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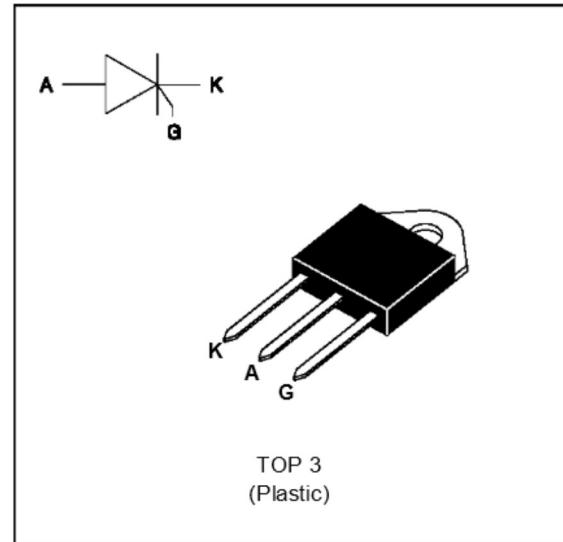
FEATURES

- 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 _{T(RMS)}	RMS on-state current (180° conduction angle)	BTW 69	BTW 69 N	T _c =70°C T _c =75°C	50 55	A
I _{T(AV)}	Average on-state current (180° conduction angle, single phase circuit)	BTW 69	BTW 69 N	T _c =70°C T _c =75°C	32 35	A
I _{TSM}	Non repetitive surge peak on-state current (T _j initial = 25°C)			tp=8.3 ms	525	A
				tp=10 ms	500	
I _{2t}	I _{2t} value	tp=10 ms		1250		A ² s
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
T _{stg} T _j	Storage and operating junction temperature range				- 40 to + 150 - 40 to + 125	°C °C
T _I	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 T _j = 125 °C	200	400	600	800	1000	1200	V

BTW 69 (N)

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (j-a)	Junction to ambient	50	°C/W
R _{th} (j-c) DC	Junction to case for DC	BTW 69	0.9
		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	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	50 mA
I _H	I _T = 500mA gate open	T _j =25°C	MAX	150 mA
V _{TM}	BTW 69 I _{TM} = 100A BTW 69 N I _{TM} = 110A tp= 380µs	T _j =25°C	MAX	1.9 2.0 V
I _{DRM} I _{RRM}	V _{DRM} Rated V _{RRM} Rated	T _j =25°C	MAX	0.02 mA
		T _j = 125°C		6
dV/dt	Linear slope up to V _D =67%V _{DRM} gate open	V _{DRM} ≤ 800V V _{DRM} ≥ 1000V	T _j = 125°C	500 250 V/µs
t _q	V _D =67%V _{DRM} I _{TM} = 110A V _R = 75V dI _{TM} /dt=30 A/µs dV _D /dt= 20V/µs	T _j = 125°C	TYP	100 µs

Package	$I_T(\text{RMS})$	$V_{\text{DRM}} / V_{\text{RRM}}$	Sensitivity Specification
		A	V
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).

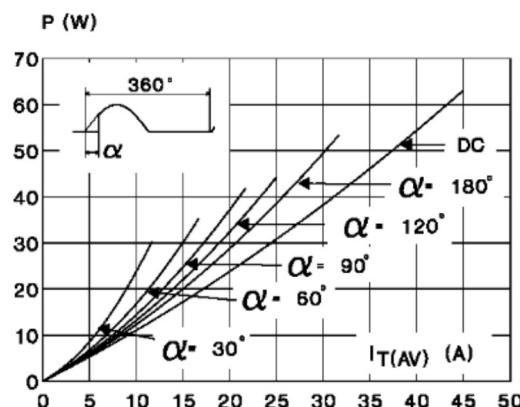


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 69 N).

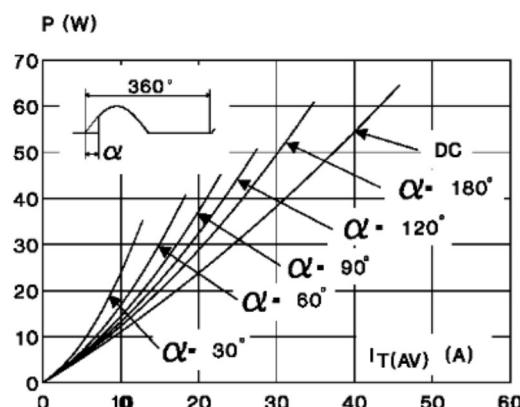


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69).

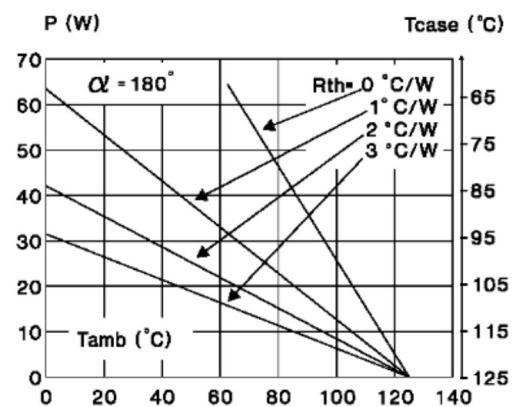
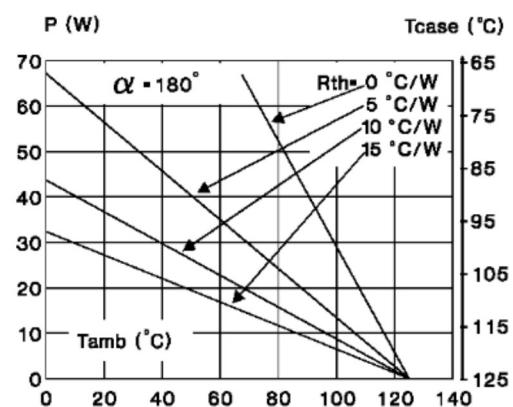


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69 N).



BTW 69 (N)

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

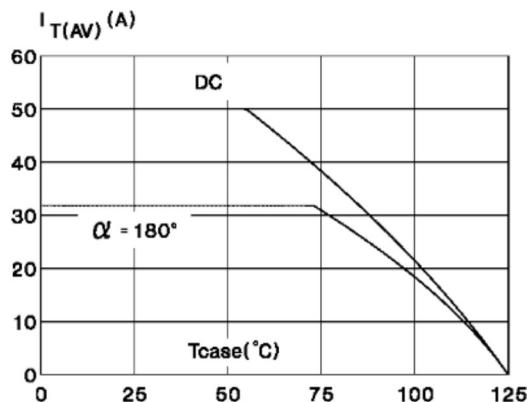


Fig.7 : Relative variation of thermal impedance versus pulse duration.

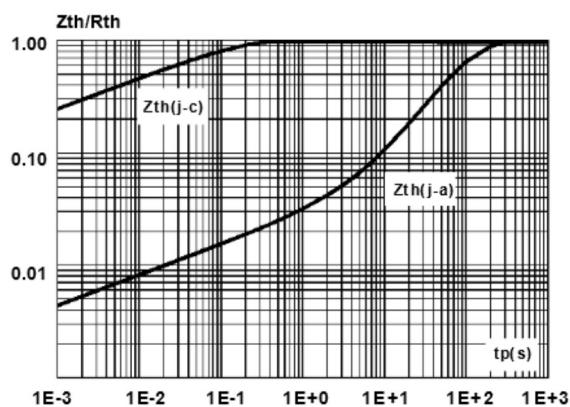


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

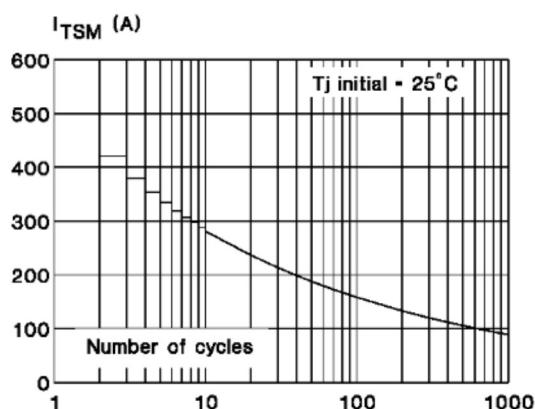


Fig.6 : Average on-state current versus case temperature (BTW 69 N).

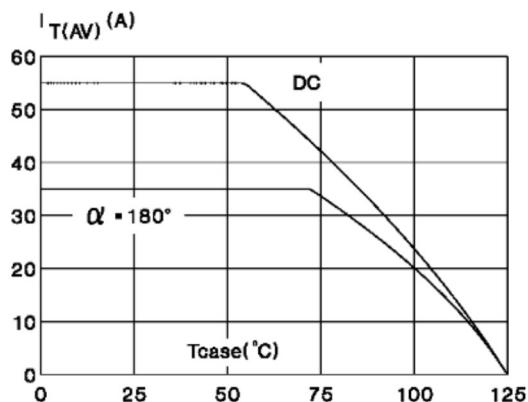


Fig.8 : Relative variation of gate trigger current versus junction temperature.

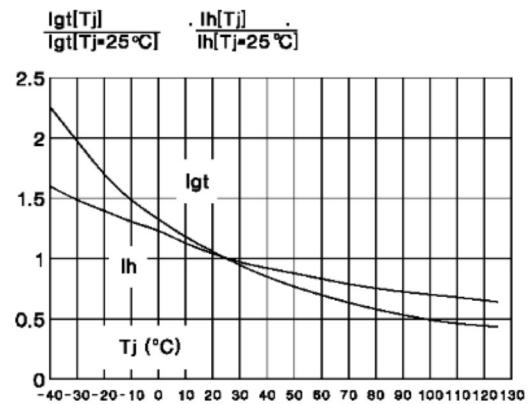


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

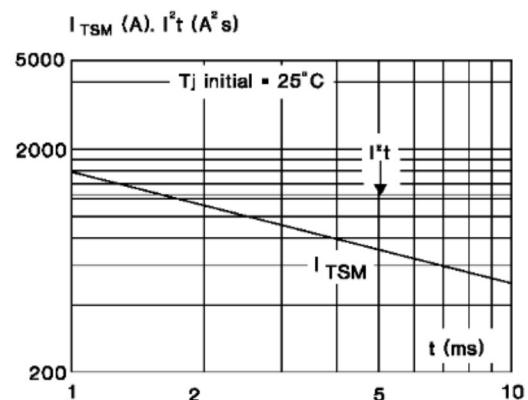
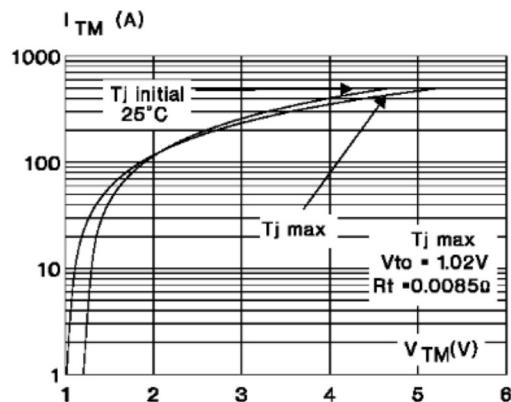


Fig11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TOP 3 Plastic

Detailed description: The mechanical drawing includes two views of the package. The top view shows the front and back sides with dimensions A (width), B (depth), C (height), D (depth), G (lead thickness), H (height), I (lead pitch), J (lead thickness), L (lead length), M (lead pitch), and P (lead thickness). The side view shows the height H, lead thickness J, lead length L, and lead pitch M. Lead labels N are indicated at the bottom.

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.

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