

BTA/BTB12 and T12 Series

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

■ SNUBBERLESS™ and LOGIC LEVEL (3 Quadrants)

Symbol	Test Conditions	Quadrant		T12	BTA/BTB12			Unit
				T1235	SW	CW	BW	
I _{GT} (1)	V _D = 12 V R _L = 30 Ω	I - II - III	MAX.	35	10	35	50	mA
V _{GT}		I - II - III	MAX.	1.3				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		MAX.	35	15	35	50	mA
I _L	I _G = 1.2 I _{GT}	I - III	MAX.	50	25	50	70	mA
		II		60	30	60	80	
dV/dt (2)	V _D = 67 %V _{DRM} gate open T _j = 125°C		MIN.	500	40	500	1000	V/μs
(dI/dt) _c (2)	(dV/dt) _c = 0.1 V/μs T _j = 125°C		MIN.	-	6.5	-	-	A/ms
	(dV/dt) _c = 10 V/μs T _j = 125°C			-	2.9	-	-	
	Without snubber T _j = 125°C			6.5	-	6.5	12	

■ STANDARD (4 Quadrants)

Symbol	Test Conditions	Quadrant		BTA/BTB06		Unit
				C	B	
I _{GT} (1)	V _D = 12 V R _L = 30 Ω	I - II - III IV	MAX.	25 50	50 100	mA
V _{GT}		ALL	MAX.	1.3		V
V _{GD}	V _D = V _{DRM} R _L = 3.3 kΩ T _j = 125°C		MIN.	0.2		V
I _H (2)	I _T = 500 mA		MAX.	25	50	mA
I _L	I _G = 1.2 I _{GT}	I - III - IV	MAX.	40	50	mA
		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 = 5.3 A/ms T _j = 125°C		MIN.	5	10	V/μs

STATIC CHARACTERISTICS

Symbol	Test Conditions		Value	Unit
V _T (2)	I _{TM} = 17 A tp = 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.	35	mΩ
I _{DRM}	V _{DRM} = V _{RRM}	T _j = 25°C	5	μA
I _{RRM}		T _j = 125°C	1	mA

Note 1: minimum I_{GT} is guaranteed at 5% of I_{GT} 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 ² PAK/TO-220AB	°C/W
			TO-220AB Insulated	
$R_{th(j-a)}$	Junction to ambient	S = 1 cm ²	D ² PAK	°C/W
			TO-220AB TO-220AB Insulated	

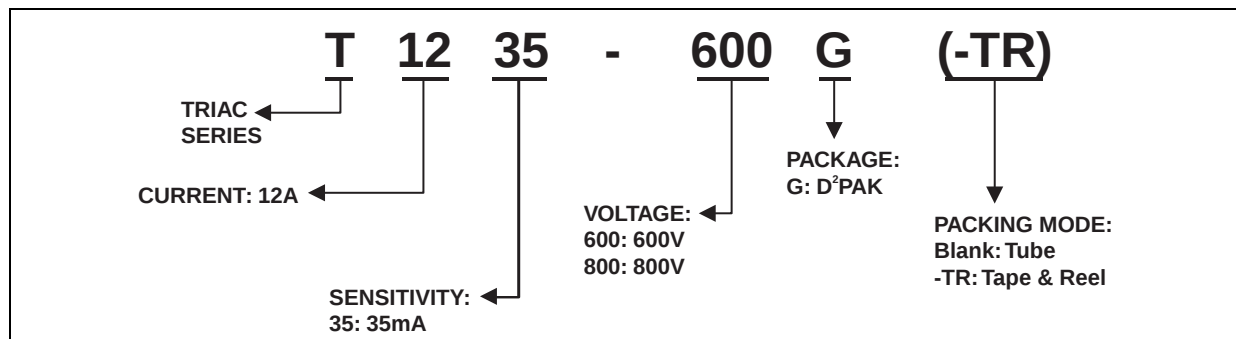
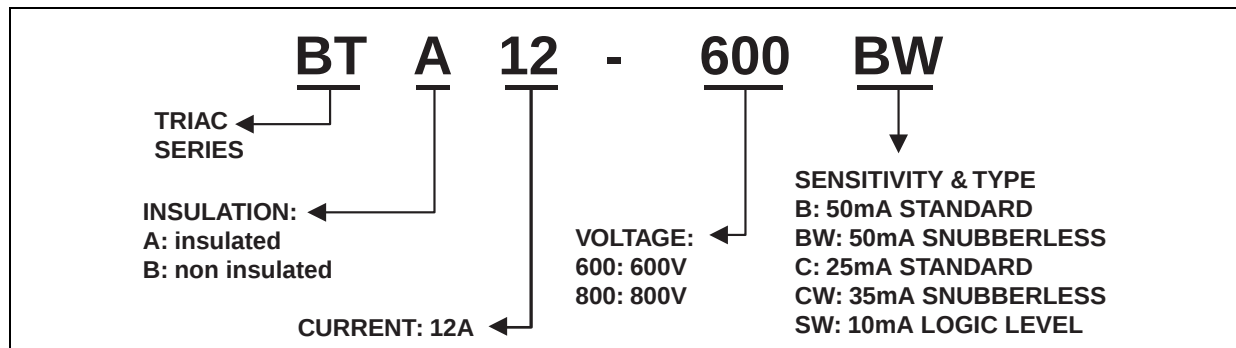
S = Copper surface under tab

PRODUCT SELECTOR

Part Number	Voltage (xxx)		Sensitivity	Type	Package
	600 V	800 V			
BTA/BTB12-xxxB	X	X	50 mA	Standard	TO-220AB
BTA/BTB12-xxxBW	X	X	50 mA	Snubberless	TO-220AB
BTA/BTB12-xxxC	X	X	25 mA	Standard	TO-220AB
BTA/BTB12-xxxCW	X	X	35 mA	Snubberless	TO-220AB
BTA/BTB12-xxxSW	X	X	10 mA	Logic level	TO-220AB
T1235-xxxG	X	X	35 mA	Snubberless	D ² PAK

BTB: non insulated TO-220AB package

ORDERING INFORMATION



OTHER INFORMATION

Part Number	Marking	Weight	Base quantity	Packing mode
BTA/BTB12-xxxxyz	BTA/BTB12-xxxxyz	2.3 g	250	Bulk
T1235-xxxG	T1235xxxG	1.5 g	50	Tube
T1235-xxxG-TR	T1235xxxG	1.5 g	1000	Tape & reel

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

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

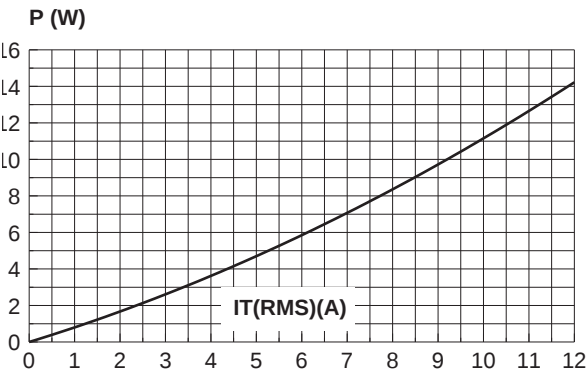


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

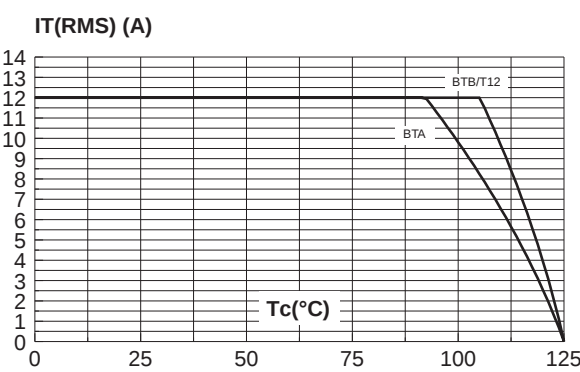


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm), full cycle.

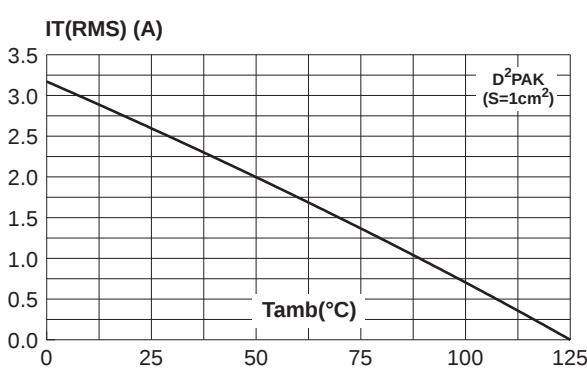


Fig. 3: Relative variation of thermal impedance versus pulse duration.

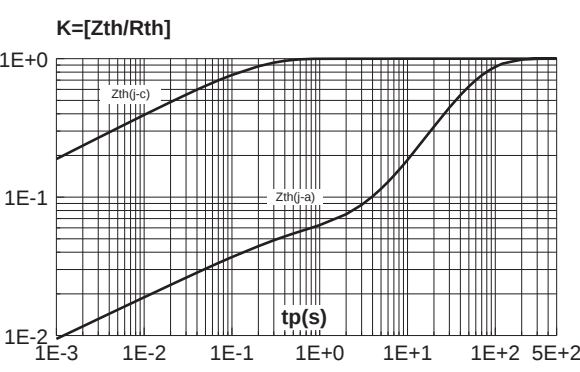


Fig. 4: On-state characteristics (maximum values).

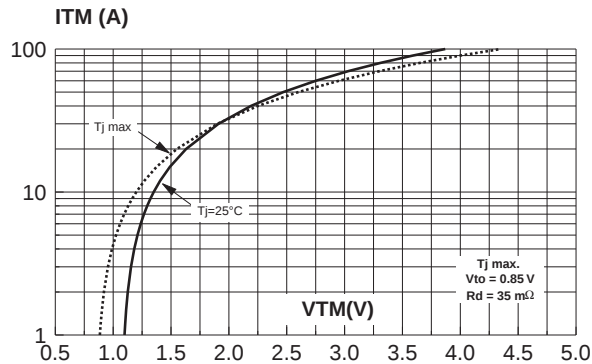


Fig. 5: Surge peak on-state current versus number of cycles.

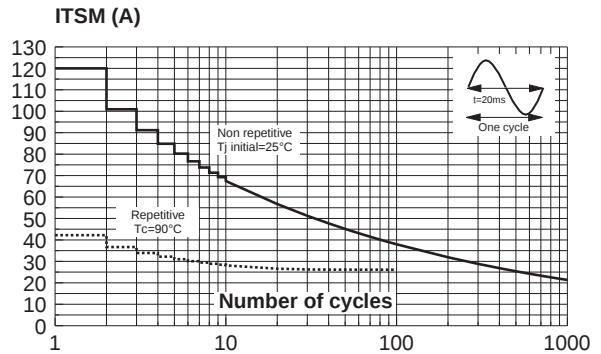


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

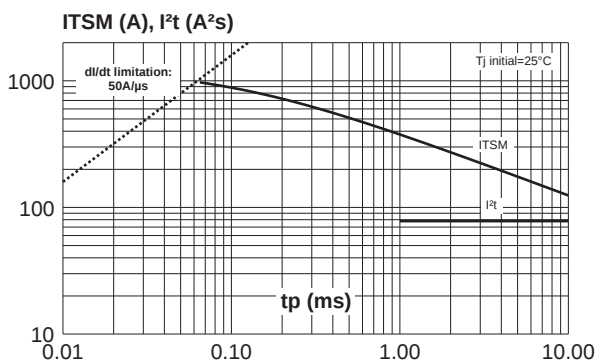


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

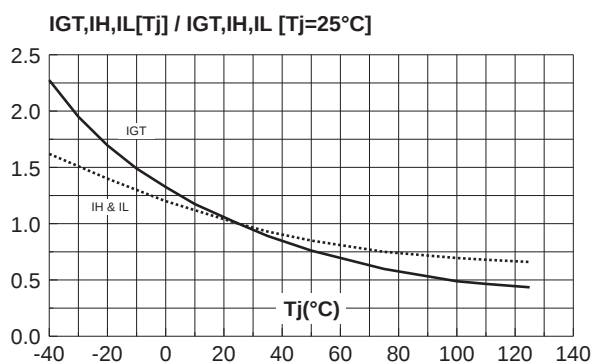


Fig. 8: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values).

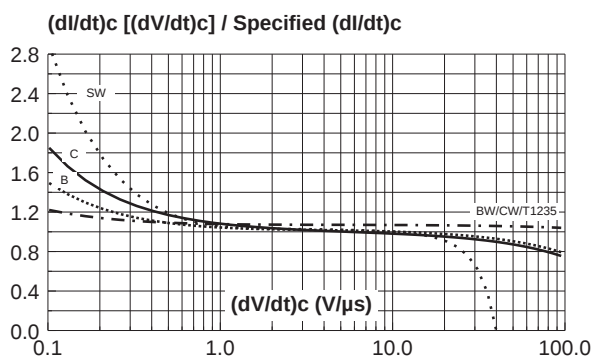


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

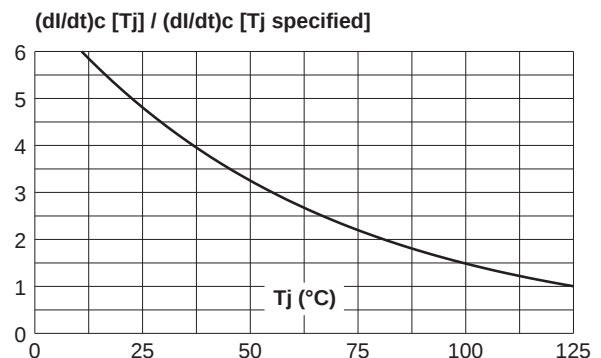
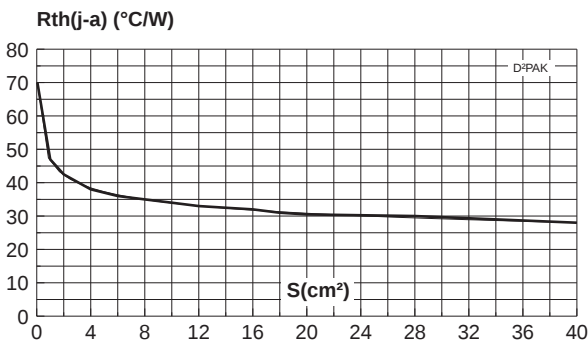
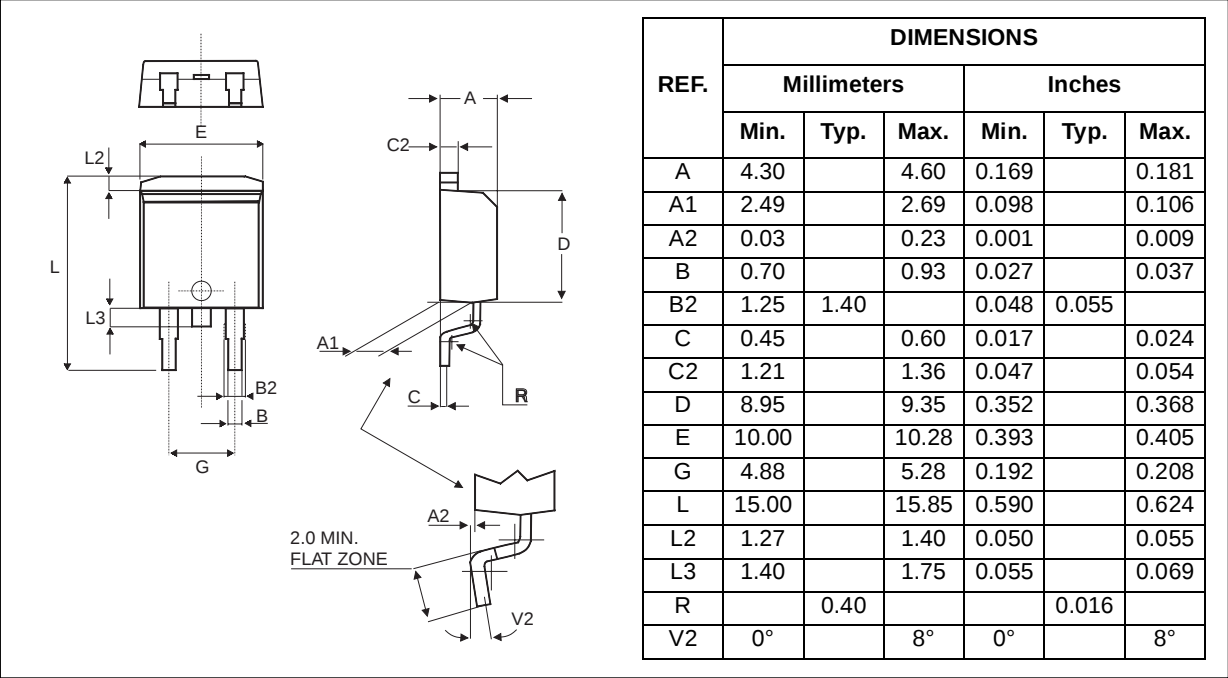


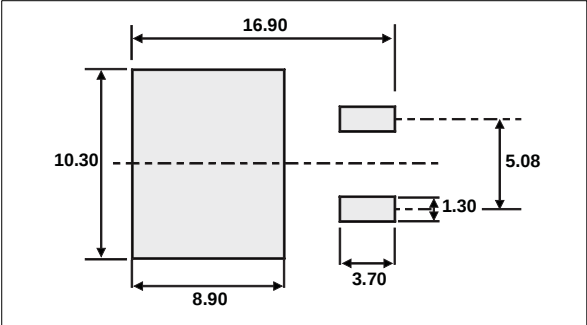
Fig. 10: D²PAK Thermal resistance junction to ambient versus copper surface under tab (printed circuit board FR4, copper thickness: 35 μm).



PACKAGE MECHANICAL DATA
D²PAK (Plastic)

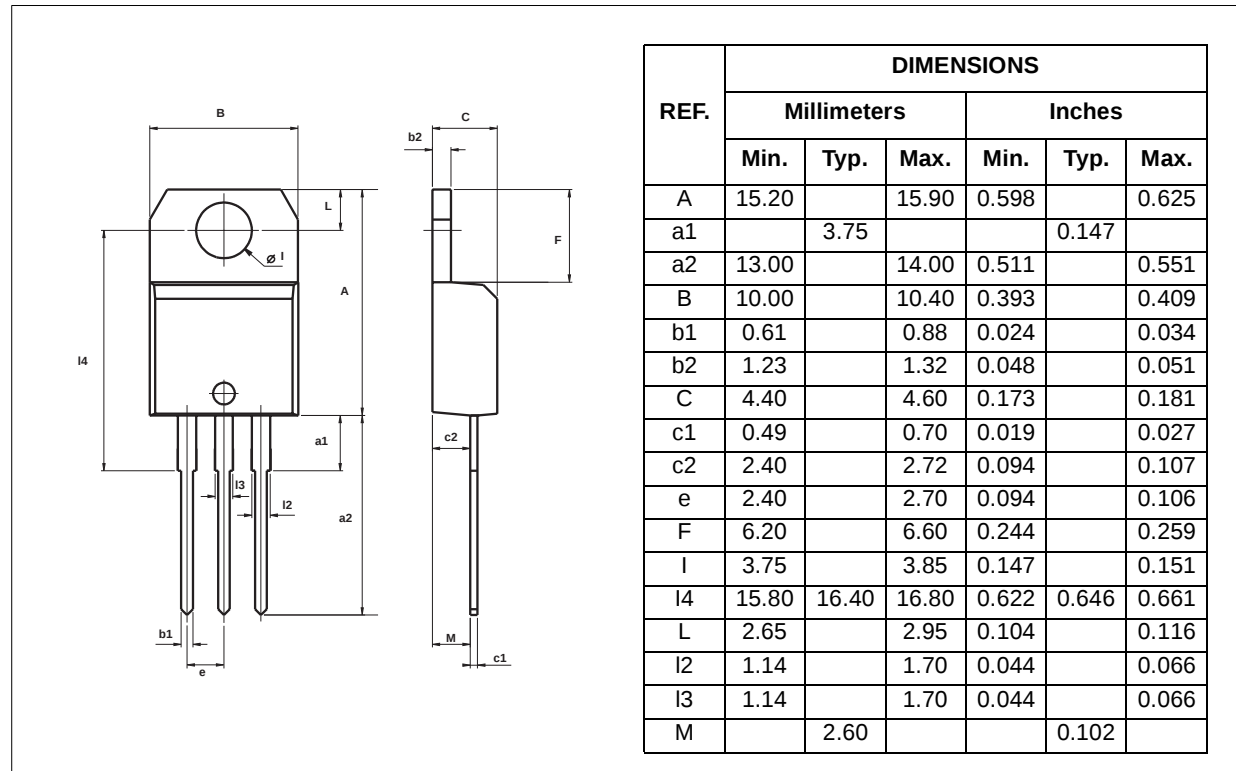


FOOTPRINT DIMENSIONS (in millimeters)
D²PAK (Plastic)



PACKAGE MECHANICAL DATA

TO-220AB / TO-220AB Ins.



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