

BCR20CM-12LB

600V - 20A - Triac

Medium Power Use

R07DS1151EJ0100

Rev.1.00

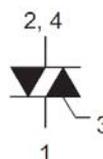
Jan 29, 2014

Features

- $I_{T(RMS)}$: 20 A
- V_{DRM} : 600 V
- I_{FGT} , I_{RGT} , $I_{RGT III}$: 30 mA(20mA) ^{Note6}
- T_j : 150 °C
- Planar Passivation Type
- Non-Insulated Type

Outline

RENESAS Package code: PRSS0004AG-A
(Package name: TO-220AB)



1. T₁ Terminal
2. T₂ Terminal
3. Gate Terminal
4. T₂ Terminal

Applications

Vacuum cleaner, electric heater, light dimmer, copying machine, and controller for other motor and heater

Maximum Ratings

| Parameter | Symbol | Voltage class | |
|--|-----------|---------------|------|
| | | 12 | Unit |
| Repetitive peak off-state voltage ^{Note1} | V_{DRM} | 600 | V |
| Non-repetitive peak off-state voltage ^{Note1} | V_{DSM} | 720 | V |

| Parameter | Symbol | Ratings | Unit | Conditions |
|--------------------------------|--------------|-------------|------------------|--|
| RMS on-state current | $I_{T(RMS)}$ | 20 | A | Commercial frequency, sine full wave 360°conduction, $T_c = 126^{\circ}C$ ^{Note3} |
| Surge on-state current | I_{TSM} | 200 | A | 60 Hz sinewave 1 full cycle, peak value, non-repetitive |
| I^2t for fusion | I^2t | 167 | A ² s | Value corresponding to 1 cycle of half wave 60 Hz, 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 | °C | |
| Storage temperature | T_{stg} | -40 to +150 | °C | |
| Mass | — | 2.1 | g | Typical value |

Electrical Characteristics

| Parameter | Symbol | Rated value | | | Unit | Test conditions | |
|---|---------------|--------------|------|------|---------------------------|--|--|
| | | Min. | Typ. | Max. | | | |
| Repetitive peak off-state current | I_{DRM} | — | — | 2.0 | mA | $T_j = 125^\circ\text{C}$, V_{DRM} applied | |
| | | — | — | 3.0 | | $T_j = 150^\circ\text{C}$, V_{DRM} applied | |
| On-state voltage | V_{TM} | — | — | 1.5 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 30\text{A}$, 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 | | |
| | III | V_{RGTIII} | — | — | 1.5 | | |
| Gate trigger current ^{Note2} | I | I_{FGTI} | — | — | 30 ^{Note6} | mA | $T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$ |
| | II | I_{RGTI} | — | — | 30 ^{Note6} | | |
| | III | I_{RGTIII} | — | — | 30 ^{Note6} | | |
| Gate non-trigger voltage | V_{GD} | 0.2 | — | — | V | $T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$ | |
| | | 0.1 | — | — | V | $T_j = 150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$ | |
| Thermal resistance | $R_{th(j-c)}$ | — | — | 1.2 | $^\circ\text{C}/\text{W}$ | Junction to case ^{Note3, Note4} | |
| Critical-rate of rise of off-state commutation voltage ^{Note5} | $(dv/dt)_c$ | 10 | — | — | V/ μs | $T_j = 125^\circ\text{C}$ | |
| | | 1 | — | — | | $T_j = 150^\circ\text{C}$ | |

Notes: 1. Gate open.

2. Measurement using the gate trigger characteristics measurement circuit.

3. Case temperature is measured at the T_2 tab 1.5 mm apart from the molded case.

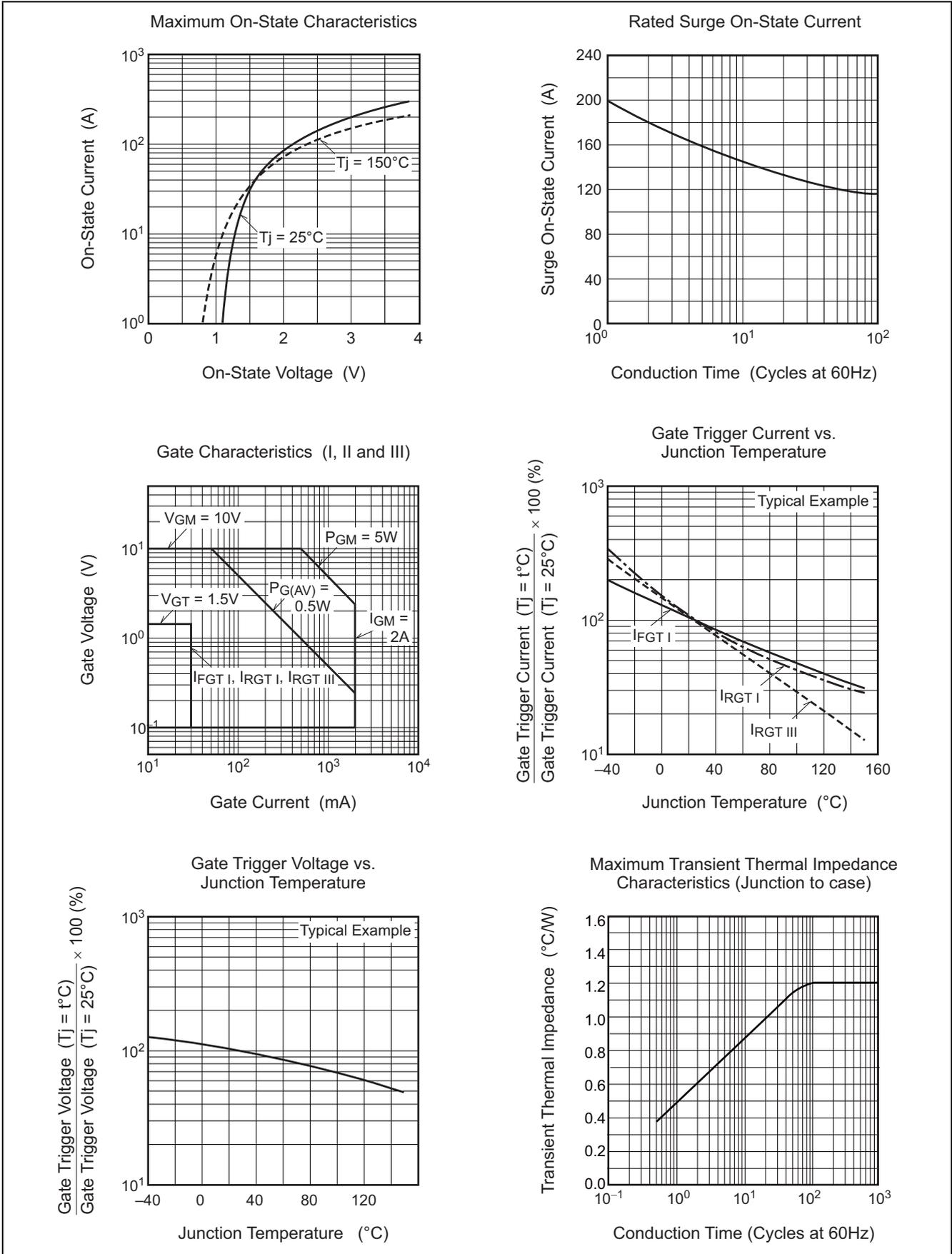
4. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $1.0^\circ\text{C}/\text{W}$.

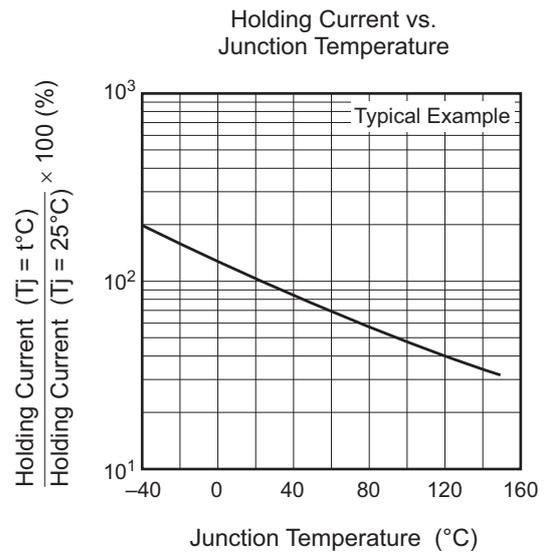
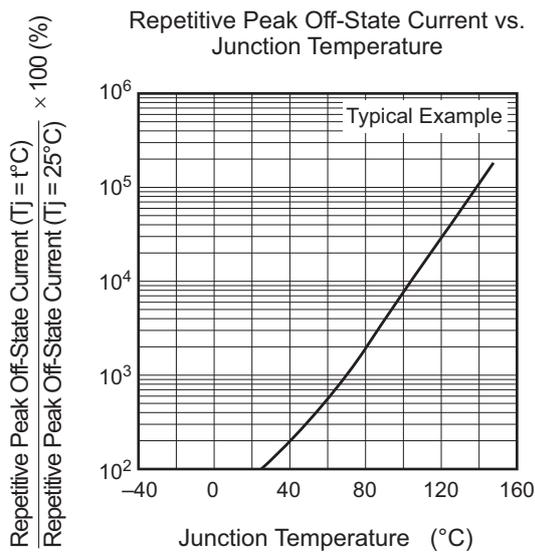
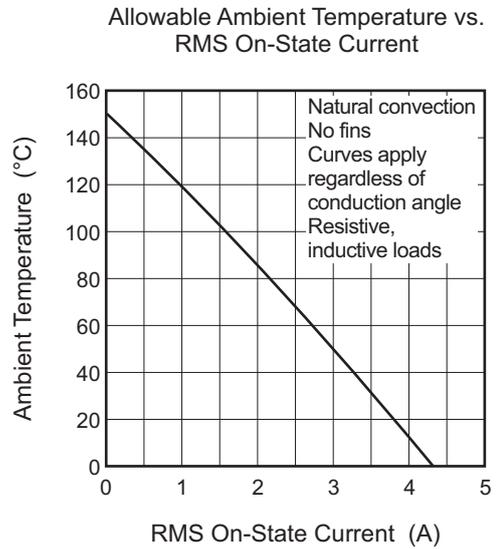
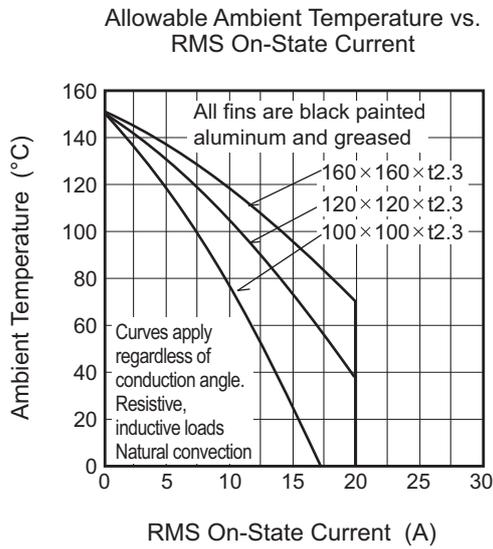
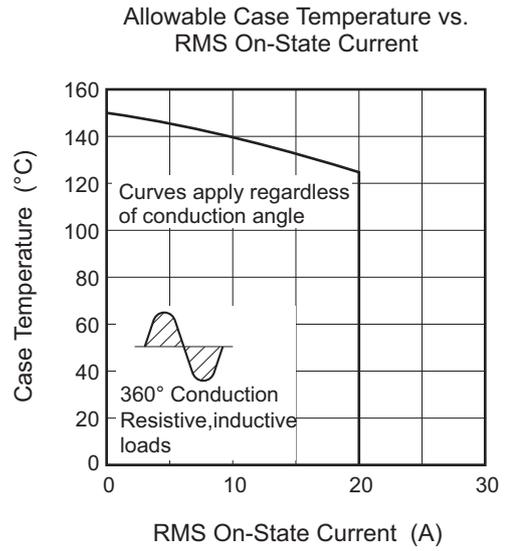
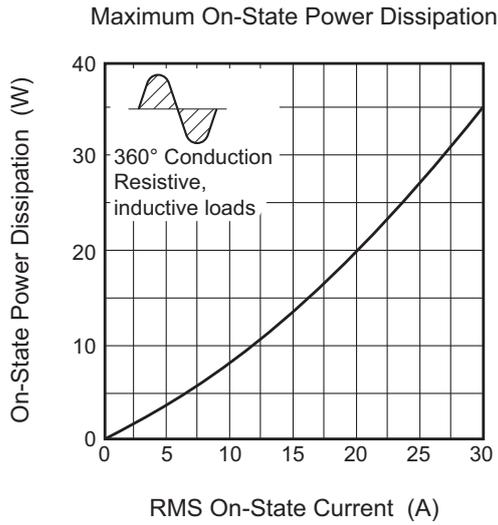
5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

6. High sensitivity ($I_{GT} \leq 20\text{ mA}$) is also available. (I_{GT} item: 1)

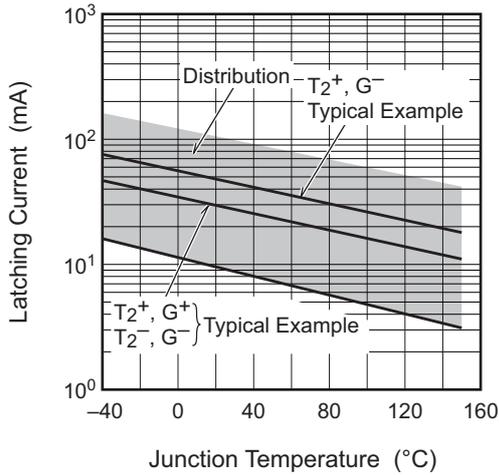
| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|--|
| 1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Peak off-state voltage $V_D = 400\text{V}$ 3. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{ A/ms}$ | |

Performance Curves

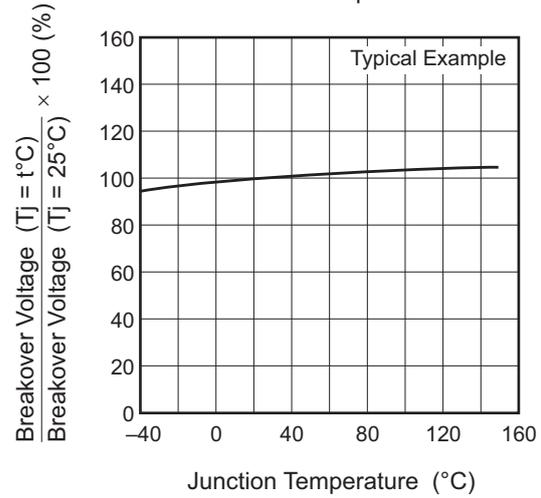




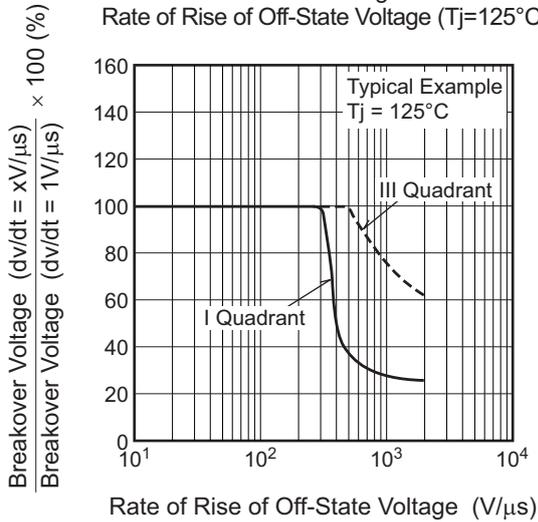
Latching Current vs. Junction Temperature



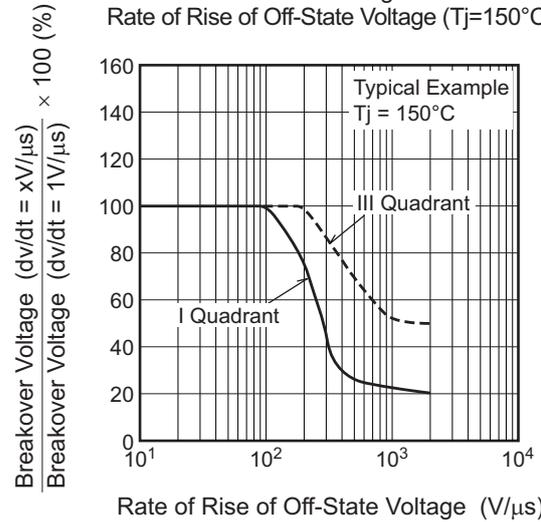
Breakover Voltage vs. Junction Temperature



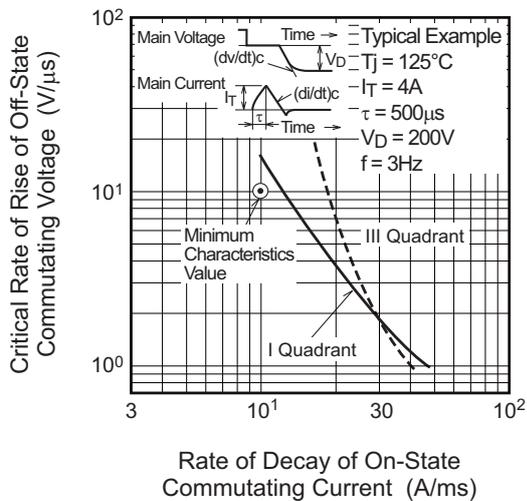
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



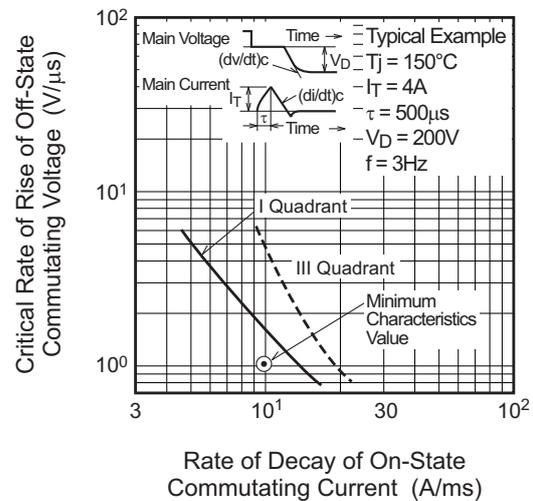
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



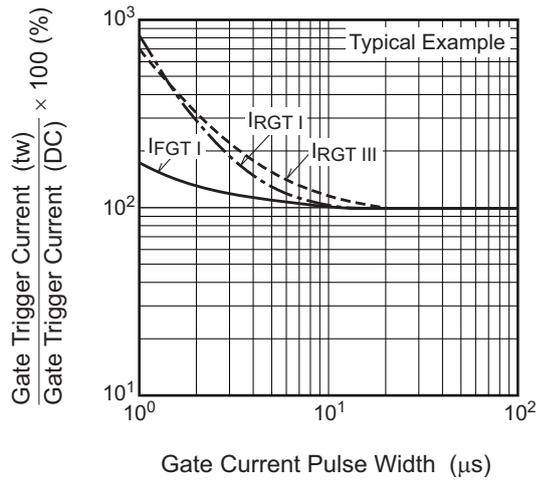
Commutation Characteristics (Tj=125°C)



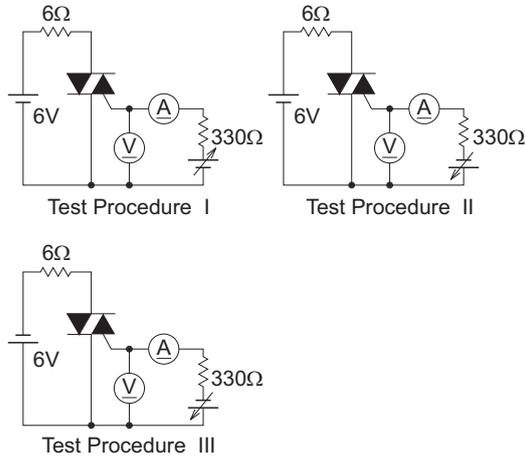
Commutation Characteristics (Tj=150°C)



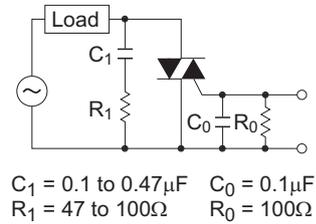
Gate Trigger Current vs. Gate Current Pulse Width



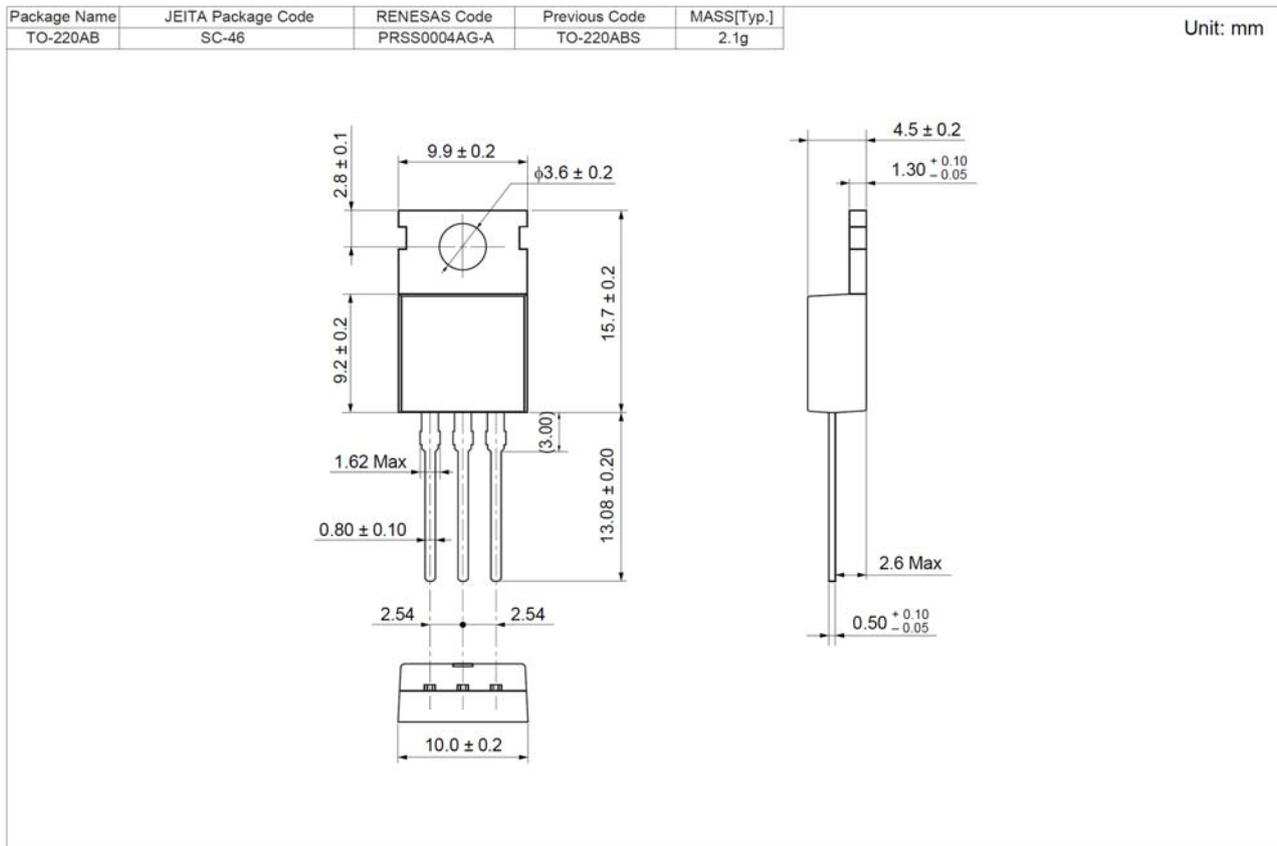
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions



Ordering Information

| Orderable Part Number | Packing | Quantity | Remark |
|-----------------------|---------|----------|--|
| BCR20CM-12LB#BB0 | Tube | 50 pcs. | Straight type |
| BCR20CM-12LB-1#BB0 | Tube | 50 pcs. | Straight type, l _{GT} item: 1 |
| BCR20CM-12LB□□#BB0 | Tube | 50 pcs. | □□: Lead forming type |
| BCR20CM12LB1□□#BB0 | Tube | 50 pcs. | □□: Lead forming type, l _{GT} item: 1 |

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

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