

TRIACS

# AC03DSM, AC03FSM AC03DSMA, AC03FSMA

## 3 A MOLD ISOLATED TRIAC

The AC03□\_ISM and AC03□\_ISMA are all diffused mold type triac granted RMS On-state current 3 Amps, with rated voltages up to 600 volts.

### FEATURES

- Isolated plastic package (Modified TO-220AB)
- 30 A Surge current

### APPLICATIONS

- Motor speed control
- Lamp dimmer, Temperature controllers
- Various solid state switches, etc.

### MAXIMUM RATINGS

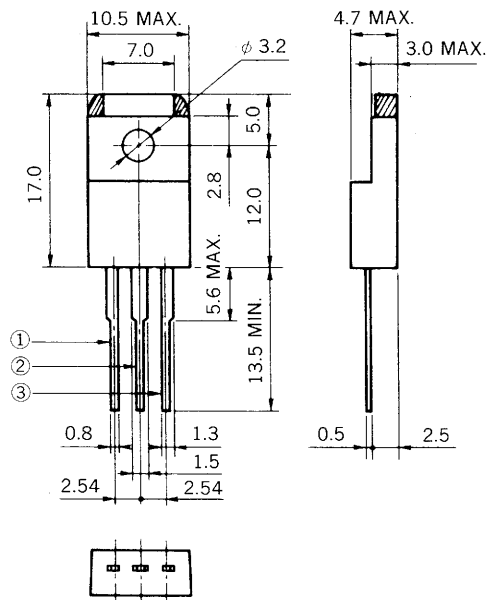
| ITEM                                  | SYMBOL        | AC03DSM<br>AC03DSMA                           | AC03FSM<br>AC03FSMA | UNIT       | NOTE            |
|---------------------------------------|---------------|---|---------------------|------------|-----------------|
| Repetitive Peak Off-State Voltage     | $V_{DRM}$     | 400   | 600                 | V          |                 |
| Non-repetitive Peak Off-State Voltage | $V_{DSM}$     | 500   | 700                 | V          |                 |
| RMS On-State Current                  | $I_T(RMS)$    | 3 ( $T_C = 109^\circ C, \theta = 180^\circ$ ) |                     | A          | See Fig. 12, 13 |
| Surge On-State Current                | $I_{TSM}$     | 30 (50 Hz 1 cycle)                            |                     | A          | See Fig. 2      |
| Fusing Current                        | $\int i^2 dt$ | 4.0   |                     | $A^2 s$    |                 |
| Peak Gate Power Dissipation           | $P_{GM}$      | 3 ( $f \geq 50$ Hz, Duty $\leq 10$ %)         |                     | W          |                 |
| Average Gate Power Dissipation        | $P_{G(AV)}$   | 0.3   |                     | W          |                 |
| Peak Gate Current                     | $I_{GM}$      | $\pm 0.5$ ( $f \geq 50$ Hz, Duty $\leq 10$ %) |                     | A          |                 |
| Junction Temperature                  | $T_j$         | -40 to +125                                   |                     | $^\circ C$ |                 |
| Storage Temperature                   | $T_{stg}$     | -55 to +150                                   |                     | $^\circ C$ |                 |
| Isolation Voltage                     | —             | 1500 (AC 1 min)                               |                     | $V_{RMS}$  | Only AC03□_ISM  |

ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25 °C)

| ITEM                     | SYMBOL               | TEST CONDITIONS  | MIN.                 | TYP. | MAX. | UNIT | NOTE       |               |
|--------------------------|----------------------|--|----------------------|------|------|------|------------|---------------|
| Peak Off-State Current   | I <sub>DRM</sub>     | V <sub>DM</sub> = V <sub>DORM</sub><br>T <sub>j</sub> = 125 °C                                       | —                    | —    | 1    | mA   |            |               |
| On-State Voltage         | V <sub>TM</sub>      | I <sub>TM</sub> = 5 A  | —                    | —    | 1.8  | V    | See Fig. 1 |               |
| Gate-trigger Current     | I <sub>GT</sub>      | V <sub>DM</sub> = 12 V<br>R <sub>L</sub> = 30 Ω  | T <sub>2</sub> +, G+ | —    | —    | 15   | mA         | See Fig. 4, 5 |
|                          |                      |  | T <sub>2</sub> -, G+ | —    | —    | 45   |            |               |
|                          |                      |  | T <sub>2</sub> +, G- | —    | —    | 15   |            |               |
|                          |                      |  | T <sub>2</sub> -, G- | —    | —    | 15   |            |               |
| Gate-trigger Voltage     | V <sub>GT</sub>      | V <sub>DM</sub> = 12 V<br>R <sub>L</sub> = 30 Ω  | T <sub>2</sub> +, G+ | —    | —    | 1.5  | V          | See Fig. 4, 5 |
|                          |                      |  | T <sub>2</sub> -, G+ | —    | —    | 2.0  |            |               |
|                          |                      |  | T <sub>2</sub> -, G- | —    | —    | 1.5  |            |               |
|                          |                      |  | T <sub>2</sub> +, G- | —    | —    | 1.5  |            |               |
| Gate Non-Trigger Voltage | V <sub>GD</sub>      | T <sub>j</sub> = 125 °C,<br>V <sub>DM</sub> = 1/2 V <sub>DORM</sub>                                  | 0.2                  | —    | —    | V    |            |               |
| Commutating dV/dt        | (dv/dt) <sub>C</sub> | T <sub>j</sub> = 125 °C<br>(di <sub>T</sub> /dt) <sub>C</sub> = -1.6 A/ms<br>V <sub>DM</sub> = 400 V | 5                    | —    | —    | V/μs |            |               |
| Holding Current          | I <sub>H</sub>       | V <sub>D</sub> = 24 V, I <sub>TM</sub> = 5 A   | —                    | 5    | —    | mA   |            |               |
| Thermal Resistance       | R <sub>th(j-c)</sub> | Junction to Case   | —                    | —    | 4.5  | °C/W | See Fig. 7 |               |
|                          | R <sub>th(j-a)</sub> | Junction to Ambient  | —                    | —    | 65   | °C/W |            |               |

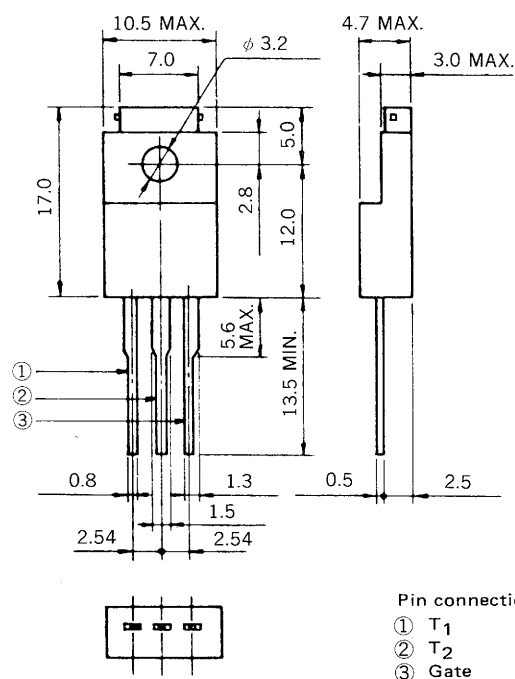
PACKAGE DIMENSIONS (Unit : mm)

AC03DSM, AC03FSM



▨ Mold Coating

AC03DSMA, AC03FSMA



Pin connection

- ① T<sub>1</sub>
- ② T<sub>2</sub>
- ③ Gate

CHARACTERISTICS

Fig. 1  $i_T - v_T$  CHARACTERISTIC

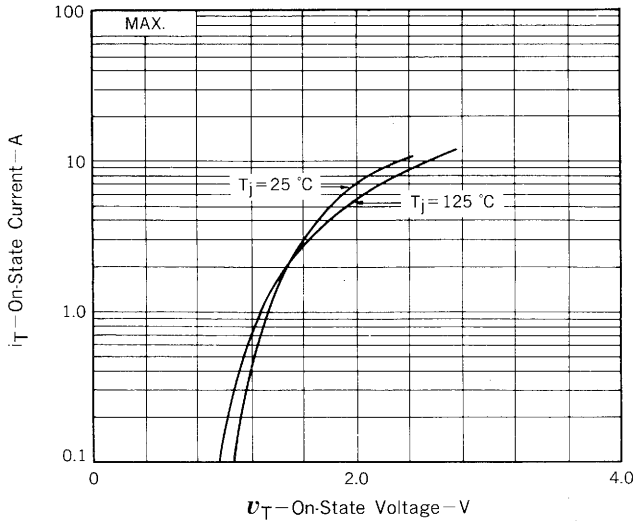


Fig. 2  $I_{TSM}$  RATING

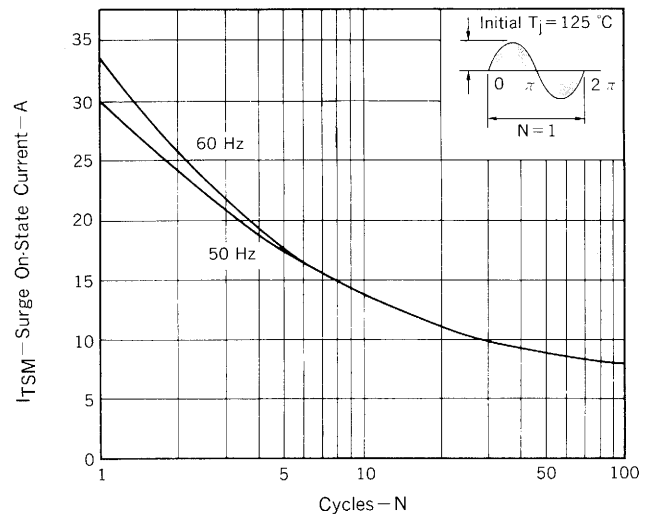


Fig. 3  $V_G - I_G$  RATING

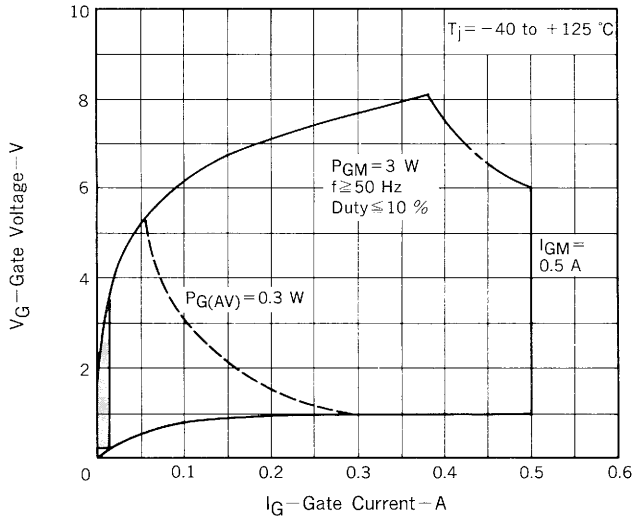


Fig. 4  $V_{GT} - I_{GT}$  CHARACTERISTIC

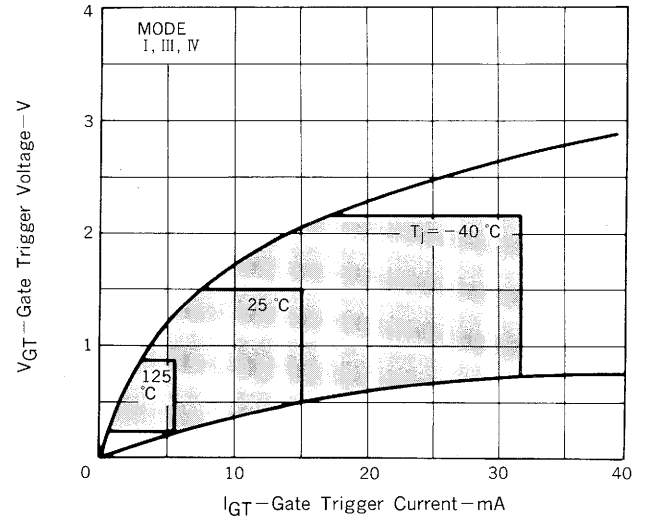


Fig. 5  $V_{GT} - I_{GT}$  CHARACTERISTIC

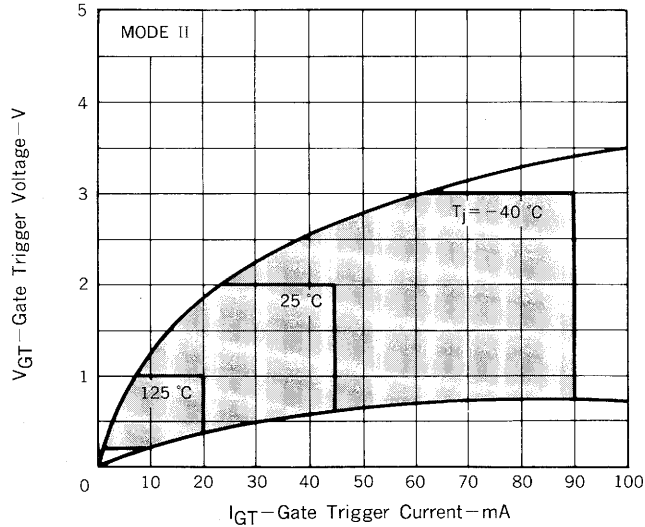


Fig. 6  $I_{GT} - T_a$  TYPICAL DISTRIBUTION

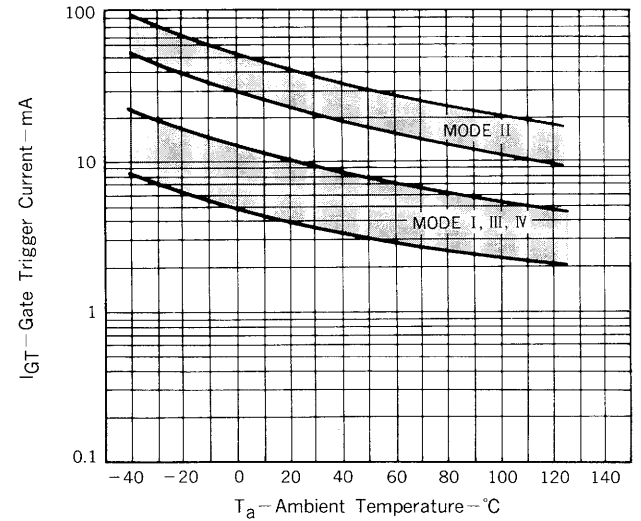


Fig. 7  $V_{GT} - T_a$  TYPICAL DISTRIBUTION

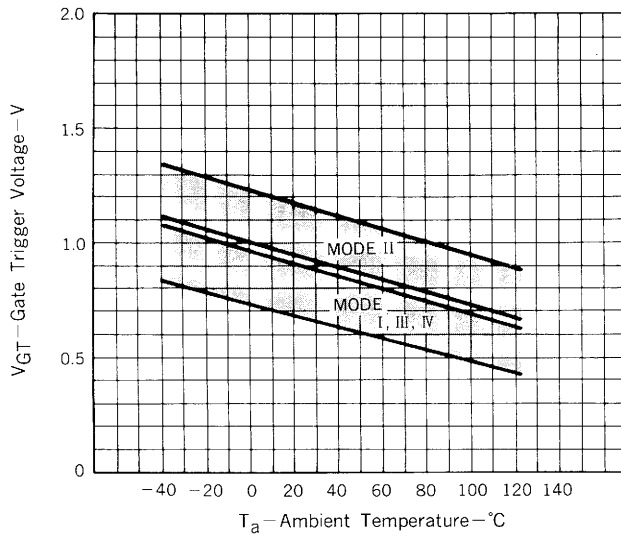


Fig. 8  $i_{GT} - \tau$  TYPICAL DISTRIBUTION

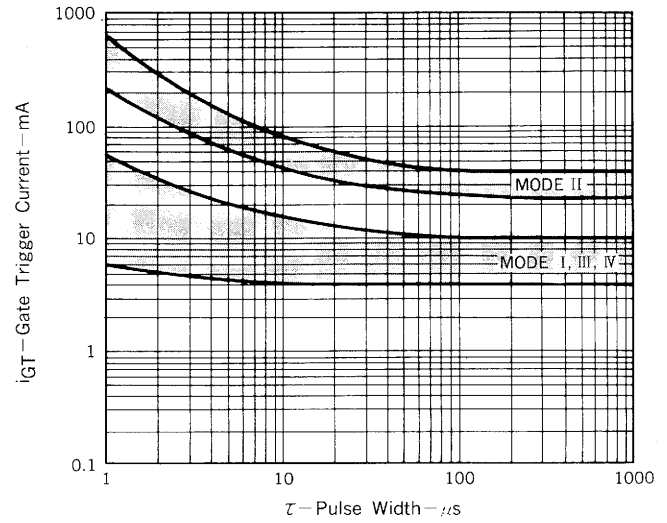


Fig. 9  $v_{GT} - \tau$  TYPICAL DISTRIBUTION

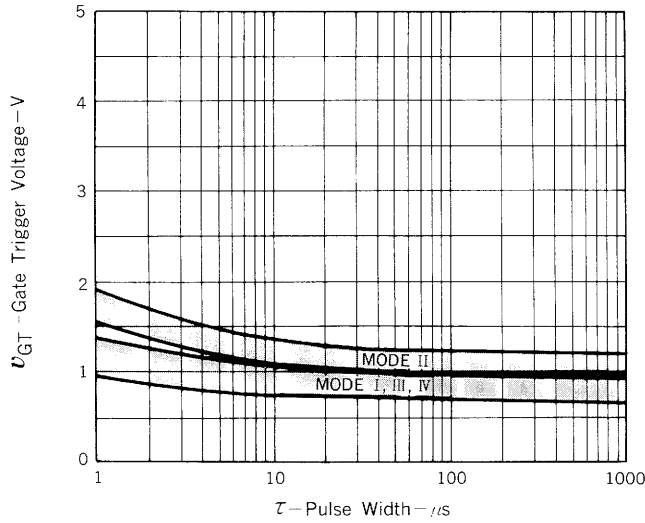


Fig. 10  $I_H - T_a$  TYPICAL DISTRIBUTION

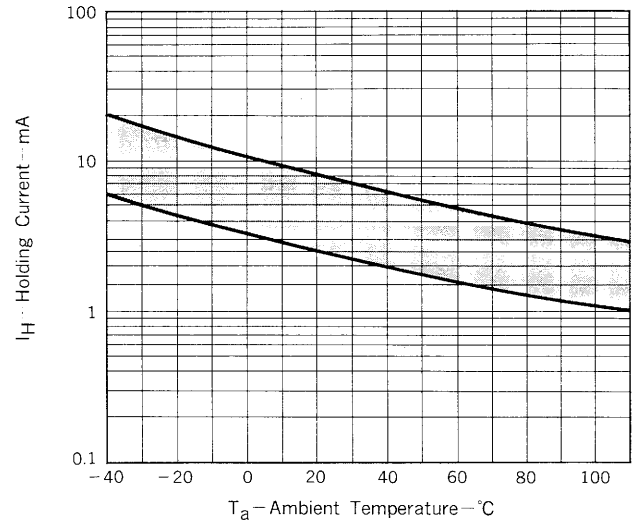


Fig. 11  $P_{T(AV)} - I_{T(RMS)}$  CHARACTERISTIC

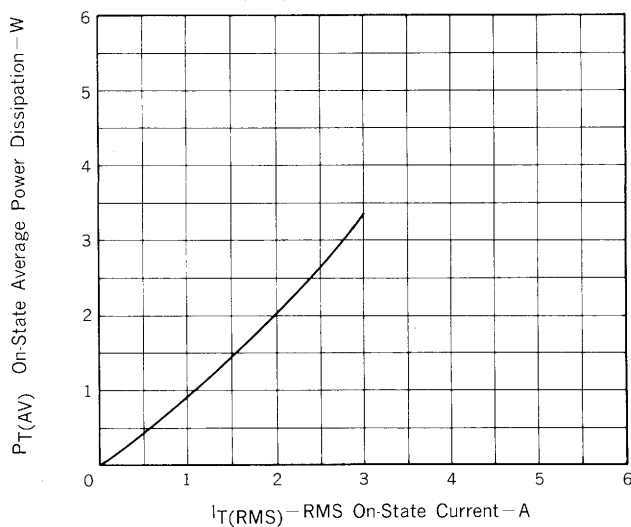


Fig. 12  $T_c - I_{T(RMS)}$  RATING

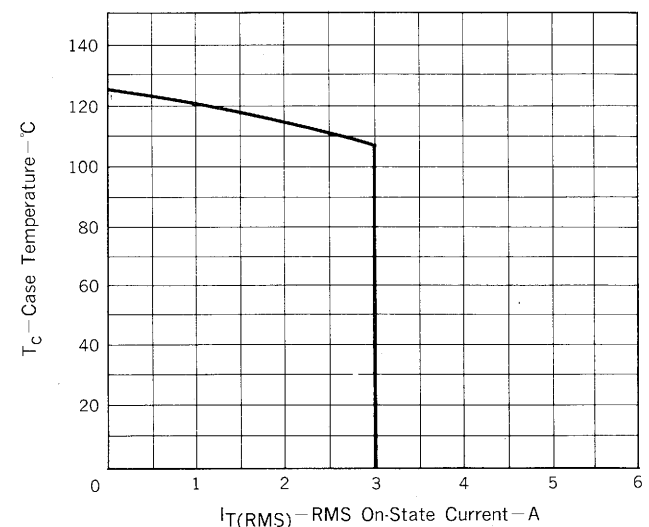


Fig. 13  $T_a - I_{T(RMS)}$  RATING

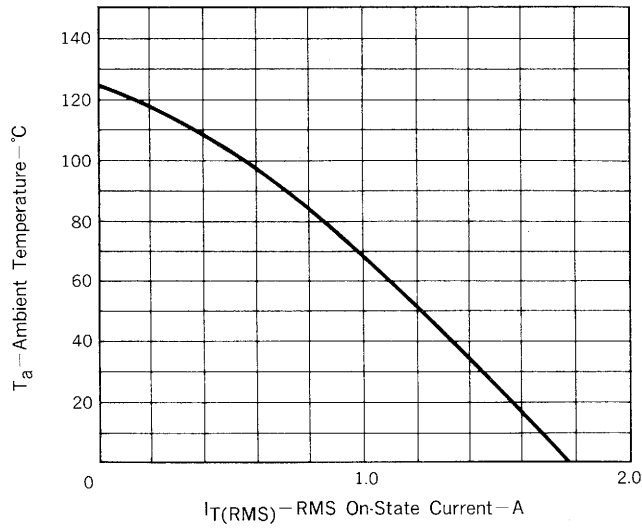


Fig. 14  $Z_{th}$  CHARACTERISTIC

