = 33 Ω	I - II - III	Max.	25	50	mA
		IV		50	100	
V _{GT}		All	Max.	1.3		V
V _{GD}	V _D = V _{DRM} , R _L = 33 kΩ, T _j = 125 °C	All	Min.	0.2		V
I _H ⁽²⁾	I _T = 500 mA	I - II - III	Max.	25	50	mA
I _L	I _G = 1.2 I _{GT}	I - III - IV	Max.	40	50	
		II		80	100	
dV/dt ⁽²⁾	V _D = 67 % V _{DRM} gate open, T _j = 125 °C		Min.	200	400	V/μs
(dV/dt) _c ⁽²⁾	(dI/dt) _c = 3.5 A/ms, T _j = 125 °C		Min.	5	10	V/μs

1. Minimum I_{GT} is guaranteed at 5 % of I_{GT} max.

2. For both polarities of A2 referenced to A1

- Snubberless and logic level (3 quadrants)

Symbol	Parameter	Quadrant		T8			BTA08/BTB08				Unit
				10	35	50	TW	SW	CW	BW	
I _{GT} ⁽¹⁾	V _D = 12 V, R _L = 30 Ω	I - II - III	Max.	10	35	50	5	10	35	50	mA
V _{GT}		I - II - III	Max.	1.2							V
V _{GD}	V _D = V _{DRM} , R _L = 3.3 kΩ, T _j = 125 °C	I - II - III	Min.	0.2							V
I _H ⁽²⁾	I _T = 100 mA	I - II - III	Max.	15	35	75	10	15	35	50	mA
I _L	I _G = 1.2 x I _{GT}	I - III	Max.	25	50	70	10	25	50	70	
		II	Max.	30	60	110	15	30	60	80	
dV/dt ⁽²⁾	V _D = 67% V _{DRM} , gate open, T _j = 125 °C		Max.	40	400	1000	20	40	400	1000	V/μs
(dI/dt) _c ⁽²⁾	(dV/dt) _c = 0.1 V/μs, T _j = 125 °C		Min.	5.4			3.5	5.4			A/ms
	(dV/dt) _c = 10 V/μs, T _j = 125 °C		Min.	2.8			1.5	2.98			
	Without snubber, T _j = 125 °C		Min.		4.5	7			4.5	7	

1. Minimum I_{GT} is guaranteed at 5 % of I_{GT} max.

2. For both polarities of A2 referenced to A1

Static electrical characteristics

Symbol	Test conditions			Value	Unit
V _{TM} ⁽¹⁾	I _{TM} = 11 A, t _p = 380 μs	T _j = 25 °C	Max.	1.55	V
V _{TO} ⁽¹⁾	threshold on-state voltage	T _j = 125 °C	Max.	0.85	V
R _D ⁽¹⁾	Dynamic resistance	T _j = 125 °C	Max.	50	mΩ
I _{DRM} I _{RRM}	V _{DRM} = V _{R_{RM}}	T _j = 25 °C	Max.	5	μA
		T _j = 125 °C	Max.	1	mA

1. For both polarities of A2 referenced to A1

Thermal resistance

Symbol	Parameter			Value	Unit
R _{th(j-c)}	Max. junction to case thermal resistance (AC)		IPAK / D2PAK / DPAK / TO-220AB	1.6	°C/W
			TO-220AB Insulated	2.5	
R _{th(j-a)}	Junction to ambient (typ.)	S = 2 cm² ⁽¹⁾	D*PAK	45	°C/W
		S = 1 cm² ⁽¹⁾	DPAK	70	
	Junction to ambient (typ.)	TO-220AB / TO-220AB Insulated		60	
		IPAK		100	

1. S = Copper surface under tab.

RATING AND CHARACTERISTIC CURVES

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

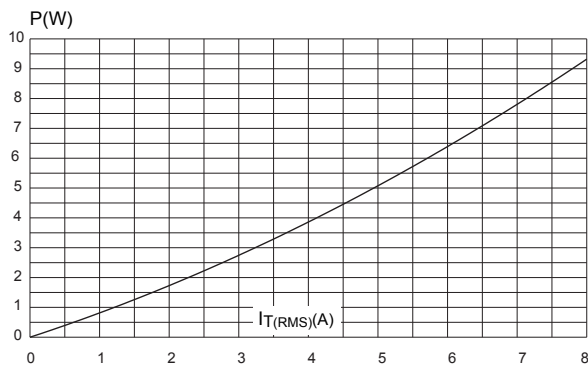


Figure 2. RMS on-state current versus temperature (full cycle)

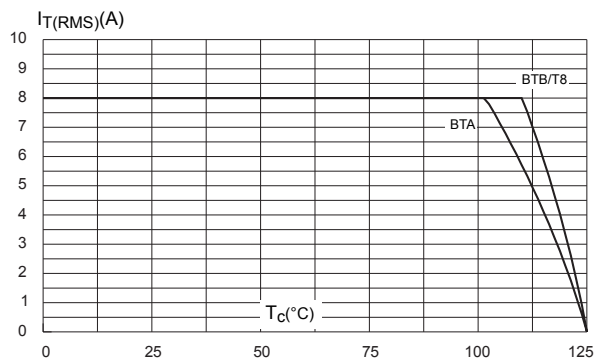


Figure 3. RMS on-state current versus ambient temperature (full cycle)

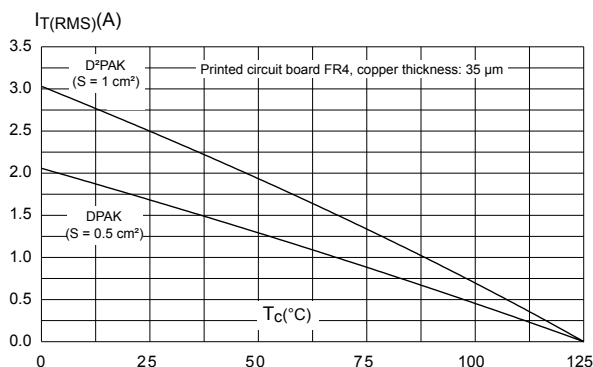


Figure 4. Relative variation of thermal impedance versus pulse duration

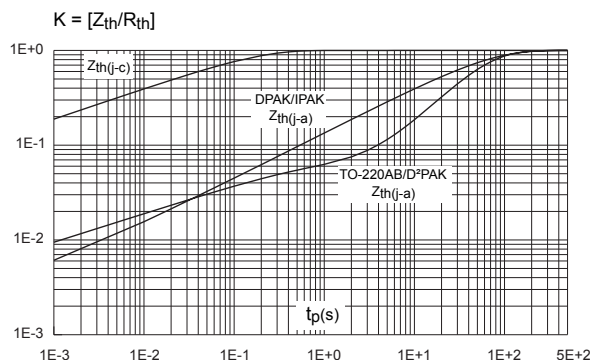


Figure 5. On-state characteristics (maximum values)

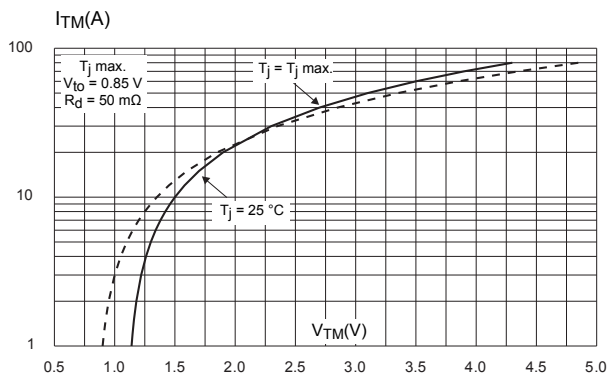
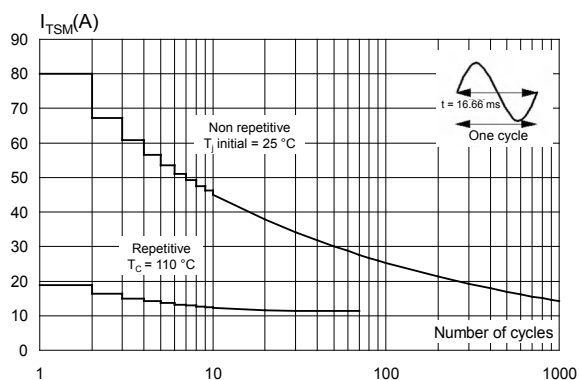
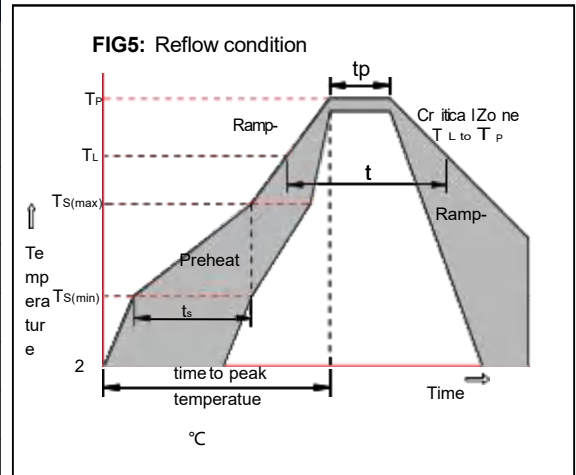


Figure 6. Surge peak on-state current versus number of cycles



Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_P)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C



Package Dimensions & Suggested Pad Layout

TO-220AB

