

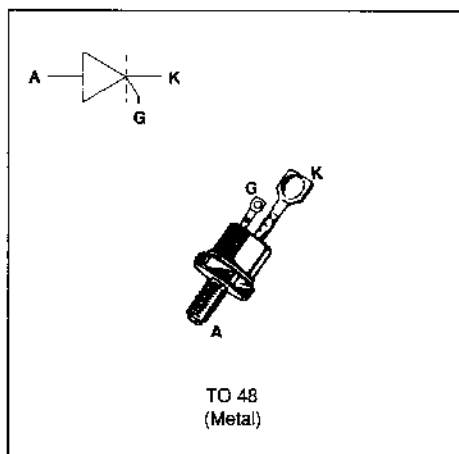
FEATURES

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

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)	$T_c = 85^\circ C$	50	A
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 85^\circ C$	32	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = $25^\circ C$)	$t_p = 8.3$ ms	520	A
		$t_p = 10$ ms	500	
I_{2t}	I_{2t} value	$t_p = 10$ ms	1250	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 600$ mA $di_G/dt = 1$ A/ μ s		100	A/ μ s
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ C$ $^\circ C$
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	$^\circ C$

Symbol	Parameter	BTW 48-					Unit
		200	400	600	800	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ C$	200	400	600	800	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th}(c-h)$	Contact (case to heatsink)	0.4	$^{\circ}\text{C/W}$
$R_{th}(j-c)$ DC	Junction to case for DC	0.7	$^{\circ}\text{C/W}$

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 60W (t_p = 20 μs) I_{FGM} = 10A (t_p = 20 μs) V_{FGM} = 16V (t_p = 20 μs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	$V_D=12\text{V}$ (DC) $R_L=33\Omega$	$T_J=25^{\circ}\text{C}$	MAX	60	mA
V_{GT}	$V_D=12\text{V}$ (DC) $R_L=33\Omega$	$T_J=25^{\circ}\text{C}$	MAX	1.5	V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_J=125^{\circ}\text{C}$	MIN	0.2	V
t_{gt}	$V_D=V_{DRM}$ $I_G=200\text{mA}$ $di_G/dt=1.5\text{A}/\mu\text{s}$	$T_J=25^{\circ}\text{C}$	TYP	2	μs
I_L	$I_G=1.2 I_{GT}$	$T_J=25^{\circ}\text{C}$	TYP	60	mA
I_H	$I_T=500\text{mA}$ gate open	$T_J=25^{\circ}\text{C}$	TYP	30	mA
V_{TM}	$I_{TM}=100\text{A}$ $t_p=380\mu\text{s}$	$T_J=25^{\circ}\text{C}$	MAX	1.8	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	$T_J=25^{\circ}\text{C}$ $T_J=125^{\circ}\text{C}$	MAX	0.02 6	mA
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_J=125^{\circ}\text{C}$	MIN	200	$\text{V}/\mu\text{s}$
T_q	$V_D=67\%V_{DRM}$ $I_{TM}=100\text{A}$ $V_R=50\text{V}$ $dI_{TM}/dt=30\text{A}/\mu\text{s}$ $dV_D/dt=20\text{V}/\mu\text{s}$	$T_J=125^{\circ}\text{C}$	TYP	100	μs

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

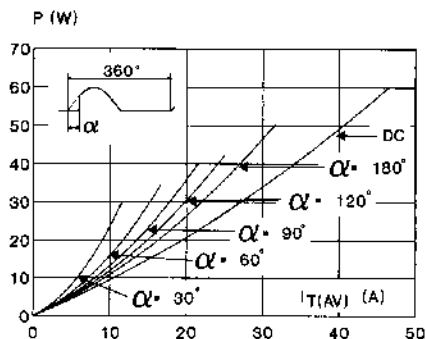


Fig.3 : Average on-state current versus case temperature.

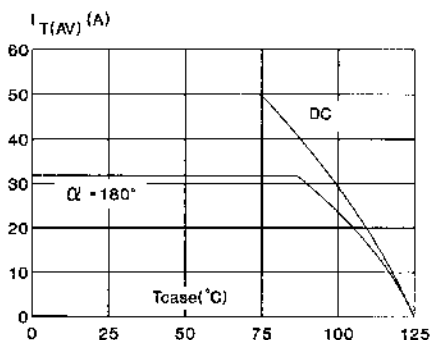


Fig.5 : Relative variation of gate trigger current versus junction temperature.

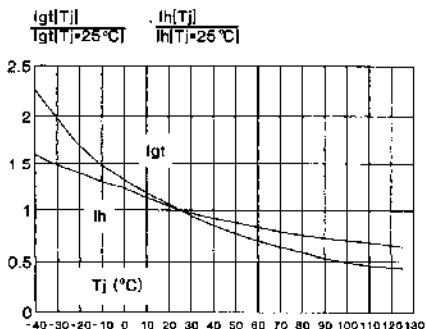


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

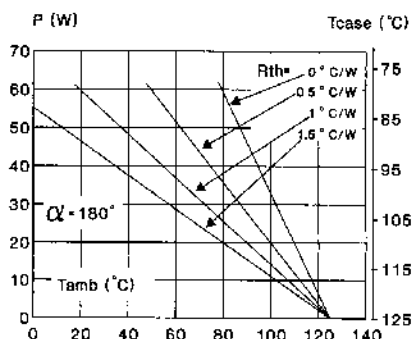


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

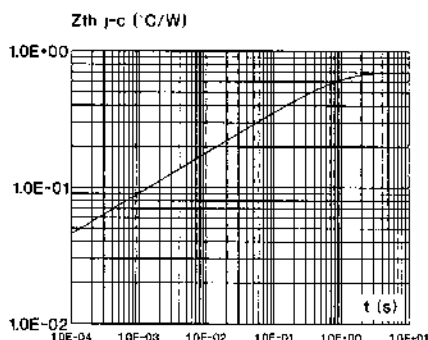


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

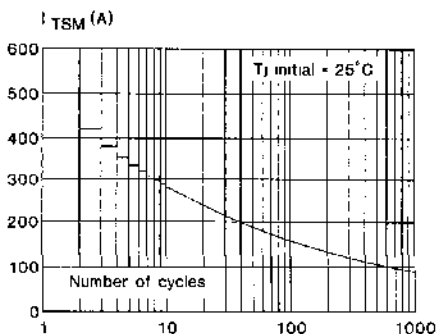


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

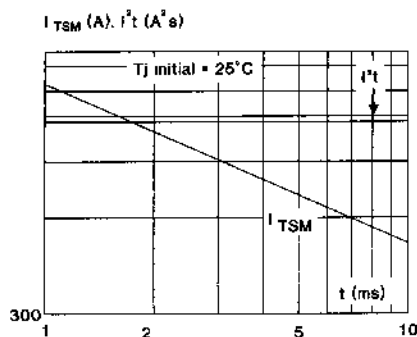
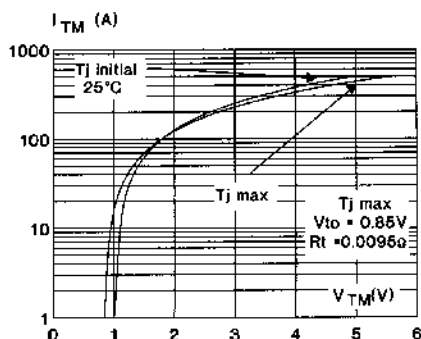
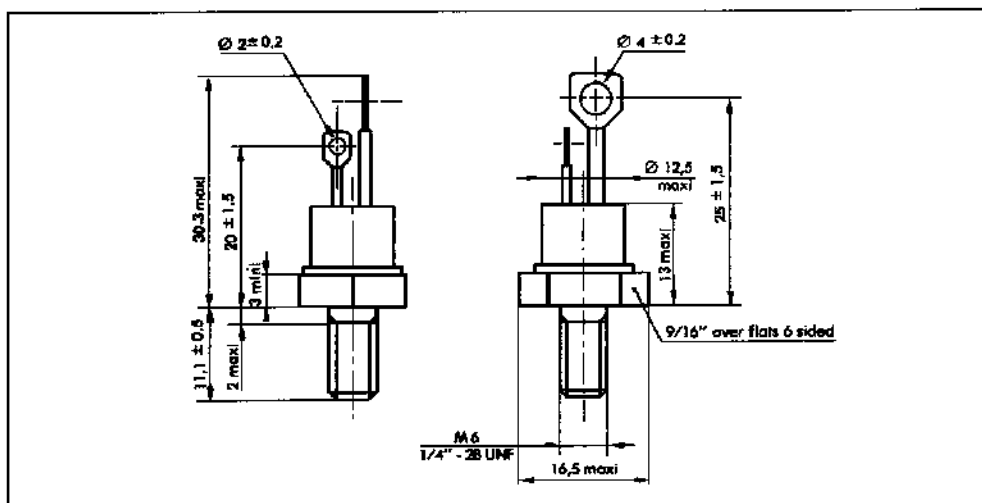


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A

Marking : type number

Weight : 13.5 g

Polarity : Anode (or A2) to case

Stud torque : 3.5 mAN min / 3.8 mAN max