

BCR25KM-12LB

Triac

Medium Power Use

REJ03G1676-0100

Rev.1.00

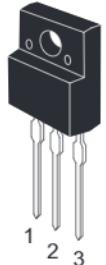
Jun 05, 2008

Features

- $I_T(\text{RMS})$: 25 A
- V_{DRM} : 600 V
- $I_{\text{FGTI}}, I_{\text{RGTI}}, I_{\text{RGTH}}$: 50 mA
- V_{iso} : 2000 V
- Insulated Type
- Planar Type

Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)



1. T_1 Terminal
2. T_2 Terminal
3. Gate Terminal

Applications

Contactless AC switch, electric heater control, light dimmer, on/off and speed control of small induction motor, on/off control of copier lamp

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} | 720 | | V |

Notes: 1. Gate open.

| Parameter | Symbol | Ratings | Unit | Conditions |
|--------------------------------|---------------------|-------------|----------------------|----------------------------------------------------------------------------------|
| RMS on-state current | $I_{T\text{(RMS)}}$ | 25 | A | Commercial frequency, sine full wave 360° conduction, $T_c = 62^\circ\text{C}$ |
| Surge on-state current | $I_{T\text{SM}}$ | 250 | A | 50 Hz sinewave 1 full cycle, peak value, non-repetitive |
| I^2t for fusion | I^2t | 313 | A^2s | Value corresponding to 1 cycle of half wave 50Hz, surge on-state current |
| Peak gate power dissipation | P_{GM} | 5 | W | |
| Average gate power dissipation | $P_{G\text{(AV)}}$ | 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 | V_{iso} | 2000 | V | $T_a = 25^\circ\text{C}$, AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case |

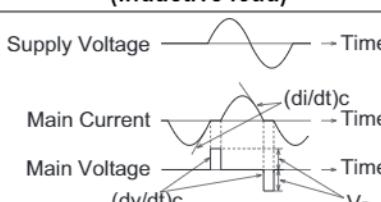
Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|-------------------------------------------------------------------------|---------------|---------------------|------|---------|--------------------|-------------------------------------------------------------------------------|
| Repetitive peak off-state current | I_{DRM} | — | — | 3.0/5.0 | mA | $T_j = 125/150^\circ\text{C}$, V_{DRM} applied |
| On-state voltage | V_{TM} | — | — | 1.5 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 40$ A, instantaneous measurement |
| Gate trigger voltage ^{Note2} | I | V_{FGTI} | — | — | V | $T_j = 25^\circ\text{C}$, $V_D = 6$ V, $R_L = 6 \Omega$, $R_G = 330 \Omega$ |
| | II | V_{RGTI} | — | — | V | |
| | III | $V_{RGTI\text{II}}$ | — | — | V | |
| Gate trigger current ^{Note2} | I | I_{FGTI} | — | — | mA | $T_j = 25^\circ\text{C}$, $V_D = 6$ V, $R_L = 6 \Omega$, $R_G = 330 \Omega$ |
| | II | I_{RGTI} | — | — | mA | |
| | III | $I_{RGTI\text{II}}$ | — | — | mA | |
| Gate non-trigger voltage | V_{GD} | 0.2/0.1 | — | — | V | $T_j = 125/150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$ |
| Thermal resistance | $R_{th(j-c)}$ | — | — | 2.8 | $^\circ\text{C/W}$ | Junction to case ^{Note3} |
| Critical-rate of rise of off-state commutation voltage ^{Note4} | $(dv/dt)c$ | 10/1 | — | — | V/ μ s | $T_j = 125/150^\circ\text{C}$ |

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

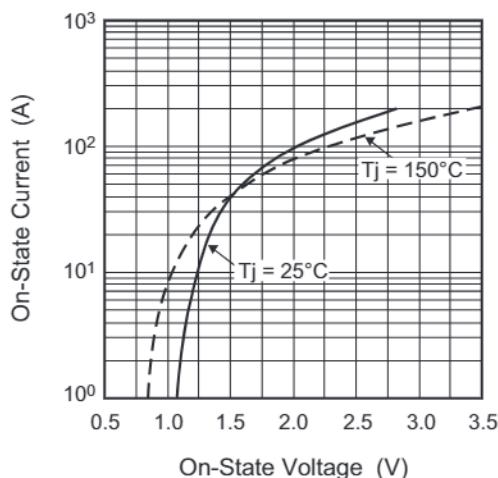
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

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

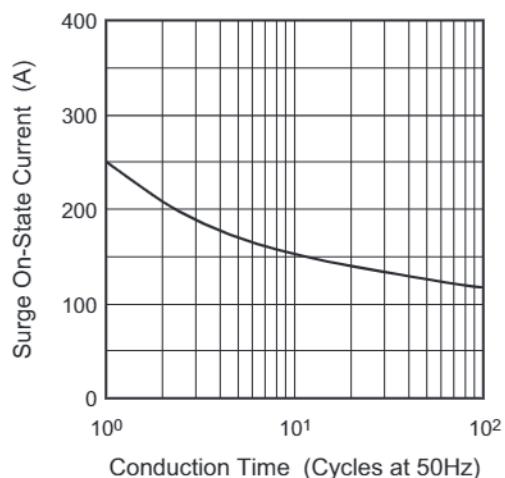
| Test conditions | Commutating voltage and current waveforms (inductive load) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Rate of decay of on-state commuting current $(di/dt)c = -13$ A/ms 3. Peak off-state voltage $V_D = 400$ V |  |

Performance Curves

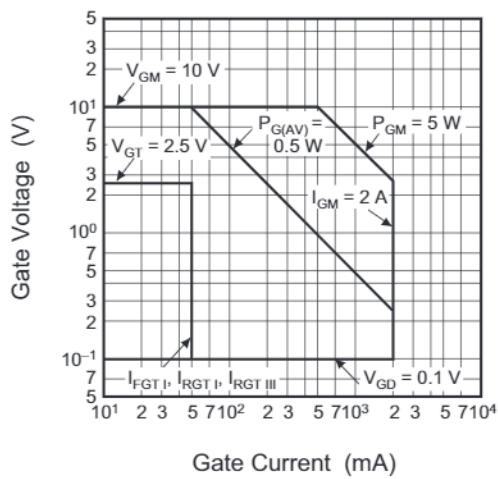
Maximum On-State Characteristics



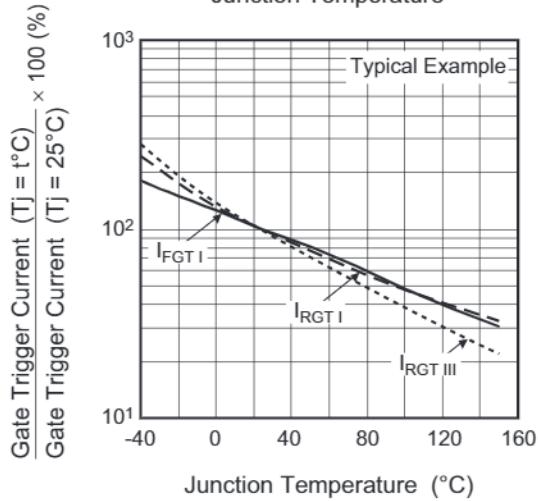
Rated Surge On-State Current



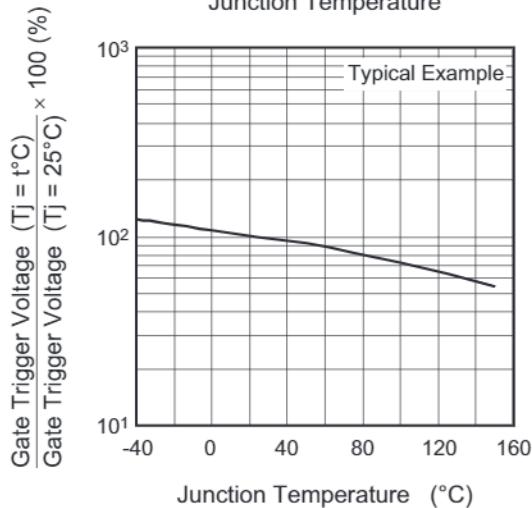
Gate Characteristics (I, II and III)



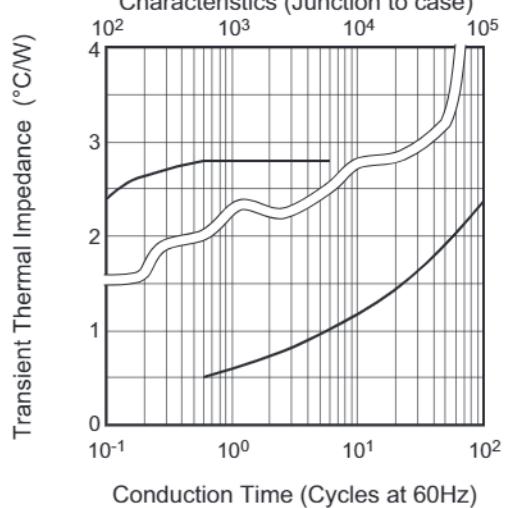
Gate Trigger Current vs. Junction Temperature

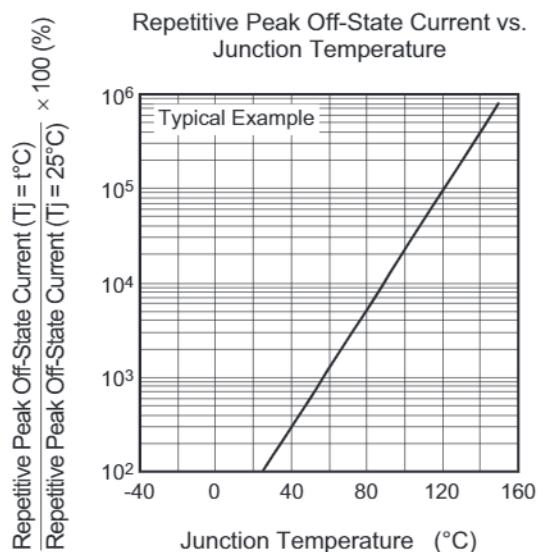
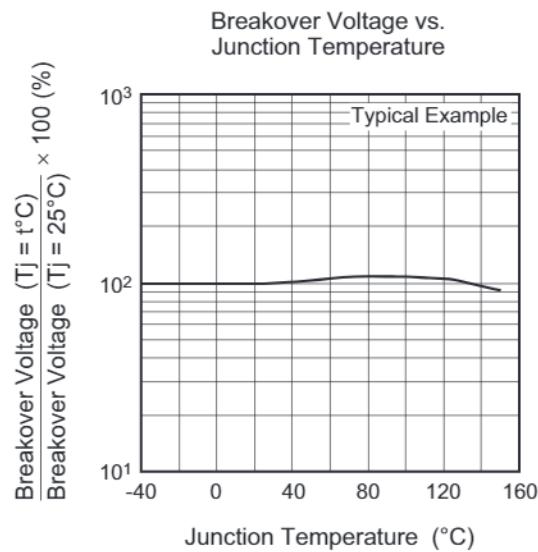
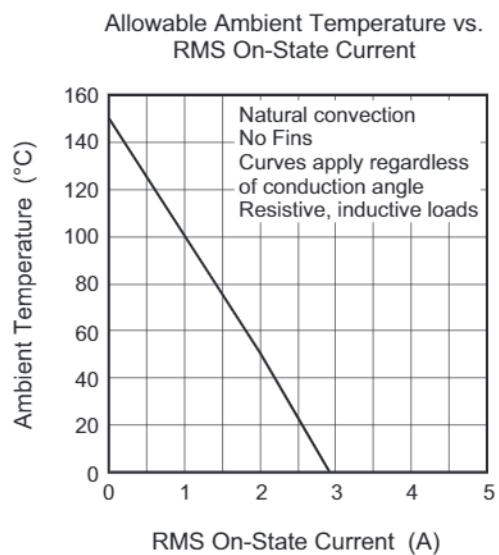
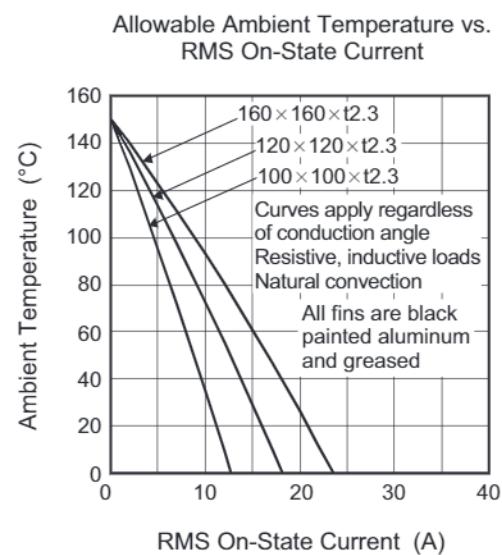
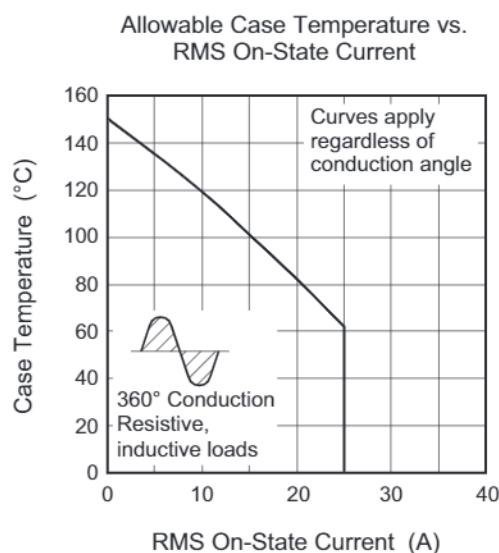
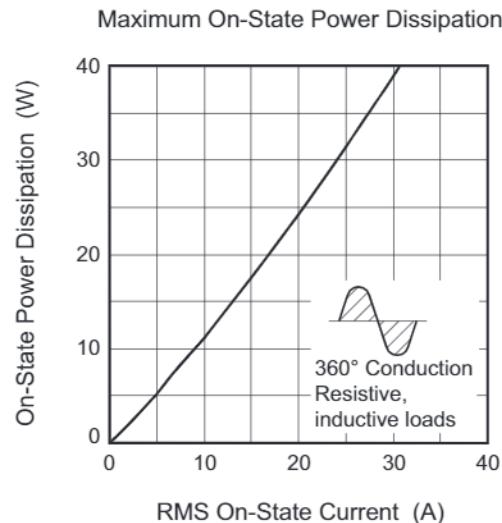


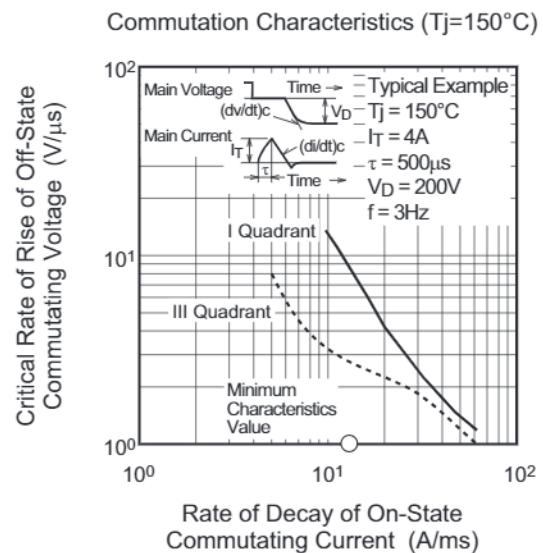
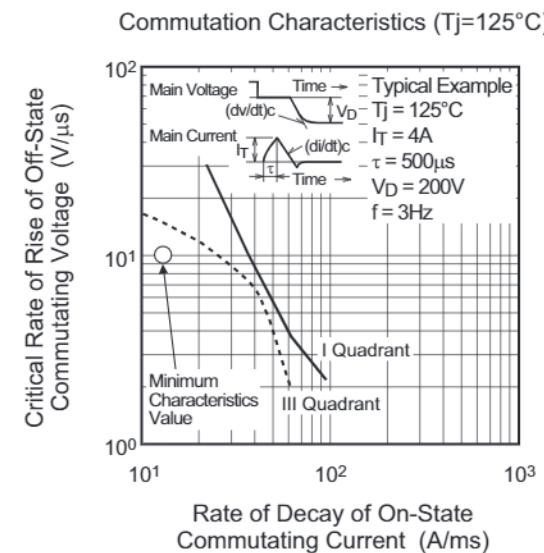
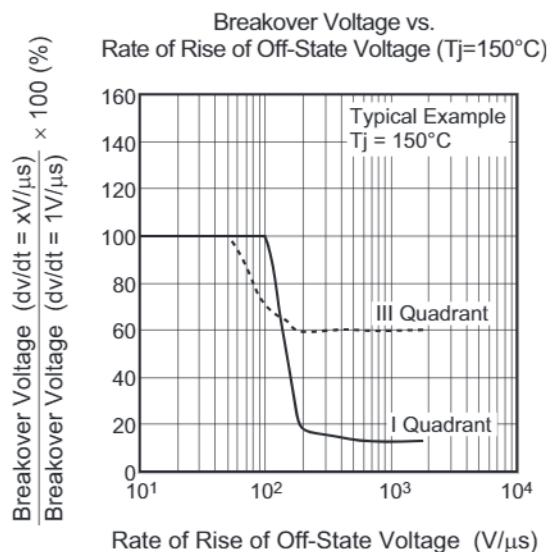
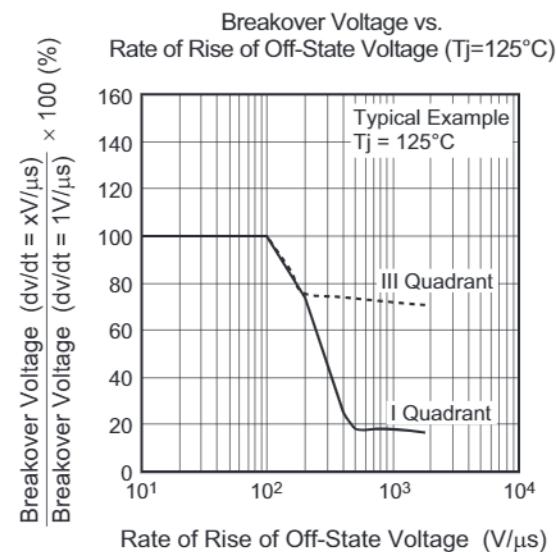
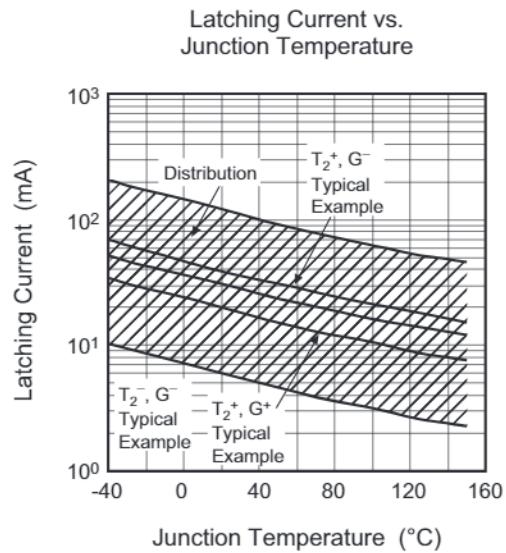
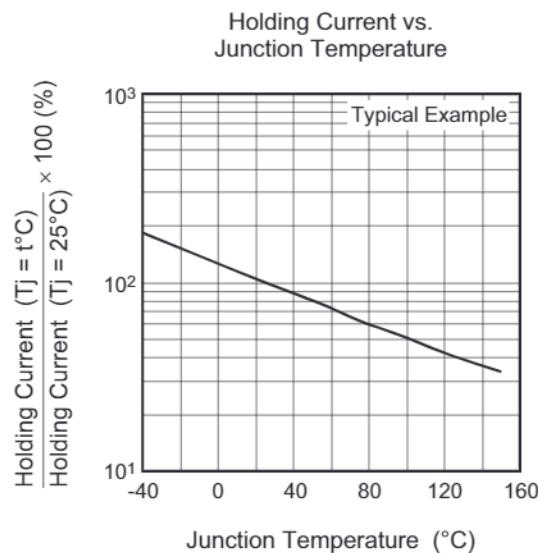
Gate Trigger Voltage vs. Junction Temperature

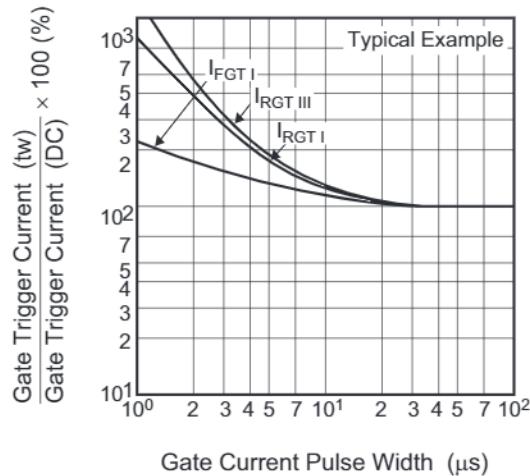


Maximum Transient Thermal Impedance Characteristics (Junction to case)

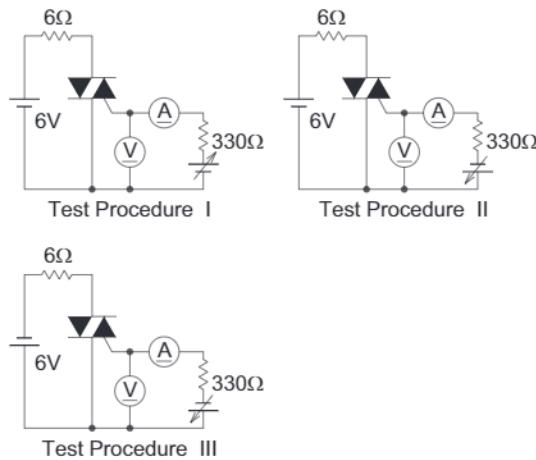




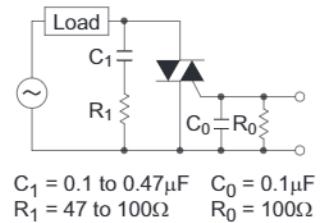


Gate Trigger Current vs.
Gate Current Pulse Width

Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] | Unit: mm |
|--------------|--------------------|--------------|---------------|------------|----------|
| TO-220FN | — | PRSS0003AB-A | — | 2.0g | |

Order Code

| Lead form | Standard packing | Quantity | Standard order code | Standard order code example |
|---------------|-------------------------|----------|-------------------------------|-----------------------------|
| Straight type | Plastic Magazine (Tube) | 50 | Type name | BCR25KM-12LB |
| Lead form | Plastic Magazine (Tube) | 50 | Type name – Lead forming code | BCR25KM-12LB -A8 |

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

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