

1 A POWER MINI MOLD TRIAC

DESCRIPTION

The AC01DJM is all diffused type TRIAC granted RMS On-state Current 1 Amps, with rated voltages up to 400 volts.

This is designed specifically to be driven by low-level logic in any gating mode.

FEATURES

- The AC01DJM offers sensitive gate specs of 5 and 10 mA, in all for quadrants.
- You can fill the gap between microprocessor controls and the power-output requirements.
- This is housed in the popular SOT-89 package.
- The package features excellent environmental stress and temperature cycling.

QUALITY GRADE

Standard

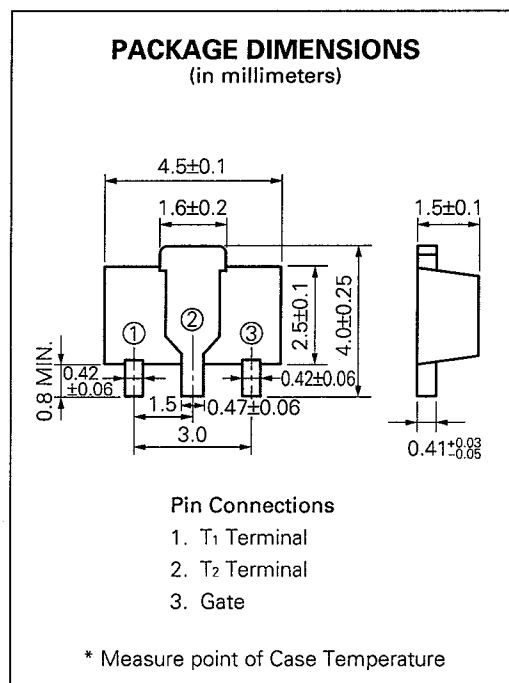
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

APPLICATIONS

Solid-state relays, microprocessor interfacing, TTL logic and various solid-state switch designs alone or with larger TRIAC.

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

| CHARACTERISTIC | SYMBOL | MAXIMUM RATINGS | UNIT | NOTE |
|---------------------------------|---------------------|-------------------------------|------------------|-------------|
| Repetitive Peak Off Voltage | V _{DRM} | 400 | V | |
| Non-repetitive Peak Off Voltage | V _{DSM} | 500 | V | |
| RMS On-State Current | I _{T(RMS)} | 1 (T _c = 113 °C) | A | See Fig. 12 |
| Peak Surge On-State Current | I _{TSM} | 7 (50 Hz), 8 (60 Hz) | A | See Fig. 2 |
| Fusing Current | $\int i^2 dt$ | 0.2 (1 ms ≤ t ≤ 10 ms) | A ² s | |
| Peak Gate Power Dissipation | P _{GM} | 1 (f ≥ 50 Hz, Duty ≤ 10 %) | W | |
| Average Gate Power Dissipation | P _{G(AV)} | 0.1 | W | |
| Peak Gate Current | I _{GM} | ±0.5 (f ≥ 50 Hz, Duty ≤ 10 %) | A | |
| Junction Temperature | T _j | 125 | °C | |
| Storage Temperature | T _{stg} | -55 to +150 | °C | |



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT | NOTE | |
|--|--------|----------------------|---|--|------|------|------|-------------|---------------|
| Peak Off-State Current | | I _{DRM} | V _{DM} = V _{DRM} | T _j = 25 °C | - | - | 10 | μA | |
| | | | | T _j = 125 °C | - | - | 100 | | |
| On-State Voltage | | V _{TM} | I _{TM} = 1.2 A | - | - | 1.5 | V | See Fig. 1 | |
| DC Gate Trigger Current | MODE I | I _{GT} | V _{DM} = 12 V R _L = 100 Ω | G; Positive, T ₂ ; Positive | - | - | 5 | mA | See Fig. 5, 7 |
| | II | | | G; Negative, T ₂ ; Positive | - | - | 10 | | |
| | III | | | G; Negative, T ₂ ; Negative | - | - | 5 | | |
| | IV | | | G; Positive, T ₂ ; Negative | - | - | 5 | | |
| DC Gate Trigger Voltage | MODE I | V _{GT} | V _{DM} = 12 V R _L = 100 Ω | G; Positive, T ₂ ; Positive | - | - | 1.0 | V | See Fig. 6, 8 |
| | II | | | G; Negative, T ₂ ; Positive | - | - | 1.5 | | |
| | III | | | G; Negative, T ₂ ; Negative | - | - | 1.0 | | |
| | IV | | | G; Positive, T ₂ ; Negative | - | - | 1.0 | | |
| Gate Non-Trigger Voltage | | V _{GD} | T _j = 125 °C, V _{DM} = 1/2 V _{DRM} | 0.1 | - | - | V | | |
| DC Holding Current | | I _H | V _D = 24 V, I _{TM} = 1 A | - | - | 10 | mA | | |
| Critical Rate of Rise of Off-State Voltage | | dv/dt | T _j = 125 °C, V _{DM} = 2/3 V _{DRM} Gate Open Circuited Exponential Waveform | - | 10 | - | V/μs | | |
| Critical Rate of Rise of Commutating Off-State Voltage | | (dv/dt) _c | T _j = 125 °C, I _{TM} = 1.2 A (di _T /dt) _c = -0.5 A/ms V _{DM} = 400 V | 0.5 | - | - | V/μs | | |
| Steady State | | R _{th(j-c)} | Junction to Case | - | - | 10 | °C/W | See Fig. 13 | |
| Thermal Resistance | | R _{th(j-a)} | Junction to Ambient | - | - | 120 | °C/W | | |

TYPICAL CHARACTERISTICS (T_a = 25 °C)

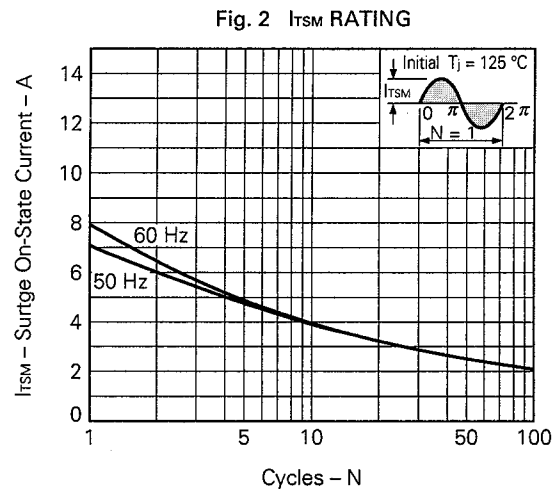
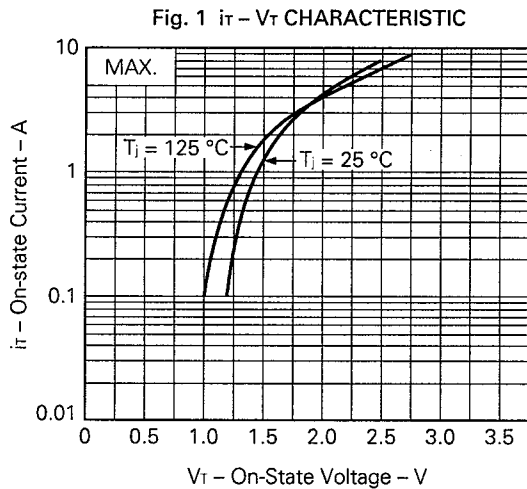


Fig. 3 $V_G - I_G$ RATING

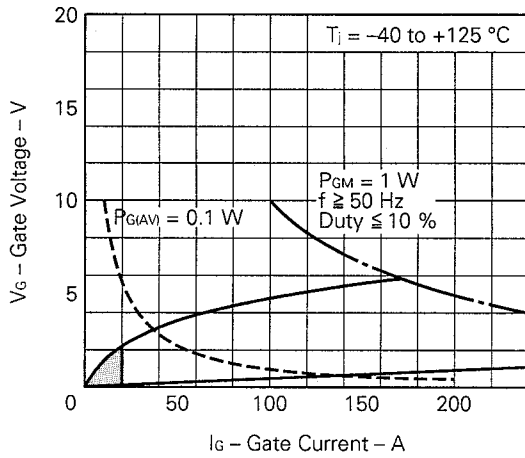


Fig. 4 GATE CHARACTERISTIC

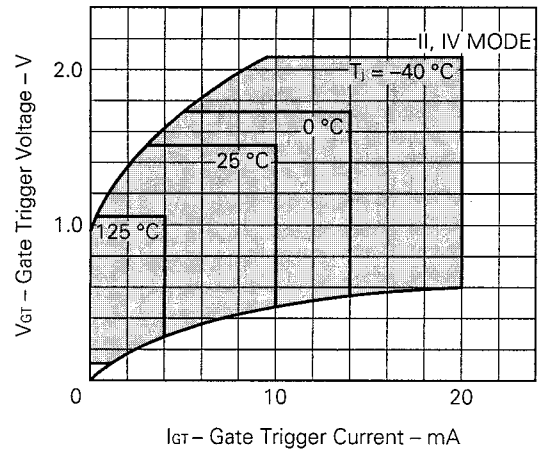


Fig. 5 GATE CHARACTERISTIC

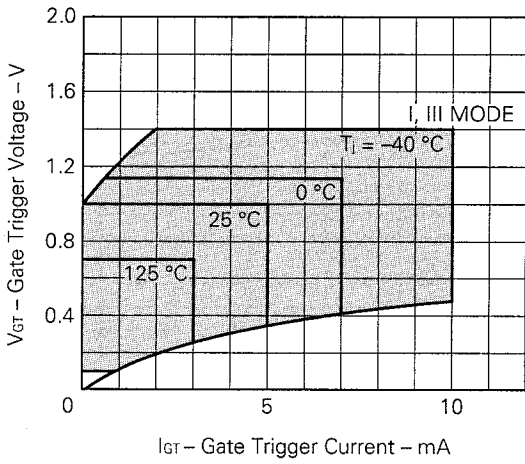


Fig. 6 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

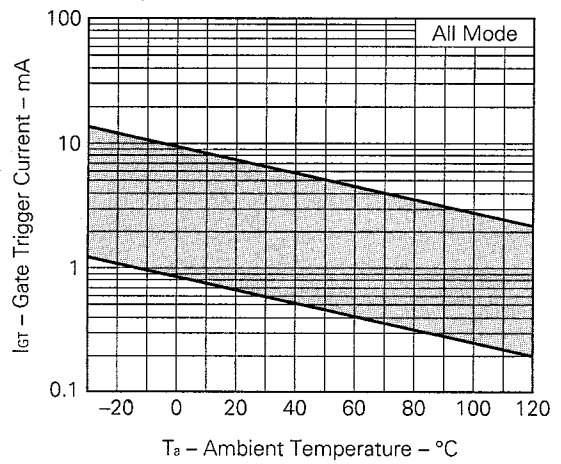


Fig. 7 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

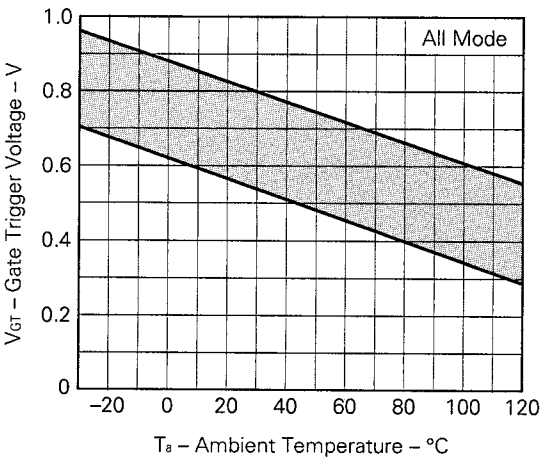


Fig. 8 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

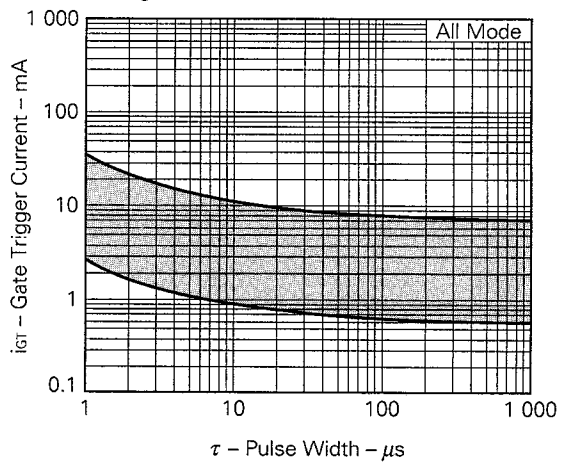


Fig. 9 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

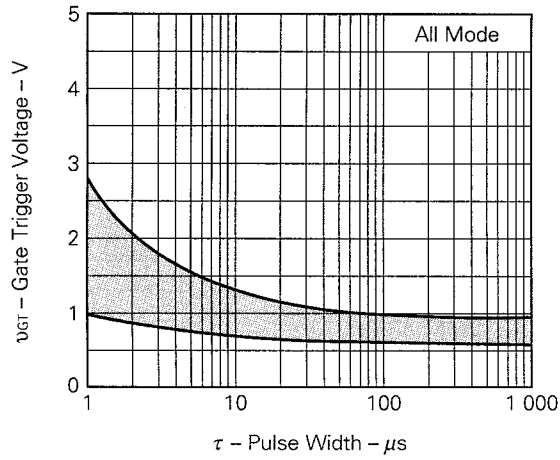


Fig. 10 $I_H - T_a$ TYPICAL DISTRIBUTION

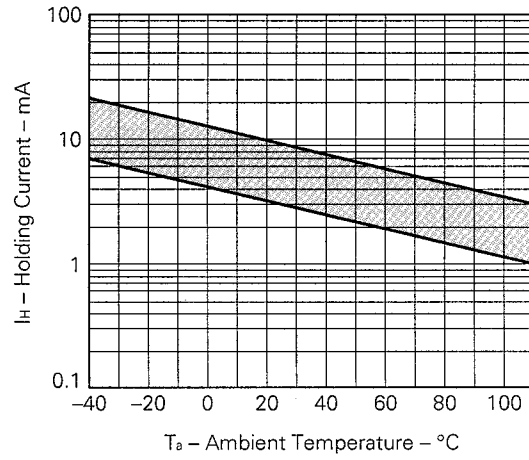


Fig. 11 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

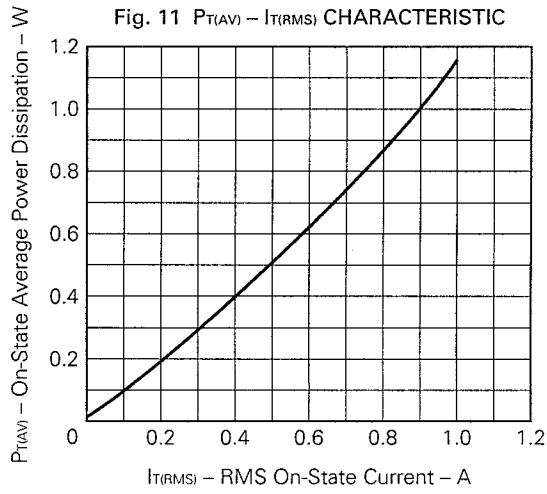


Fig. 12 $T_c - I_{T(RMS)}$ RATING

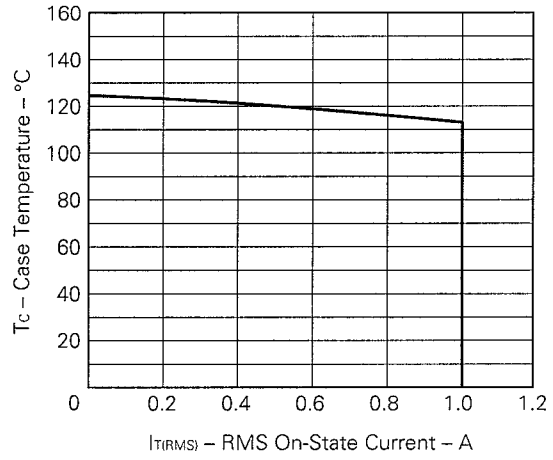


Fig. 13 $T_a - I_{T(RMS)}$ RATING

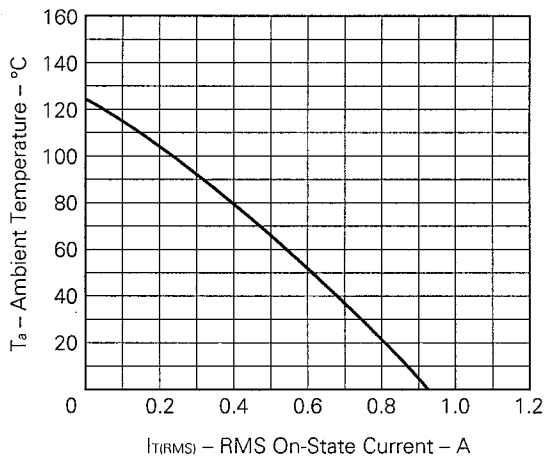
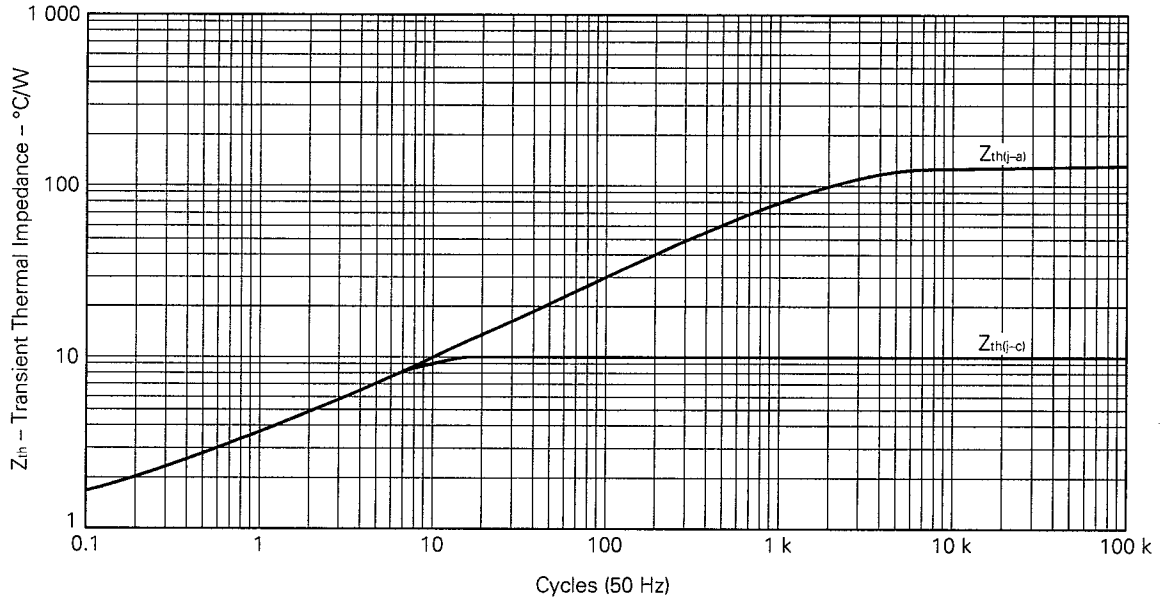


Fig. 14 Z_{th} CHARACTERISTIC



REFERENCE

| Document name | Document No. |
|--|--------------|
| Quality control guide of semiconductor devices | MEI-1202 |
| Assembly manual of semiconductor devices | IEI-1207 |

[MEMO]

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