

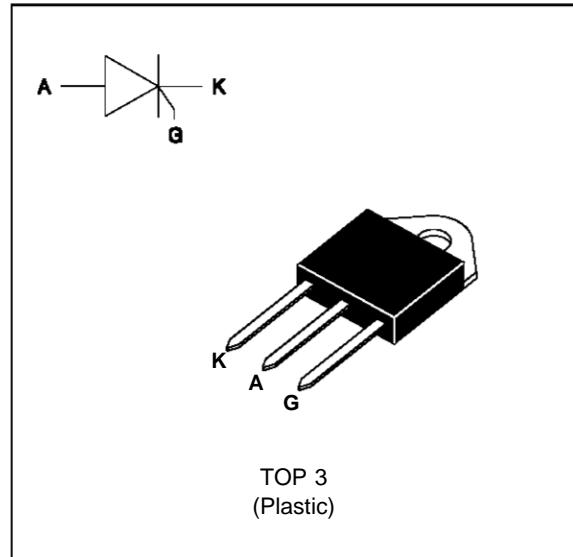
**FEATURES**

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- BTW 69 Serie :  
INSULATED VOLTAGE = 2500V(RMS)  
(UL RECOGNIZED : E81734)

**DESCRIPTION**

The BTW 69 (N) 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 <sub>T</sub> (RMS)	RMS on-state current (180° conduction angle)	BTW 69	T <sub>c</sub> =70°C	50	A
		BTW 69 N	T <sub>c</sub> =75°C	55	
I <sub>T</sub> (AV)	Average on-state current (180° conduction angle, single phase circuit)	BTW 69	T <sub>c</sub> =70°C	32	A
		BTW 69 N	T <sub>c</sub> =75°C	35	
I <sub>TSM</sub>	Non repetitive surge peak on-state current ( T <sub>j</sub> initial = 25°C )		tp=8.3 ms	525	A
			tp=10 ms	500	
I <sub>2t</sub>	I <sub>2t</sub> value	tp=10 ms	1250	A <sup>2</sup> s	
dI/dt	Critical rate of rise of on-state current Gate supply : I <sub>G</sub> = 100 mA dI <sub>G</sub> /dt = 1 A/μs		100	A/μs	
T <sub>stg</sub> T <sub>j</sub>	Storage and operating junction temperature range	- 40 to + 150	- 40 to + 125	°C °C	
T <sub>I</sub>	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	230		°C	

Symbol	Parameter	BTW 69		BTW 69 / BTW 69 N				Unit
		200	400	600	800	1000	1200	
V <sub>DRM</sub> V <sub>RRM</sub>	Repetitive peak off-state voltage T <sub>j</sub> = 125 °C	200	400	600	800	1000	1200	V

## THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R <sub>th</sub> (j-a)	Junction to ambient		50	°C/W
R <sub>th</sub> (j-c) DC	Junction to case for DC	BTW 69	0.9	°C/W
		BTW 69 N	0.8	

## GATE CHARACTERISTICS (maximum values)

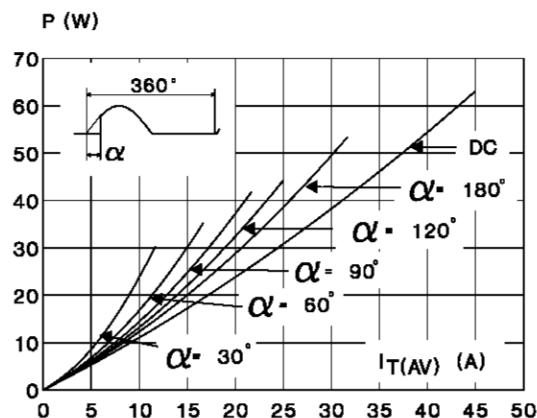
P<sub>G</sub> (AV) = 1W P<sub>GM</sub> = 40W (tp = 20 μs) I<sub>FGM</sub> = 8A (tp = 20 μs) V<sub>RGM</sub> = 5 V.

## ELECTRICAL CHARACTERISTICS

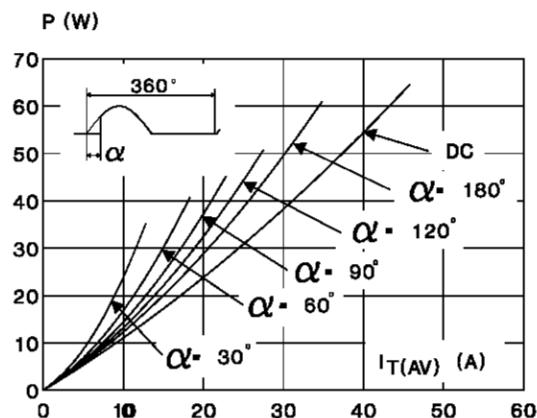
Symbol	Test Conditions	Value		Unit
		BTW 69	BTW 69 N	
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> =25°C	MAX	80 mA
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> =25°C	MAX	1.5 V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>j</sub> = 125°C	MIN	0.2 V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 200mA dI <sub>G</sub> /dt = 1.5A/μs	T <sub>j</sub> =25°C	TYP	2 μs
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	T <sub>j</sub> =25°C	TYP	50 mA
I <sub>H</sub>	I <sub>T</sub> = 500mA gate open	T <sub>j</sub> =25°C	MAX	150 mA
V <sub>TM</sub>	BTW 69 ITM= 100A BTW 69 N ITM= 110A tp= 380μs	T <sub>j</sub> =25°C	MAX	1.9 2.0 V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> Rated V <sub>RRM</sub> Rated	T <sub>j</sub> =25°C	MAX	0.02 mA
		T <sub>j</sub> = 125°C		
dV/dt	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	V <sub>DRM</sub> ≤ 800V V <sub>DRM</sub> ≥ 1000V	T <sub>j</sub> = 125°C	MIN 500 250 V/μs
t <sub>q</sub>	V <sub>D</sub> =67%V <sub>DRM</sub> I <sub>TM</sub> = 110A V <sub>R</sub> = 75V dI <sub>TM</sub> /dt=30 A/μs dV <sub>D</sub> /dt= 20V/μs	T <sub>j</sub> = 125°C	TYP	100 μs

Package	$I_T(\text{RMS})$	$V_{\text{DRM}} / V_{\text{RRM}}$	Sensitivity Specification
	A	V	BTW
BTW 69 (Insulated)	50	200	X
		400	X
		600	X
		800	X
		1000	X
		1200	X
BTW 69 N (Uninsulated)	55	600	X
		800	X
		1000	X
		1200	X

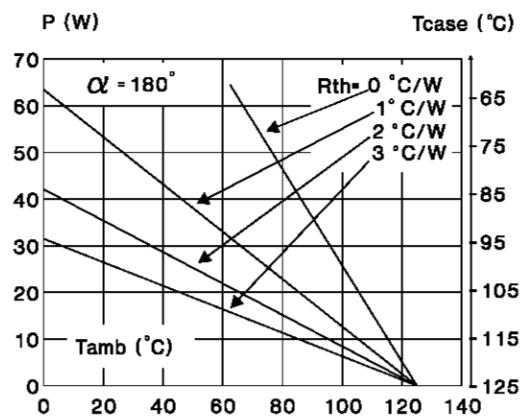
**Fig.1** : Maximum average power dissipation versus average on-state current (BTW 69).



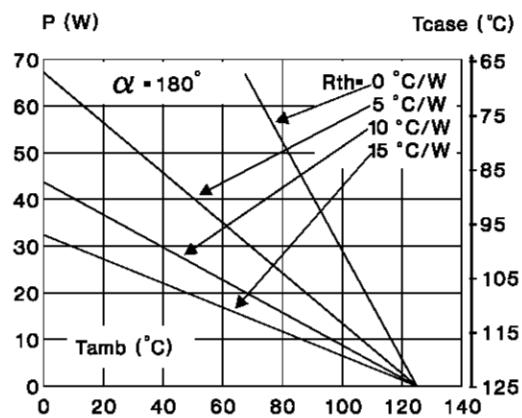
**Fig.3** : Maximum average power dissipation versus average on-state current (BTW 69 N).



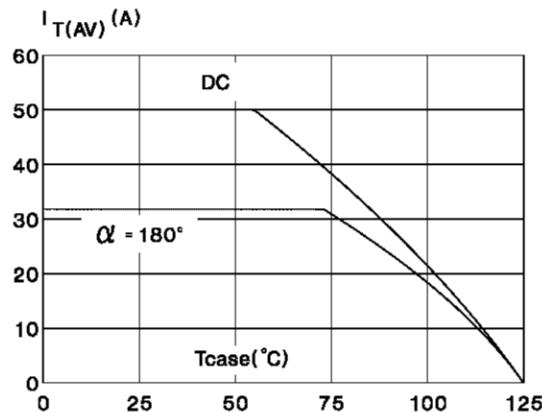
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTW 69).



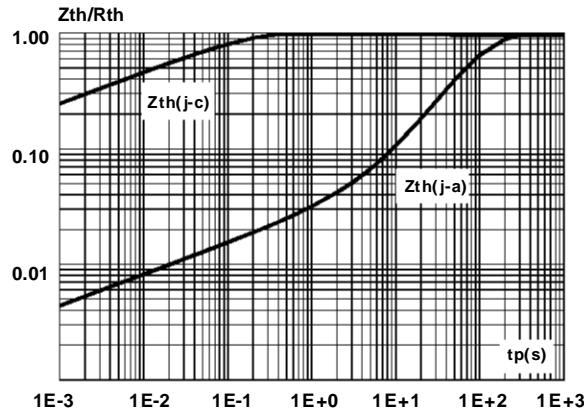
**Fig.4** : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTW 69 N).



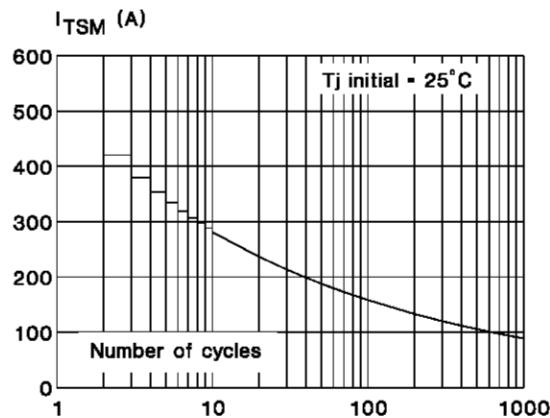
**Fig.5** : Average on-state current versus case temperature (BTW 69).



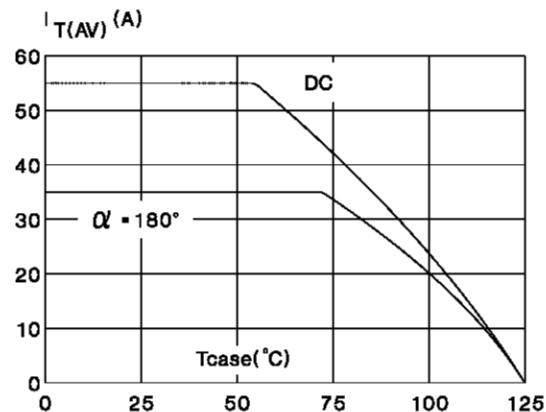
**Fig.7** : Relative variation of thermal impedance versus pulse duration.



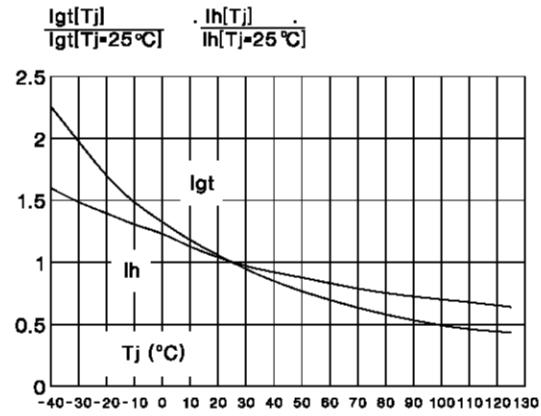
**Fig.9** : Non repetitive surge peak on-state current versus number of cycles.



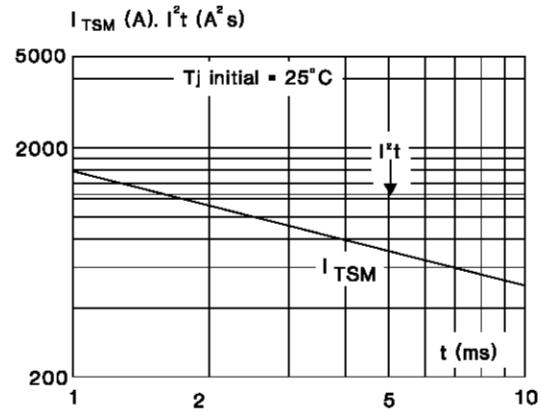
**Fig.6** : Average on-state current versus case temperature (BTW 69 N).



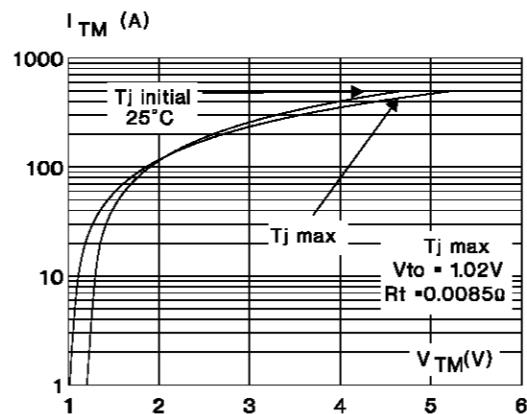
**Fig.8** : Relative variation of gate trigger current versus junction temperature.



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



**Fig11 : On-state characteristics (maximum values).**



## PACKAGE MECHANICAL DATA

TOP 3 Plastic

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	15.10	15.50	0.594	0.611
B	20.70	21.10	0.814	0.831
C	14.30	15.60	0.561	0.615
D	16.10	16.50	0.632	0.650
G	3.40	-	0.133	-
H	4.40	4.60	0.173	0.182
I	4.08	4.17	0.161	0.164
J	1.45	1.55	0.057	0.062
L	0.50	0.70	0.019	0.028
M	2.70	2.90	0.106	0.115
N	5.40	5.65	0.212	0.223
P	1.20	1.40	0.047	0.056

Cooling method : C  
Marking : type number  
Weight : 4.7 g

Recommended torque value : 0.8 m.N.  
Maximum torque value : 1 m.N.