# CR8PM

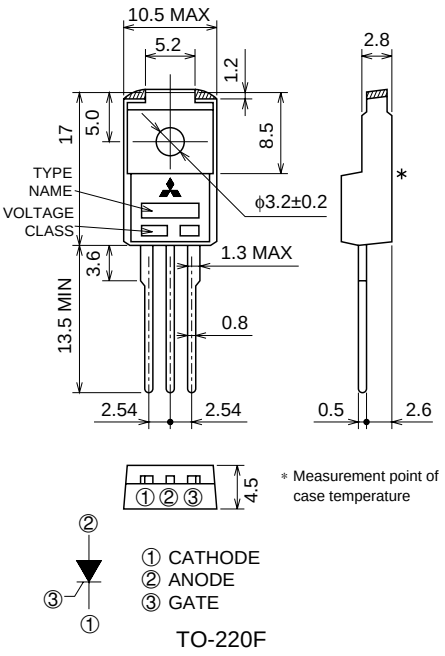
**MEDIUM POWER USE**

**INSULATED TYPE, GLASS PASSIVATION TYPE**

**CR8PM**

- **$I_{T\ (AV)}$ ..... 8A**
- **$V_{DRM}$ ..... 400V/600V**
- **$I_{GT}$ ..... 15mA**
- **$V_{iso}$ ..... 1500V**
- **UL Recognized: File No. E80276**

**OUTLINE DRAWING** Dimensions in mm




## APPLICATION

Switching mode power supply, ECR, regulator for autocycle, motor control

## MAXIMUM RATINGS ($T_a$=25°C, unless otherwise noted)

| Symbol | Parameter | Voltage class | | Unit |
|---|---|---|---|---|
| | | 8 | 12 | |
| $V_{RRM}$ | Repetitive peak reverse voltage | 400 | 600 | V |
| $V_{RSM}$ | Non-repetitive peak reverse voltage | 500 | 720 | V |
| $V_{R\ (DC)}$ | DC reverse voltage | 320 | 480 | V |
| $V_{DRM}$ | Repetitive peak off-state voltage | 400 | 600 | V |
| $V_{D\ (DC)}$ | DC off-state voltage | 320 | 480 | V |

| Symbol | Parameter | Conditions | Ratings | Unit |
|---|---|---|---|---|
| $I_{T\ (RMS)}$ | RMS on-state current | | 12.6 | A |
| $I_{T\ (AV)}$ | Average on-state current | Commercial frequency, sine half wave, 180° conduction, $T_C$=81°C | 8.0 | A |
| $I_{TSM}$ | Surge on-state current | 60Hz sine half wave 1 full cycle, peak value, non-repetitive | 120 | A |
| $I^2t$ | $I^2t$ for fusing | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current | 60 | $A^2s$ |
| $P_{GM}$ | Peak gate power dissipation | | 5.0 | W |
| $P_{G\ (AV)}$ | Average gate power dissipation | | 0.5 | W |
| $V_{FGM}$ | Peak gate forward voltage | | 6.0 | V |
| $V_{RGM}$ | Peak gate reverse voltage | | 10 | V |
| $I_{FGM}$ | Peak gate forward current | | 2.0 | A |
| $T_j$ | Junction temperature | | –40 ~ +125 | °C |
| $T_{stg}$ | Storage temperature | | –40 ~ +125 | °C |
| — | Weight | Typical value | 2.0 | g |
| $V_{iso}$ | Isolation voltage | $T_a$=25°C, AC 1 minute, each terminal to case | 1500 | V |



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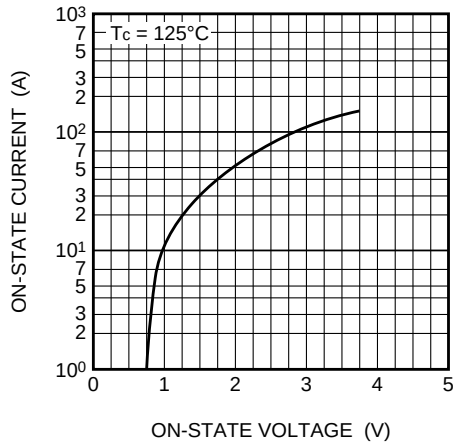
## ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $I_{RRM}$ | Repetitive peak reverse current | $T_j$=125°C, $V_{RRM}$ applied | — | — | 2.0 | mA |
| $I_{DRM}$ | Repetitive peak off-state current | $T_j$=125°C, $V_{DRM}$ applied | — | — | 2.0 | mA |
| $V_{TM}$ | On-state voltage | $T_C$=25°C, $I_{TM}$=25A, instantaneous value | — | — | 1.4 | V |
| $V_{GT}$ | Gate trigger voltage | $T_a$=25°C, $V_D$=6V, $I_T$=1A | — | — | 1.0 | V |
| $V_{GD}$ | Gate non-trigger voltage | Tj=125°C, VD=1/2VDRM | 0.2 | — | — | V |
| $I_{GT}$ | Gate trigger current | $T_j$=25°C, $V_D$=6V, $I_T$=1A | — | — | 15 | mA |
| $I_H$ | Holding current | $T_j$=25°C, $V_D$=12V | — | 1.5 | — | mA |
| $R_{th\ (j-c)}$ | Thermal resistance | Junction to case ✻1 | — | — | 3.7 | °C/W |

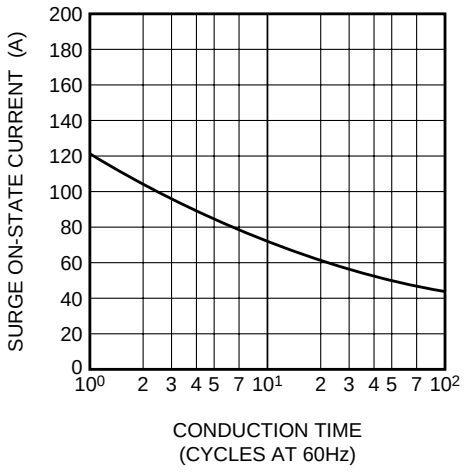
✻1. The contact thermal resistance $R_{th\ (j-c)}$ is 0.5°C/W with greased.

## PERFORMANCE CURVES

**MAXIMUM ON-STATE CHARACTERISTICS**




**RATED SURGE ON-STATE CURRENT**



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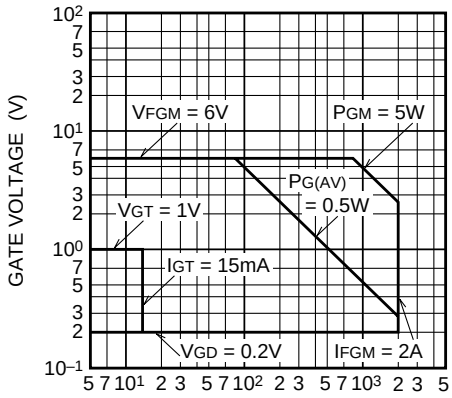
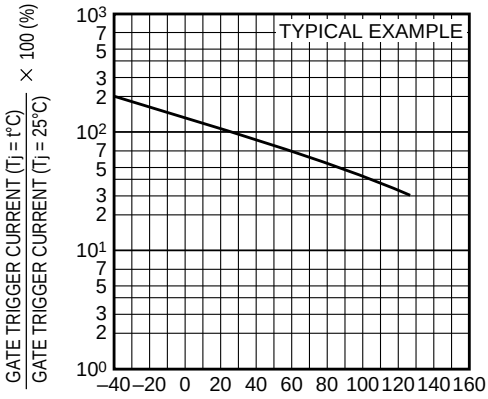
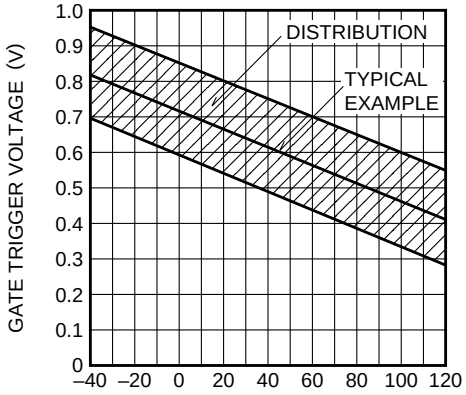
**GATE CHARACTERISTICS**



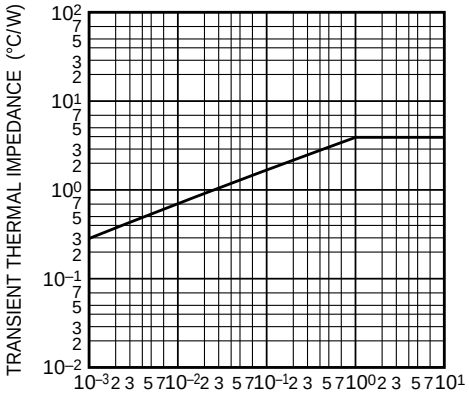

**GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE**



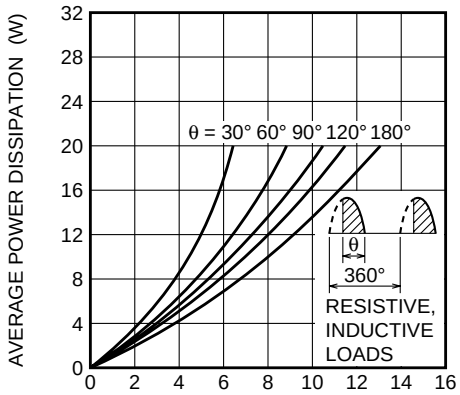

**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE**



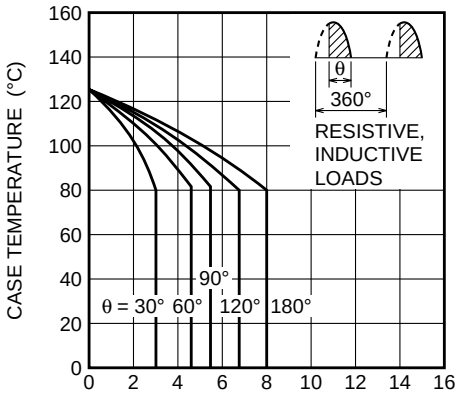

**MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)**




**MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE HALF WAVE)**




**ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)**



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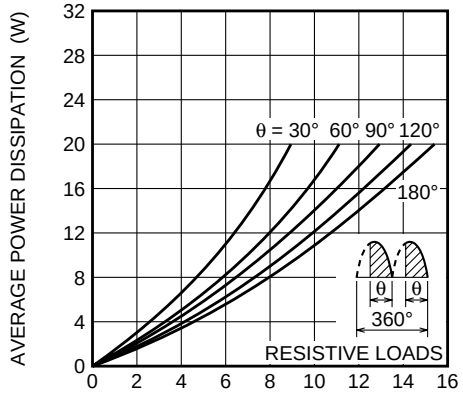
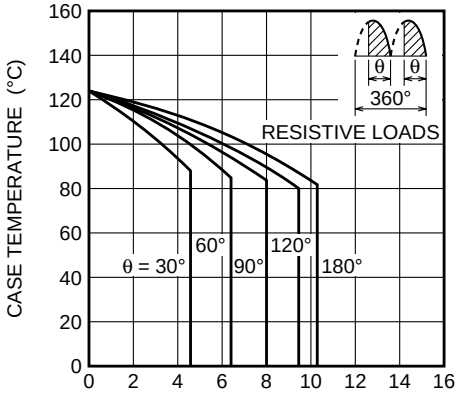
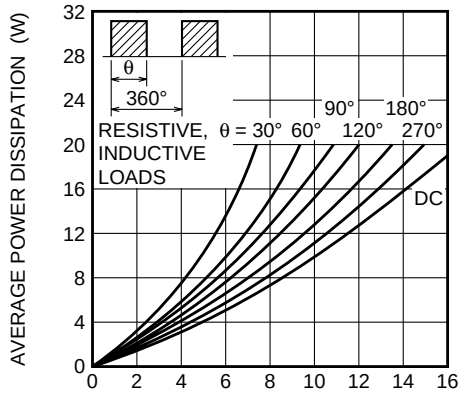
**MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE FULL WAVE)**



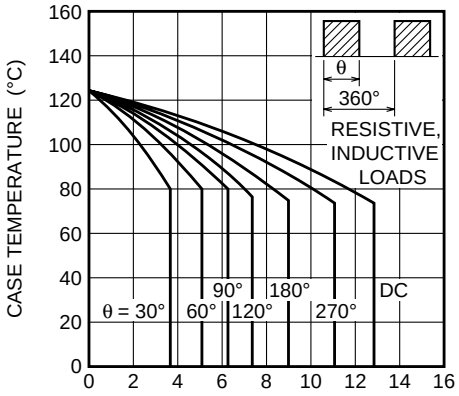

**ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE FULL WAVE)**



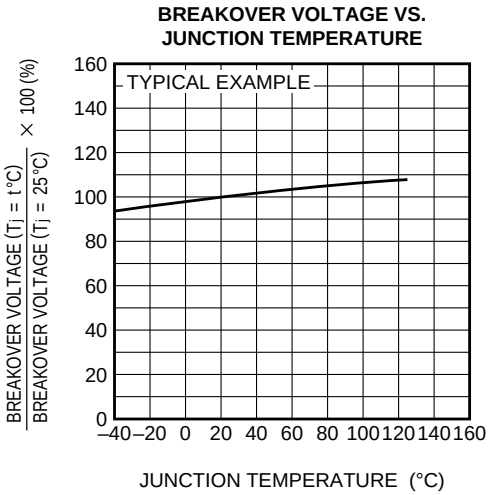

**MAXIMUM AVERAGE POWER DISSIPATION (RECTANGULAR WAVE)**



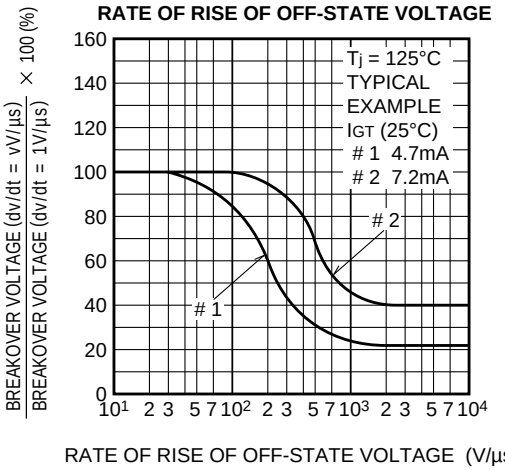

**ALLOWABLE CASE TEMPERATURE VS. AVERAGE ON-STATE CURRENT (RECTANGULAR WAVE)**




**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE**




**BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE**



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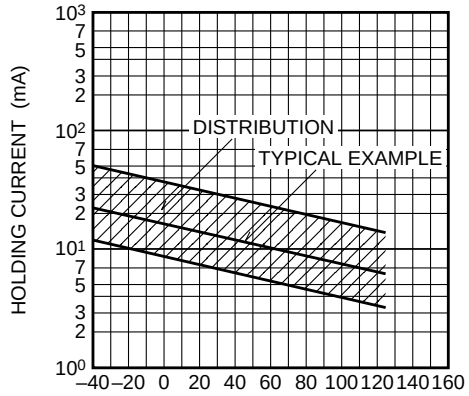
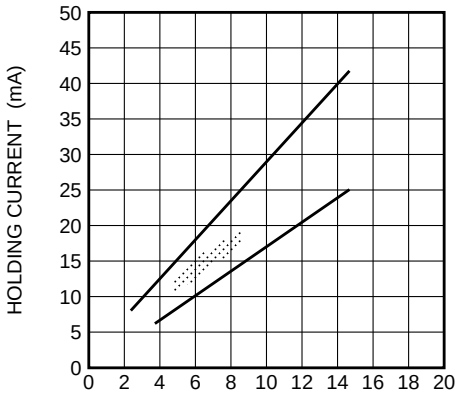
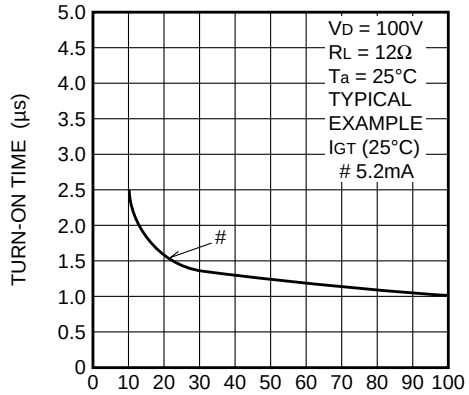
**HOLDING CURRENT VS. JUNCTION TEMPERATURE**



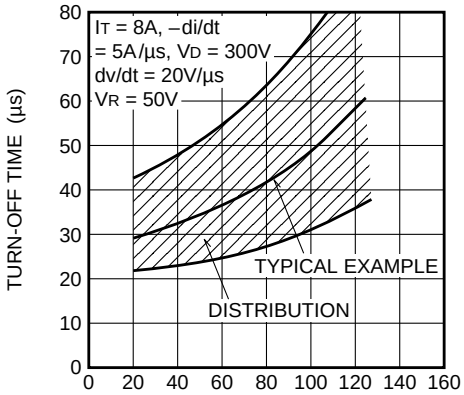

**HOLDING CURRENT VS. GATE TRIGGER CURRENT**



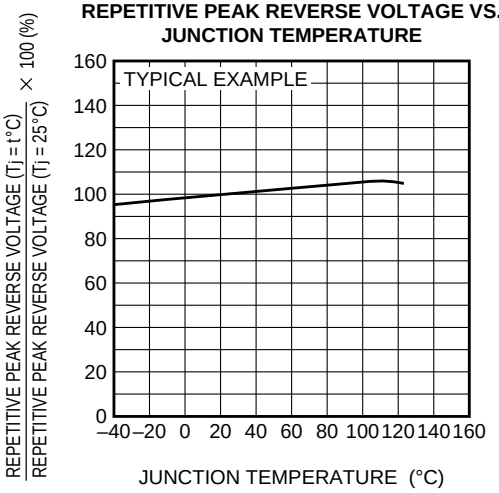

**TURN-ON TIME VS. GATE CURRENT**



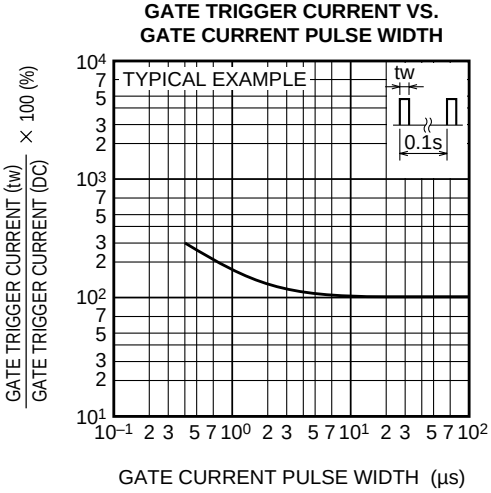

**TURN-OFF TIME VS. JUNCTION TEMPERATURE**




**REPETITIVE PEAK REVERSE VOLTAGE VS. JUNCTION TEMPERATURE**




**GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH**



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