

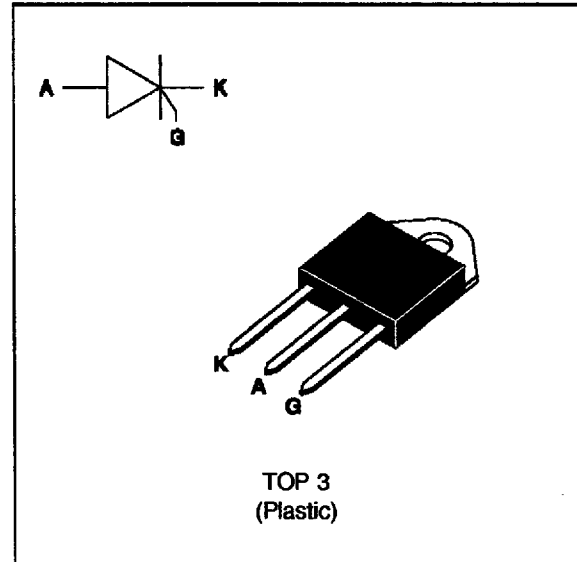
FEATURES

- 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 | °C °C |
| T_l | Maximum lead temperature for soldering during 10 s at 4.5 mm from case | | | 230 | °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 $T_J = 125$ °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)

PG (AV) = 1W PGM = 40W (tp = 20 μs) IFGM = 8A (tp = 20 μs) VRGM = 5 V.

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | | | Value | | Unit |
|--------------------------------------|--|---|------------------------|------|------------|----------|------|
| | | | | | BTW 68 | BTW 68 N | |
| IGT | V _D =12V (DC) R _L =33Ω | T _j =25°C | MAX | 50 | | mA | |
| VGT | V _D =12V (DC) R _L =33Ω | T _j =25°C | MAX | 1.5 | | V | |
| VGD | 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 | $I_T(\text{RMS})$ | $V_{\text{DRM}} / V_{\text{RRM}}$ | 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).

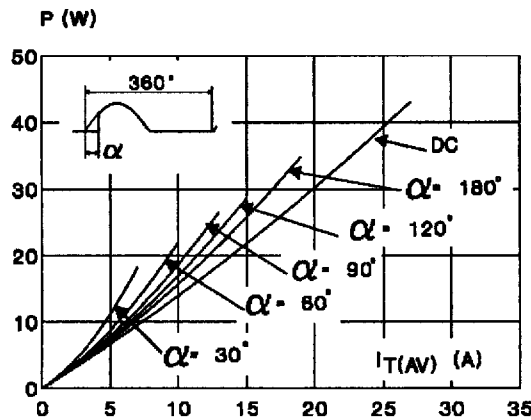


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 68 N).

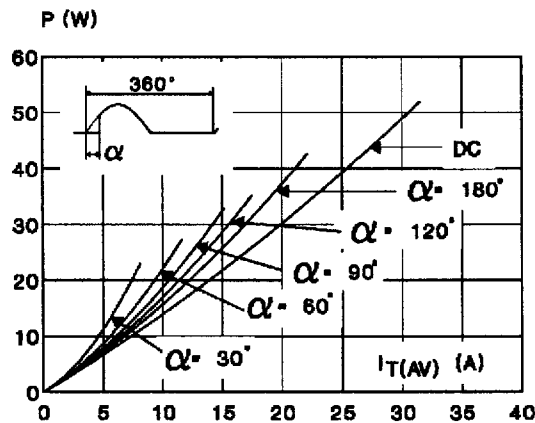


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 68).

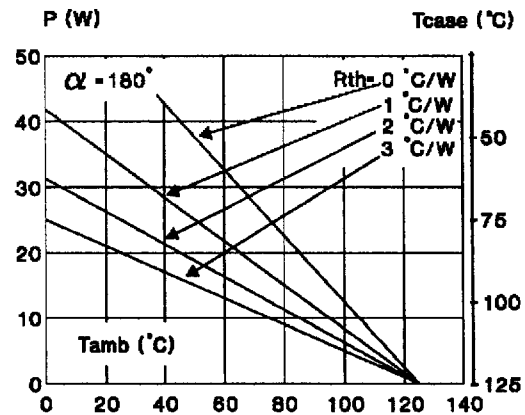


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 68 N).

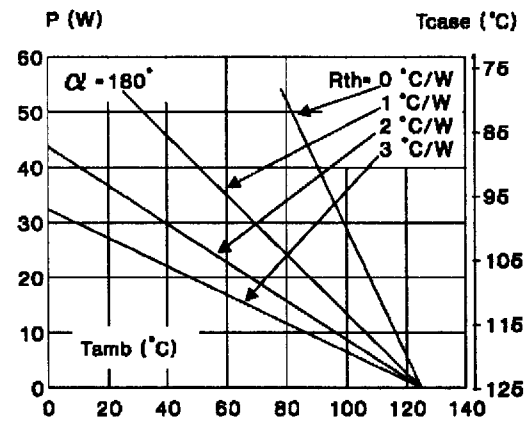


Fig.5 : Average on-state current versus case temperature (BTW 68).

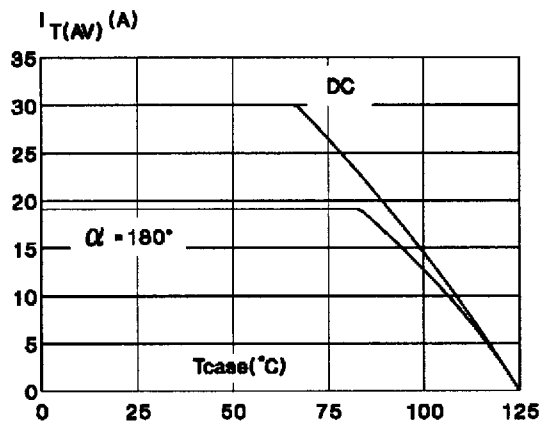


Fig.6 : Average on-state current versus case temperature (BTW 68 N).

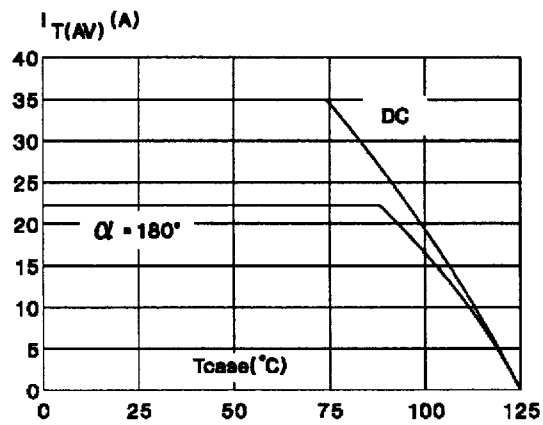


Fig.7 : Relative variation of thermal impedance versus pulse duration.

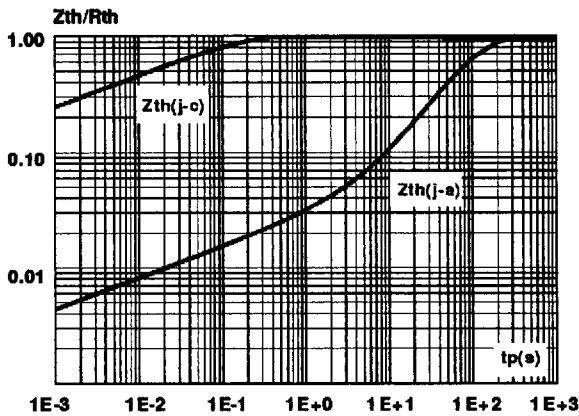


Fig.8 : Relative variation of gate trigger current versus junction temperature.

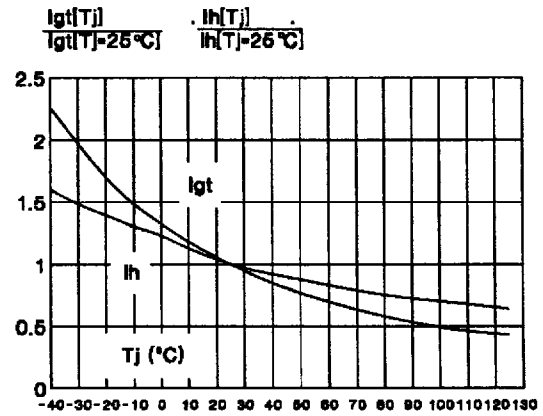


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

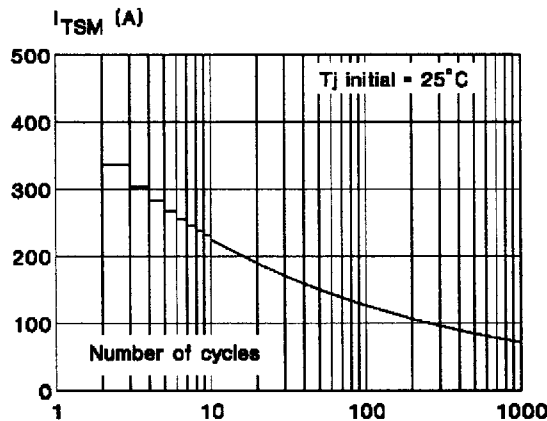


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

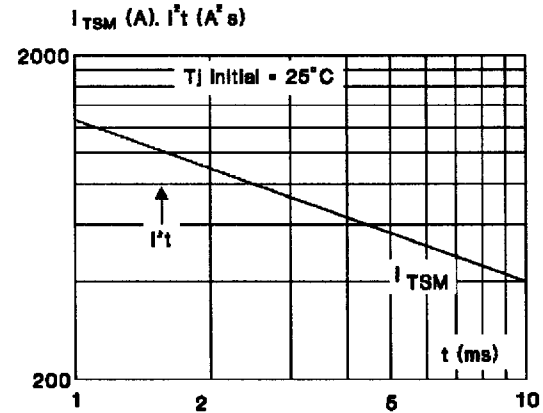
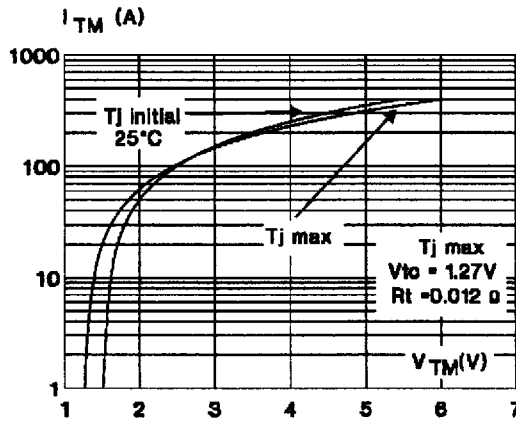
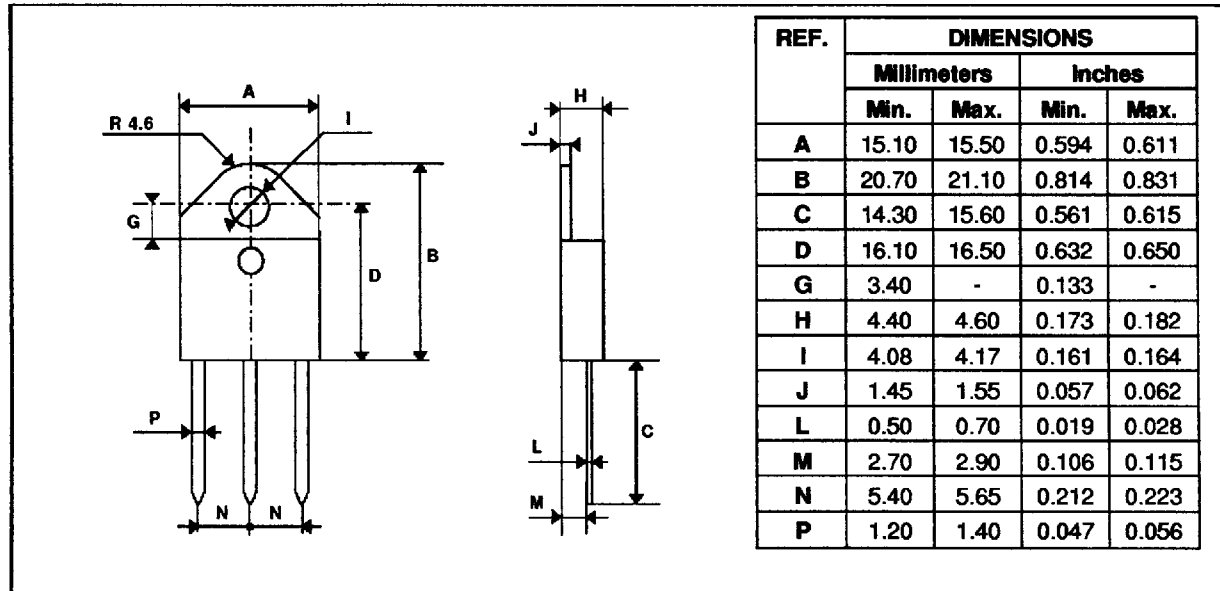


Fig11 : On-state characteristics (maximum values).



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.

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