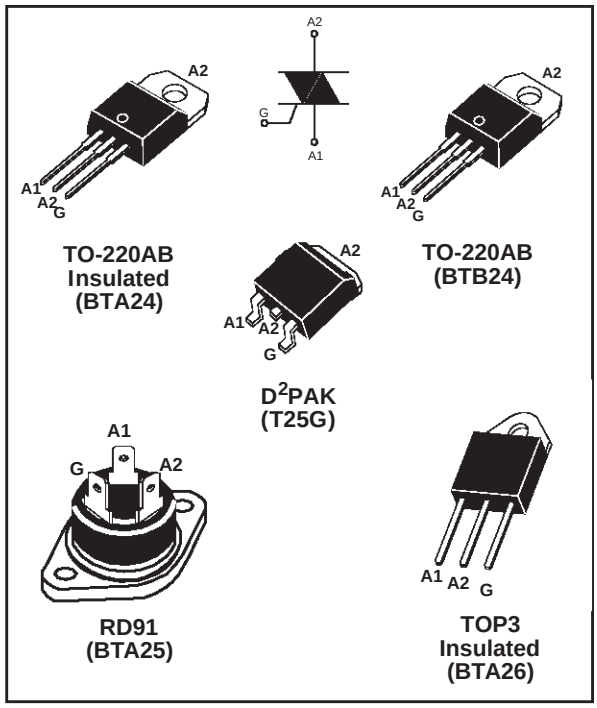
BTA/BTB24, BTA25, BTA26 and T25 Series

SNUBBERLESS™ & STANDARD 25A TRIACs

MAIN FEATURES:

Symbol	Value	Unit
$I_{T(RMS)}$	25	A
V_{DRM}/V_{RRM}	600 and 800	V
$I_{GT\ (Q_1)}$	35 to 50	mA



DESCRIPTION

Available either in through-hole of surface and T25 mount packages, the BTA/BTB24-25-26 triac series is suitable for general purpose AC power switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, water heaters, induction motor starting circuits...or for phase control operation in high power motor speed controllers, soft start circuits...The snubberless versions (BTA/BTB...W and T25 series) are specially recommended for use on inductive loads, thanks to their high commutation performances.

By using an internal ceramic pad, the BTA series provides voltage insulated tab (rated at 2500V RMS) complying with UL standards

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	D PAK TO-220AB	Tc = 100°C	25	A
		RD91 TOP3 Ins.	Tc = 90°C		
		TO-220AB Ins.	Tc = 75°C		
I_{TSM}	Non repetitive surge peak on-state current (full cycle, Tj initial = 25°C)	F = 60 Hz	t = 16.7 ms	260	A
		F = 50 Hz	t = 20 ms	250	
I t	I t Value for fusing	tp = 10 ms		450	A s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , tr ≤ 100 ns	F = 120 Hz	Tj = 125°C	50	A/µs
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voltage	tp = 10 ms	Tj = 25°C	V_{DRM}/V_{RRM} + 100	V
I_{GM}	Peak gate current	tp = 20 µs	Tj = 125°C	4	A
$P_{G(AV)}$	Average gate power dissipation		Tj = 125°C	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C

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

■ **SNUBBERLESS™ (3 Quadrants) T25-G, BTA/BTB24...W, BTA25...W, BTA26...W**

Symbol	Test Conditions	Quadrant		T25	BTA/BTB		Unit
				T2535	CW	BW	
I_{GT} (1)	V_D = 12 V R_L = 33 Ω	I - II - III	MAX.	35	35	50	mA
V_{GT}		I - II - III	MAX.	1.3			V
V_{GD}	$V_D = V_{DRM}$ R_L = 3.3 kΩ Tj = 125°C	I - II - III	MIN.	0.2			V
I_H (2)	I_T = 500 mA		MAX.	50	50	75	mA
I_L	$I_G = 1.2\ I_{GT}$	I - III	MAX.	70	70	80	mA
		II		80	80	100	
dV/dt (2)	V_D = 67 % V_{DRM} gate open Tj = 125°C		MIN.	500	500	1000	V/µs
(dI/dt)c (2)	Without snubber Tj = 125°C		MIN.	13	13	22	A/ms

■ **STANDARD (4 Quadrants): BTA25...B, BTA26...B**

Symbol	Test Conditions	Quadrant		Value	Unit
I_{GT} (1)	V_D = 12 V R_L = 33 Ω	I - II - III IV	MAX.	50 100	mA
V_{GT}		ALL	MAX.	1.3	V
V_{GD}	$V_D = V_{DRM}$ R_L = 3.3 kΩ Tj = 125°C	ALL	MIN.	0.2	V
I_H (2)	I_T = 500 mA		MAX.	80	mA
I_L	$I_G = 1.2\ I_{GT}$	I - III - IV	MAX.	70	mA
		II		160	
dV/dt (2)	V_D = 67 % V_{DRM} gate open Tj = 125°C		MIN.	500	V/µs
(dV/dt)c (2)	(dI/dt)c = 13.3 A/ms Tj = 125°C		MIN.	10	V/µs

STATIC CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
V_{TM} (2)	I_{TM} = 35 A tp = 380 µs	Tj = 25°C	MAX.	1.55	V
V_{to} (2)	Threshold voltage	Tj = 125°C	MAX.	0.85	V
R_d (2)	Dynamic resistance	Tj = 125°C	MAX.	16	mΩ
I_{DRM}	$V_{DRM} = V_{RRM}$	Tj = 25°C	MAX.	5	µA
I_{RRM}		Tj = 125°C		3	mA

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)		D PAK TO-220AB	0.8	°C/W
			RD91 (Insulated) TOP3 Insulated	1.1	
			TO-220AB Insulated	1.7	
$R_{th(j-a)}$	Junction to ambient	S = 1 cm	D PAK	45	°C/W
			TOP3 Insulated	50	
			TO-220AB	60	
			TO-220AB Insulated		

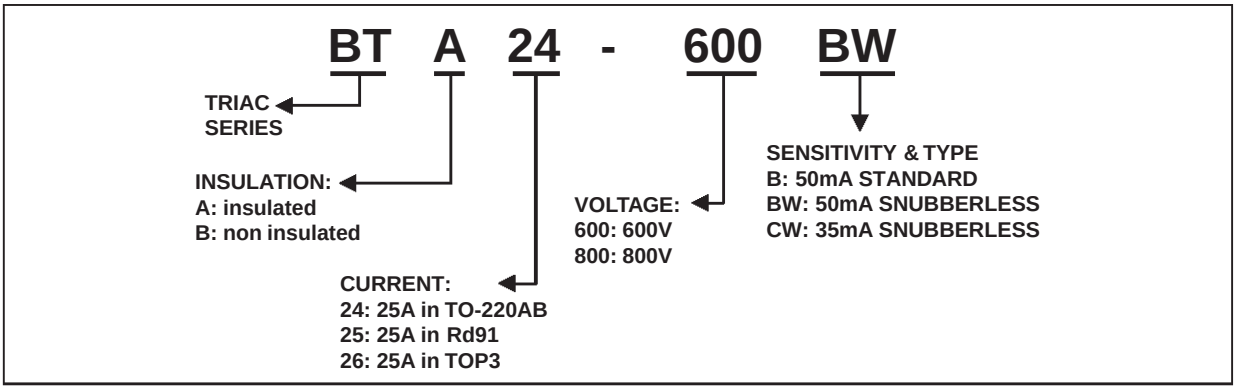
S: Copper surface under tab

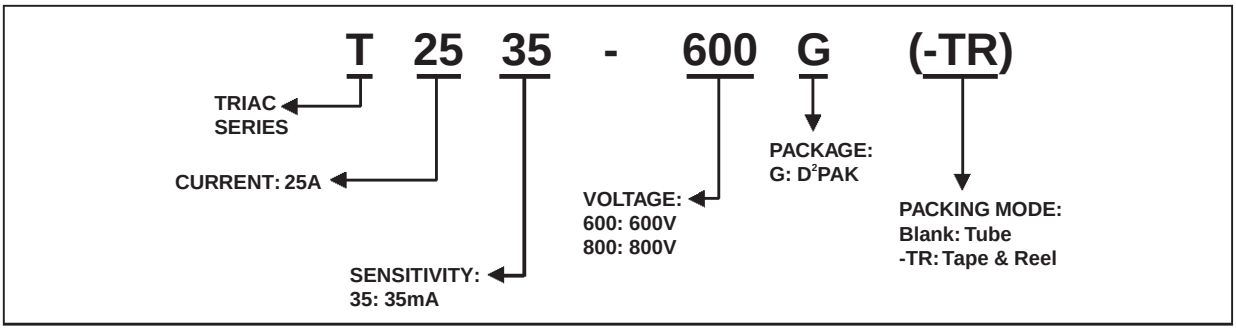
PRODUCT SELECTOR

Part Number	Voltage (xxx)		Sensitivity	Type	Package
	600 V	800 V			
BTB24-xxxB	X	X	50 mA	Standard	TO-220AB
BTA/BTB24-xxxBW	X	X	50 mA	Snubberless	TO-220AB
BTA/BTB24-xxxCW	X	X	35 mA	Snubberless	TO-220AB
BTA25-xxxB	X	X	50 mA	Standard	RD-91
BTA25-xxxBW	X	X	50 mA	Snubberless	RD-91
BTA25-xxxCW	X	X	35 mA	Snubberless	RD-91
BTA26-xxxB	X	X	50 mA	Standard	TOP3 Ins.
BTA26-xxxBW	X	X	50 mA	Snubberless	TOP3 Ins.
BTA26-xxxCW	X	X	35 mA	Snubberless	TOP3 Ins.
T2535-xxxG	X	X	35 mA	Snubberless	D PAK

BTB: Non insulated TO-220AB package

ORDERING INFORMATION





OTHER INFORMATION

Part Number	Marking	Weight	Base quantity	Packing mode
BTA/BTB24-xxxyz	BTA/BTB24xxxyz	2.3 g	250	Bulk
BTA25-xxxyz	BTA25xxxyz	20 g	25	Bulk
BTA26-xxxyz	BTA26xxxyz	4.5 g	120	Bulk
T2535-xxxG	T2535xxxG	1.5 g	50	Tube
T2535-xxxG-TR	T2535xxxG	1.5 g	1000	Tape & reel

Note: xxx= voltage, y = sensitivity, z = type

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

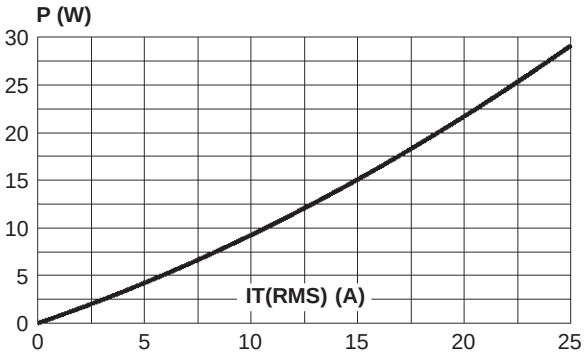


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

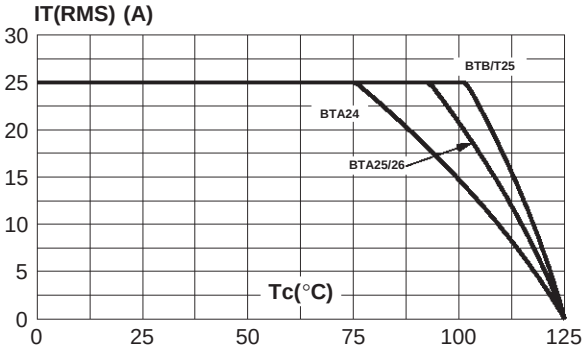


Fig. 2-2: D PAK RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35 μm), full cycle.

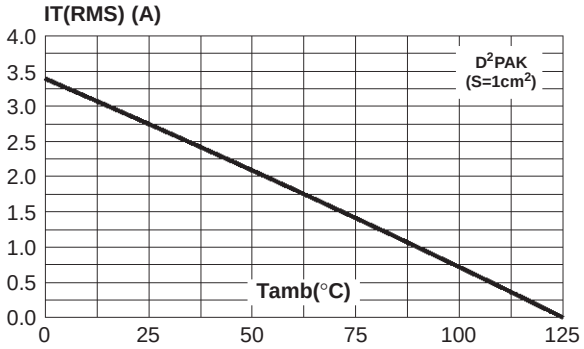


Fig. 3: Relative variation of thermal impedance versus pulse duration.

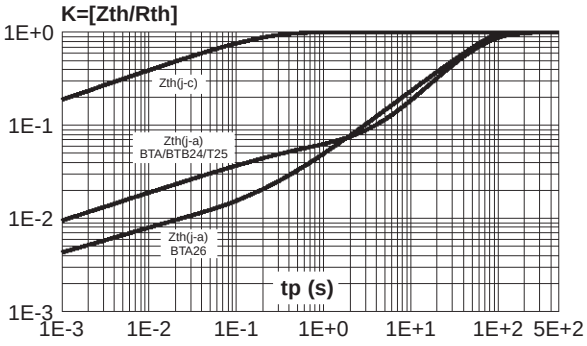


Fig. 4: On-state characteristics (maximum values).

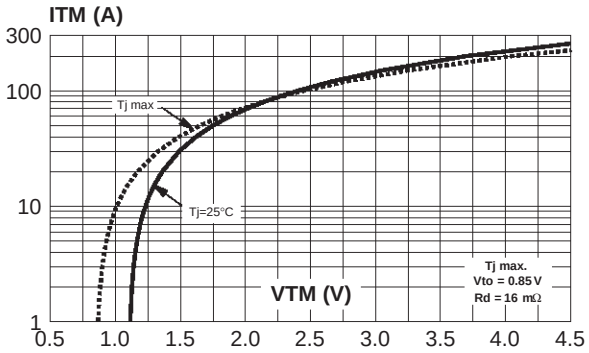


Fig. 5: Surge peak on-state current versus number of cycles.

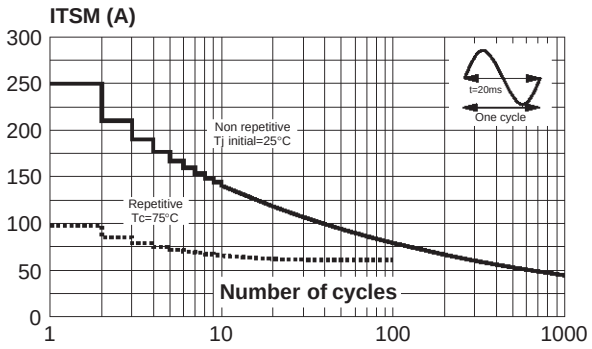


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms, and corresponding value of I t.

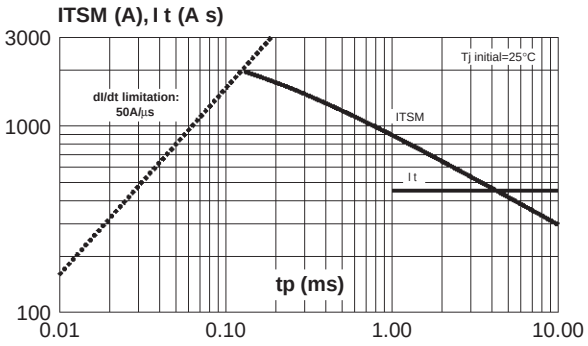


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

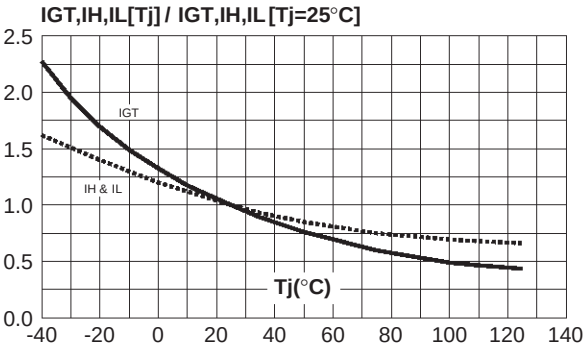


Fig. 8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values).

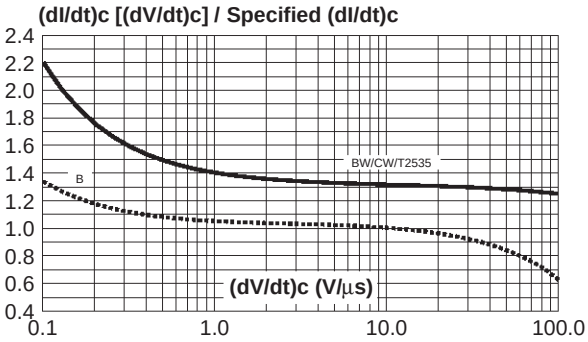


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

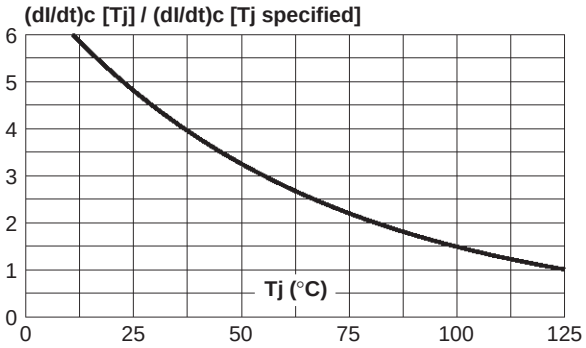


Fig. 10: D PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 µm).