

# Z00607MA

STANDARD

0.8A TRIAC

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.

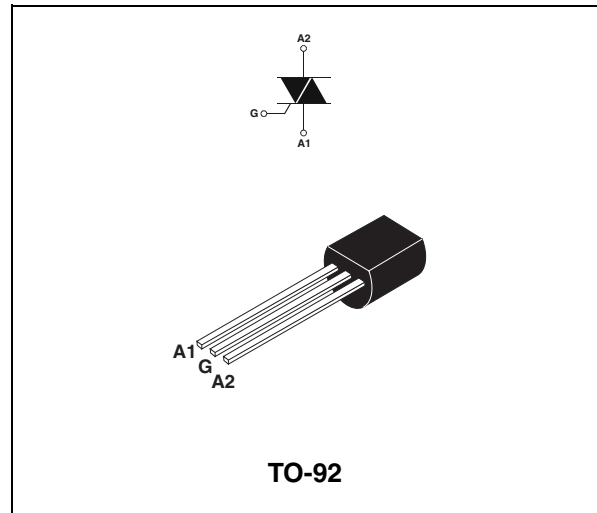


Table 2: Order Codes

| Part Numbers  | Marking |
|---------------|---------|
| Z00607MA 1BA2 | Z0607MA |
| Z00607MA 2BL2 | Z0607MA |
| Z00607MA 5BL2 | Z0607MA |

Table 3: Absolute Maximum Ratings

| Symbol             | Parameter                                                                               |                    |                      | Value                          | Unit        |
|--------------------|-----------------------------------------------------------------------------------------|--------------------|----------------------|--------------------------------|-------------|
| $I_{T(RMS)}$       | RMS on-state current (full sine wave)                                                   |                    | $T_I = 50^{\circ}C$  | 0.8                            | A           |
| $I_{TSM}$          | Non repetitive surge peak on-state current (full cycle, $T_j$ initial = $25^{\circ}C$ ) | 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         | $T_j = 110^{\circ}C$ | 20                             | A/ $\mu s$  |
| $I_{GM}$           | Peak gate current                                                                       | $t_p = 20$ $\mu s$ | $T_j = 110^{\circ}C$ | 1                              | A           |
| $P_{G(AV)}$        | Average gate power dissipation                                                          |                    | $T_j = 110^{\circ}C$ | 0.1                            | W           |
| $T_{stg}$<br>$T_j$ | Storage junction temperature range<br>Operating junction temperature range              |                    |                      | - 40 to + 150<br>- 40 to + 110 | $^{\circ}C$ |

**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/ $\mu\text{s}$ |
| $(dI/dt)_c (2)$ | $(dV/dt)_c = 0.35\text{ A/ms}$ $T_j = 110^\circ\text{C}$             |              | MIN. | 1.5   | A/ms             |

**Table 5: Static Characteristics**

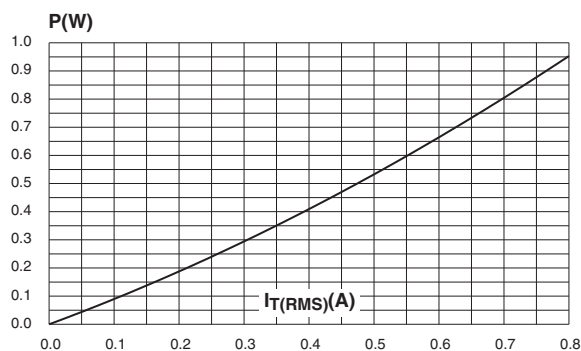
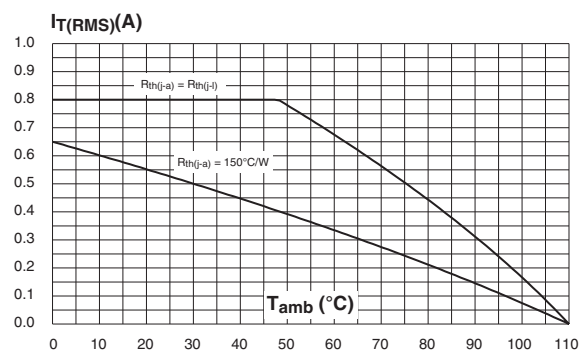
| Symbol                 | Test Conditions                                  |                           |      | Value | Unit             |
|------------------------|--------------------------------------------------|---------------------------|------|-------|------------------|
| $V_{TM} (2)$           | $I_{TM} = 1.1\text{ A}$ $t_p = 380\ \mu\text{s}$ | $T_j = 25^\circ\text{C}$  | 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   | $\text{m}\Omega$ |
| $I_{DRM}$<br>$I_{RRM}$ | $V_{DRM} = V_{RRM} = 600\text{ V}$               | $T_j = 25^\circ\text{C}$  | MAX. | 5     | $\mu\text{A}$    |
|                        |                                                  | $T_j = 110^\circ\text{C}$ |      | 0.1   | mA               |

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

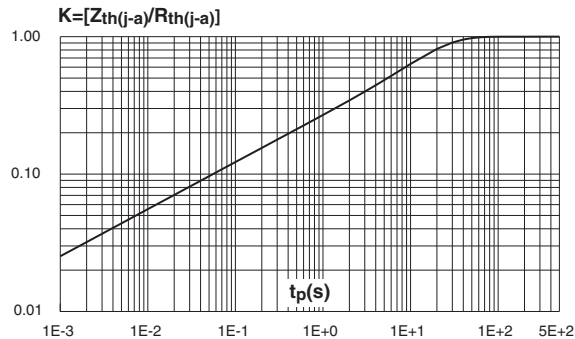
**Note 2:** for both polarities of A2 referenced to A1.

**Table 6: Thermal resistances**

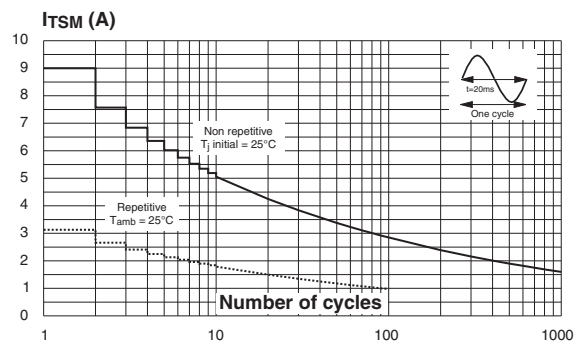
| Symbol        | Parameter               | Value | Unit               |
|---------------|-------------------------|-------|--------------------|
| $R_{th(j-l)}$ | Junction to lead (A.C.) | 60    | $^\circ\text{C/W}$ |
| $R_{th(j-a)}$ | Junction to ambient     | 150   | $^\circ\text{C/W}$ |

**Figure 1: Maximum power dissipation versus RMS on-state current (full cycle)****Figure 2: RMS on-state current versus ambient temperature (full cycle)**

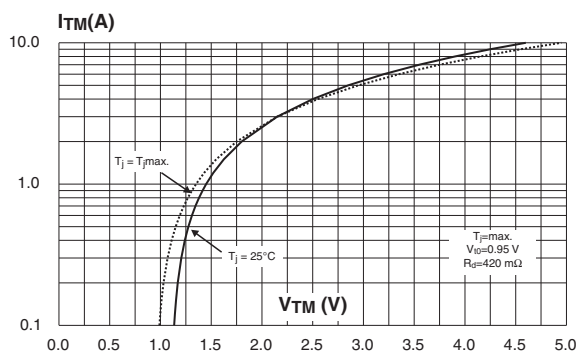
**Figure 3: Relative variation of thermal impedance versus pulse duration**



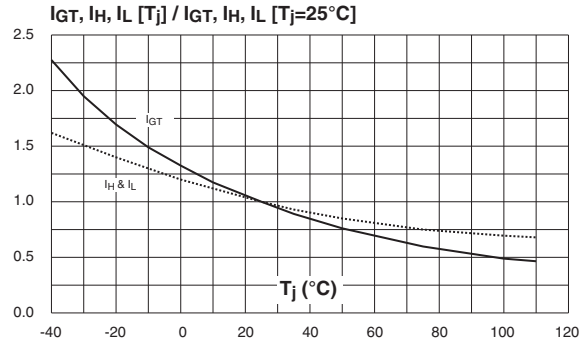
**Figure 5: Surge peak on-state current versus number of cycles**



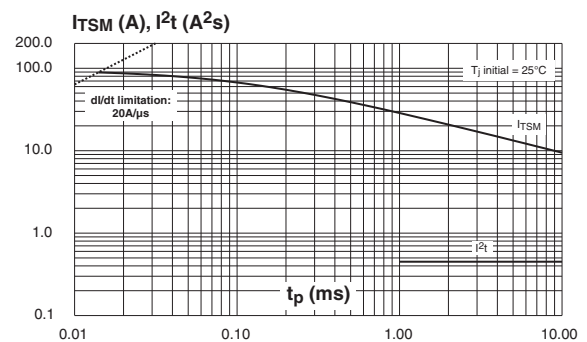
**Figure 7: On-state characteristics (maximum values)**



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



**Figure 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10$  ms and corresponding value of  $I^2t$**



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

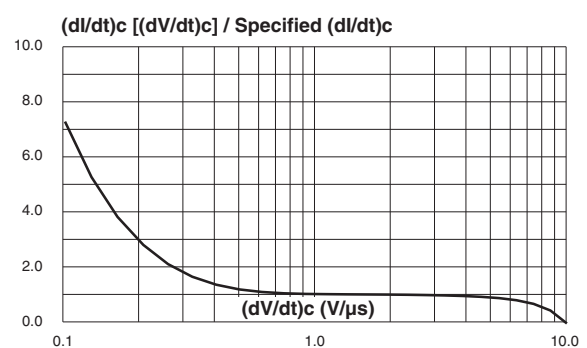


Figure 9: Relative variation of critical rate of decrease of main current versus junction temperature

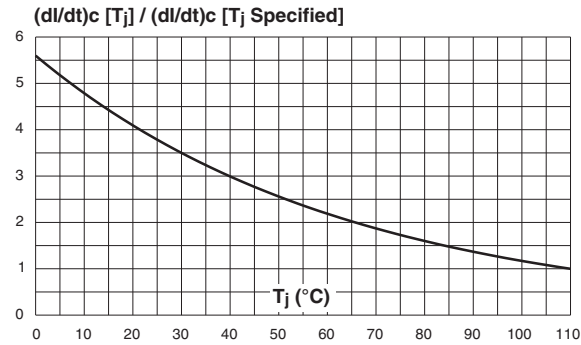


Figure 10: Ordering Information Scheme

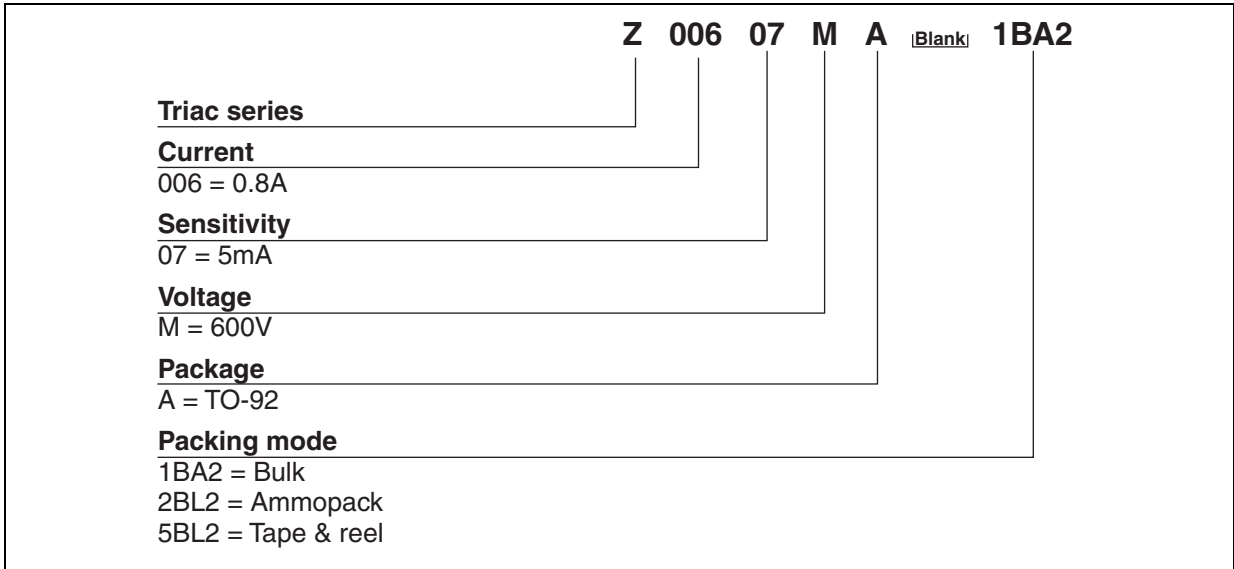


Table 7: Product Selector

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

Figure 11: TO-92 Package Mechanical Data

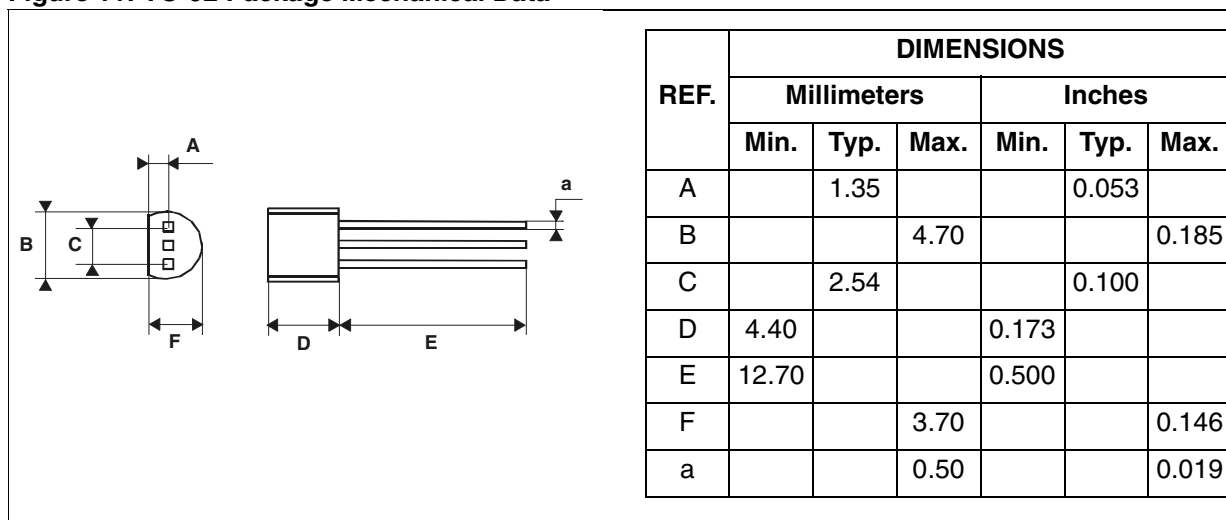


Table 8: Ordering Information

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|--------|----------|---------------|
| Z00607MA 1BA2 | Z0607MA | TO-92   | 0.2 g  | 2500     | Bulk          |
| Z00607MA 2BL2 | Z0607MA |         |        | 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                |
| 13-Sep-2005 | 7        | Z00607MA 2BL2: marking corrected from 00607mA to Z0607MA |