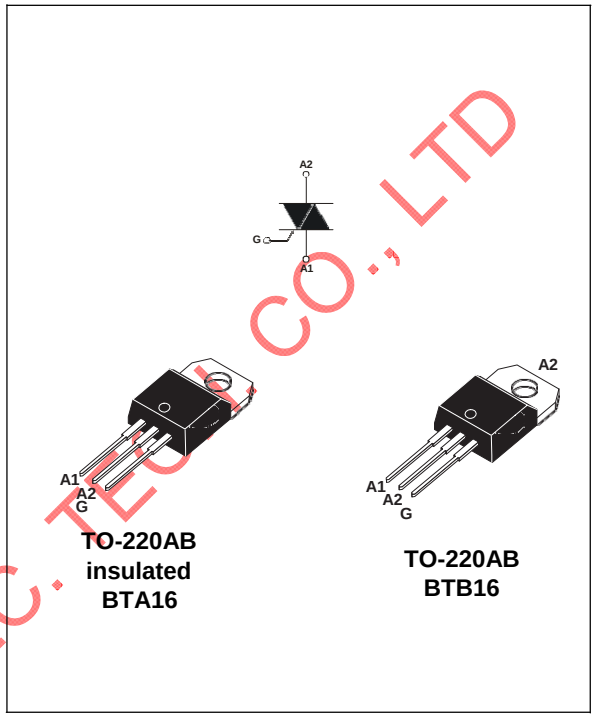
Features

- Medium current Triacs
- Low thermal resistance with clip bonding
- Low thermal resistance insulation ceramic for insulated BTA
- High commutation (4Q) or very high commutation (3Q) capability
- BTA series UL1557 certified
- RoHS (2002/95/EC) compliant
- Insulated tab (BTA series, rated at 2500 V_{RMS})



TO-220AB insulated BTA16

TO-220AB BTB16

Applications

- Snubberless versions (BTA/BTB) especially recommended for use on inductive loads, because of their high commutation performances
- On/off or phase angle function in applications such as static relays, light dimmers and appliance motor speed controllers

Description

Available either in through-hole or surface-mount packages, the BTA16, BTB16, T1610 and T1635 Triacs series are suitable for general purpose mains power AC switching.

Characteristics

Absolute maximum ratings

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	On-state rms current (full sine wave)	D^2PAK / TO-220AB	T_c = 100 °C	16	A
		TO-220AB insulated	T_c = 86 °C		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25 °C)	F = 50 Hz	t = 20 ms	160	A
		F = 60 Hz	t = 16.7 ms	168	
I^2t	I^2t value for fusing	t_p = 10 ms		144	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , $t_r \leq$ 100 ns	F = 120 Hz	T_j = 125 °C	50	A/µs
V_{DSM}/ V_{RSM}	Non repetitive surge peak off-state voltage	t_p = 10 ms	T_j = 25 °C	V_{DRM}/V_{RRM} + 100	V
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 temperature range			-40 to + 150	
T_j	Maximum operating junction temperature			-40 to + 125	

Electrical characteristics (T_j = 25 °C, unless otherwise specified)
Snubberless and logic level (3 quadrants)

Symbol	Test conditions	Quadrant		BTA16 / BTB16					Unit
				D	E	C		B	
I_{GT} (1)	V_D = 12 V R_L = 33 ∧	I - II - III-IV	Max.	5	10	15		30	mA
V_{GT}		I - II - III-IV	Max.	1.3					V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ T_j = 125 °C	I - II - III-IV	Min.	0.2					V
I_H (2)	I_T = 500 mA		Max.	15	35	15	35	50	mA
I_L	I_G = 1.2 I_{GT}	I - III	Max.	25	50	25	50	70	mA
		II		30	60	30	60	80	
dV/dt (2)	V_D = 67 %V_{DRM} gate open	T_j = 125 °C	Min.	40	500	40	500	1000	V/µs
(dI/dt)c (2)	(dV/dt)c = 0.1 V/µs	T_j = 125 °C	Min.	8.5	-	8.5	-	-	A/ms
	(dV/dt)c = 10 V/µs	T_j = 125 °C		3.0	-	3.0	-	-	
	Without snubber	T_j = 125 °C		-	8.5	-	8.5	14	

1. Minimum IGT is guaranted at 5% of I_{GT} max
2. For both polarities of A2 referenced to A1

Static characteristics

Symbol	Test conditions			Value	Unit
V_T (2)	I_{TM} = 22.5 A t_p = 380 µs	T_j = 25 °C	Max.	1.55	V
V_{to} (2)	Threshold voltage	T_j = 125 °C	Max.	0.85	V
R_d (2)	Dynamic resistance	T_j = 125 °C	Max.	25	m∧
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	T_j = 25 °C	Max.	5	µA
		T_j = 125 °C		2	mA

Table 6. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (AC)	TO-220AB	1.2	°C/W
		TO-220AB insulated	2.1	
$R_{th(j-a)}$	Junction to ambient	TO-220AB / TO-220AB insulated	60	°C/W

1. S = Copper surface under tab

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

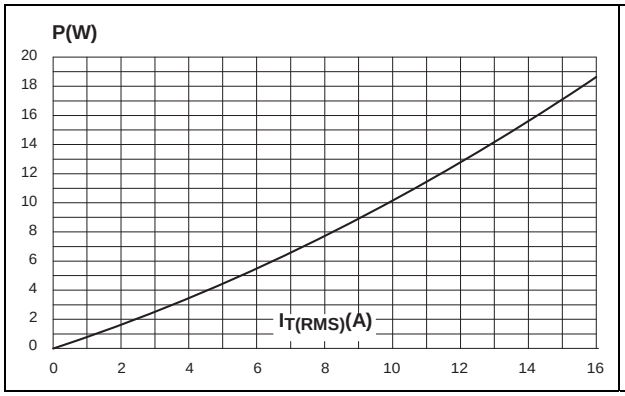


Figure 2. On-state rms current versus case temperature (full cycle)

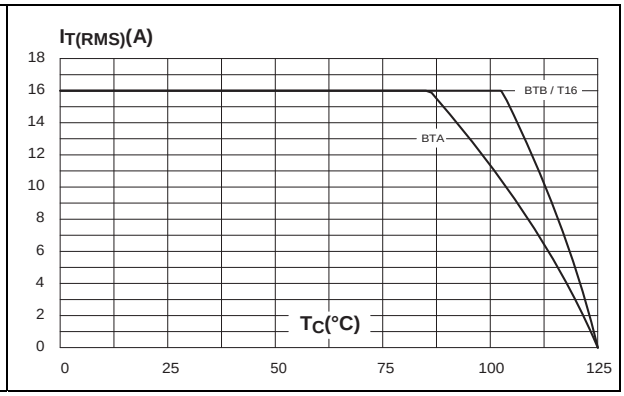


Figure 3. On-state rms current versus ambient temperature (full cycle)

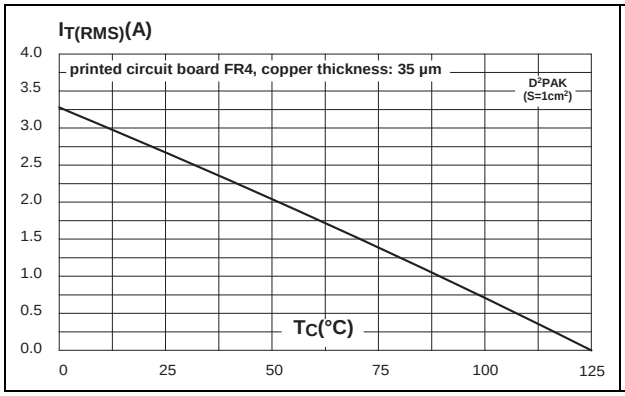


Figure 4. Relative variation of thermal impedance versus pulse duration

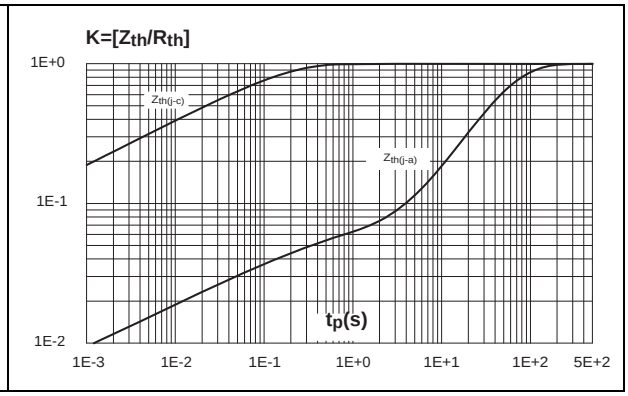


Figure 5. On-state characteristics (maximum values)

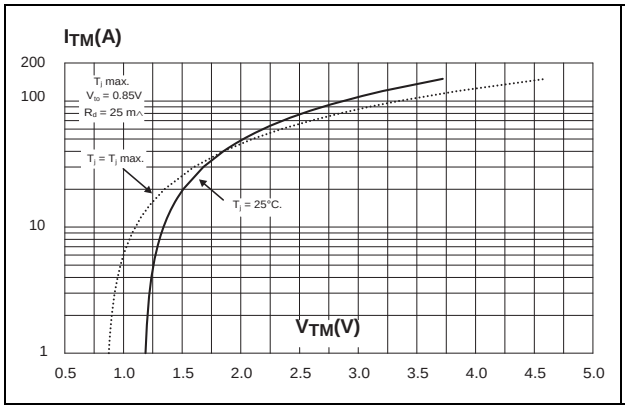


Figure 6. Surge peak on-state current versus number of cycles

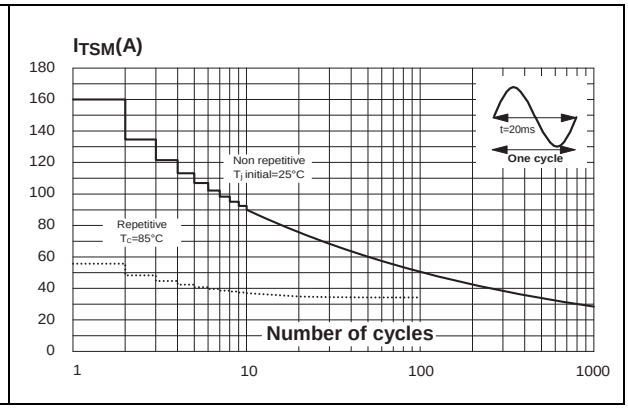


Figure 7. Non-repetitive surge peak on-state current for a sinusoidal

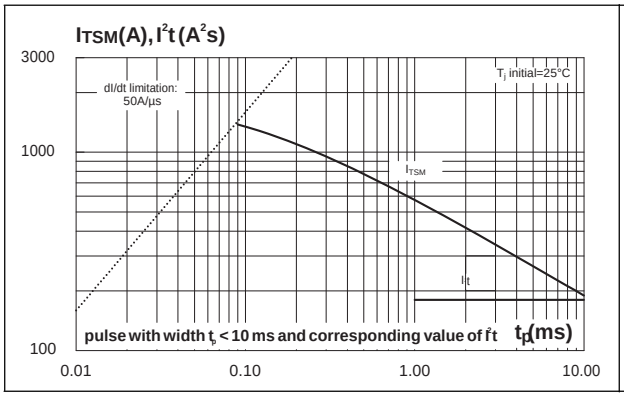


Figure 8. Relative variation of gate trigger current

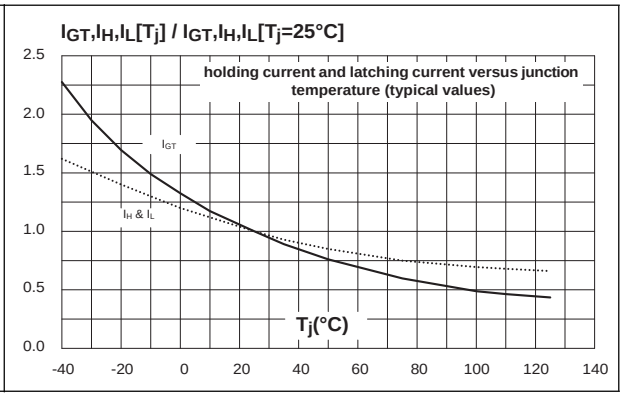


Figure 9. Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

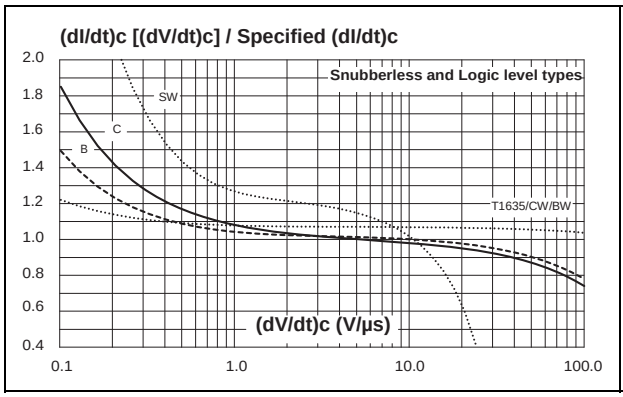


Figure 10. Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)