

# BCR2PM-14LE

800V – 2A - Triac

R07DS0233EJ0200

Low Power Use

Rev.2.00

Dec 24, 2014

## Features

- $I_{T(RMS)}$  : 2 A
- $V_{DRM}$  : 800 V ( $T_j = 125^{\circ}C$ )
- $I_{FGT I}$ ,  $I_{RGT I}$ ,  $I_{RGT III}$  : 10 mA
- Planar Passivation Type
- The product guaranteed maximum junction temperature  $150^{\circ}C$ .

## Outline

RENESAS Package code: PRSS0003AA-B  
(Package name: TO-220F(2) )



1. T<sub>1</sub> Terminal
2. T<sub>2</sub> Terminal
3. Gate Terminal

## Applications

Electric rice cooker, electric pot, and controller for other heater

## Precautions on Usage

When the BCR2PM-14LE is used, do not attach the heat radiating fin.

## Maximum Ratings

| Parameter                                              | Symbol    | Voltage class | Unit | Condition            |
|--------------------------------------------------------|-----------|---------------|------|----------------------|
|                                                        |           | 14            |      |                      |
| Repetitive peak off-state voltage <sup>Note1</sup>     | $V_{DRM}$ | 800           | V    | $T_j = 125^{\circ}C$ |
|                                                        |           | 700           | V    | $T_j = 150^{\circ}C$ |
| Non-repetitive peak off-state voltage <sup>Note1</sup> | $V_{DSM}$ | 840           | V    |                      |

| Parameter                      | Symbol      | Ratings      | Unit             | Conditions                                                                |
|--------------------------------|-------------|--------------|------------------|---------------------------------------------------------------------------|
| RMS on-state current           | $I_T (RMS)$ | 2            | A                | Commercial frequency, sine full wave 360° conduction                      |
| Surge on-state current         | $I_{TSM}$   | 10           | A                | 60 Hz sinewave 1 full cycle, peak value, non-repetitive                   |
| $I^2t$ for fusing              | $I^2t$      | 0.41         | A <sup>2</sup> s | Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current |
| Peak gate power dissipation    | $P_{GM}$    | 1            | W                |                                                                           |
| Average gate power dissipation | $P_{G(AV)}$ | 0.1          | W                |                                                                           |
| Peak gate voltage              | $V_{GM}$    | 6            | V                |                                                                           |
| Peak gate current              | $I_{GM}$    | 1            | A                |                                                                           |
| Junction temperature           | $T_j$       | - 40 to +150 | °C               |                                                                           |
| Storage temperature            | $T_{stg}$   | - 40 to +150 | °C               |                                                                           |
| Mass                           | —           | 2.0          | g                | Typical value                                                             |

Notes: 1. Gate open.

### Electrical Characteristics

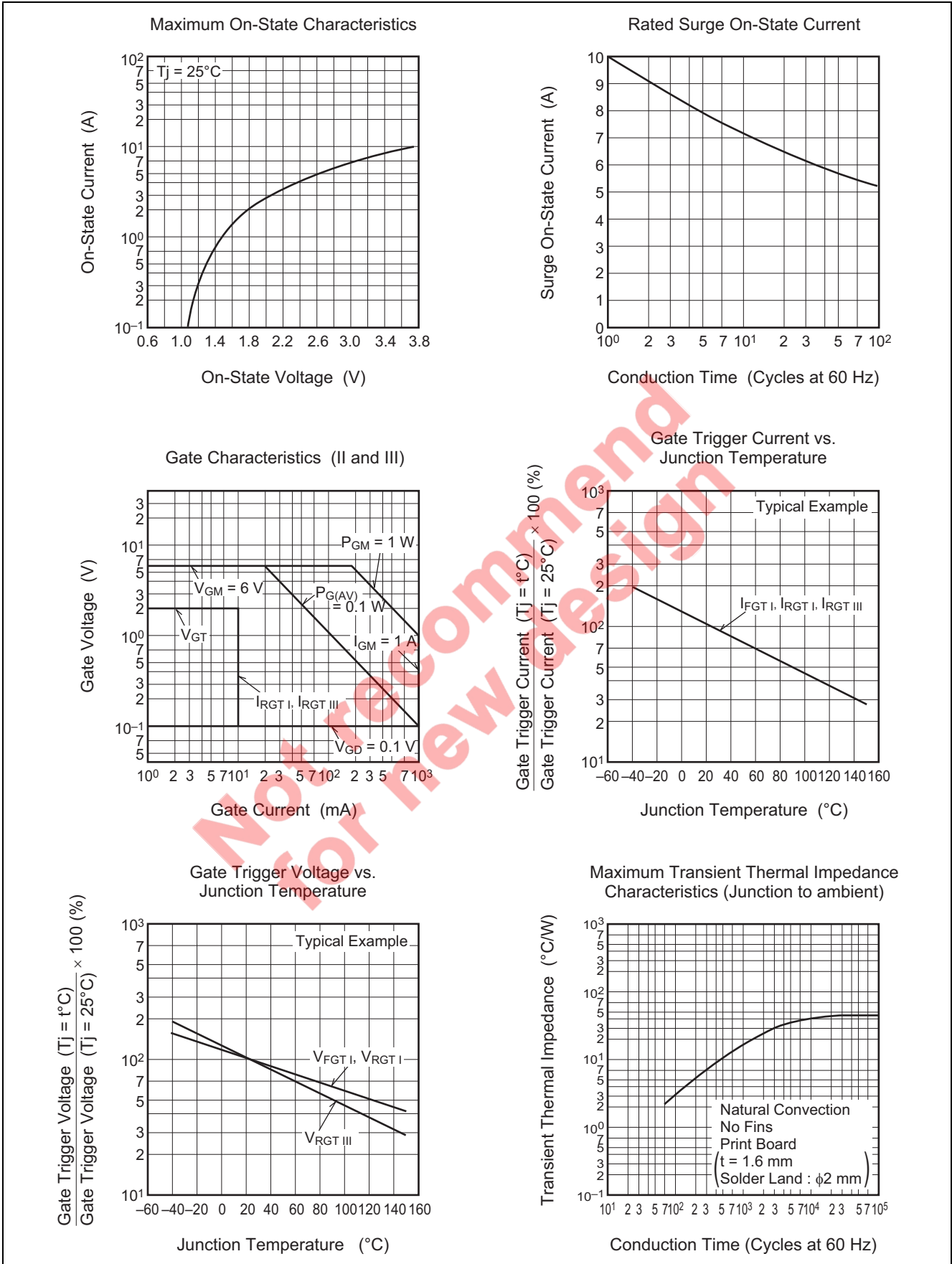
| Parameter                                                               | Symbol        | Min.         | Typ. | Max. | Unit             | Test conditions                                                                         |
|-------------------------------------------------------------------------|---------------|--------------|------|------|------------------|-----------------------------------------------------------------------------------------|
| Repetitive peak off-state current                                       | $I_{DRM}$     | —            | —    | 1.0  | mA               | $T_j = 150^\circ\text{C}$ , $V_{DRM}$ applied                                           |
| On-state voltage                                                        | $V_{TM}$      | —            | —    | 2.1  | V                | $T_j = 25^\circ\text{C}$ , $I_{TM} = 3\text{ A}$ , Instantaneous measurement            |
| Gate trigger voltage <sup>Note2</sup>                                   | I             | $V_{FGTI}$   | —    | —    | 2.0              | $T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$ |
|                                                                         | II            | $V_{RGTI}$   | —    | —    | 2.0              |                                                                                         |
|                                                                         | III           | $V_{RGTIII}$ | —    | —    | 2.0              |                                                                                         |
| Gate trigger current <sup>Note2</sup>                                   | I             | $I_{FGTI}$   | —    | —    | 10               | $T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$ |
|                                                                         | II            | $I_{RGTI}$   | —    | —    | 10               |                                                                                         |
|                                                                         | III           | $I_{RGTIII}$ | —    | —    | 10               |                                                                                         |
| Gate non-trigger voltage                                                | $V_{GD}$      | 0.1          | —    | —    | V                | $T_j = 150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$                                         |
| Thermal resistance                                                      | $R_{th(j-a)}$ | —            | —    | 45   | °C/W             | Junction to ambient, Natural convection                                                 |
| Critical-rate of rise of off-state commutation voltage <sup>Note3</sup> | $(dv/dt)_c$   | 0.5          | —    | —    | V/ $\mu\text{s}$ | $T_j = 125^\circ\text{C}$                                                               |

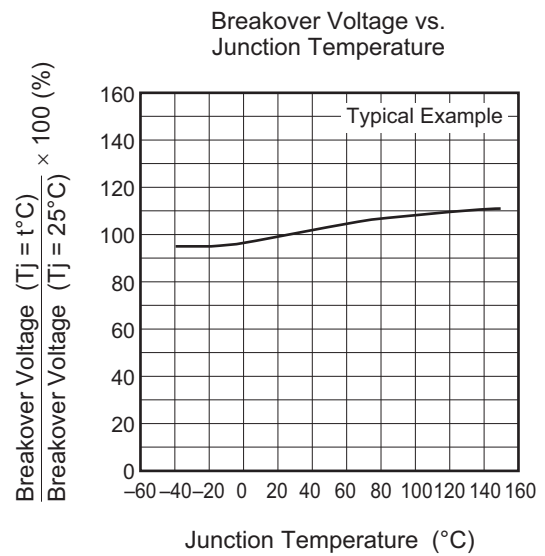
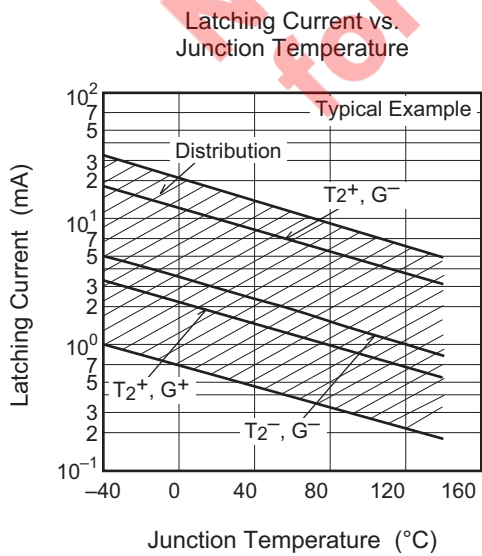
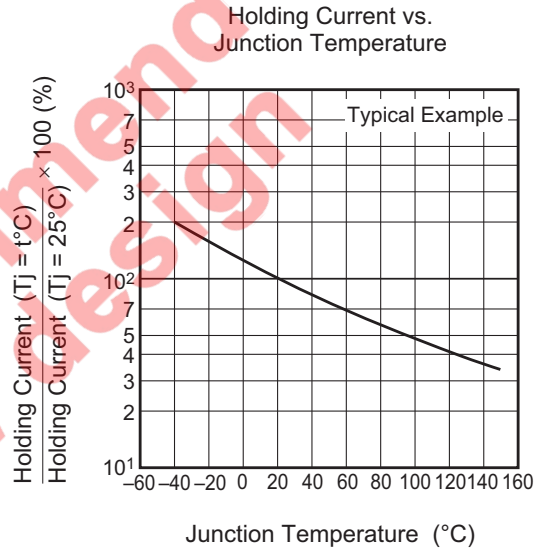
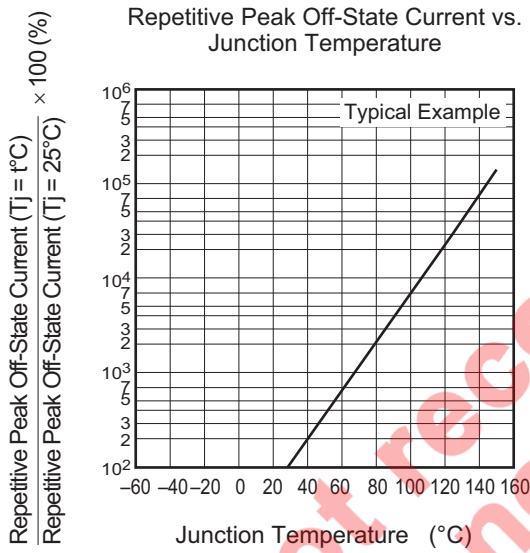
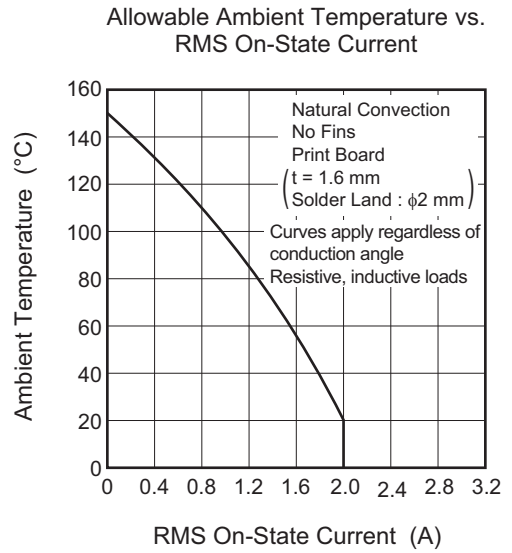
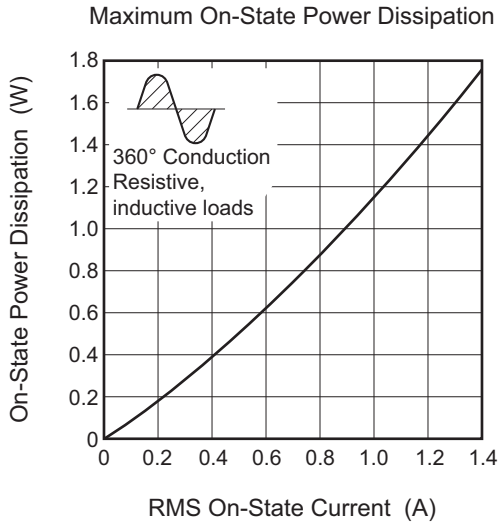
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

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

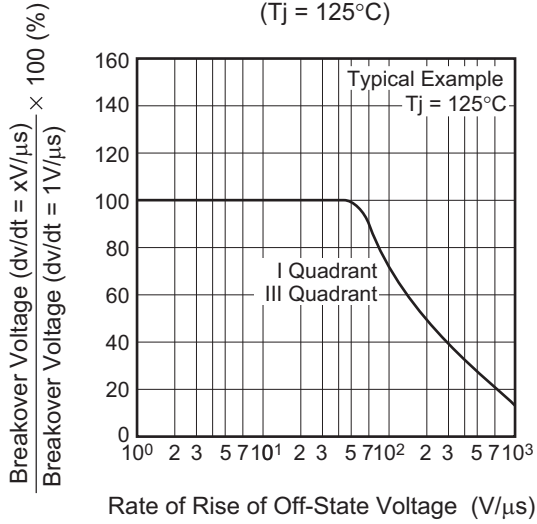
| Test conditions                                                                                                                                                                                 | Commutating voltage and current waveforms (inductive load) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| 1. Junction temperature<br>$T_j = 125^\circ\text{C}$<br>2. Rate of decay of on-state commutating current<br>$(di/dt)_c = -1.0\text{ A/ms}$<br>3. Peak off-state voltage<br>$V_D = 400\text{ V}$ |                                                            |

Performance Curves

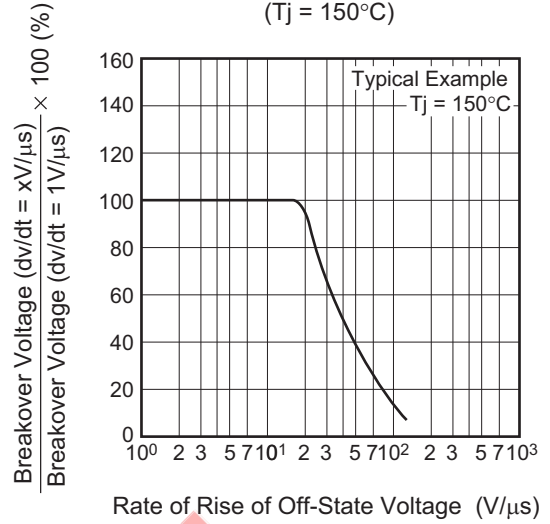




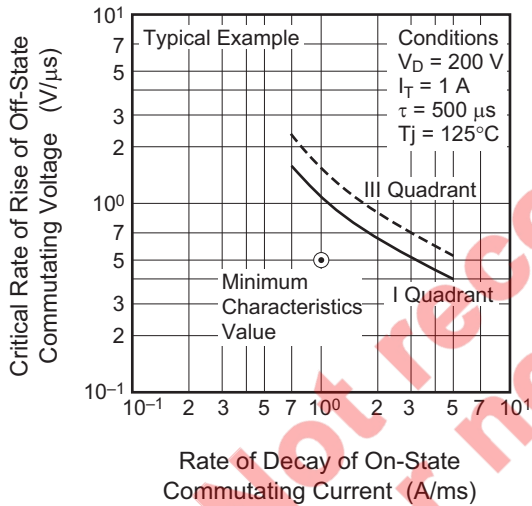
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj = 125°C)



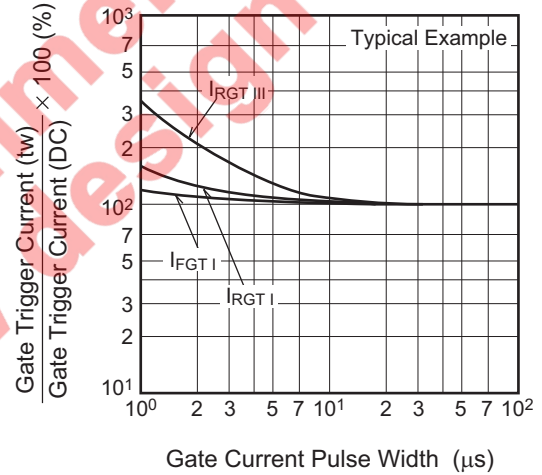
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj = 150°C)



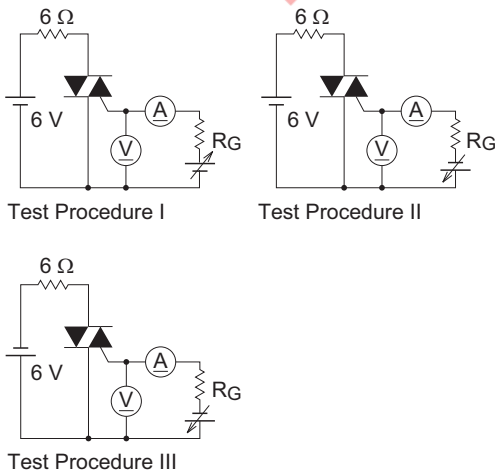
Commutation Characteristics



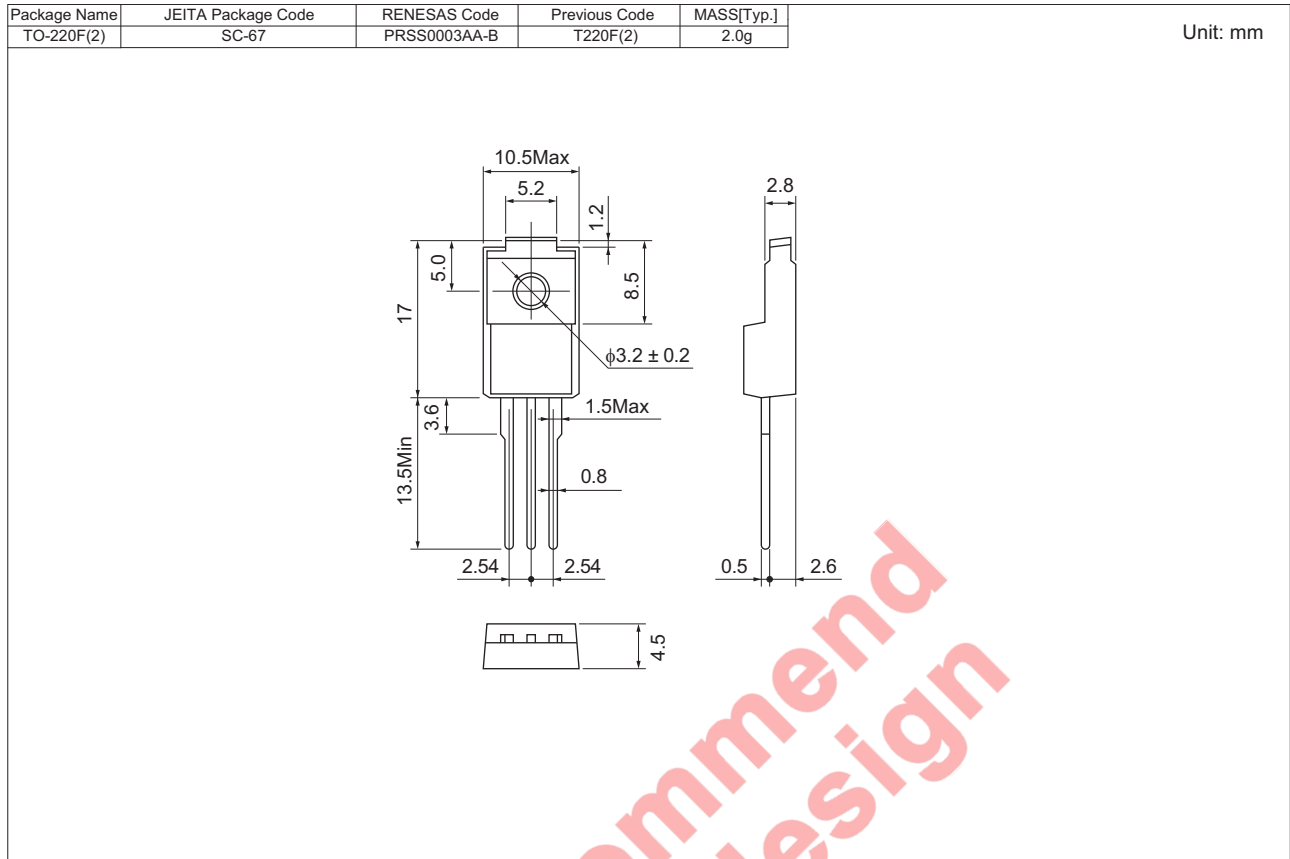
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Package Dimensions



Ordering Information

| Orderable Part Number | Packing | Quantity | Remark        |
|-----------------------|---------|----------|---------------|
| BCR2PM-14LE#B00       | Bag     | 100 pcs. | Straight type |
| BCR2PM-14LE-AS#B00    | Tube    | 50 pcs.  | AS Lead form  |

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

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