

BCR16KM-12LC

Triac

Medium Power Use

REJ03G0328-0200

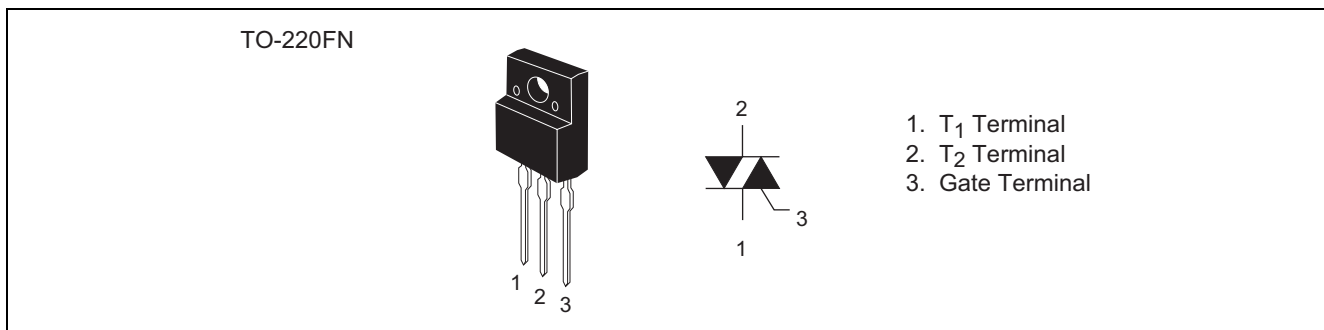
Rev.2.00

Dec.17.2004

Features

- $I_{T(RMS)}$: 16 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , I_{RGT} : 50 mA
- V_{ISO} : 2000 V
- The product guaranteed maximum junction temperature 150°C.
- Insulated Type
- Planar Passivation Type

Outline



Applications

Motor control, heater control

Maximum Ratings

| Parameter | Symbol | Voltage class | Unit |
|--|-----------|---------------|------|
| | | 12 | |
| Repetitive peak off-state voltage ^{Note1} | V_{DRM} | 600 | V |
| Non-repetitive peak off-state voltage ^{Note1} | V_{DSM} | 700 | V |

| Parameter | Symbol | Ratings | Unit | Conditions |
|--------------------------------|-------------|--------------|----------------------|--|
| RMS on-state current | I_T (RMS) | 16 | A | Commercial frequency, sine full wave 360° conduction, $T_c = 75^\circ\text{C}$ |
| Surge on-state current | I_{TSM} | 96 | A | 60Hz sinewave 1 full cycle, peak value, non-repetitive |
| I^2t for fusing | I^2t | 38 | A^2s | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current |
| Peak gate power dissipation | P_{GM} | 5 | W | |
| Average gate power dissipation | $P_{G(AV)}$ | 0.5 | W | |
| Peak gate voltage | V_{GM} | 10 | V | |
| Peak gate current | I_{GM} | 2 | A | |
| Junction temperature | T_j | - 40 to +150 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | - 40 to +150 | $^\circ\text{C}$ | |
| Mass | — | 2.0 | g | Typical value |
| Isolation voltage | Viso | 2000 | V | $T_a = 25^\circ\text{C}$, AC 1 minute, T_1 - T_2 -G terminal to case |

Notes: 1. Gate open.

Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions | |
|---|---------------|--------------|------|------|---------------------------|---|---|
| Repetitive peak off-state current | I_{DRM} | — | — | 2.0 | mA | $T_j = 125^\circ\text{C}$, V_{DRM} applied | |
| On-state voltage | V_{TM} | — | — | 1.75 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 25\text{ A}$, Instantaneous measurement | |
| Gate trigger voltage ^{Note2} | I | V_{FGTI} | — | — | 1.5 | V | $T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$ |
| | II | V_{RGTI} | — | — | 1.5 | V | |
| | III | V_{RGTIII} | — | — | 1.5 | V | |
| Gate trigger current ^{Note2} | I | I_{FGTI} | — | — | 50 | mA | $T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$ |
| | II | I_{RGTI} | — | — | 50 | mA | |
| | III | I_{RGTIII} | — | — | 50 | mA | |
| Gate non-trigger voltage | V_{GD} | 0.2 | — | — | V | $T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$ | |
| Thermal resistance | $R_{th(j-c)}$ | — | — | 3.4 | $^\circ\text{C}/\text{W}$ | Junction to case ^{Note3} | |
| Critical-rate of rise of off-state commutating voltage ^{Note4} | $(dv/dt)_c$ | 10 | — | — | $\text{V}/\mu\text{s}$ | $T_j = 125^\circ\text{C}$ | |

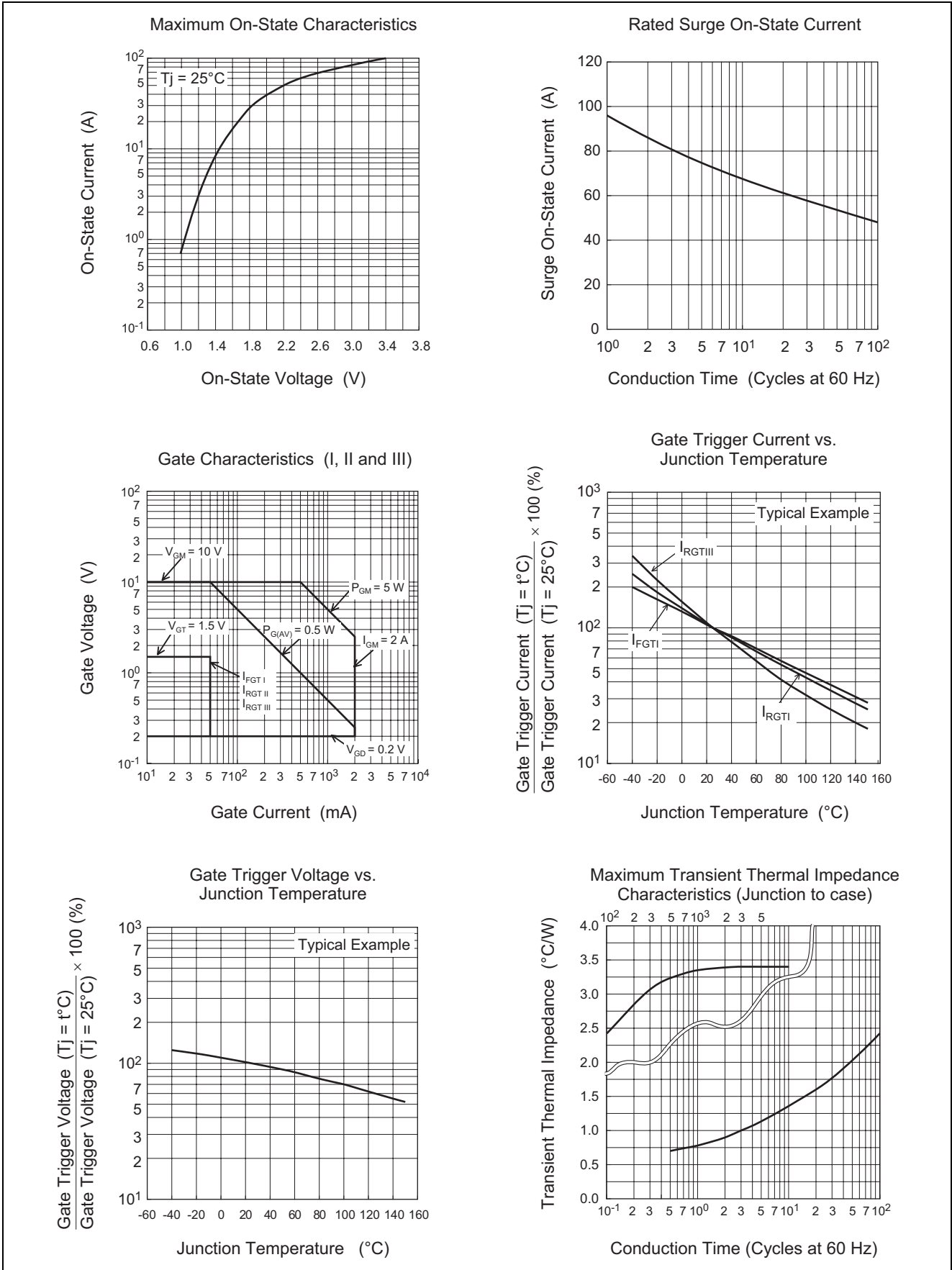
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

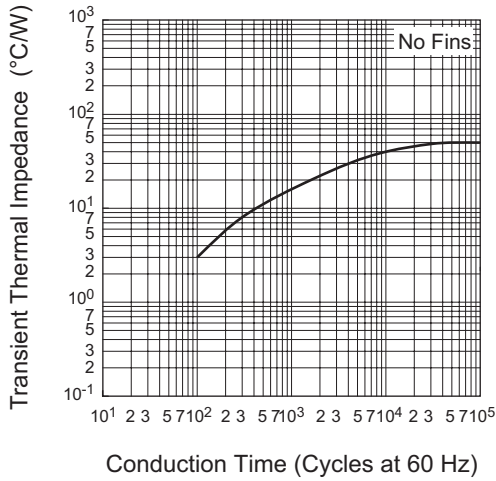
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|--|
| 1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -8\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$ | |

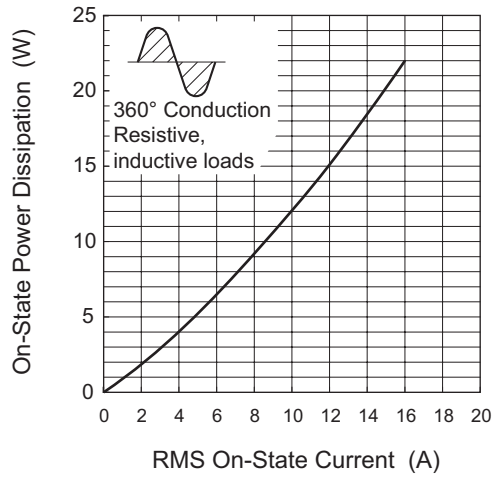
Performance Curves



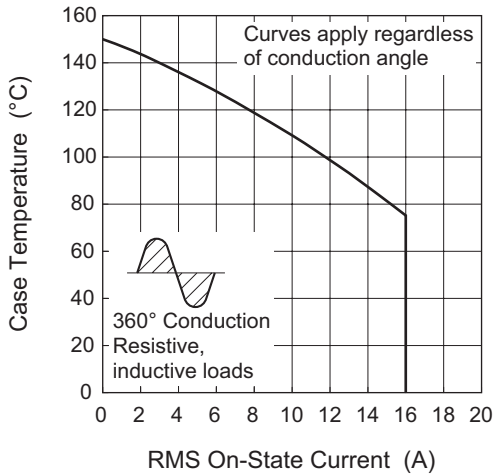
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



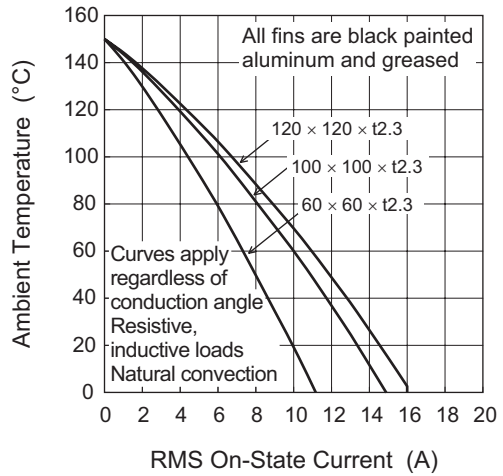
Maximum On-State Power Dissipation



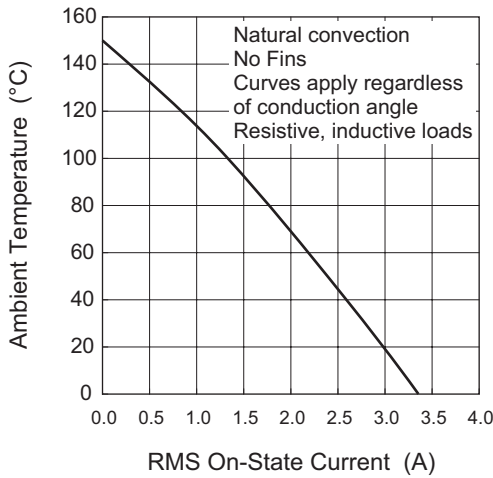
Allowable Case Temperature vs. RMS On-State Current



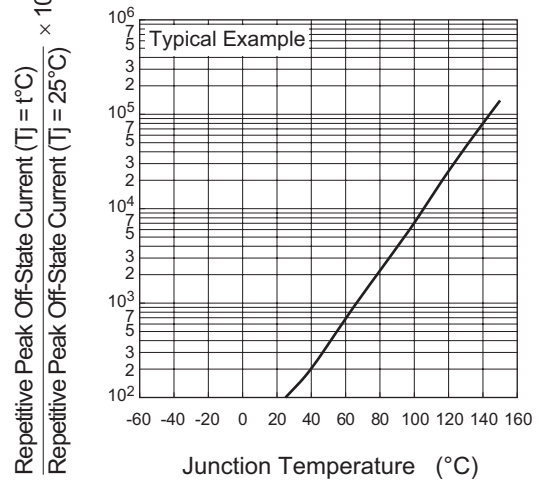
Allowable Ambient Temperature vs. RMS On-State Current



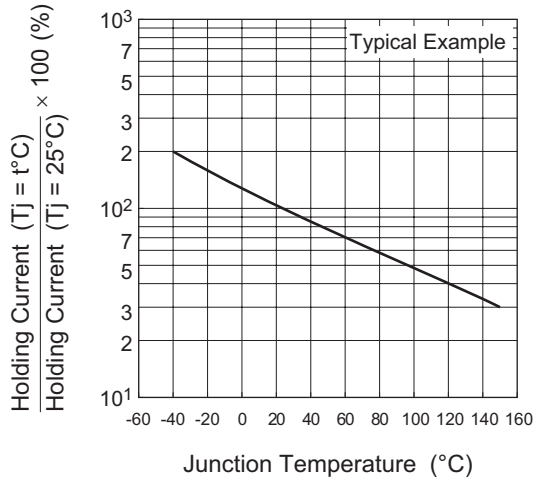
Allowable Ambient Temperature vs. RMS On-State Current



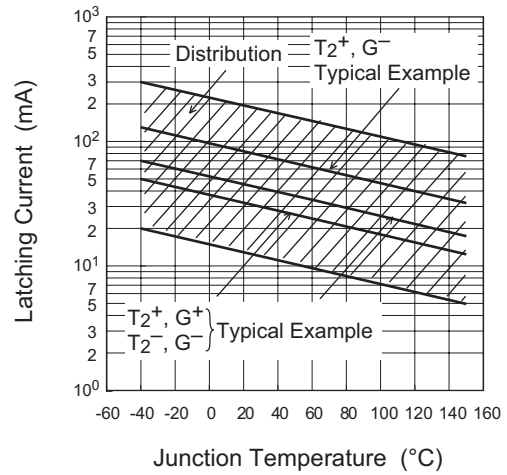
Repetitive Peak Off-State Current vs. Junction Temperature



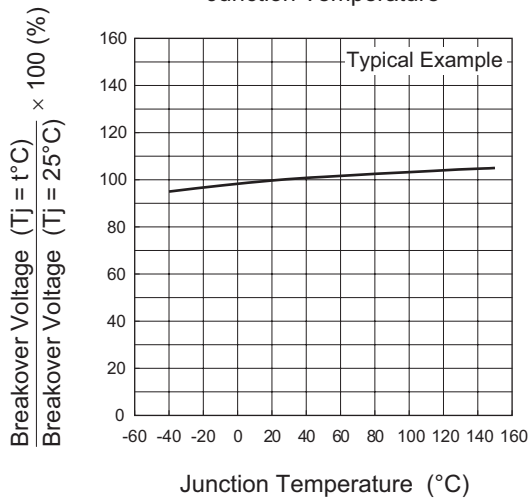
Holding Current vs. Junction Temperature



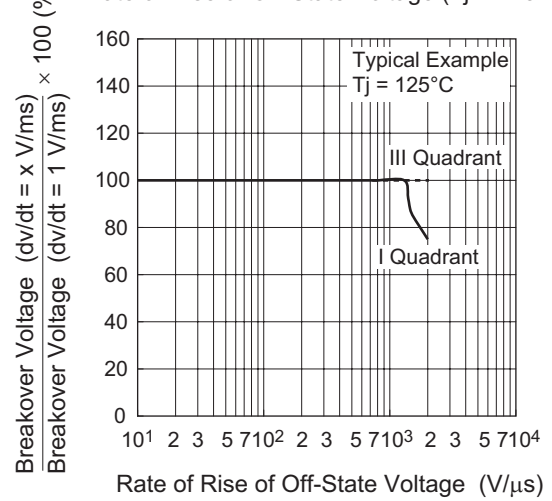
Latching Current vs. Junction Temperature



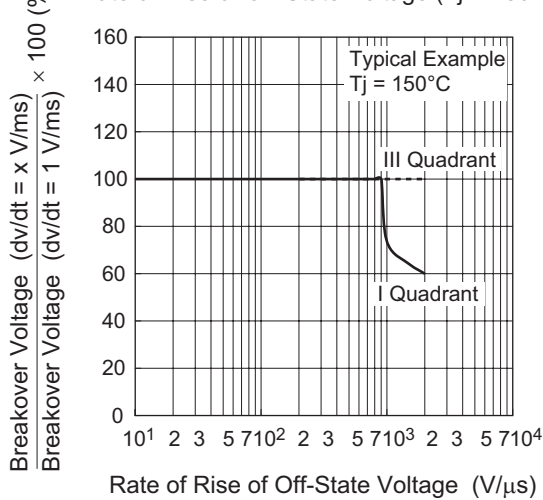
Breakover Voltage vs. Junction Temperature



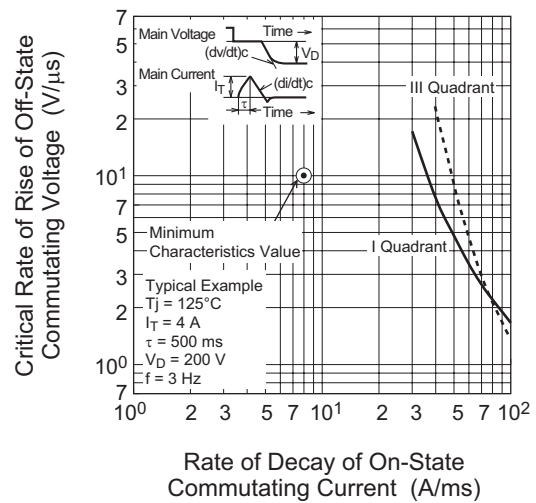
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj = 125°C)



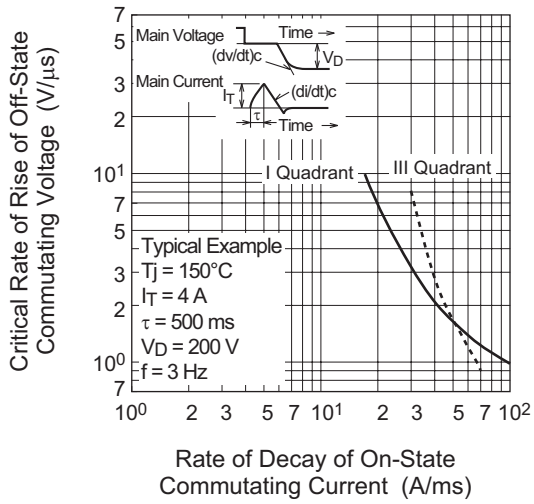
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj = 150°C)



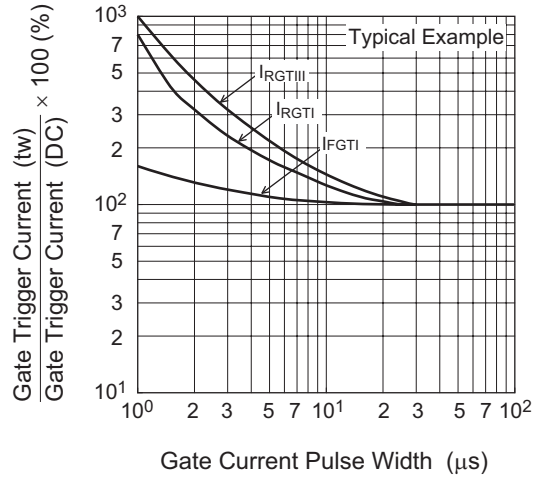
Commutation Characteristics (Tj = 125°C)



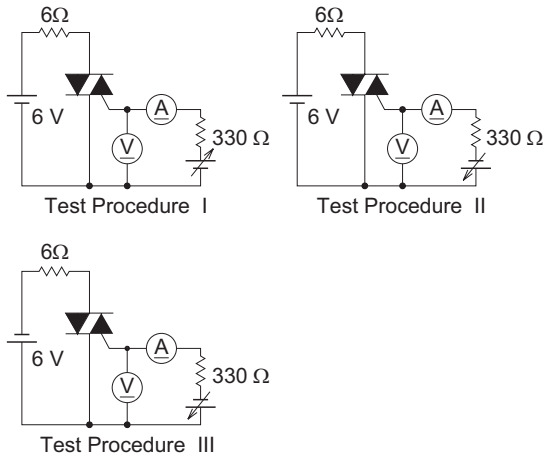
Commutation Characteristics ($T_j = 150^\circ\text{C}$)



Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Package Dimensions

TO-220FN

| | | | |
|-------------------|------------|----------------------------|---------------|
| EIAJ Package Code | JEDEC Code | Mass (g) (reference value) | Lead Material |
| — | — | 2.0 | Cu alloy |

Technical drawing showing dimensions for the TO-220FN package. Dimensions include: 10 ± 0.3, 15 ± 0.3, 3 ± 0.3, 6.5 ± 0.3, φ 3.2 ± 0.2, 14 ± 0.5, 3.6 ± 0.3, 1.1 ± 0.2, 0.75 ± 0.15, 2.54 ± 0.25, 2.8 ± 0.2, 0.75 ± 0.15, 4.5 ± 0.2, and 2.6 ± 0.2.

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

| Symbol | Dimension in Millimeters | | |
|----------------|--------------------------|-----|-----|
| | Min | Typ | Max |
| A | — | — | — |
| A ₁ | — | — | — |
| A ₂ | — | — | — |
| b | — | — | — |
| D | — | — | — |
| E | — | — | — |
| e | — | — | — |
| x | — | — | — |
| y | — | — | — |
| y ₁ | — | — | — |
| ZD | — | — | — |
| ZE | — | — | — |

Order Code

| Lead form | Standard packing | Quantity | Standard order code | Standard order code example |
|---------------|------------------|----------|-------------------------------|-----------------------------|
| Straight type | Tube | 50 | Type name | BCR16KM-12LC |
| Lead form | Tube | 50 | Type name – Lead forming code | BCR16KM-12LC-A8 |

Note : Please confirm the specification about the shipping in detail.

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