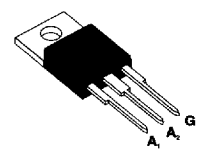
SGS-THOMSON MICROELECTRONICS

BTA24 BW/CW

SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : (dI/dt)c ≥ 22A/ms without snubber
- HIGH SURGE CURRENT : I_{TSM} = 240A
- INSULATING VOLTAGE = 2500$V_{(RMS)}$ (UL RECOGNIZED : E81734)



TO220AB
(Plastic)

DESCRIPTION

The BTA24BW/CW series of isolated triacs uses a high oerformance MESA GLASS technology. The SNUBBERLESS™ concept offers suppression of RC nerwork and it is suitable for application such as phase control and static switching on inductive or resistive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc= 70°C	25	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	tp = 8.3 ms	250	A
		tp = 10 ms	240	
I^2t	I^2t Value for fusing	tp = 10 ms	288	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 500 mA dI_G/dt = 1 A/µs.	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C
Tl	Maximum lead temperature for soldering during 10s at 4.5mm from case.		260	°C

Symbol	Parameter	BTA24-...BW / CW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125°C	400	600	700	800	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient	60	°C/W
Rth(j-c)	Junction to case for D.C	2.3	°C/W
Rth(j-c)	Junction to case for A.C 360° conduction angle (F=50Hz)	1.7	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)}$= 1 W P_{GM} = 40 W (tp = 20 µs) I_{GM} = 4 A (tp = 20 µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Sensitivity		Unit
					BW	CW	
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III	MIN	2	2	mA
				MAX	50	35	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj= 25°C	I-II-III	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	I-II-III	MIN	0.2		V
tgt	V_D=V_{DRM} I_T = 35A I_G = 500mA dI_G/dt= 3Aµs	Tj= 25°C	I-II-III	TYP	2		µs
I_H *	I_T= 250mA Gate open	Tj= 25°C		MAX	75	50	mA
I_L	I_G= 1.2 I_{GT}	Tj= 25°C	I-III	TYP	50	—	mA
			II	TYP	90	—	
			I-II-III	MAX	—	80	
V_{TM} *	I_{TM}= 35A tp= 380µs	Tj= 25°C		MAX	1.7		V
I_{DRM} I_{RRM}	V_D = V_{DRM} V_R= V_{RRM}	Tj= 25°C		MAX	0.01		mA
		Tj= 125°C		MAX	5		
dV/dt *	V_D=67%V_{DRM} Gate open	Tj= 125°C		MIN	500	250	V/µs
				TYP	750	500	
(dI/dt)c *	Without snubber	Tj= 125°C		MIN	22	13	A/ms
				TYP	44	26	

* For either polarity of electrode A_2 voltage with reference to electrode A_1

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(Curves are cut off by (dI/dt)c limitation)

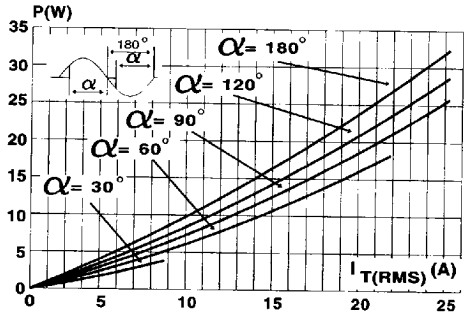


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperature (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

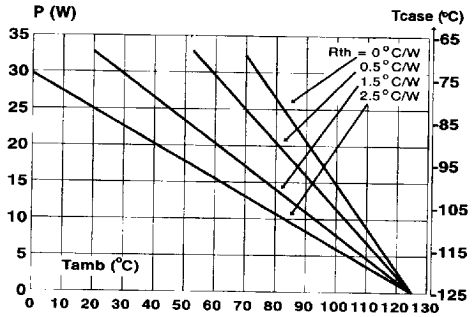


Fig.3 : RMS on-state current versus case temperature.

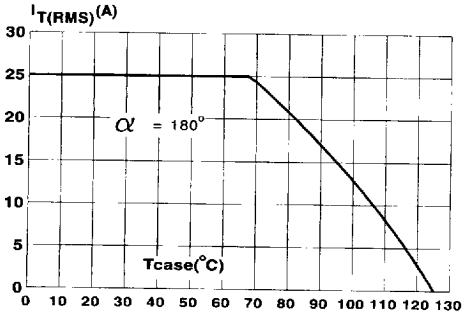


Fig.4 : Relative variation of thermal impedance versus pulse duration.

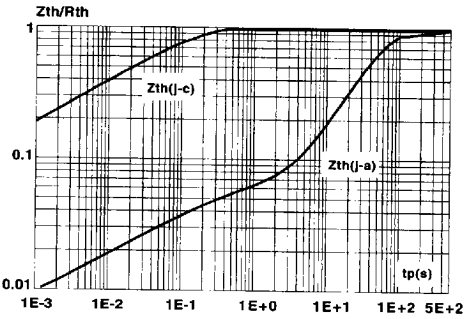


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

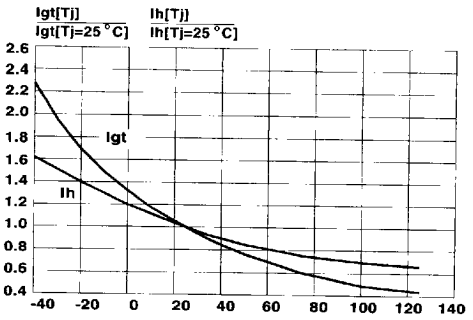


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

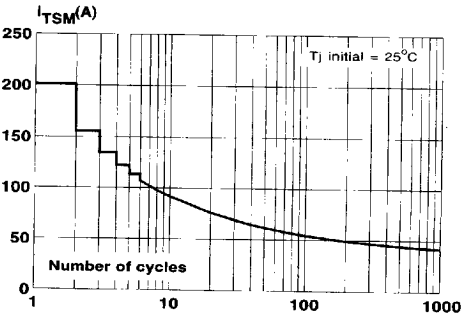


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : tp ≤ 10ms, and corresponding value of I^2t.

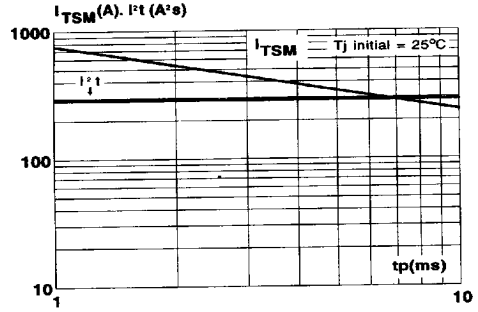
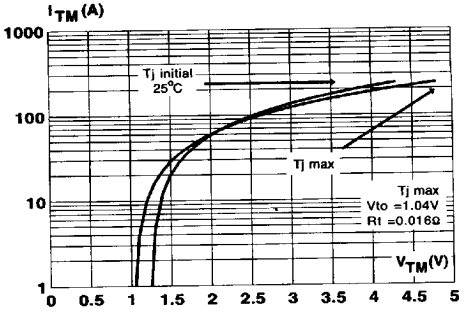
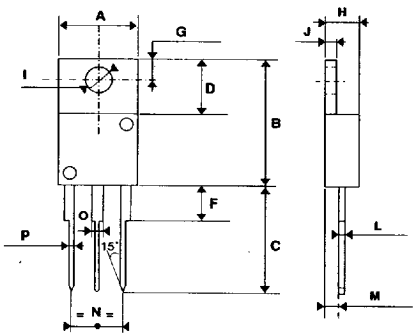


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
TO220 AB (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.20	10.50	0.401	0.413
B	14.23	15.87	0.560	0.625
C	12.70	14.70	0.500	0.579
D	5.85	6.85	0.230	0.270
F		4.50		0.178
G	2.54	3.00	0.100	0.119
H	4.48	4.82	0.176	0.190
I	3.55	4.00	0.140	0.158
J	1.15	1.39	0.045	0.055
L	0.35	0.65	0.013	0.026
M	2.10	2.70	0.082	0.107
N	4.58	5.58	0.18	0.22
O	0.80	1.20	0.031	0.048
P	0.64	0.96	0.025	0.038

Cooling method : C
Marking : type number
Weight : 2.3g
Recommended torque value : 0.8 m.N.
Maximum torque value : 1 m.N.
Electrical isolation : 2500V_{RMS}
Capacitance : 7pF