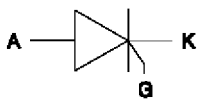
SGS-THOMSON MICROELECTRONICS

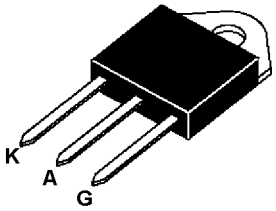
BTW 69 (N)

SCR

FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- BTW69 Serie :
  INSULATED VOLTAGE = 2500V(RMS)
  (UL RECOGNIZED : E81734)





TOP 3
(Plastic)

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
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	BTW 69 BTW 69 N	Tc=70°C Tc=75°C	50 55	A
$I_{T(AV)}$	Average on-state current (180° conduction angle,single phase circuit)	BTW 69 BTW 69 N	Tc=70°C Tc=75°C	32 35	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)		tp=8.3 ms	525	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 = 100 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 69		BTW 69 / BTW 69 N				Unit
		200	400	600	800	1000	1200	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	800	1000	1200	V

THERMAL RESISTANCES

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

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{FGM} = 8A (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value		Unit
					BTW 69	BTW 69 N	
I_{GT}	V_D=12V (DC) R_L=33Ω		Tj=25°C	MAX	80		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	50		mA
I_H	I_T= 500mA gate open		Tj=25°C	MAX	150		mA
V_{TM}	BTW 69 ITM= 100A BTW 69 N I_{TM}= 110A tp= 380µs		Tj=25°C	MAX	1.9	2.0	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	V_{DRM}≤ 800V V_{DRM} ≥ 1000V	Tj= 125°C	MIN	500 250		V/µs
tq	V_D=67%V_{DRM} I_{TM}= 110A V_R= 75V dI_{TM}/dt=30 A/µs dV_D/dt= 20V/µs		Tj= 125°C	TYP	100		µs

Package	$I_{T(RMS)}$	V_{DRM} / V_{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).

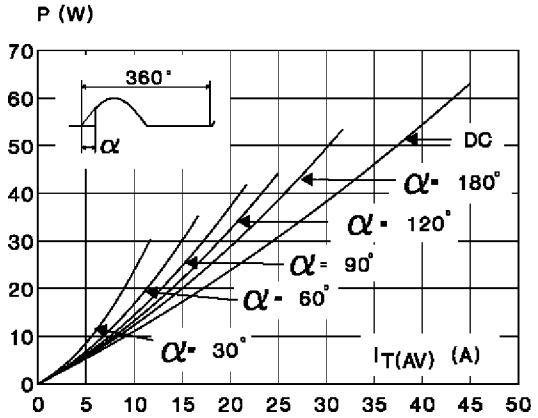


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69).

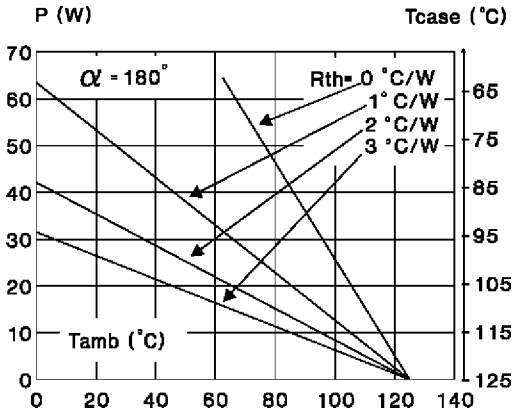


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 69 N).

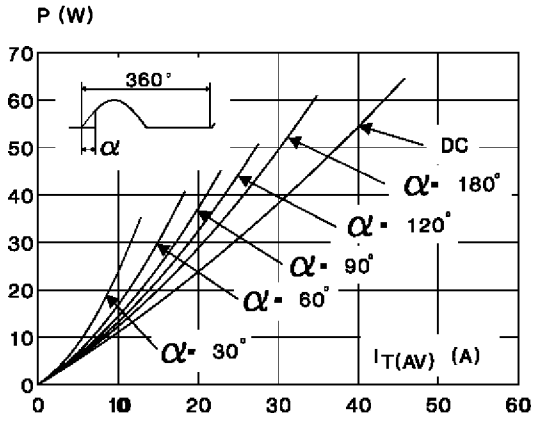


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69 N).

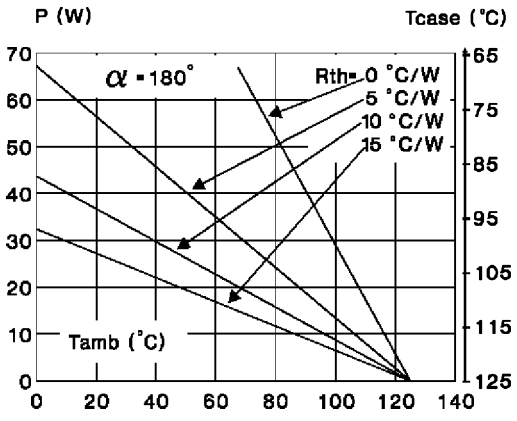


Fig.5 : Average on-state current versus case temperature (BTW 69).

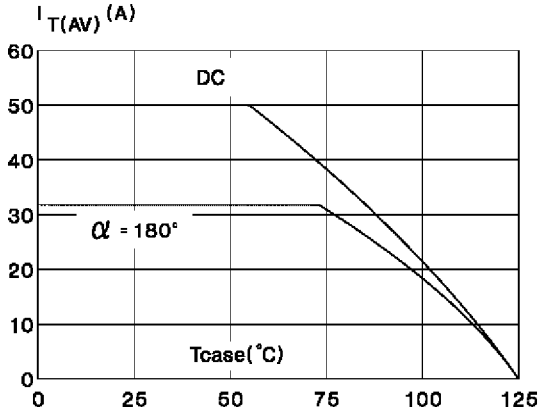


Fig.6 : Average on-state current versus case temperature (BTW 69 N).

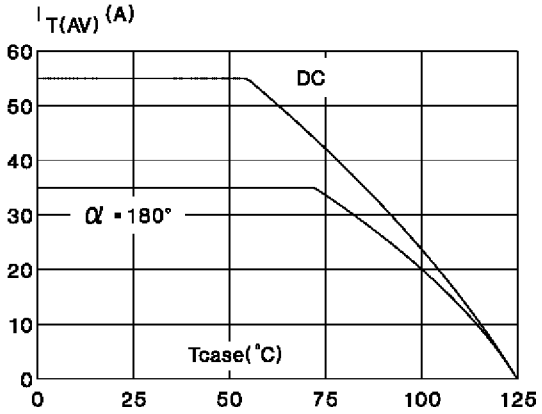


Fig.7 : Relative variation of thermal impedance versus pulse duration.

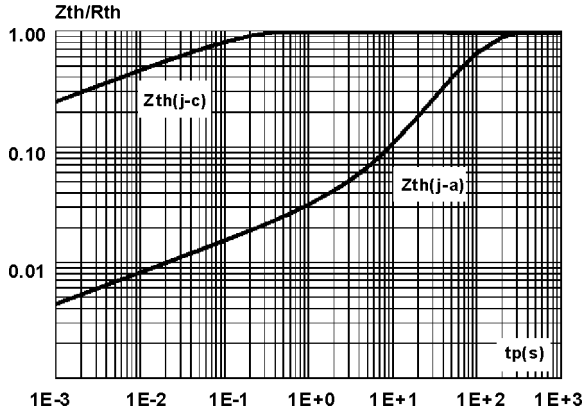


Fig.8 : Relative variation of gate trigger current versus junction temperature.

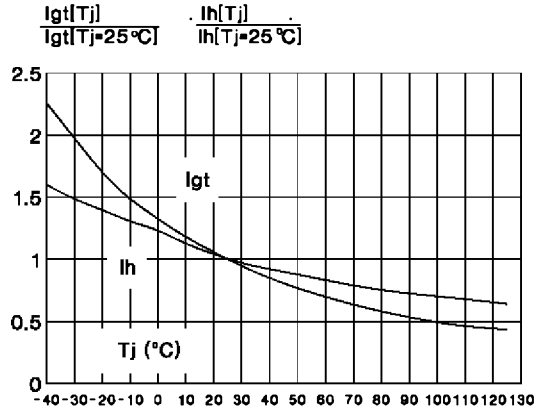


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

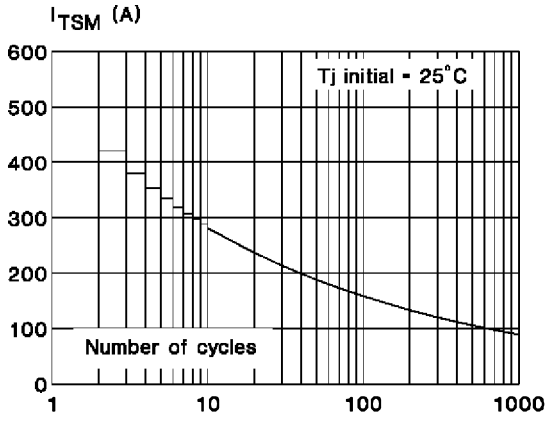


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t.

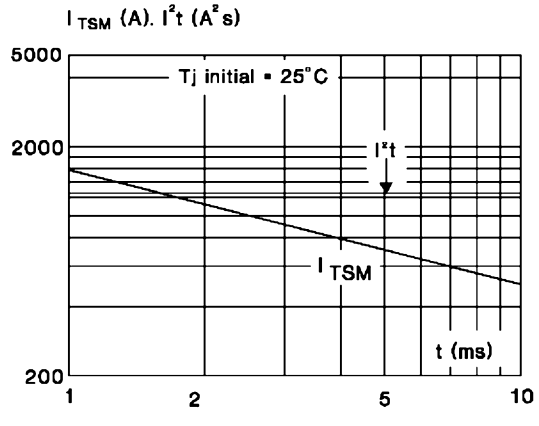
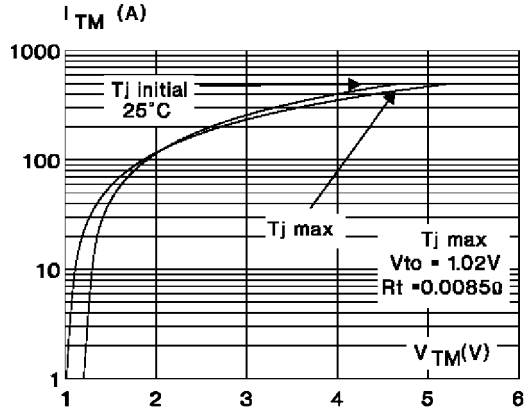
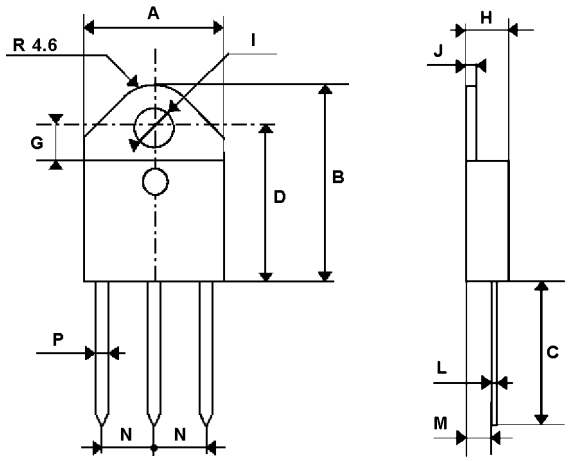


Fig11 : On-state characteristics (maximum values).



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.