

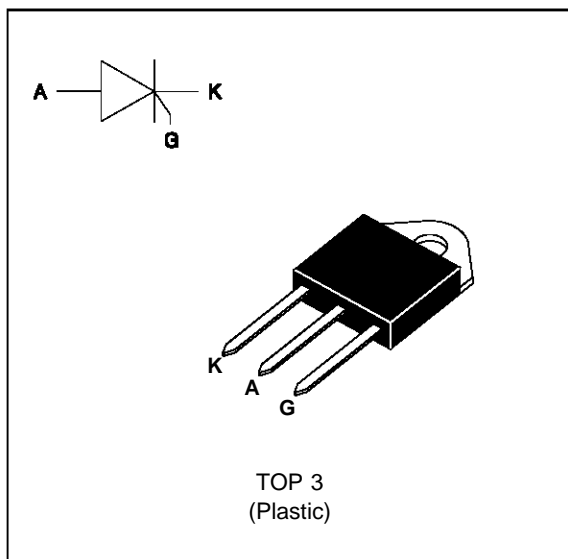
FEATURES

- 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 | T _c =70°C | 50 | A |
| | | BTW 69 N | T _c =75°C | 55 | |
| I _{T(AV)} | Average on-state current (180° conduction angle, single phase circuit) | BTW 69 | T _c =70°C | 32 | A |
| | | BTW 69 N | T _c =75°C | 35 | |
| 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 ² t | I ² t 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 _l | 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 |

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 | °C/W |
| | | | BTW 69 N | |

GATE CHARACTERISTICS (maximum values)

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

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 | | μs |
| 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/ μs |
| tq | $V_D=67\%V_{DRM}$ $I_{TM}=110A$ $V_R=75V$ $di_{TM}/dt=30 A/\mu s$ $dV_D/dt=20V/\mu s$ | $T_j=125^\circ C$ | 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).

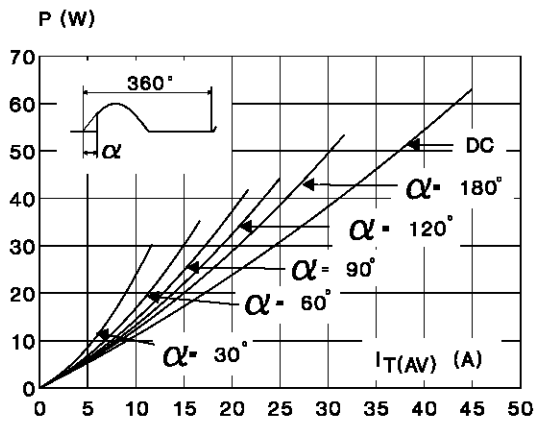


Fig.3 : Maximum average power dissipation versus average on-state current (BTW 69 N).

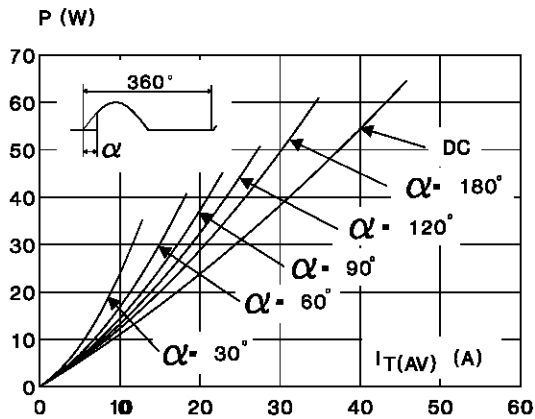


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69).

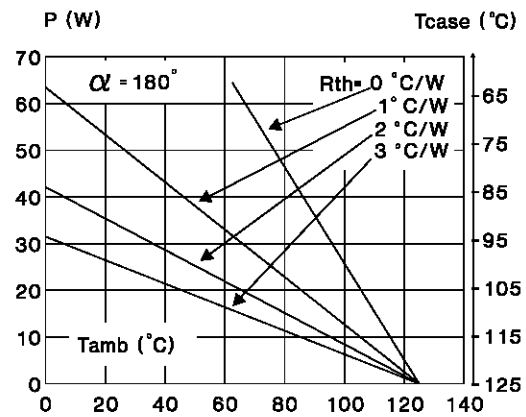


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTW 69 N).

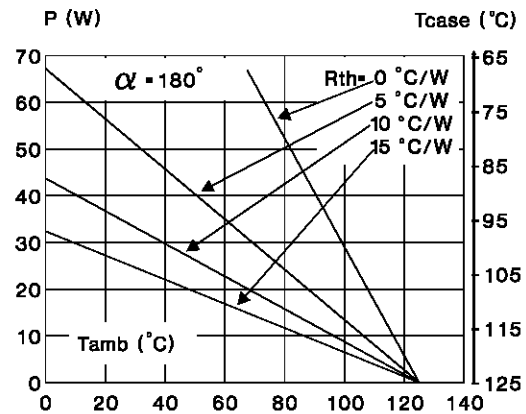


Fig.5 : Average on-state current versus case temperature (BTW 69).

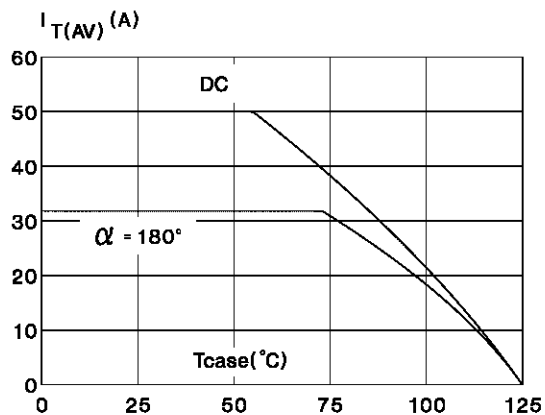


Fig.6 : Average on-state current versus case temperature (BTW 69 N).

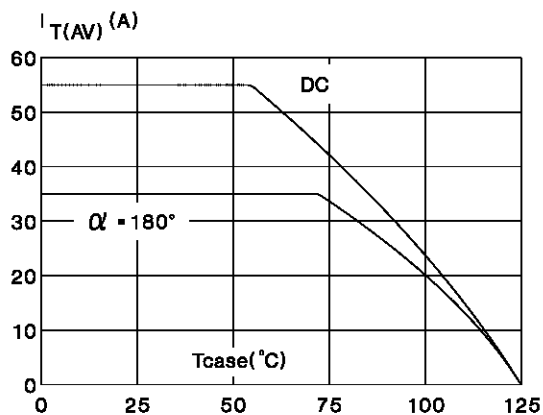


Fig.7 : Relative variation of thermal impedance versus pulse duration.

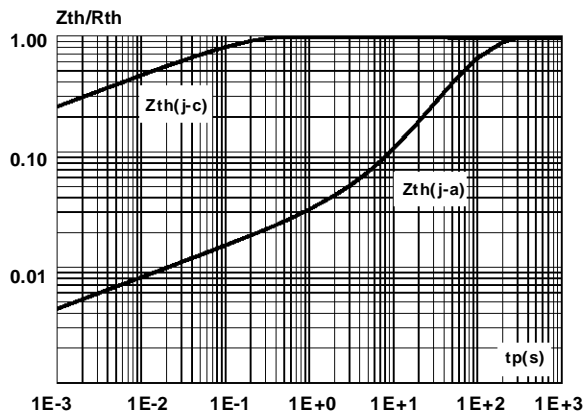


Fig.8 : Relative variation of gate trigger current versus junction temperature.

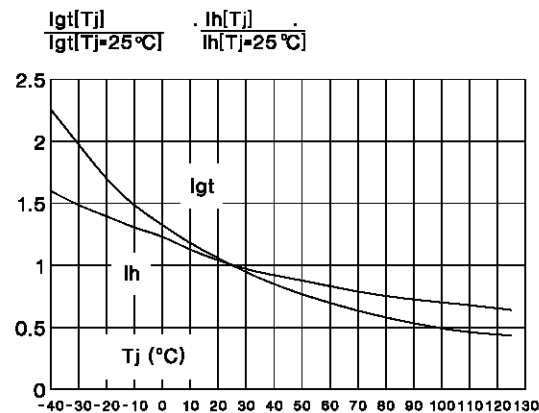


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

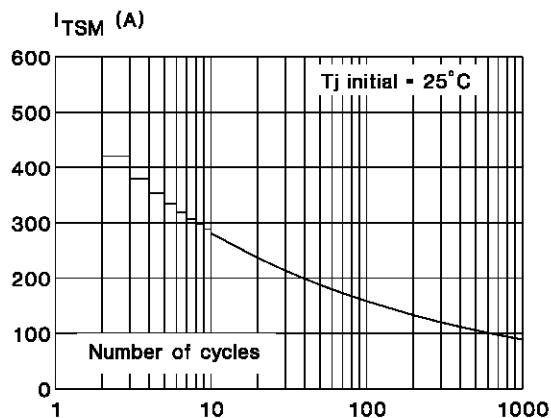


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

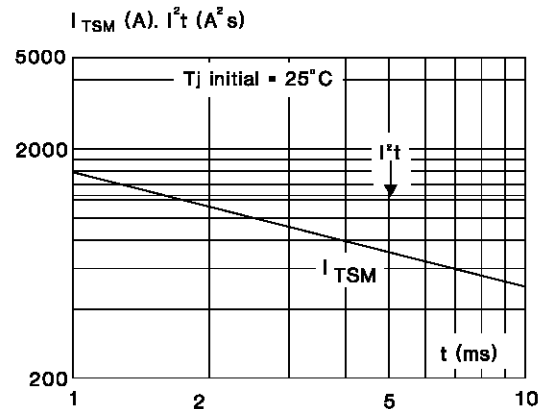
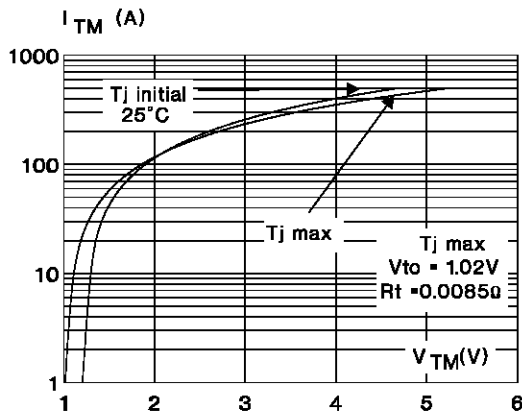
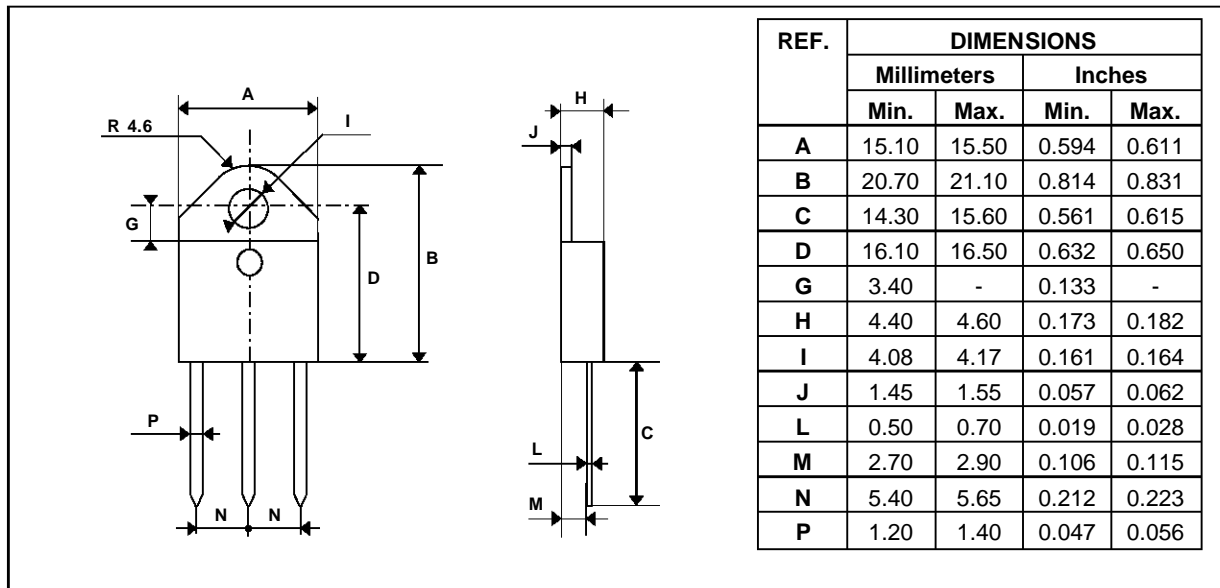


Fig11 : On-state characteristics (maximum values).



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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