

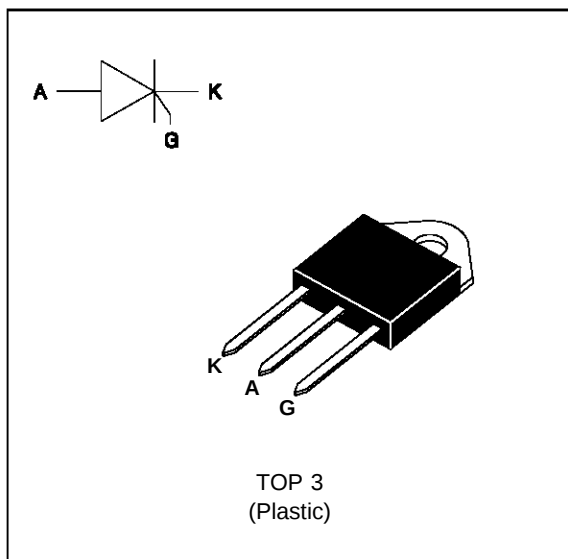
FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- BTW 68 Serie :
INSULATED VOLTAGE = 2500V_(RMS)
(UL RECOGNIZED : E81734)

DESCRIPTION

The BTW 68 (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 68 BTW 68 N	$T_c=80^{\circ}C$ $T_c=85^{\circ}C$	30 35	A
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	BTW 68 BTW 68 N	$T_c=80^{\circ}C$ $T_c=85^{\circ}C$	19 22	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)		$t_p=8.3$ ms	420	A
			$t_p=10$ ms	400	
I_2t	I_2t value		$t_p=10$ ms	800	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 100$ mA $di_G/dt = 1$ A/ μ s			100	A/ μ 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 68		BTW 68 / BTW 68 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 68	1.1	°C/W
		BTW 68 N	0.8	

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 40W (tp = 20 μ s) I_{FGM} = 8A (tp = 20 μ s) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions				Value		Unit
					BTW 68	BTW 68 N	
I _{GT}	V _D =12V (DC) R _L =33Ω	T _j =25°C	MAX	50		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	
tgt	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	40		mA	
I _H	I _T = 500mA gate open	T _j =25°C	MAX	75		mA	
V _{TM}	BTW 68 I _{TM} = 60A BTW 68 N I _{TM} = 70A tp= 380μs	T _j =25°C	MAX	2.1	2.2	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	MIN	500 250	V/μs	
tq	V _D =67%V _{DRM} I _{TM} = 60A V _R = 75V dI _{TM} /dt=30 A/μs dV _D /dt= 20V/μs	T _j = 125°C	TYP	100		μs	

Package	$I_{T(RMS)}$	V_{DRM} / V_{RRM}	Sensitivity Specification
	A	V	BTW
BTW 68 (Insulated)	30	200	X
		400	X
		600	X
		800	X
		1000	X
		1200	X
BTW 68 N (Uninsulated)	35	600	X
		800	X
		1000	X
		1200	X

Fig.1 : Maximum average power dissipation versus average on-state current (BTW 68).

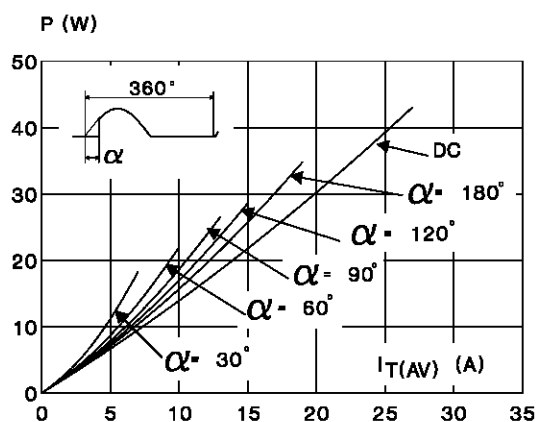


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 68 N).

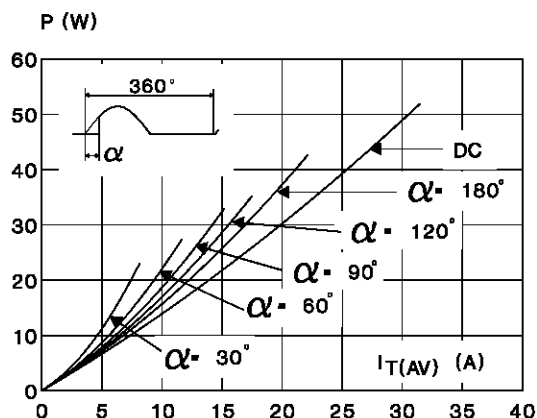


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 68).

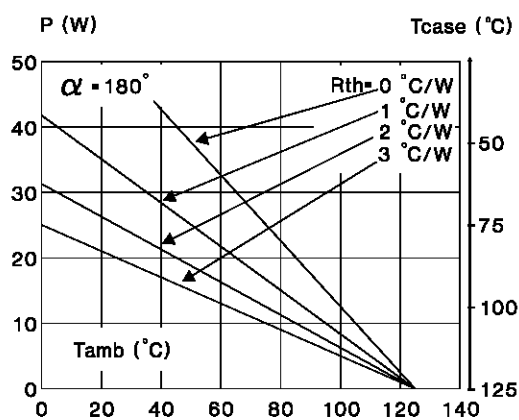


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 68 N).

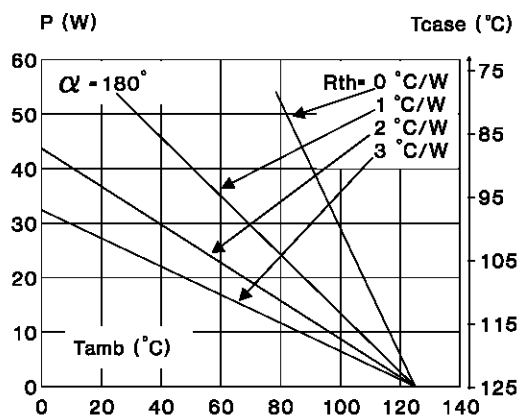


Fig.5 : Average on-state current versus case temperature (BTW 68).

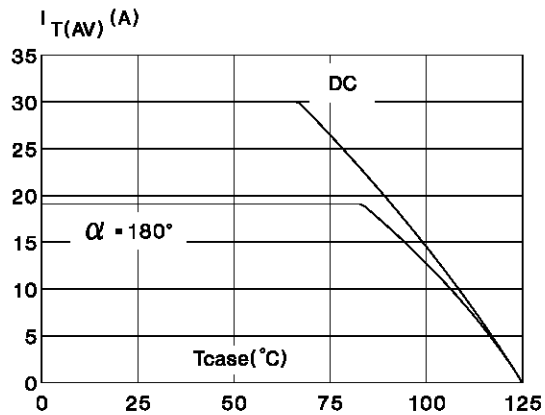


Fig.6 : Average on-state current versus case temperature (BTW 68 N).

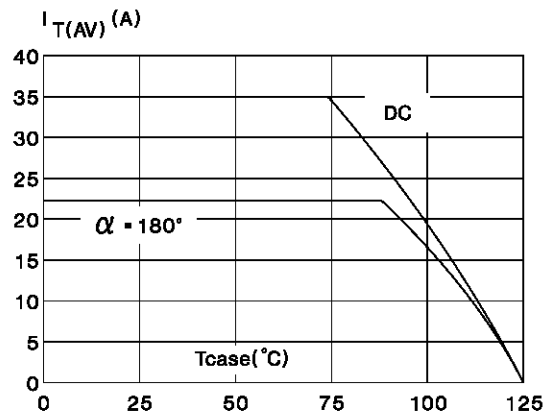


Fig.7 : Relative variation of thermal impedance versus pulse duration.

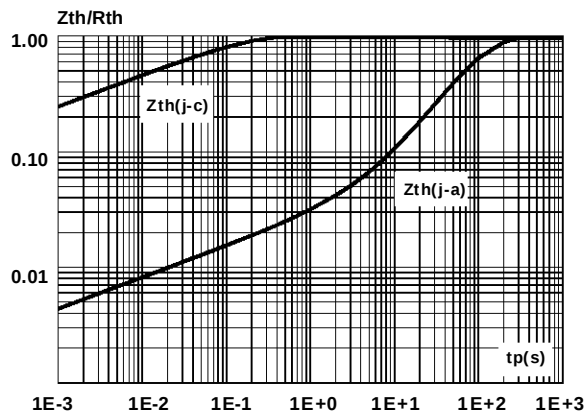


Fig.8 : Relative variation of gate trigger current versus junction temperature.

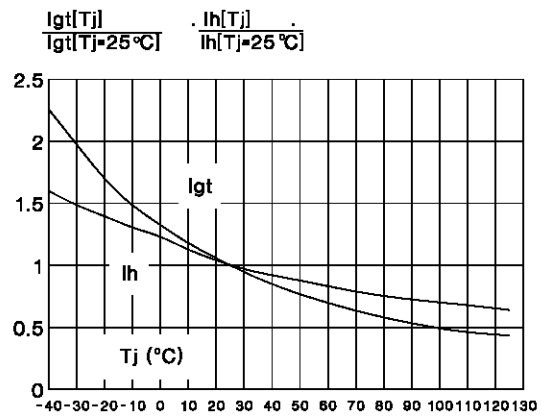


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

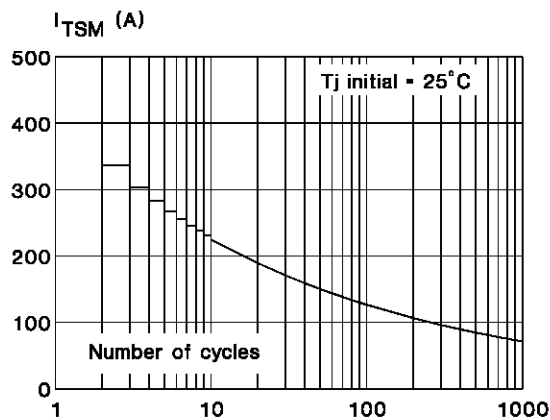


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

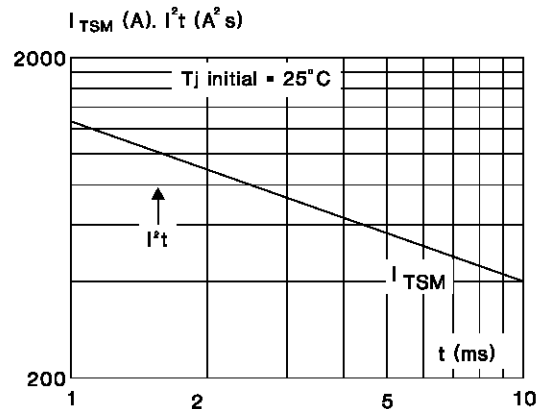
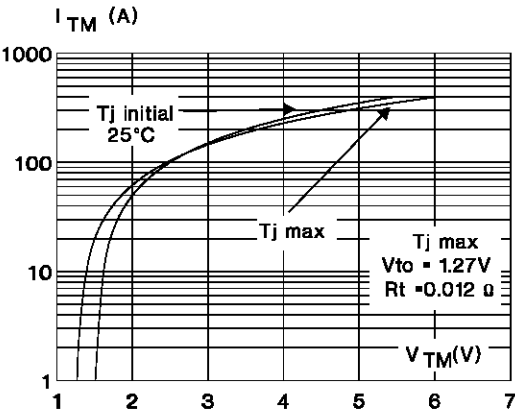
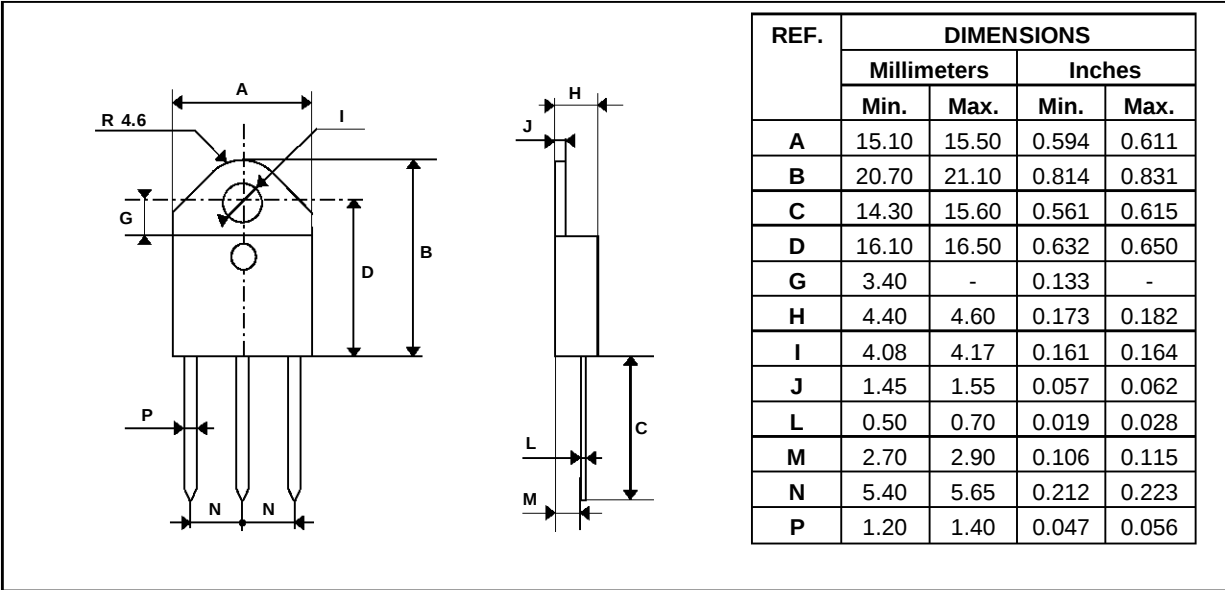


Fig11 : On-state characteristics (maximum values).



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.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES
Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.