

Table 1: Main Features

| Symbol | Value | Unit |
|-------------------|-------|------|
| $I_{T(RMS)}$ | 0.8 | A |
| V_{DRM}/V_{RRM} | 600 | V |
| $I_{GT}(Q_1)$ | 5 | mA |

DESCRIPTION

The **Z00607MA** is suitable for low power AC switching applications, such as fan speed, small light controllers...

Thanks to low gate triggering current, it can be directly driven by microcontrollers.

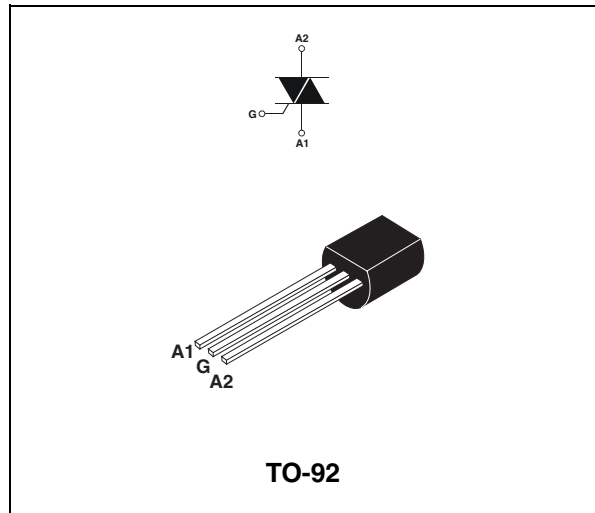


Table 2: Order Codes

| Part Numbers | Marking |
|---------------|----------|
| Z00607MA 1BA2 | Z00607MA |
| Z00607MA 2BL2 | Z00607MA |
| Z00607MA 5BL2 | Z00607MA |

Table 3: Absolute Maximum Ratings

| Symbol | Parameter | | Value | Unit | |
|--------------------|--|--------------------------|--------------------------------|------|----------------------|
| $I_{T(RMS)}$ | RMS on-state current (full sine wave) | | $T_I = 50^\circ\text{C}$ | 0.8 | A |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C) | F = 50 Hz | t = 20 ms | 9 | A |
| | | F = 60 Hz | t = 16.7 ms | 9.5 | |
| I^2t | I^2t Value for fusing | $t_p = 10$ ms | | 0.45 | A^2s |
| di/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100$ ns | F = 120 Hz | $T_j = 110^\circ\text{C}$ | 20 | A/ μs |
| I_{GM} | Peak gate current | $t_p = 20$ μs | $T_j = 110^\circ\text{C}$ | 1 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | $T_j = 110^\circ\text{C}$ | 0.1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | - 40 to + 150 - 40 to + 110 | | $^\circ\text{C}$ |

Tables 4: Electrical Characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified)

| Symbol | Test Conditions | Quadrant | | Value | Unit |
|--------------------------|--|--------------|------|-------|------------------|
| I_{GT} (1) | $V_D = 12\text{ V}$ $R_L = 30\ \Omega$ | I - II - III | MAX. | 5 | mA |
| | | IV | | 7 | |
| V_{GT} | | ALL | MAX. | 1.3 | V |
| V_{GD} | $V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$ $T_j = 110^\circ\text{C}$ | ALL | MIN. | 0.2 | V |
| I_H (2) | $I_T = 200\text{ mA}$ | | MAX. | 5 | mA |
| I_L | $I_G = 1.2 I_{GT}$ | I - III - IV | MAX. | 10 | mA |
| | | II | | 20 | |
| dV/dt (2) | $V_D = 67\% V_{DRM}$ gate open $T_j = 110^\circ\text{C}$ | | MIN. | 10 | V/ μs |
| (dI/dt) _c (2) | (dV/dt) _c = 0.35 A/ms $T_j = 110^\circ\text{C}$ | | MIN. | 1.5 | A/ms |

Table 5: Static Characteristics

| Symbol | Test Conditions | | | Value | Unit | |
|------------------------|------------------------------------|--------------------------|---------------------------|-------|------|---------------|
| V_{TM} (2) | $I_{TM} = 1.1\text{ A}$ | $t_p = 380\ \mu\text{s}$ | $T_j = 25^\circ\text{C}$ | MAX. | 1.5 | V |
| V_{to} (2) | Threshold voltage | | $T_j = 110^\circ\text{C}$ | MAX. | 0.95 | V |
| R_d (2) | Dynamic resistance | | $T_j = 110^\circ\text{C}$ | MAX. | 420 | m Ω |
| I_{DRM} I_{RRM} | $V_{DRM} = V_{RRM} = 600\text{ V}$ | | $T_j = 25^\circ\text{C}$ | MAX. | 5 | μA |
| | | | $T_j = 110^\circ\text{C}$ | | 0.1 | mA |

Note 1: minimum I_{GT} is guaranteed at 5% of I_{GT} max.

Note 2: for both polarities of A2 referenced to A1.

Table 6: Thermal resistances

| Symbol | Parameter | Value | Unit |
|---------------|-------------------------|-------|--------------------|
| $R_{th(j-l)}$ | Junction to lead (A.C.) | 60 | $^\circ\text{C/W}$ |
| $R_{th(j-a)}$ | Junction to ambient | 150 | $^\circ\text{C/W}$ |

Figure 1: Maximum power dissipation versus RMS on-state current (full cycle)

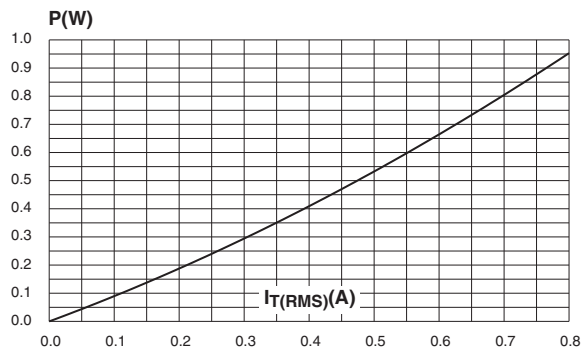


Figure 2: RMS on-state current versus ambient temperature (full cycle)

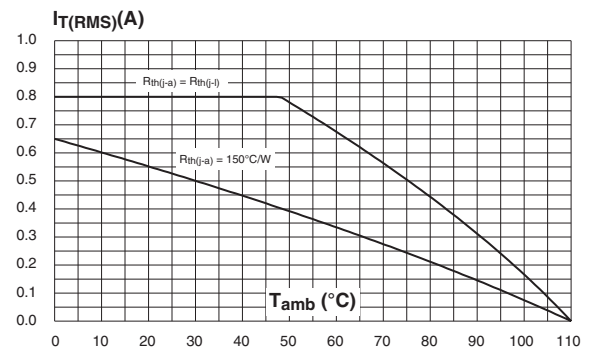


Figure 3: Relative variation of thermal impedance versus pulse duration

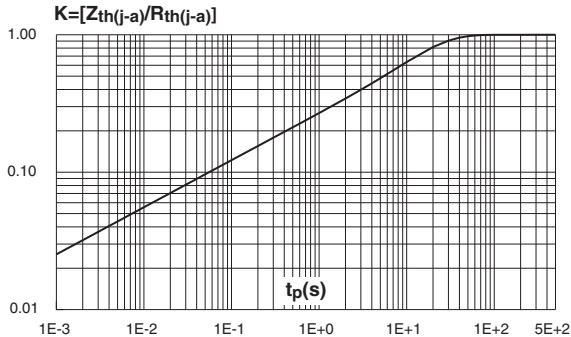


Figure 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

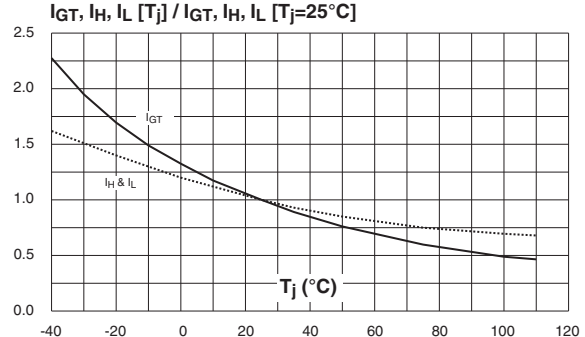


Figure 5: Surge peak on-state current versus number of cycles

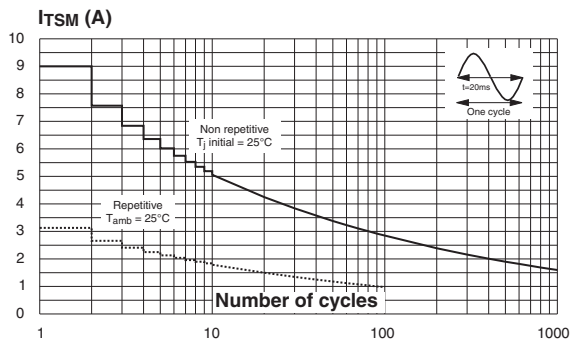


Figure 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10 ms and corresponding value of I²t

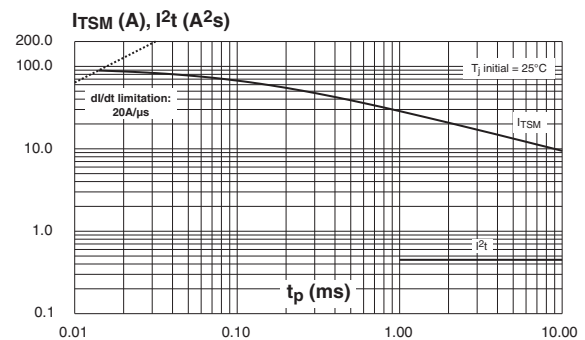


Figure 7: On-state characteristics (maximum values)

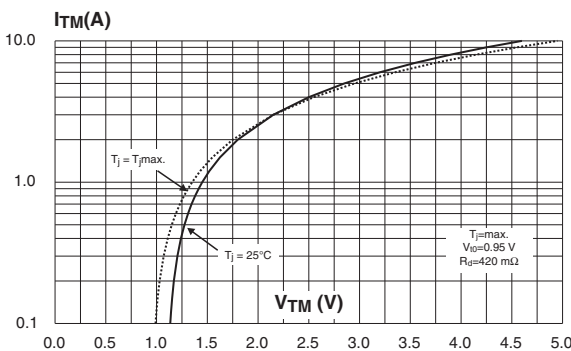


Figure 8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

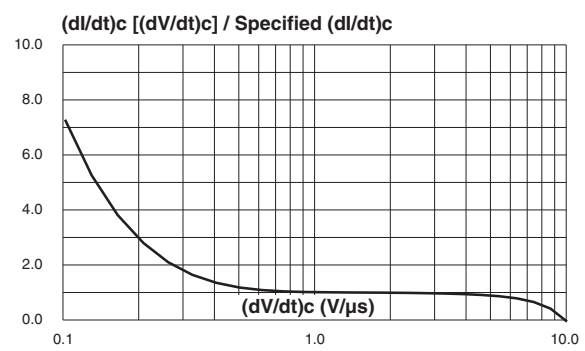


Figure 9: Relative variation of critical rate of decrease of main current versus junction temperature

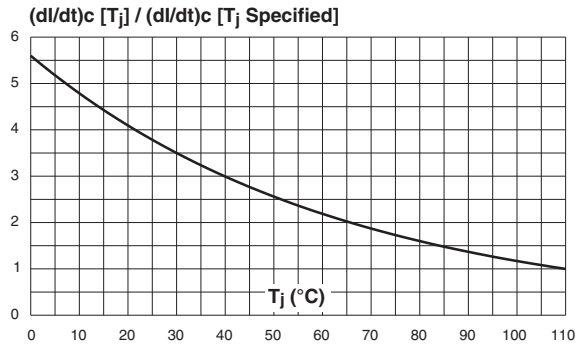


Figure 10: Ordering Information Scheme

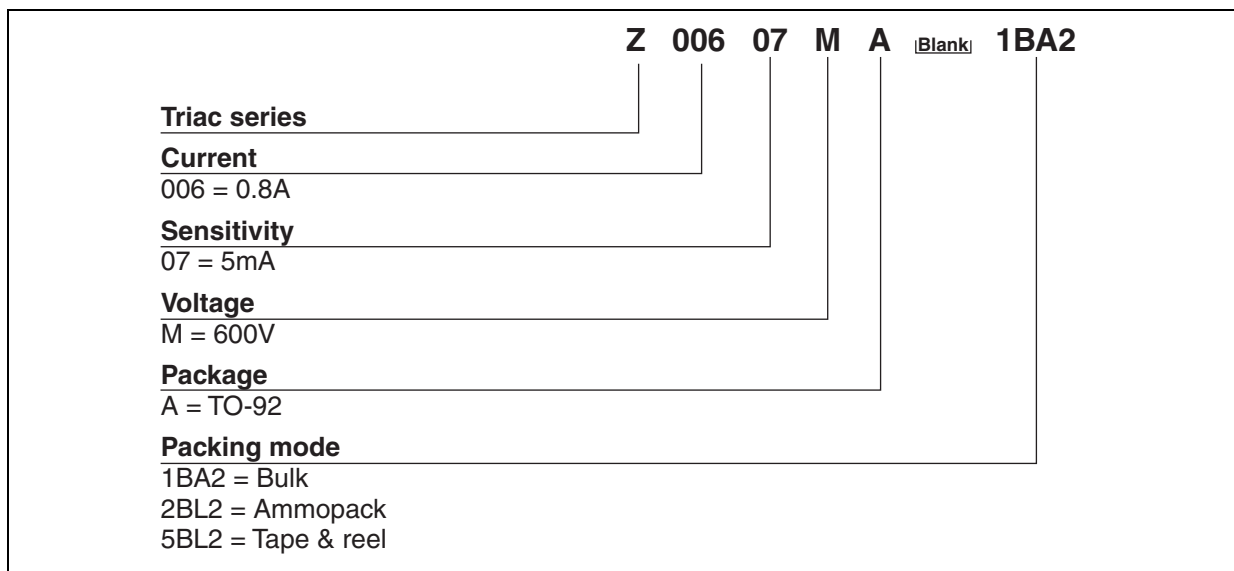
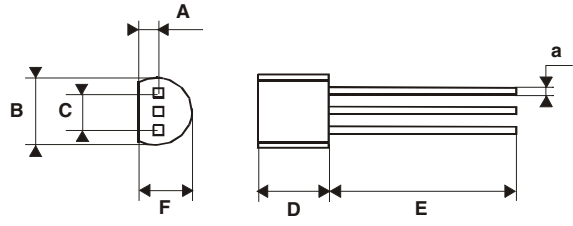


Table 7: Product Selector

| Part Number | Voltage | Sensitivity | Type | Package |
|-------------|---------|-------------|----------|---------|
| Z00607MA | 600 V | 5 mA | Standard | TO-92 |

Figure 11: TO-92 Package Mechanical Data



| REF. | DIMENSIONS | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | | 1.35 | | | 0.053 | |
| B | | | 4.70 | | | 0.185 |
| C | | 2.54 | | | 0.100 | |
| D | 4.40 | | | 0.173 | | |
| E | 12.70 | | | 0.500 | | |
| F | | | 3.70 | | | 0.146 |
| a | | | 0.50 | | | 0.019 |

Table 8: Ordering Information

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|--------|----------|---------------|
| Z00607MA 1BA2 | Z0607MA | TO-92 | 0.2 g | 2500 | Bulk |
| Z00607MA 2BL2 | 00607MA | | | 2000 | Ammopack |
| Z00607MA 5BL2 | Z0607MA | | | 2000 | Tape & reel |

Table 9: Revision History

| Date | Revision | Description of Changes |
|-------------|----------|--|
| Oct-2001 | 4 | Last update. |
| 25-Mar-2005 | 5 | Package: TO-92 tape & reel delivery mode 5BL2 added. |
| 21-Jun-2005 | 6 | Markings updated from Z006xxxx to Z06xxxx |

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