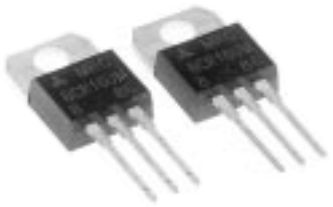
# BCR16UM

**MEDIUM POWER USE**

**INSULATED TYPE, GLASS PASSIVATION TYPE**

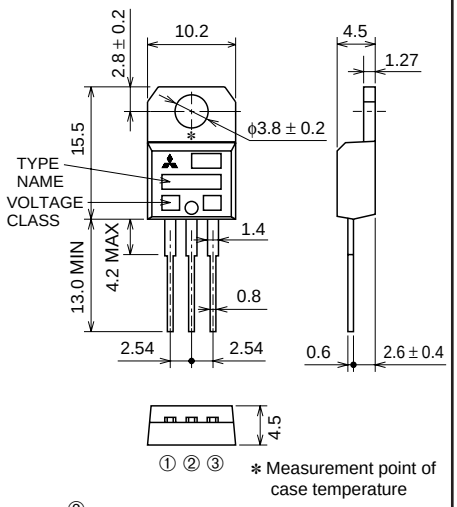
**BCR16UM**



- $I_{T\ (RMS)}$ ..... 16A
- $V_{DRM}$ .....400V/600V
- $I_{FGT\ I}$, $I_{RGT\ I}$, $I_{RGT\ III}$ ..... 15mA
- $V_{iso}$ ..... 1500V

**OUTLINE DRAWING**

Dimensions in mm




TO-220

## APPLICATION

Light dimmer

## MAXIMUM RATINGS

| Symbol | Parameter | Voltage class | | Unit |
|---|---|---|---|---|
| | | 8 | 12 | |
| $V_{DRM}$ | Repetitive peak off-state voltage *1 | 400 | 600 | V |
| $V_{DSM}$ | Non-repetitive peak off-state voltage *1 | 500 | 720 | V |

| Symbol | Parameter | Conditions | Ratings | Unit |
|---|---|---|---|---|
| $I_{T\ (RMS)}$ | RMS on-state current | Commercial frequency, sine full wave 360° conduction, $T_C$=79°C *3 | 16 | A |
| $I_{TSM}$ | Surge on-state current | 60Hz sinewave 1 full cycle, peak value, non-repetitive | 170 | A |
| $I^2t$ | $I^2t$ for fusing | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current | 121 | $A^2s$ |
| $P_{GM}$ | Peak gate power dissipation | | 5 | W |
| $P_{G\ (AV)}$ | Average gate power dissipation | | 0.5 | W |
| $V_{GM}$ | Peak gate voltage | | 10 | V |
| $I_{GM}$ | Peak gate current | | 2 | A |
| $T_j$ | Junction temperature | | –40 ~ +125 | °C |
| $T_{stg}$ | Storage temperature | | –40 ~ +125 | °C |
| — | Weight | Typical value | 2.3 | g |
| $V_{iso}$ | Isolation voltage | $T_a$=25°C, AC 1 minute, $T_1$ · $T_2$ · G terminal to case | 1500 | V |

*1. Gate open.



MITSUBISHI ELECTRIC

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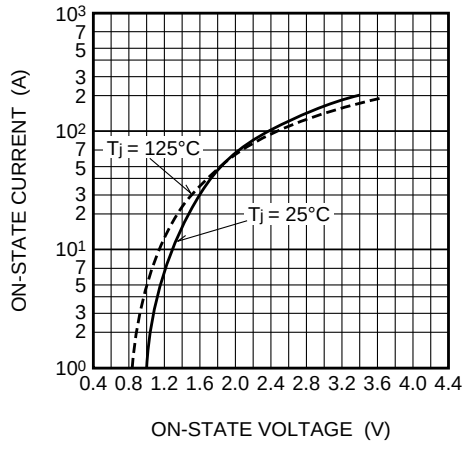
## ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | | Test conditions | Limits | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $I_{DRM}$ | 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 measurement | — | — | 1.5 | V |
| $V_{FGT\ I}$ | Gate trigger voltage *2 | I | $T_j$=25°C, $V_D$=6V, $R_L$=6Ω, $R_G$=330Ω | — | — | 1.5 | V |
| $V_{RGT\ I}$ | | II | | — | — | 1.5 | V |
| $V_{RGT\ III}$ | | III | | — | — | 1.5 | V |
| $I_{FGT\ I}$ | Gate trigger current *2 | I | $T_j$=25°C, $V_D$=6V, $R_L$=6Ω, $R_G$=330Ω | — | — | 15 | mA |
| $I_{RGT\ I}$ | | II | | — | — | 15 | mA |
| $I_{RGT\ III}$ | | III | | — | — | 15 | mA |
| $V_{GD}$ | Gate non-trigger voltage | | $T_j$=125°C, $V_D$=1/2$V_{DRM}$ | 0.2 | — | — | V |
| $R_{th\ (j-c)}$ | Thermal resistance | | Junction to case *3 *4 | — | — | 2.5 | °C/W |

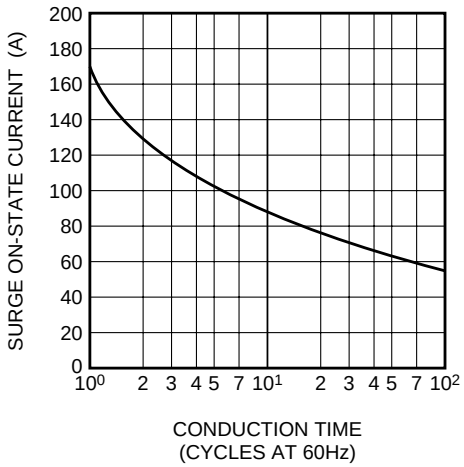
*2. Measurement using the gate trigger characteristics measurement circuit.
*3. Case temperature is measured at the $T_2$ terminal 1.5mm away from the molded case.
*4. The contact thermal resistance $R_{th\ (c-f)}$ in case of greasing is 1.0°C/W.

## PERFORMANCE CURVES

**MAXIMUM ON-STATE CHARACTERISTICS**




**RATED SURGE ON-STATE CURRENT**



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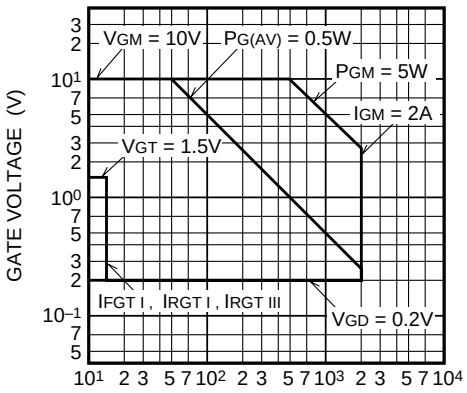
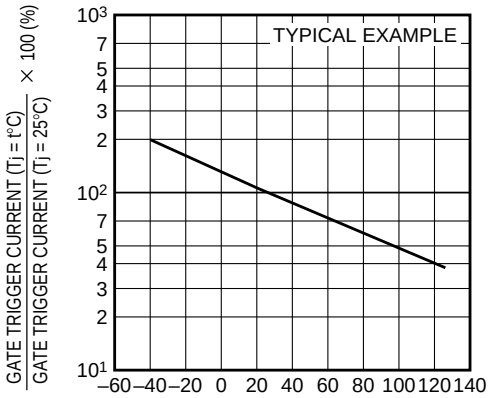
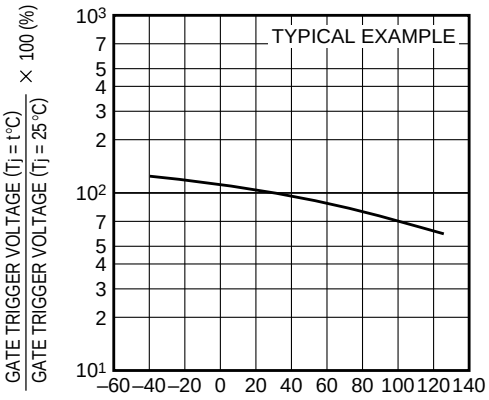
### GATE CHARACTERISTICS



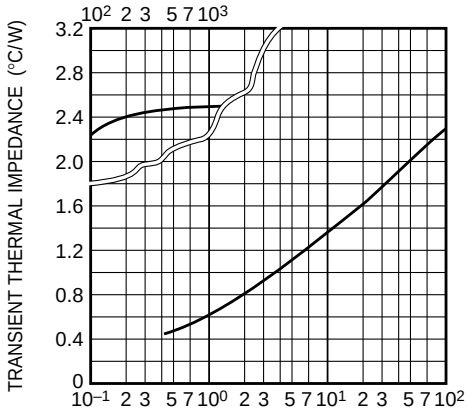

### GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE



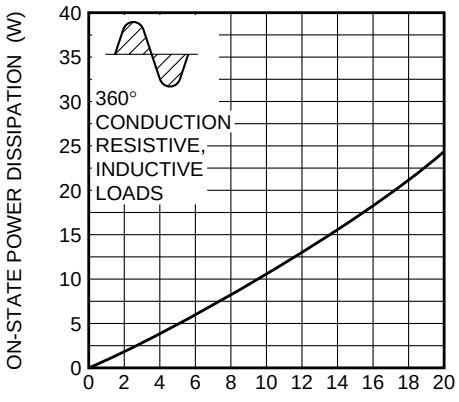

### GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE



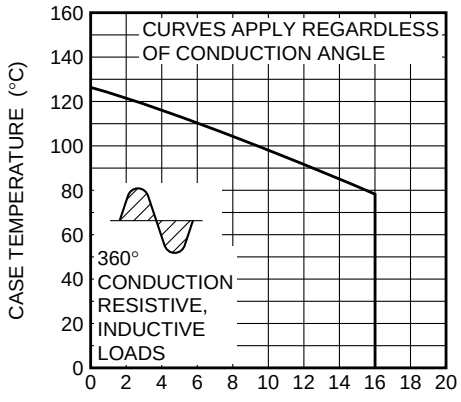

### MAXIMUM TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)




### MAXIMUM ON-STATE POWER DISSIPATION




### ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



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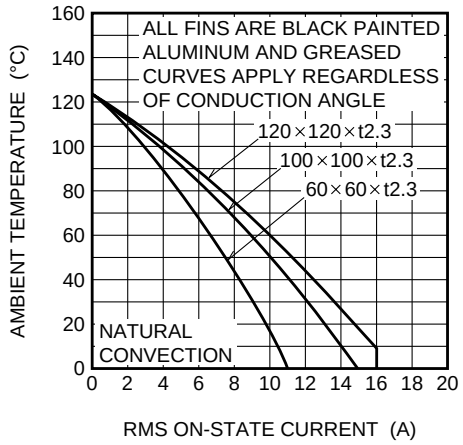
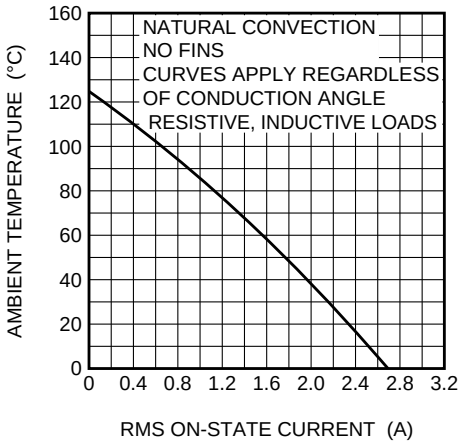
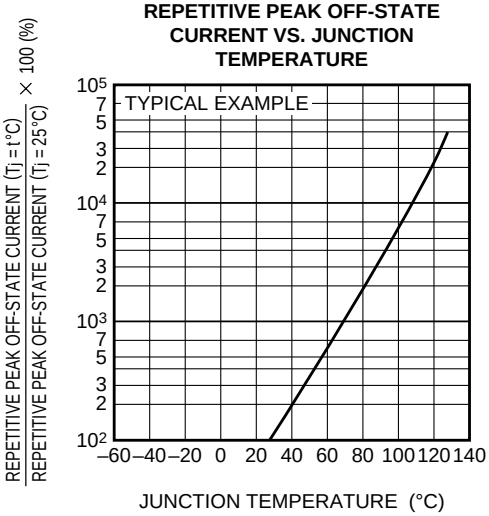
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



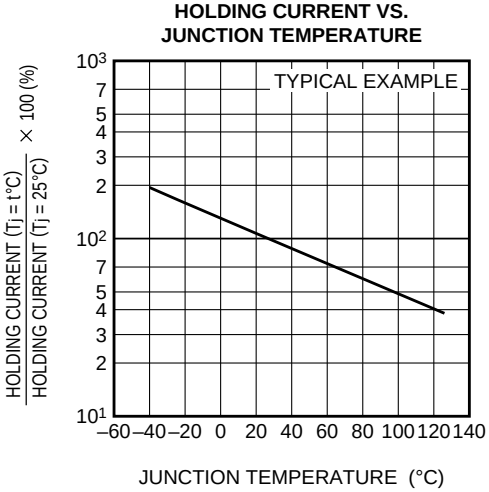

**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



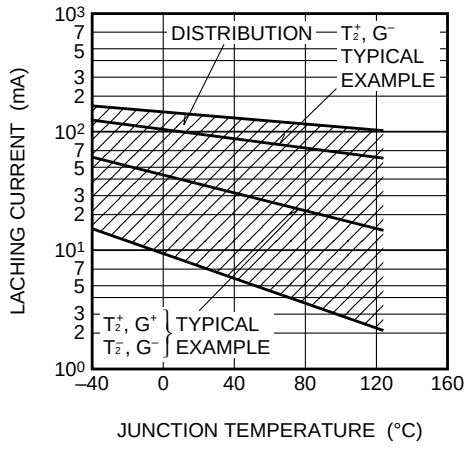

**REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE**



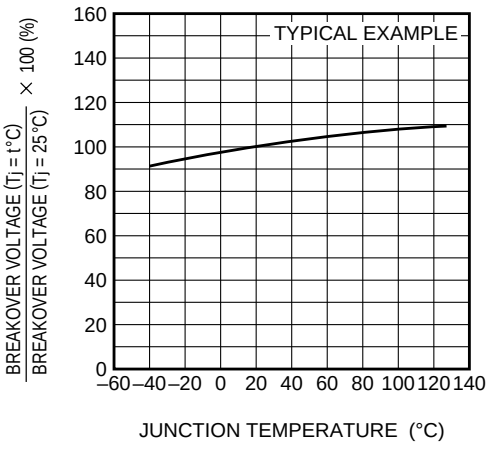

**HOLDING CURRENT VS. JUNCTION TEMPERATURE**



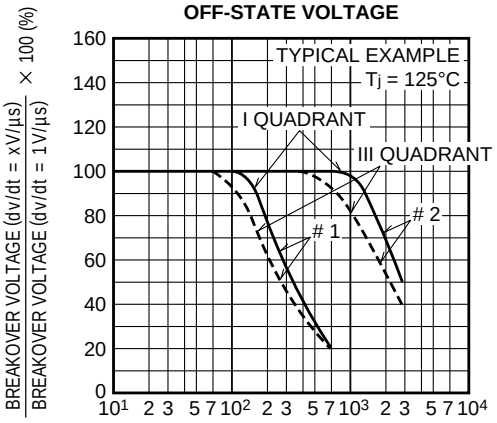

**LACHING CURRENT VS. JUNCTION TEMPERATURE**



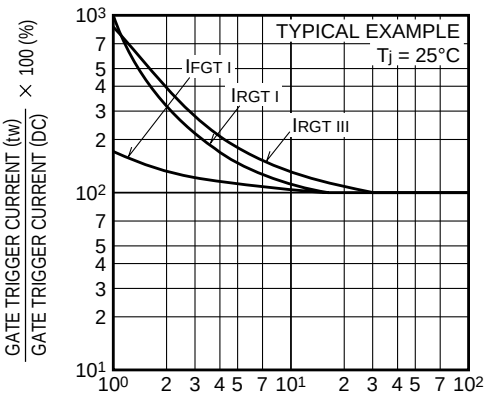

**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE**



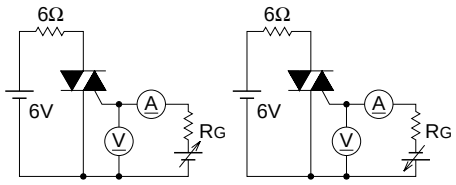
**BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE**




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



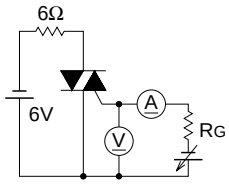

**GATE TRIGGER CHARACTERISTICS TEST CIRCUITS**




TEST PROCEDURE Ⅰ




TEST PROCEDURE Ⅱ




TEST PROCEDURE Ⅲ

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