



BTW67 and BTW69 Series

STANDARD

50A SCRs

MAIN FEATURES:

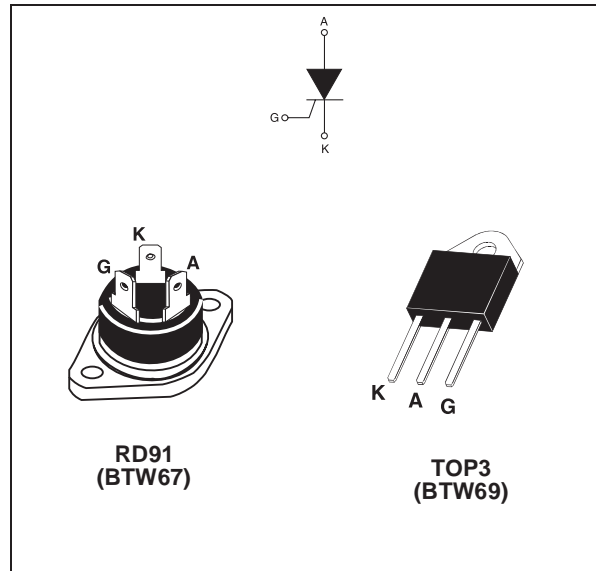
| Symbol | Value | Unit |
|-------------------|-------------|------|
| $I_{T(RMS)}$ | 50 | A |
| V_{DRM}/V_{RRM} | 600 to 1200 | V |
| I_{GT} | 80 | mA |

DESCRIPTION

Available in high power packages, the BTW67 / BTW69 Series is suitable in applications where power handling and power dissipation are critical, such as solid state relays, welding equipment, high power motor control.

Based on a clip assembly technology, they offer a superior performance in surge current handling capabilities.

Thanks to their internal ceramic pad, they provide high voltage insulation (2500V RMS), complying with UL standards (file ref: E81734).



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit | |
|--------------------|---|------------------------|---------------------------|--------------------------------|------------------------|
| $I_{T(RMS)}$ | RMS on-state current (180° conduction angle) | RD91 | $T_c = 70^\circ\text{C}$ | 50 | A |
| | | TOP3 Ins. | $T_c = 75^\circ\text{C}$ | | |
| $I_{T(AV)}$ | Average on-state current (180° conduction angle) | RD91 | $T_c = 70^\circ\text{C}$ | 32 | A |
| | | TOP3 Ins. | $T_c = 75^\circ\text{C}$ | | |
| I_{TSM} | Non repetitive surge peak on-state current | $t_p = 8.3 \text{ ms}$ | $T_j = 25^\circ\text{C}$ | 610 | A |
| | | $t_p = 10 \text{ ms}$ | | 580 | |
| I^2t | I^2t Value for fusing | | $T_j = 25^\circ\text{C}$ | 1680 | A^2s |
| di/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$ | $F = 60 \text{ Hz}$ | $T_j = 125^\circ\text{C}$ | 50 | $\text{A}/\mu\text{s}$ |
| I_{GM} | Peak gate current | $t_p = 20 \mu\text{s}$ | $T_j = 125^\circ\text{C}$ | 8 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | $T_j = 125^\circ\text{C}$ | 1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | | - 40 to + 150 - 40 to + 125 | $^\circ\text{C}$ |
| V_{RGM} | Maximum peak reverse gate voltage | | | 5 | V |

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ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

| Symbol | Test Conditions | | Value | Unit | | |
|--------------------------------------|---|------------------------|------------------------|------|------|----|
| I _{GT} | V _D = 12 V R _L = 33 Ω | | MIN. | 8 | mA | |
| | | | MAX. | 80 | | |
| V _{GT} | | | MAX. | 1.3 | V | |
| V _{GD} | V _D = V _{DRM} R _L = 3.3 kΩ | T _j = 125°C | MIN. | 0.2 | V | |
| I _H | I _T = 500 mA Gate open | | MAX. | 150 | mA | |
| I _L | I _G = 1.2 I _{GT} | | MAX. | 200 | mA | |
| dV/dt | V _D = 67 % V _{DRM} Gate open | T _j = 125°C | MIN. | 1000 | V/μs | |
| V _{TM} | I _{TM} = 100 A t _p = 380 μs | T _j = 25°C | MAX. | 1.9 | V | |
| V _{t0} | Threshold voltage | | MAX. | 1.0 | V | |
| R _d | Dynamic resistance | | MAX. | 8.5 | mΩ | |
| I _{DRM} I _{RRM} | V _{DRM} = V _{RRM} | | T _j = 25°C | MAX. | 10 | μA |
| | | | T _j = 125°C | | 5 | mA |

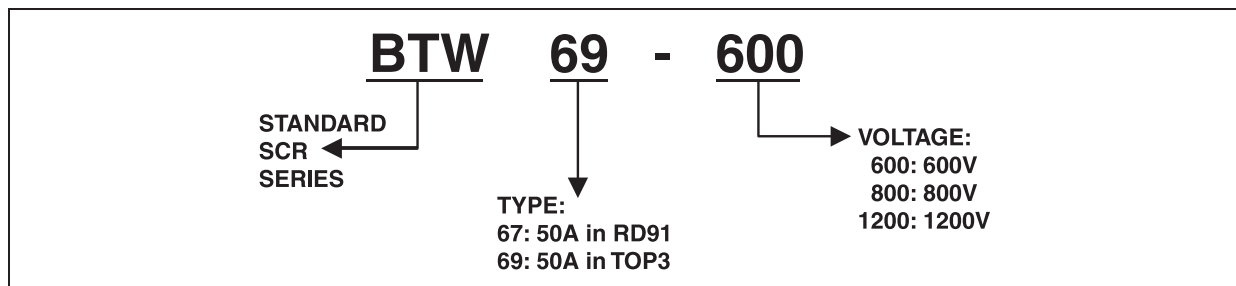
THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit | |
|----------------------|-----------------------|------------------|------|------|
| R _{th(j-c)} | Junction to case (DC) | RD91 (Insulated) | 1.0 | °C/W |
| | | TOP3 Insulated | 0.9 | |
| R _{th(j-a)} | Junction to ambient | TOP3 Insulated | 50 | °C/W |

PRODUCT SELECTOR

| Part Number | Voltage (xxx) | | | Sensitivity | Package |
|-------------|---------------|-------|--------|-------------|-----------|
| | 600 V | 800 V | 1200 V | | |
| BTW67-xxx | X | X | X | 80 mA | RD91 |
| BTW69-xxx | X | X | X | 80 mA | TOP3 Ins. |

ORDERING INFORMATION



OTHER INFORMATION

| Part Number | Marking | Weight | Base Quantity | Packing mode |
|-------------|----------|--------|---------------|--------------|
| BTW67-xxx | BTW67xxx | 20.0 g | 25 | Bulk |
| BTW69-xxx | BTW69xxx | 4.5 g | 120 | Bulk |

Note: xxx = voltage

Fig. 1: Maximum average power dissipation versus average on-state current.

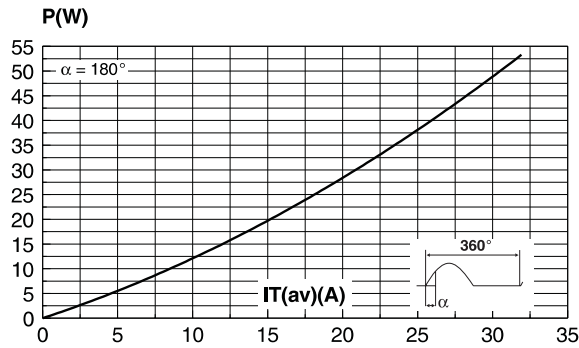


Fig. 3: Relative variation of thermal impedance versus pulse duration.

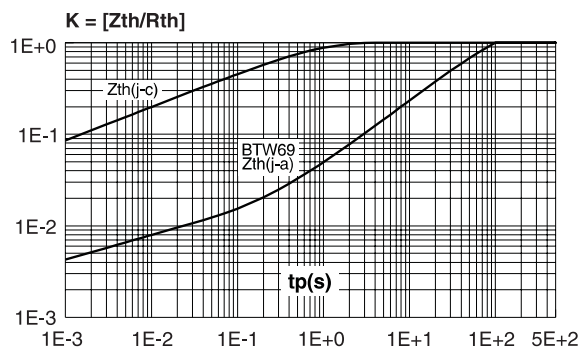


Fig. 5: Surge peak on-state current versus number of cycles.

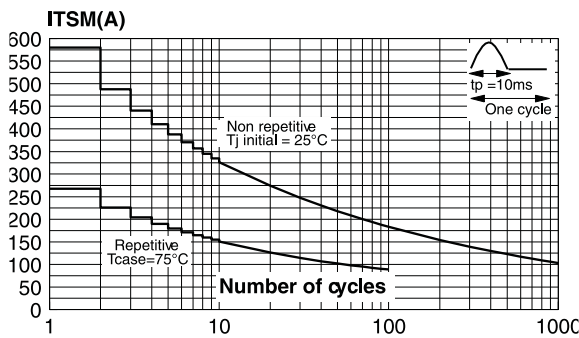


Fig. 2: Average and D.C. on-state current versus case temperature.

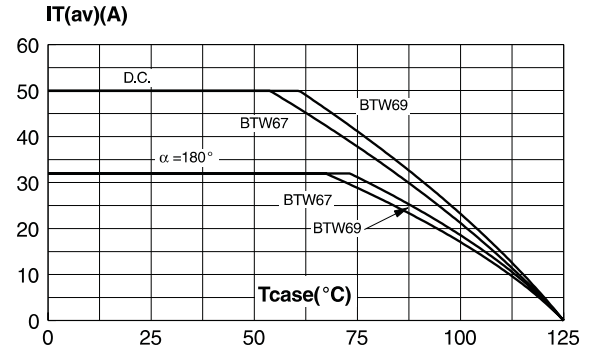


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature.

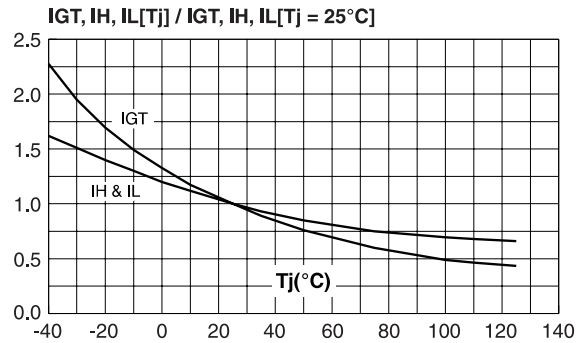
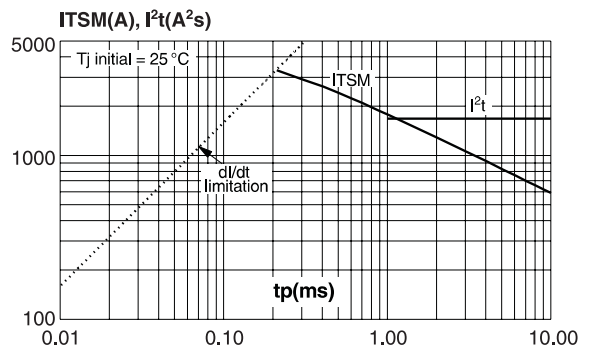
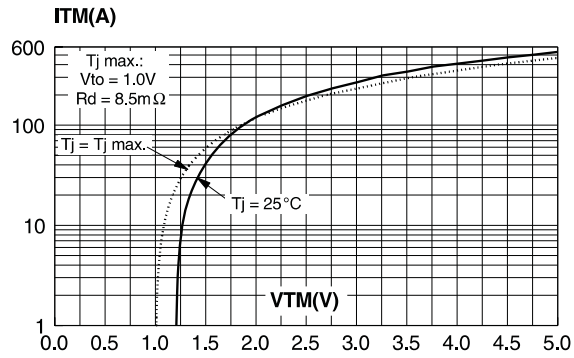


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .



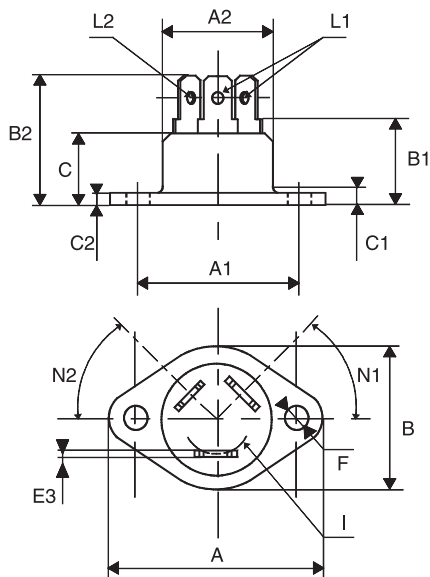
BTW67 and BTW69 Series

Fig. 7: On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

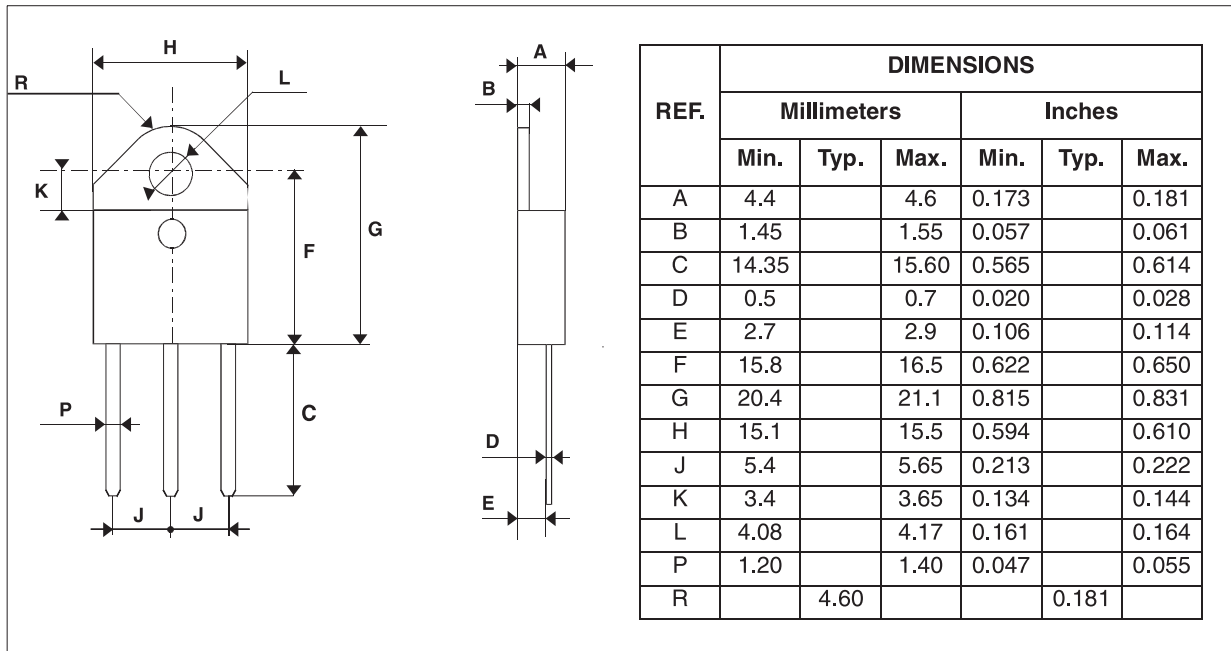
RD91 (Plastic)



| REF. | DIMENSIONS | | | |
|------|-------------|-------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | | 40.00 | | 1.575 |
| A1 | 29.90 | 30.30 | 1.177 | 1.193 |
| A2 | | 22.00 | | 0.867 |
| B | | 27.00 | | 1.063 |
| B1 | 13.50 | 16.50 | 0.531 | 0.650 |
| B2 | | 24.00 | | 0.945 |
| C | | 14.00 | | 0.551 |
| C1 | | 3.50 | | 0.138 |
| C2 | 1.95 | 3.00 | 0.077 | 0.118 |
| E3 | 0.70 | 0.90 | 0.027 | 0.035 |
| F | 4.00 | 4.50 | 0.157 | 0.177 |
| I | 11.20 | 13.60 | 0.441 | 0.535 |
| L1 | 3.10 | 3.50 | 0.122 | 0.138 |
| L2 | 1.70 | 1.90 | 0.067 | 0.075 |
| N1 | 33° | 43° | 33° | 43° |
| N2 | 28° | 38° | 28° | 38° |

PACKAGE MECHANICAL DATA

TOP3 Ins.(Plastic)



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