SGS-THOMSON MICROELECTRONICS

BTW 48

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY

TO 48
(Metal)

DESCRIPTION

The BTW 48 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.
This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tc = 85 °C	50	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tc = 85 °C	32	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	520	A
		tp = 10 ms	500	
I^2t	I^2t value	tp = 10 ms	1250	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 600 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	BTW 48-					Unit
		200	400	600	800	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1200	V

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	0.7	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 60W (tp = 20 µs) I_{FGM} = 10A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	60	mA
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj= 125°C	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 200mA dI_G/dt = 1.5A/µs	Tj=25°C	TYP	2	µs
I_L	I_G= 1.2 I_{GT}	Tj=25°C	TYP	60	mA
I_H	I_T= 500mA gate open	Tj=25°C	TYP	30	mA
V_{TM}	ITM= 100A tp= 380µs	Tj=25°C	MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C	MAX	0.02	mA
		Tj= 125°C		6	
dV/dt	Linear slope up to V_D=67%V_{DRM} gate open	Tj= 125°C	MIN	200	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 100A V_R= 50V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs	Tj= 125°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

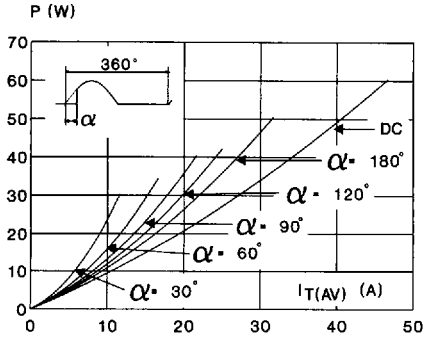


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

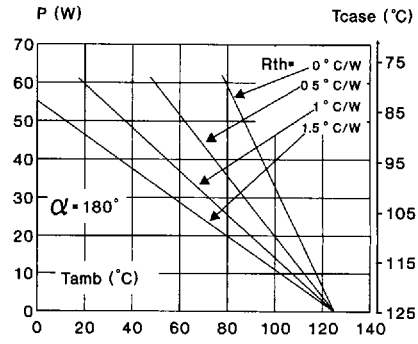


Fig.3 : Average on-state current versus case temperature.

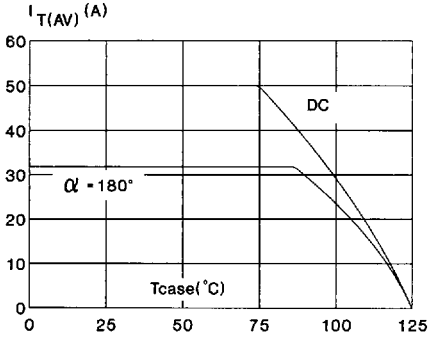


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

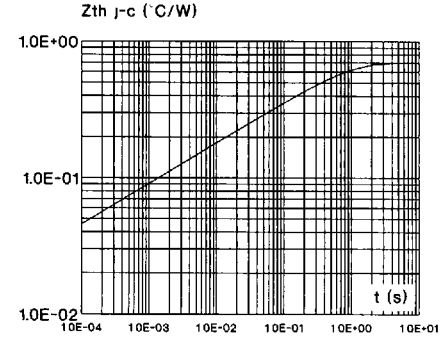


Fig.5 : Relative variation of gate trigger current versus junction temperature.

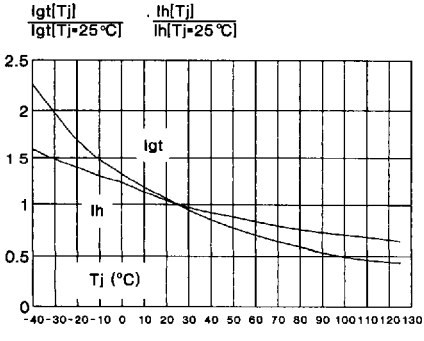


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

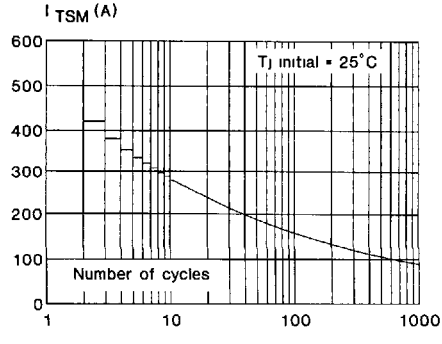


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

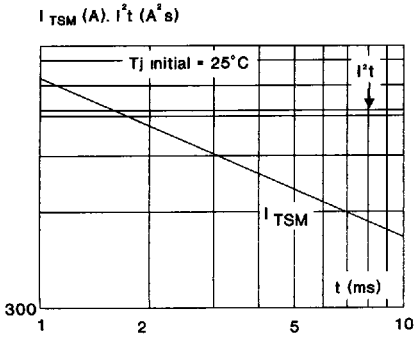
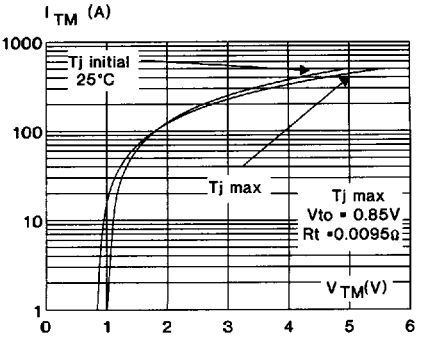
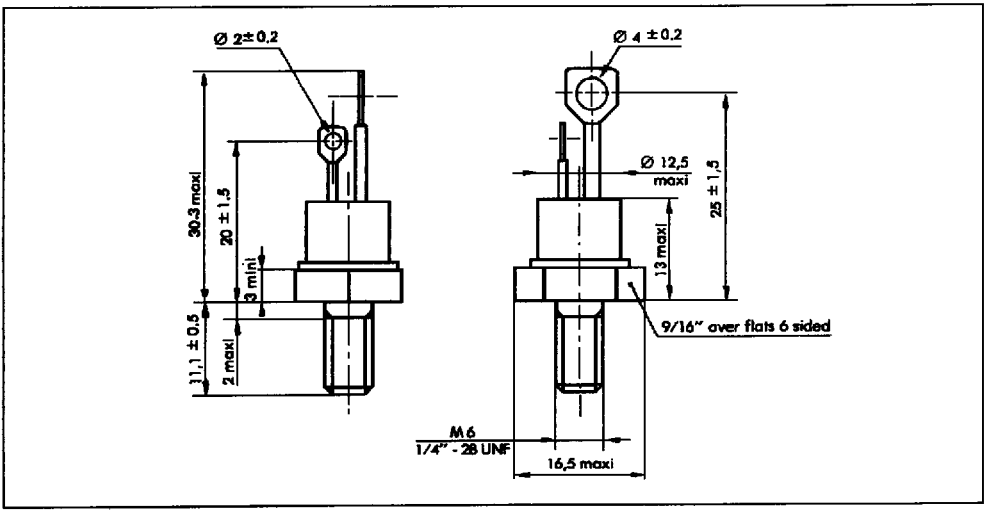


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A
Marking : type number
Weight : 13.5 g
Polarity : Anade (or A2) to case
Stud torque : 3.5 mΛN min / 3.8 mΛN max

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