

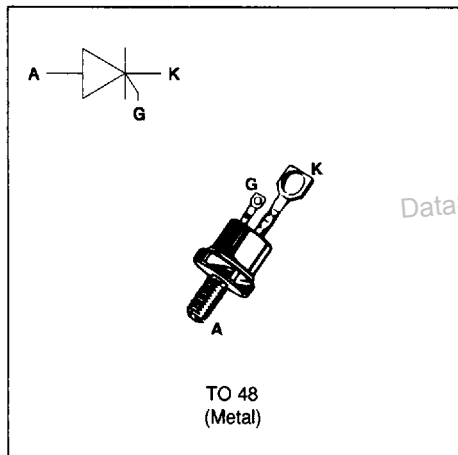
FEATURES

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

DESCRIPTION

The BTW 39 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)	$T_c = 75^\circ\text{C}$	25	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 75^\circ\text{C}$	16	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3\text{ ms}$	210	A
		$t_p = 10\text{ ms}$	200	
i_2t	i_2t value	$t_p = 10\text{ ms}$	200	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 800\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$		100	$\text{A}/\mu\text{s}$
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	$^\circ\text{C}$ $^\circ\text{C}$
T_I	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	$^\circ\text{C}$

Symbol	Parameter	BTW 39-							Unit
		100	200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	100	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (c-h)	Contact (case to heatsink)	0.4	°C/W
R _{th} (j-c) DC	Junction to case for DC	1.5	°C/W

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 40W (t_p = 20 μs) I_{FGM} = 8A (t_p = 20 μs) V_{FGM} = 16V (t_p = 20 μs) V_{RGM} = 5V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Value	Unit
I _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C MAX	80	mA
V _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C MAX	1.5	V
V _{GD}	V _D =V _{DRM} R _L =3.3kΩ	T _j = 125°C MIN	0.2	V
t _{gt}	V _D =V _{DRM} I _G = 200mA dI _G /dt = 1.5A/μs	T _j =25°C TYP	2	μs
I _L	I _G = 1.2 I _{GT}	T _j =25°C TYP	80	mA
I _H	I _T = 500mA gate open	T _j =25°C TYP	50	mA
V _{TM}	I _{TM} = 50A t _p = 380μs	T _j =25°C MAX	2.2	V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _j =25°C MAX T _j = 125°C	0.02 5	mA
dV/dt	Linear slope up to V _D =67%V _{DRM} gate open	T _j = 125°C MIN	200	V/μs
T _q	V _D =67%V _{DRM} I _{TM} = 50A V _R = 50V dI _{TM} /dt=30 A/μs dV _D /dt= 20V/μs	T _j = 125°C TYP	100	μs

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

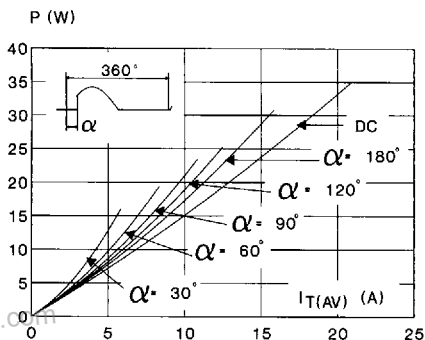


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact.

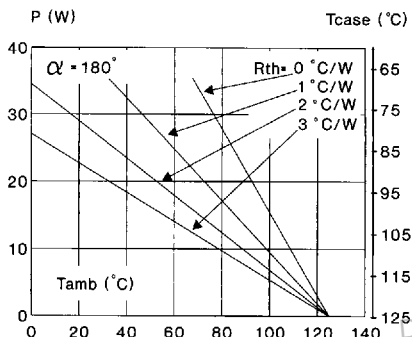


Fig.3 : Average on-state current versus case temperature.

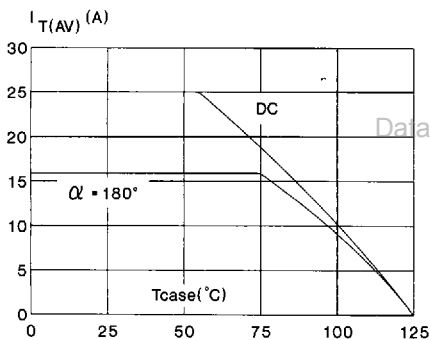


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

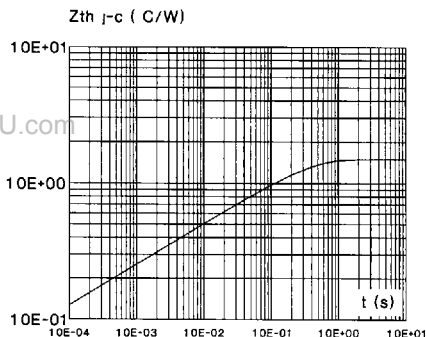


Fig.5 : Relative variation of gate trigger current versus junction temperature.

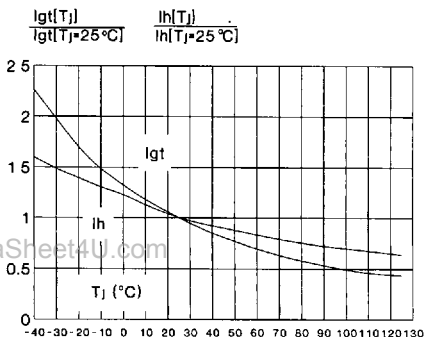
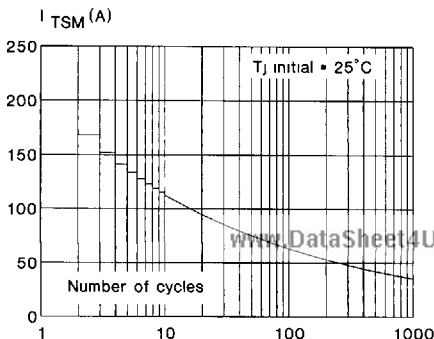


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



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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 .

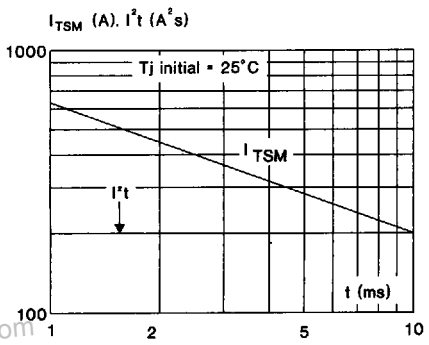
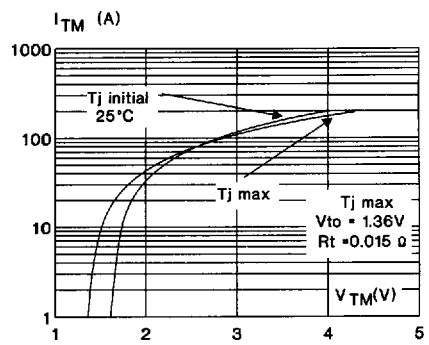
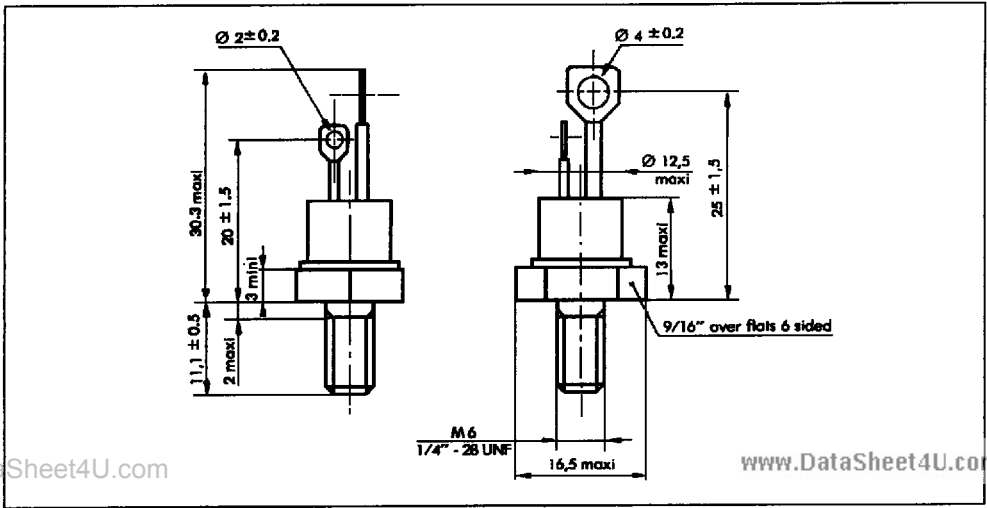


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



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