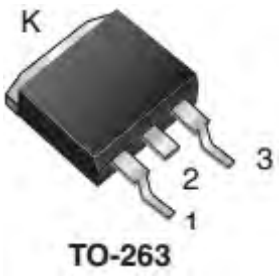
BTB12G Series

Description

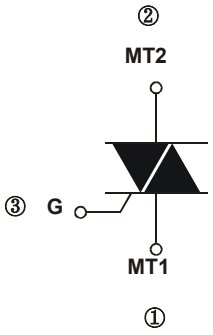
Available either in through-hole or surface-mount packages, the BTB12 triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applica-tions such as static relays, heating regulation, in-duction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers,...



Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600 and 800	V
$I_{GT\ (Q_1)}$	5 to 50	mA

Symbol



ORDERING INFORMATION

BT B 12 - 800 CW

Triac series

Insulation
B = non insulated

Current
12 = 12A

Voltage
600 = 600V
800 = 800V

Sensitivity and type
SW = I_{GT}1-3＜10mA
BW = I_{GT}1-3＜50mA
CW = I_{GT}1-3＜35mA
TW = I_{GT}1-3＜5mA
B = I_{GT}1-3＜50mA,,I_{GT}＜100mA
C = I_{GT}1-3＜25mA,I_{GT}＜50mA
D = I_{GT}1-3＜5mA,I_{GT}＜10mA
E = I_{GT}1-3＜10mA,I_{GT}＜25mA

Absolute Maximum Ratings

Symbol	Parameter			Value	Unit
V_{DRM}	Repetitive peak off-state voltage	T_j=25℃		600/800	V
V_{RRM}	Repetitive peak reverse voltage				
$I_{T(RMS)}$	RMS on-state current (full sine wave)	T_C=105℃		12	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	F = 50 Hz	t = 20 ms	120	A
		F = 60 Hz	t = 16.7 ms	126	
I^2t	^2t Value for fusing	t_p = 10 ms		78	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
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} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C

Tables 4: Electrical Characteristics (T_j = 25°C, unless otherwise specified)

SNUBBERLESS and Logic Level (3 quadrants)

Symbol	Test Conditions	Quadrant		Value				Unit
				TW	SW	CW	BW	
I_{GT} (1)	V_D = 12 V R_L = 30 Ω	I - II - III	MAX.	5	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.	10	15	35	50	mA
I_L	I_G = 1.2 I_{GT}	I - III	MAX.	10	25	50	70	mA
		II		15	30	60	80	
dV/dt (2)	V_D = 67 %V_{DRM} gate open T_j = 125°C		MIN.	20	40	400	1000	V/µs

Standard (4 quadrants)

Symbol	Test Conditions	Quadrant		Value				Unit
				B	C	D	E	
I_{GT} (1)	V_D = 12 V R_L = 30 Ω	I - II - III IV	MAX.	50 100	25 50	5 10	10 25	mA
V_{GT}		ALL	MAX.	1.3				V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ T_j = 125°C	ALL	MIN.	0.2				V
I_H (2)	I_T = 500 mA		MAX.	50	25	10	15	mA
I_L	I_G = 1.2 I_{GT}	I - III - IV	MAX.	50	40	10	25	mA
		II		100	80	15	30	
dV/dt (2)	V_D = 67 %V_{DRM} gate open T_j = 125°C		MIN.	400	200	10	20	V/µs

Static Characteristics

Symbol	Test Conditions			Value	Unit
V_{TM} (2)	I_{TM} = 17 A t_p = 380 µs	T_j = 25°C	MAX.	1.55	V
V_{t0} (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} I_{RRM}	V_{DRM} = V_{RRM}	T_j = 25°C	MAX.	5	υA
		T_j = 125°C		1	mA

Note 1: minimum I_{GT} is guaranted at 5% of I_{GT} max.

Note 2: for both polarities of MT2 referenced to MT1.

Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO263	1.6	℃/W

CHARACTERISTICS

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

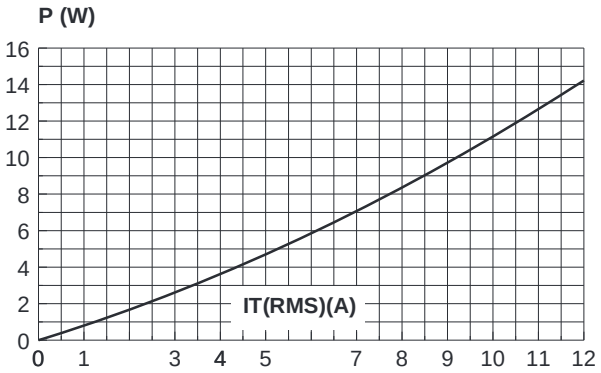


Fig. 2-1: RMS on-state current versus case temperature (full cycle).

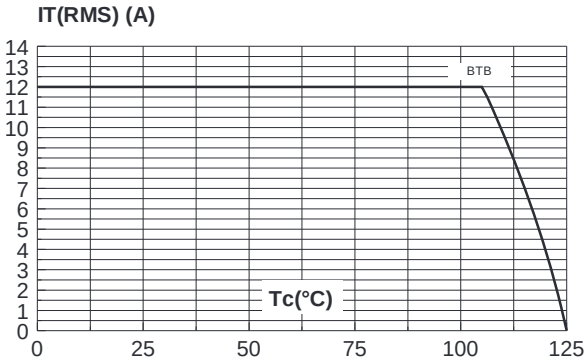


Fig. 2-2: RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35µm),full cycle.

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

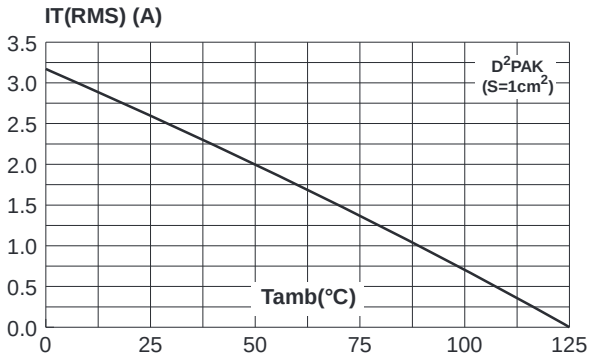


Fig. 4: On-state characteristics (maximum values).

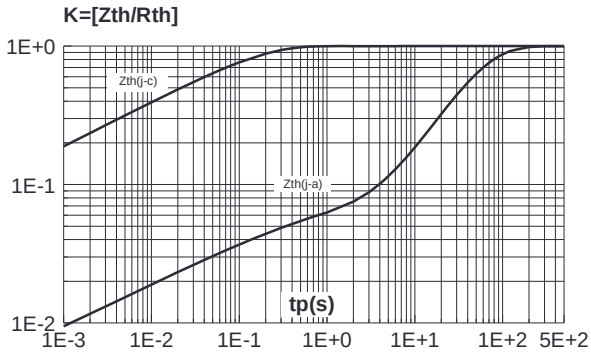


Fig. 5: Surge peak on-state current versus number of cycles.

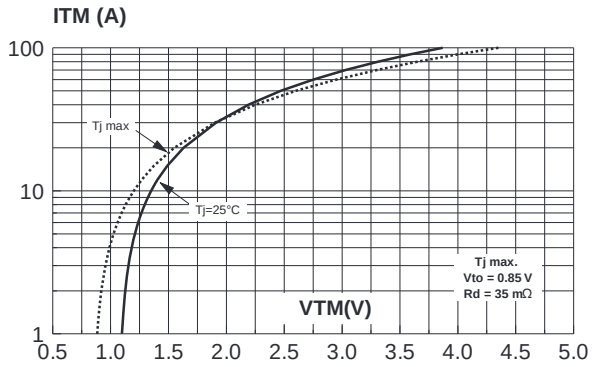


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms, and corresponding value of I²t.

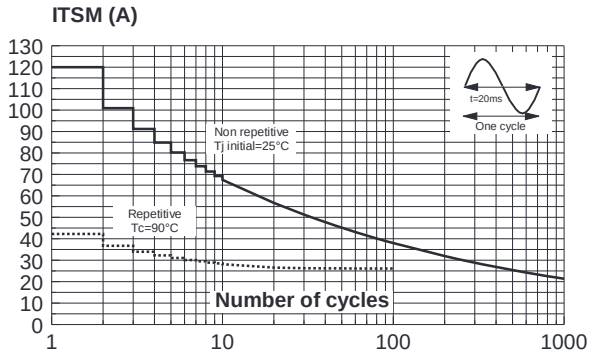


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

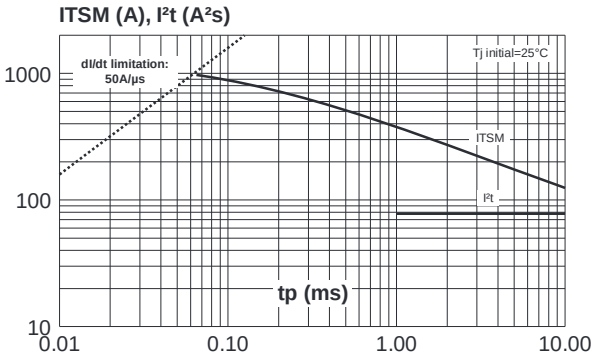


Fig. 8-1: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values) (BW/CW/T1235).

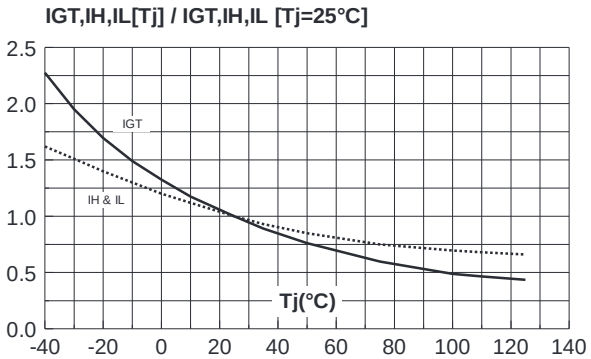
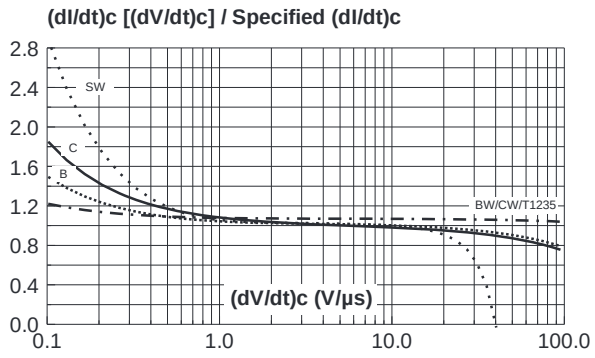


Fig. 8-2: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values) (TW).

CHARACTERISTICS



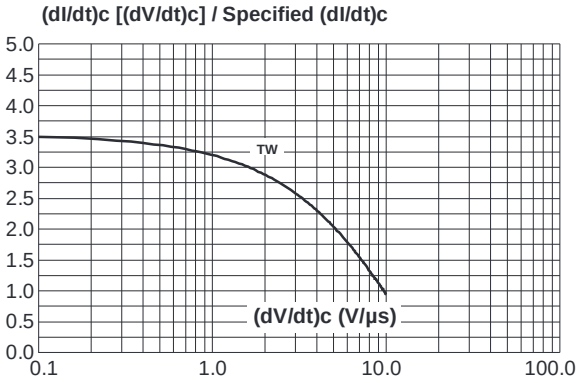
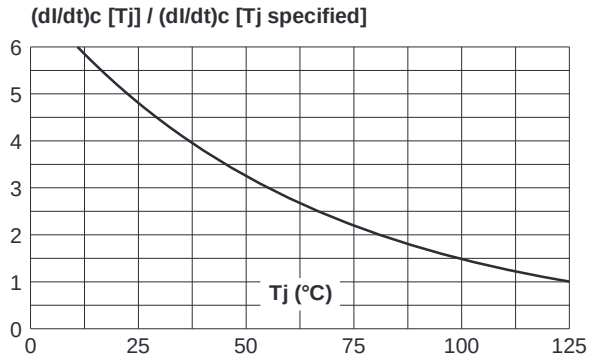
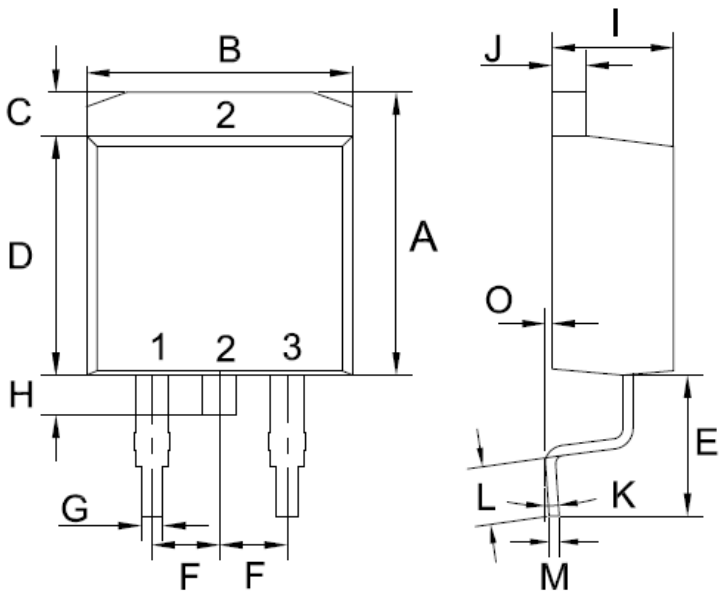


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.



TO-263 Mechanical Drawing



TO-263 (D^2 PAK) Unit:mm		
DIM	MIN	MAX
A	10.44	10.84
B	9.81	10.21
C	1.44	1.84
D	8.80	9.20
E	4.46	4.66
F	2.44	2.64
G	0.61	1.01
H	0.70	1.30
I	4.27	4.87
J	1.07	1.47
K	0°	8°
L	2.10	2.50
M	0.30	0.46
O	0	0.25