

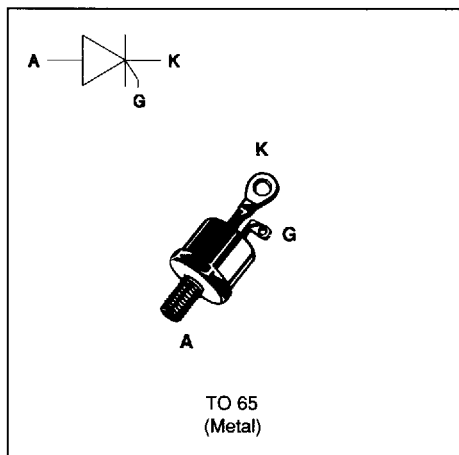
FEATURES

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

DESCRIPTION

The BTW 50 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
$I_T(\text{RMS})$	RMS on-state current (180° conduction angle)	$T_c = 100\text{ }^\circ\text{C}$	63	A
$I_T(\text{AV})$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 100\text{ }^\circ\text{C}$	40	A
I_{TSM}	Non repetitive surge peak on-state current (T_J initial = $25\text{ }^\circ\text{C}$)	$t_p = 8.3\text{ ms}$	950	A
		$t_p = 10\text{ ms}$	910	
I_2t	I_2t value	$t_p = 10\text{ ms}$	4150	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 1\text{ A}$ $di_G/dt = 1\text{ A}/\mu\text{s}$		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_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	$^\circ\text{C}$

Symbol	Parameter	BTW 50-						Unit
		200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_J = 125\text{ }^\circ\text{C}$	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case to heatsink)	0.3	°C/W
Rth (j-c) DC	Junction to case for DC	0.4	°C/W

GATE CHARACTERISTICS (maximum values)

PG (AV) = 2W PGM = 80W (tp = 20 μs) IFGM = 10A (tp = 20 μs) VFGM = 16V (tp = 20 μs) VRGM = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
IGT	VD=12V (DC) RL=33Ω	TJ=25°C	MAX	150	mA
VGT	VD=12V (DC) RL=33Ω	TJ=25°C	MAX	1.5	V
VGD	VD=VDRM RL=3.3kΩ	TJ= 125°C	MIN	0.2	V
tgt	VD=VDRM IG = 500mA dIG/dt = 3A/μs	TJ=25°C	TYP	2	μs
IL	IG= 1.2 IGT	TJ=25°C	TYP	100	mA
IH	IT= 500mA gate open	TJ=25°C	TYP	50	mA
VTM	ITM= 500A tp= 380μs	TJ=25°C	MAX	3	V
IDRM IRRM	VDRM Rated VRRM Rated	TJ=25°C	MAX	0.02	mA
		TJ= 125°C		12	
dV/dt	Linear slope up to VD=67%VDRM gate open	TJ= 125°C	MIN	200	V/μs
Tq	VD=67%VDRM ITM= 500A VR= 50V dITM/dt=30 A/μs dVD/dt= 20V/μs	TJ= 125°C	TYP	100	μs

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

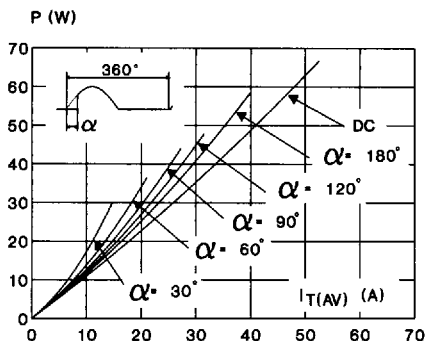


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

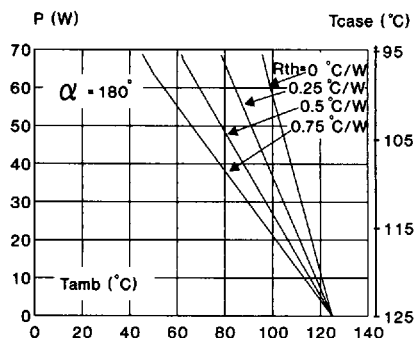


Fig.3 : Average on-state current versus case temperature.

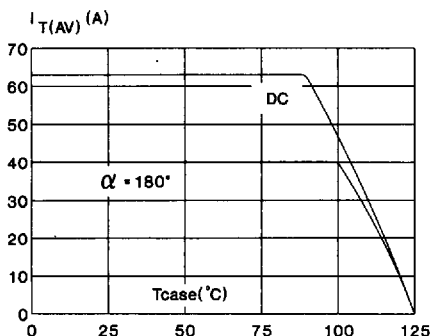


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

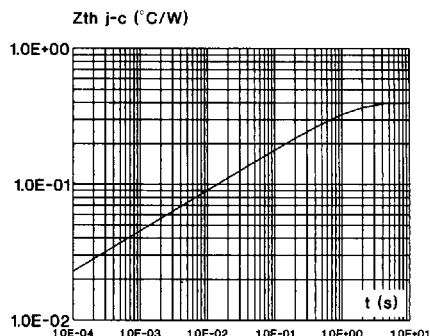


Fig.5 : Relative variation of gate trigger current versus junction temperature.

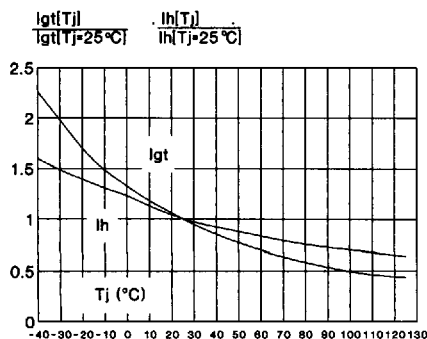


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

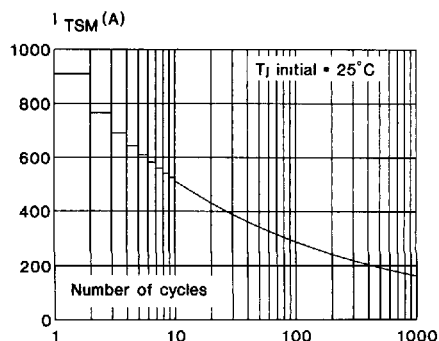


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

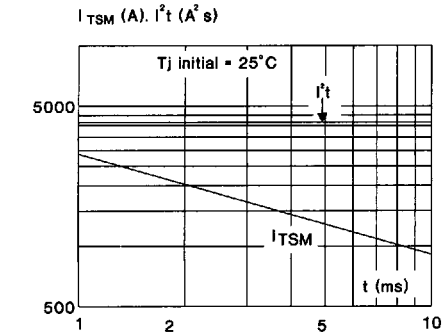
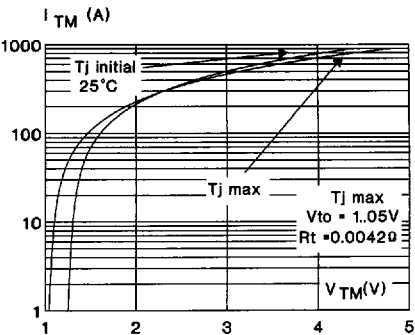
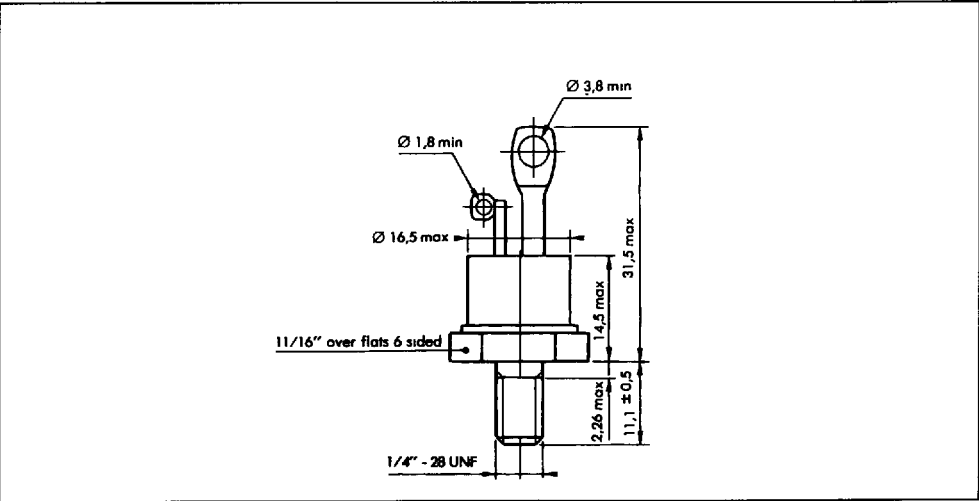


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)
TO 65 Metal



Cooling method : C
Marking : type number
Weight : 19 g
Polarity : Anade (or A2) to case
Stud torque : 3.5 mAN min / 3.8 mAN max