# BCR8LM-12LA

## 600V - 8A - Triac

Medium Power Use

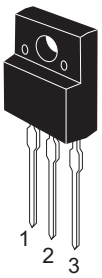
R07DS0683EJ0100
Rev.1.00
Feb 25, 2013

## Features

- $I_{T\ (RMS)}$ : 8 A
- $V_{DRM}$ : 600 V
- $I_{FGTI}$, $I_{RGTI}$, $I_{RGT\ III}$ : 10 mA
- $V_{iso}$ : 1800V
- Insulated Type
- Planar Type
- UL Recognized : File No. E223904

## Outline

RENESAS Package code: PRSS0003AF-A)
(Package name: TO-220FL)





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

## Applications

Switching mode power supply, washing machine, motor control, heater control, and other general purpose AC power control applications

## 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 |

| Parameter | Symbol | Ratings | Unit | Conditions |
|---|---|---|---|---|
| RMS on-state current | $I_{T\ (RMS)}$ | 8 | A | Commercial frequency, sine full wave 360°conduction, Tc = 82°C |
| Surge on-state current | $I_{TSM}$ | 80 | A | 60 Hz sine wave 1 full cycle, peak value, non-repetitive |
| $I^2t$ for fusion | $I^2t$ | 26 | $A^2s$ | 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 | Tj | –40 to +125 | °C | |
| Storage temperature | Tstg | –40 to +125 | °C | |
| Mass | — | 1.5 | g | Typical value |
| Isolation voltage [Note4] | $V_{iso}$ | 1800 | V | Ta = 25°C, AC 1 minute, T1 • T2 • G terminal to case |

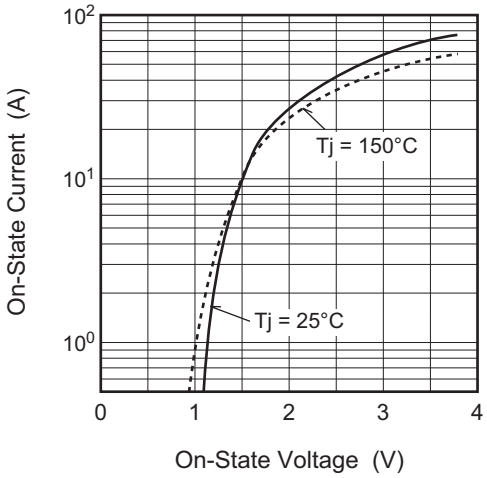
## Electrical Characteristics

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|---|---|---|---|---|---|---|---|
| Repetitive peak off-state current | | $I_{DRM}$ | — | — | 2.0 | mA | Tj = 125°C, $V_{DRM}$ applied |
| On-state voltage | | $V_{TM}$ | — | — | 1.6 | V | Tc = 25°C, $I_{TM}$ = 12 A, instantaneous measurement |
| Holding current | | $I_H$ | — | 10 | — | mA | Tj = 25°C, $V_D$ = 12 V, $R_{GT1}$ =∞ Ω |
| Gate trigger voltage Note2 | I | $V_{FGT_I}$ | — | — | 1.5 | V | Tj = 25°C, $V_D$ = 6 V, $R_L$ = 6 Ω, $R_G$ = 330 Ω |
| | II | $V_{RGT_I}$ | — | — | 1.5 | V | |
| | III | $V_{RGT_{III}}$ | — | — | 1.5 | V | |
| Gate trigger current Note2 | I | $I_{FGT_I}$ | — | — | 10 | mA | Tj = 25°C, $V_D$ = 6 V, $R_L$ = 6 Ω, $R_G$ = 330 Ω |
| | II | $I_{RGT_I}$ | — | — | 10 | mA | |
| | III | $I_{RGT_{III}}$ | — | — | 10 | mA | |
| Gate non-trigger voltage | | $V_{GD}$ | 0.2 | — | — | V | Tj = 125°C, $V_D$ = 1/2 $V_{DRM}$ |
| Thermal resistance | | $R_{th\ (j-c)}$ | — | — | 4.3 | °C/W | Junction to case Note3 |

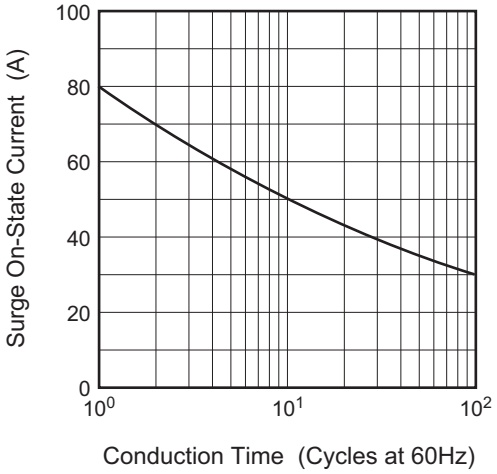
Notes: 1. Gate open.
2. Measurement using the gate trigger characteristics measurement circuit.
3. The contact thermal resistance $R_{th\ (c-f)}$ in case of greasing is 0.5°C/W.
4. Make sure that your finished product containing this device meets your safe isolation requirements. For safety, it is advisable that heatsink is electrically floating.

## Performance Curves

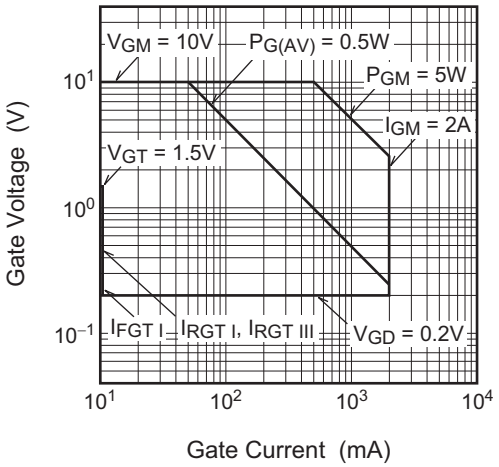
Maximum On-State Characteristics



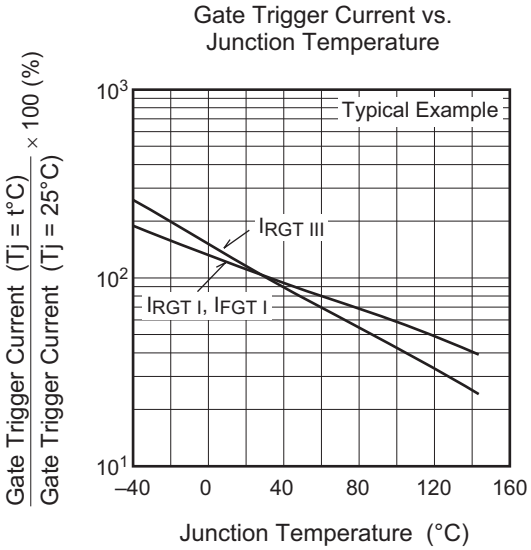

Rated Surge On-State Current



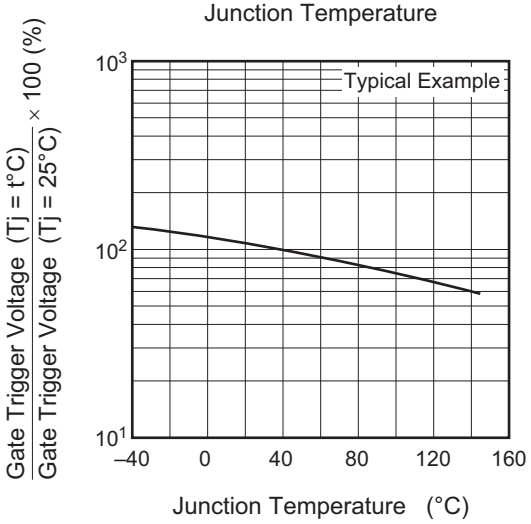

Gate Characteristics (I, II and III)



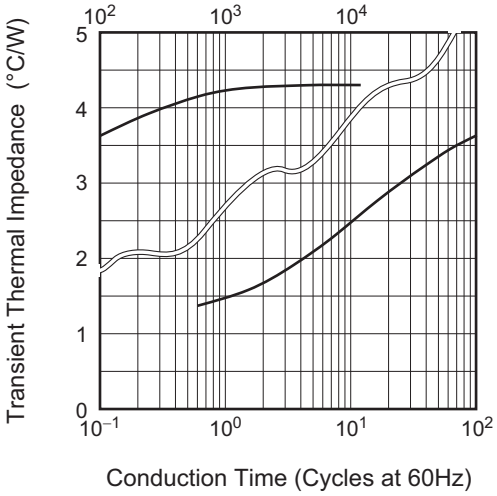

Gate Trigger Current vs. Junction Temperature



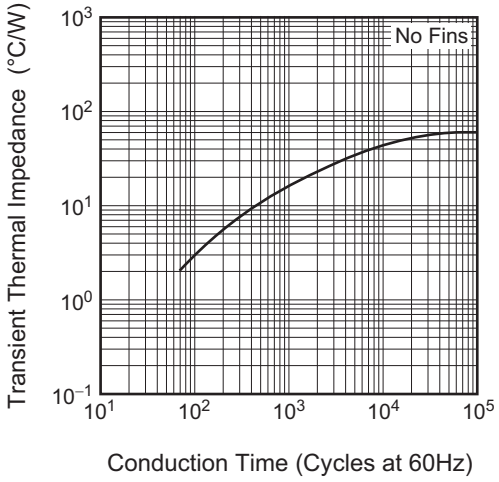

Gate Trigger Voltage vs. Junction Temperature



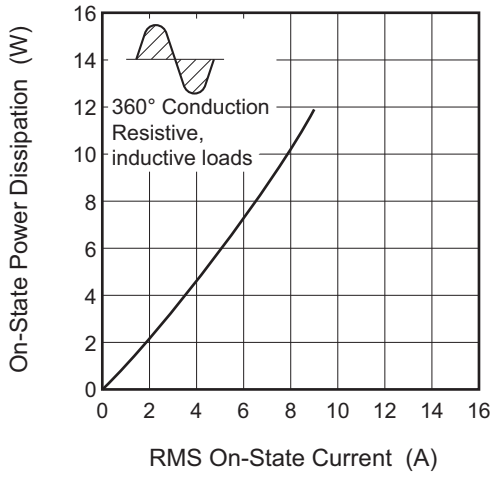

Maximum Transient Thermal Impedance Characteristics (Junction to case)



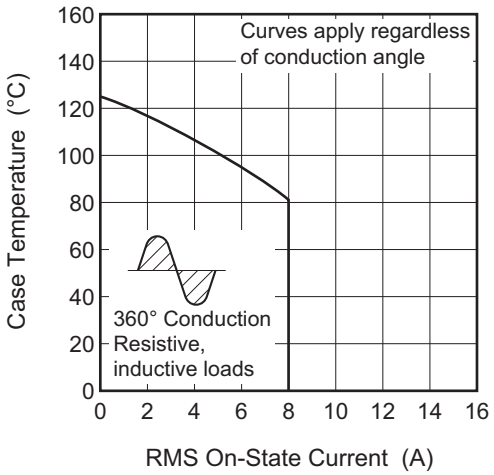
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



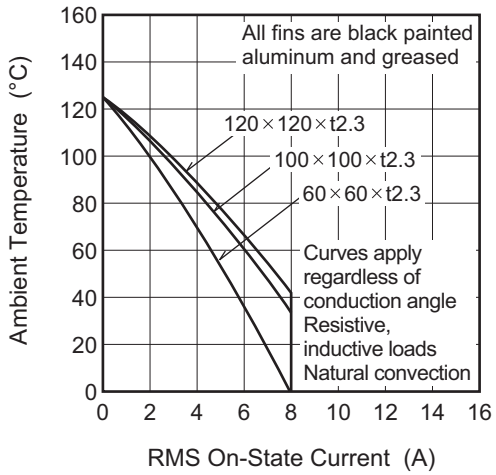

Maximum On-State Power Dissipation



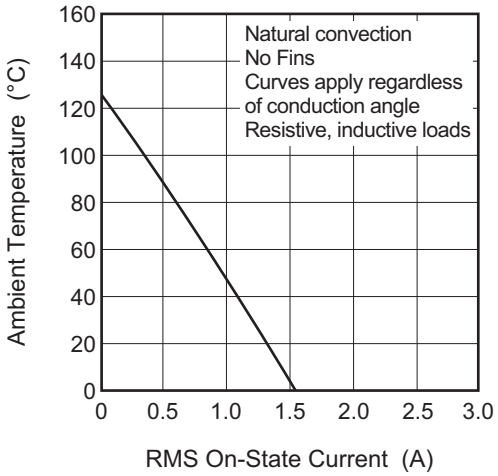

Allowable Case Temperature vs. RMS On-State Current



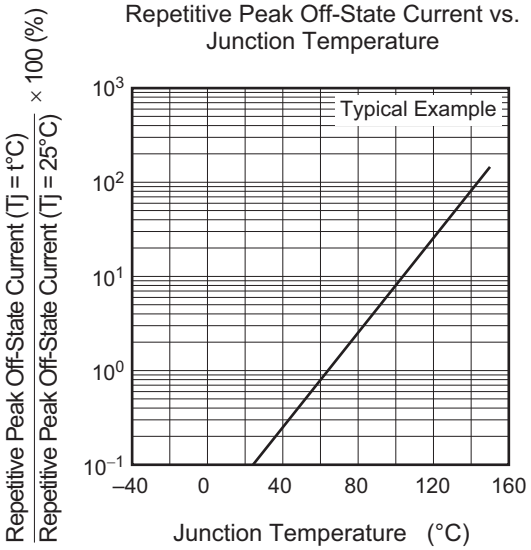

Allowable Ambient Temperature vs. RMS On-State Current



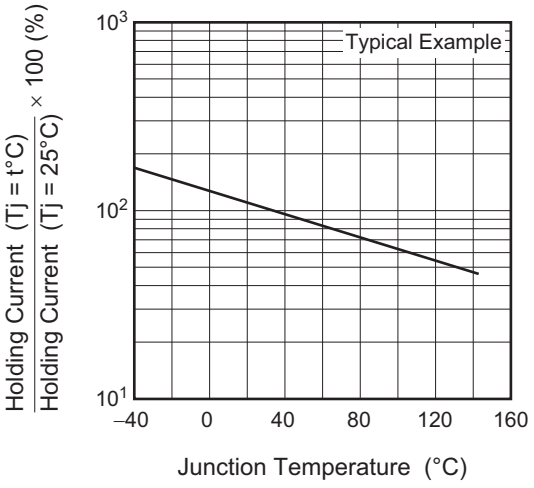

Allowable Ambient Temperature vs. RMS On-State Current



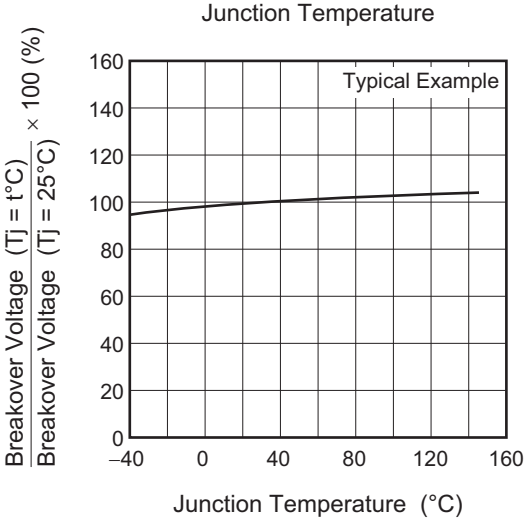

Repetitive Peak Off-State Current vs. Junction Temperature



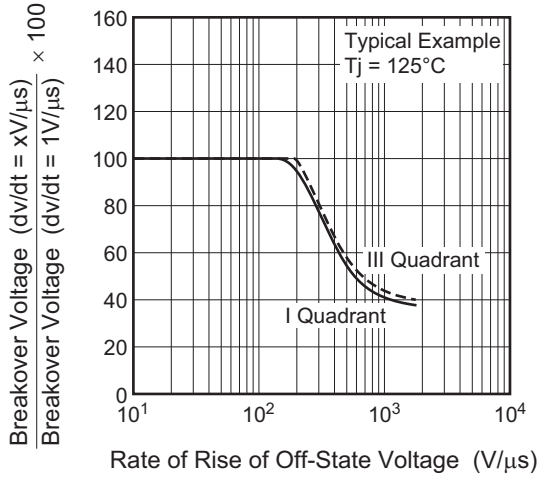
Holding Current vs.
Junction Temperature



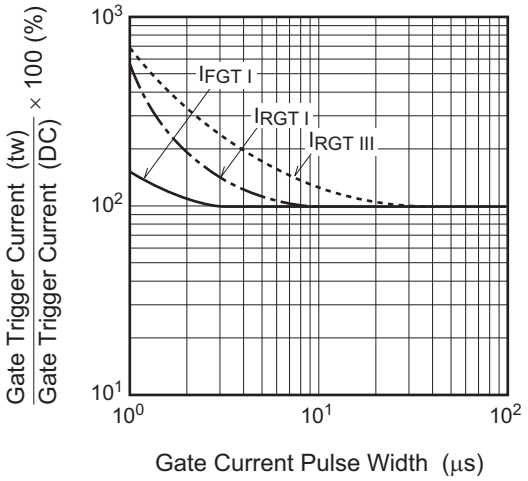

Breakover Voltage vs.
Junction Temperature



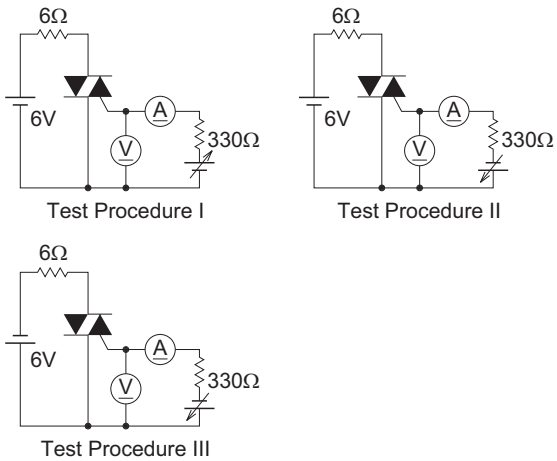

Breakover Voltage vs.
Rate of Rise of Off-State Voltage (Tj = 125°C)




Gate Trigger Current vs.
Gate Current Pulse Width



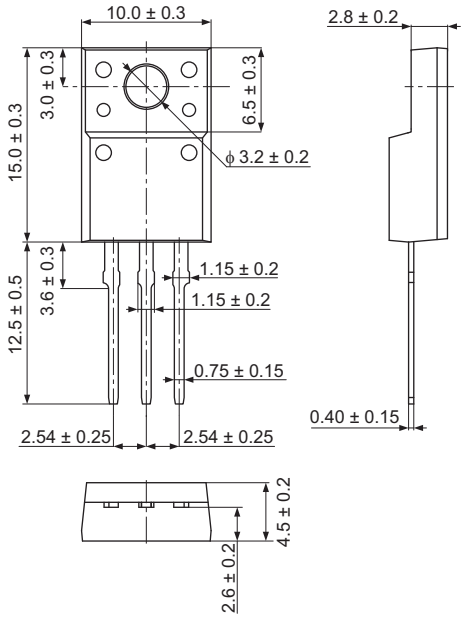

Gate Trigger Characteristics Test Circuits



## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|---|---|---|---|---|
| TO-220FL | — | PRSS0003AF-A | TO-220FL | 1.5g |

Unit: mm




## Ordering Information

| Orderable Part Number | Packing | Quantity | Remark |
|---|---|---|---|
| BCR8LM-12LA#B00 | Tube | 50 pcs. | Straight type |
| BCR8LM-12LA-A8#B00 | Tube | 50 pcs. | A8 Lead form |

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

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