

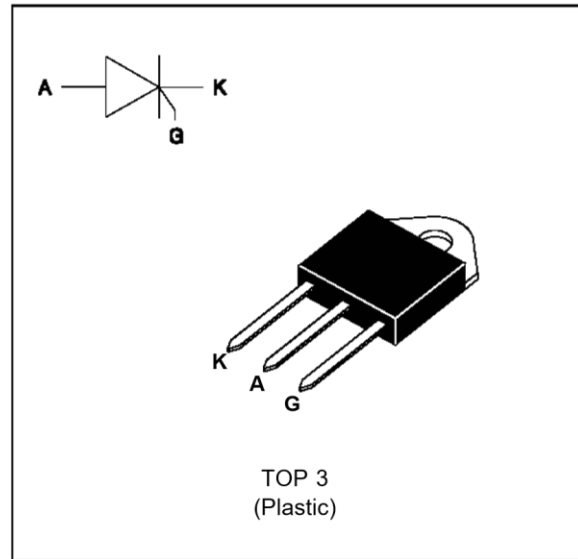
### FEATURES

- 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	$T_c=70^\circ C$ 50 $T_c=75^\circ C$ 55	A	
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	BTW 69 BTW 69 N	$T_c=70^\circ C$ 32 $T_c=75^\circ C$ 35	A	
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C )		$t_p=8.3$ ms	525	A
			$t_p=10$ ms	500	
$I^2t$	$I^2t$ value		$t_p=10$ ms	1250	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 100$ mA $di_G/dt = 1$ A/ $\mu$ s			100	A/ $\mu$ s
$T_{stg}$ $T_j$	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	$^\circ C$ $^\circ C$
$T_l$	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			230	$^\circ C$

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 $T_j = 125^\circ C$	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)**
 $P_G (AV) = 1W$     $P_{GM} = 40W$  ( $t_p = 20 \mu s$ )    $I_{FGM} = 8A$  ( $t_p = 20 \mu s$ )    $V_{RGM} = 5V$ .

**ELECTRICAL CHARACTERISTICS**

Symbol	Test Conditions			Value		Unit	
				BTW 69	BTW 69 N		
$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	MAX	80		mA	
$V_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	MAX	1.5		V	
$V_{GD}$	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_j=125^\circ C$	MIN	0.2		V	
tgt	$V_D=V_{DRM}$ $I_G = 200mA$ $di_G/dt = 1.5A/\mu s$	$T_j=25^\circ C$	TYP	2		$\mu s$	
$I_L$	$I_G = 1.2 I_{GT}$	$T_j=25^\circ C$	TYP	50		mA	
$I_H$	$I_T = 500mA$ gate open	$T_j=25^\circ C$	MAX	150		mA	
$V_{TM}$	BTW 69 $I_{TM} = 100A$ BTW 69 N $I_{TM} = 110A$ $t_p = 380\mu s$	$T_j=25^\circ C$	MAX	1.9	2.0	V	
$I_{DRM}$ $I_{RRM}$	$V_{DRM}$ Rated $V_{RRM}$ Rated	$T_j=25^\circ C$	MAX	0.02		mA	
		$T_j=125^\circ C$		6			
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$V_{DRM} \leq 800V$ $V_{DRM} \geq 1000V$	$T_j=125^\circ C$	MIN	500 250	V/ $\mu s$	
tq	$V_D=67\%V_{DRM}$ $di_{TM}/dt=30 A/\mu s$	$I_{TM} = 110A$ $V_R = 75V$ $dV_D/dt = 20V/\mu s$	$T_j=125^\circ C$	TYP	100		$\mu s$

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).

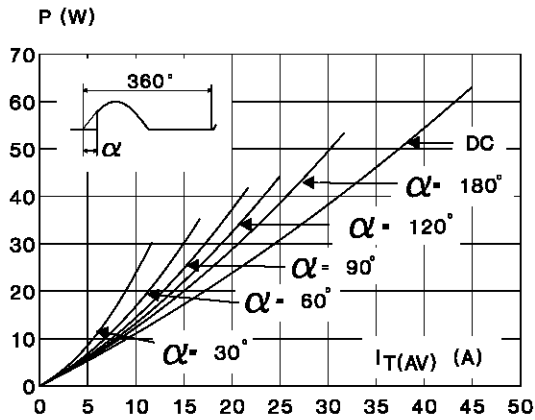


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 69 N).

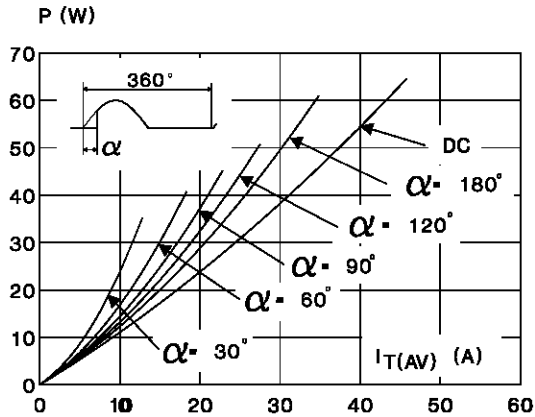


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact (BTW 69).

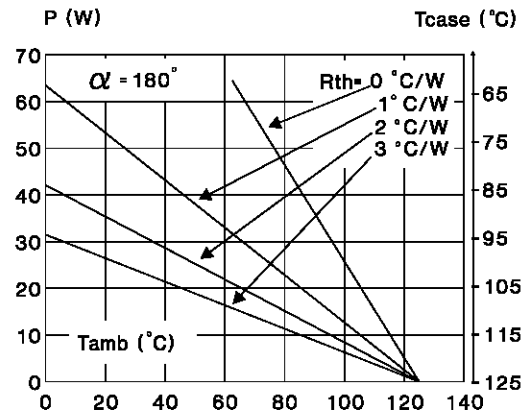
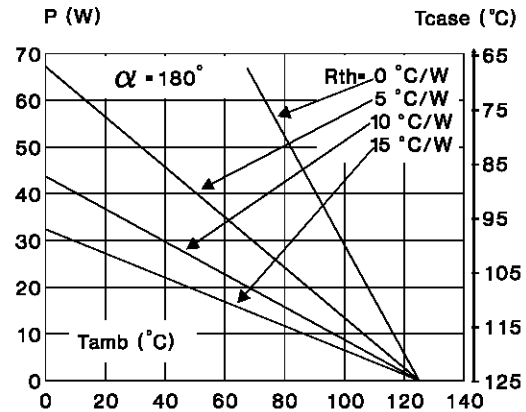
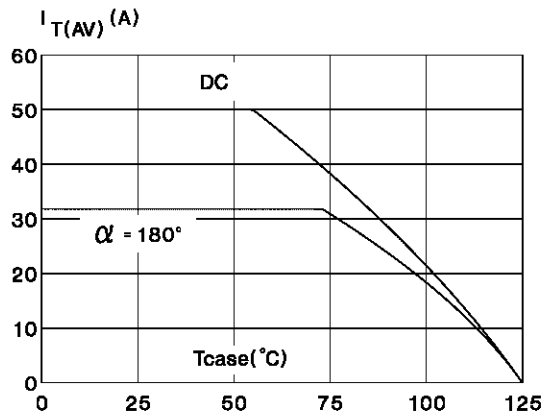


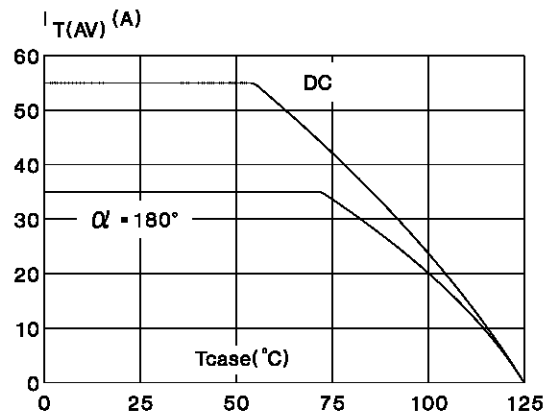
Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact (BTW 69 N).



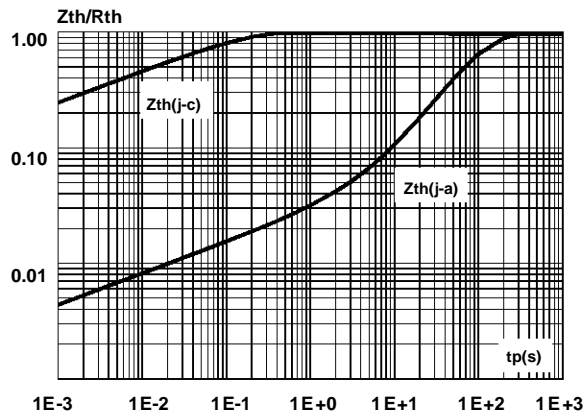
**Fig.5 :** Average on-state current versus case temperature (BTW 69).



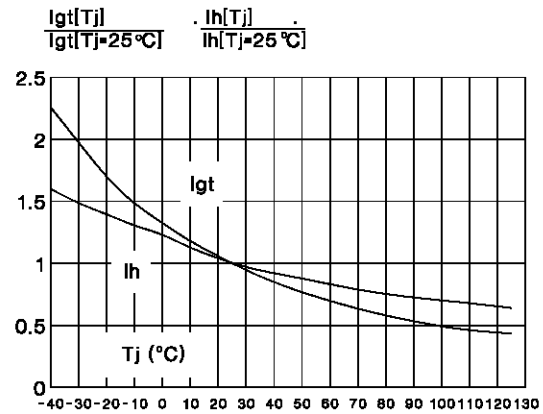
**Fig.6 :** Average on-state current versus case temperature (BTW 69 N).



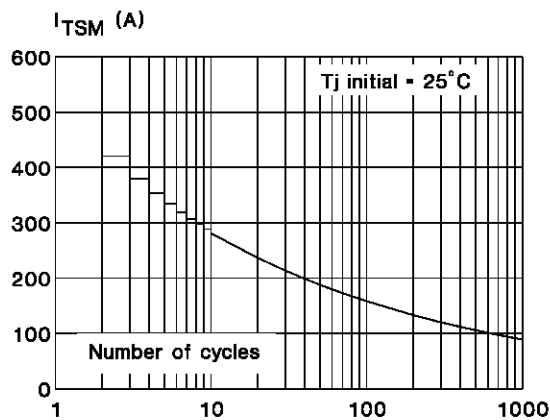
**Fig.7 :** Relative variation of thermal impedance versus pulse duration.



**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  $I^2t$ .

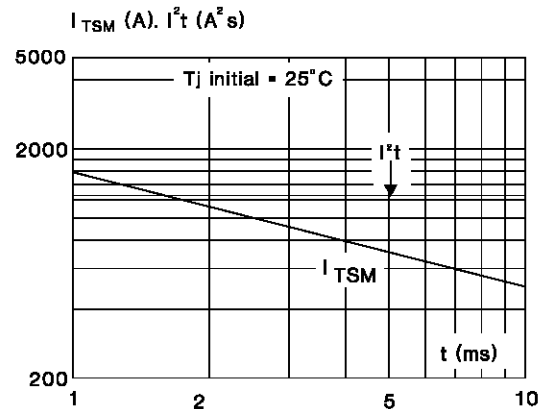
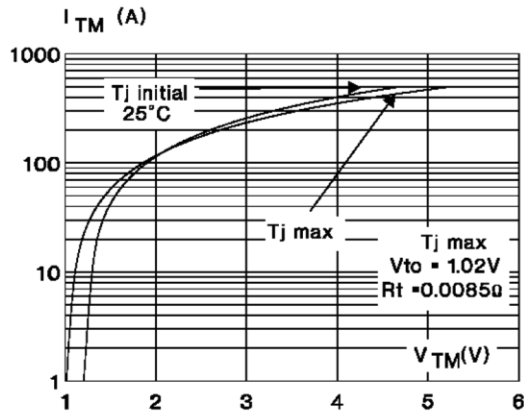
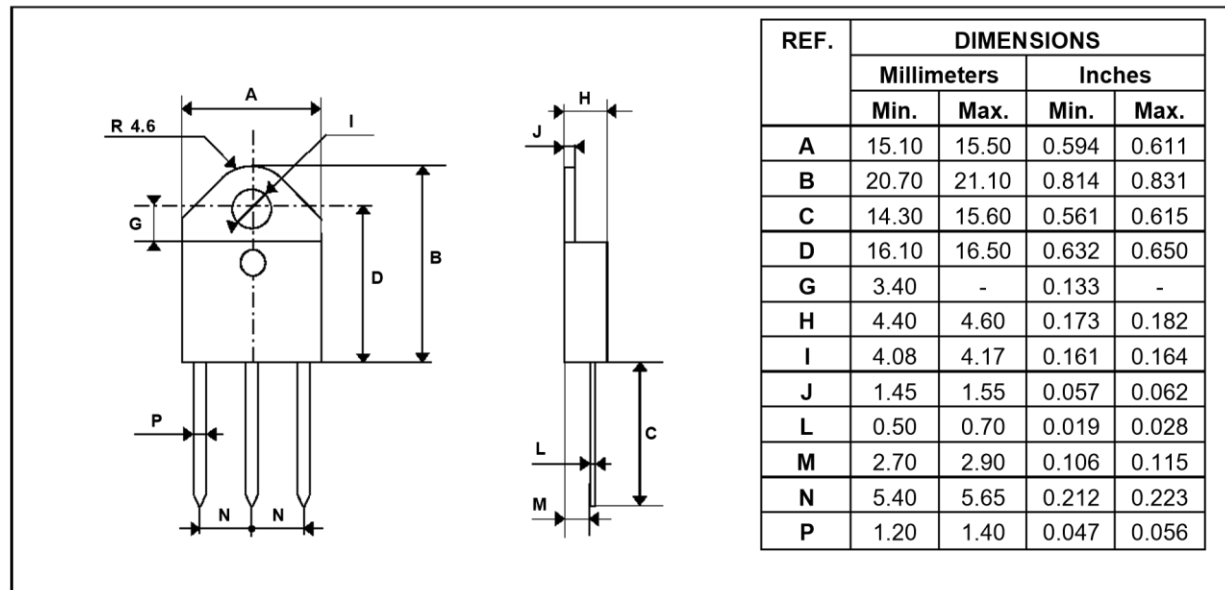


Fig11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TOP 3 Plastic



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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