# BCR3FM-12LB

## 600V - 3A - Triac
## Medium Power Use

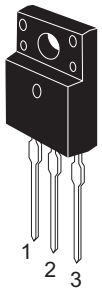
R07DS0955EJ0001
Rev.0.01
Nov 19, 2012

### Features

- $I_{T\ (RMS)}$ : 3 A
- $V_{DRM}$ : 600 V
- Tj: 150°C
- $I_{FGTI}$, $I_{RGTI}$, $I_{RGTIII}$: 20 mA (10 mA) Note5
- Insulated Type
- Planar Passivation Type
- Viso: 2000 V

### Outline

RENESAS Package code: PRSS0003AG-A
(Package name: TO-220FP)







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

### Applications

Switching mode power supply, small motor control, heater control, solenoid driver, and other general purpose control applications

### Maximum Ratings

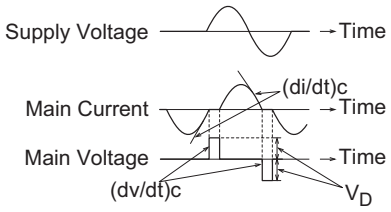
| Parameter | Symbol | Voltage class | Unit |
|---|---|---|---|
| | | 12 | |
| Repetitive peak off-state voltage Note1 | $V_{DRM}$ | 600 | V |
| Non-repetitive peak off-state voltage Note1 | $V_{DSM}$ | 720 | V |

| Parameter | Symbol | Ratings | Unit | Conditions |
|---|---|---|---|---|
| RMS on-state current | $I_{T\ (RMS)}$ | 3 | A | Commercial frequency, sine full wave 360° conduction, Tc = 134°C |
| Surge on-state current | $I_{TSM}$ | 30 | A | 60Hz sinewave 1 full cycle, peak value, non-repetitive |
| $I^2t$ for fusion | $I^2t$ | 3.7 | $A^2s$ | Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current |
| Peak gate power dissipation | $P_{GM}$ | 3 | W | |
| Average gate power dissipation | $P_{G\ (AV)}$ | 0.3 | W | |
| Peak gate voltage | $V_{GM}$ | 6 | V | |
| Peak gate current | $I_{GM}$ | 0.5 | A | |
| Junction Temperature | Tj | –40 to +150 | °C | |
| Storage temperature | Tstg | –40 to +150 | °C | |
| Mass | — | 1.9 | g | Typical value |
| Isolation voltage Note6 | Viso | 2000 | V | Ta = 25°C, AC 1 minute<br>$T_1$ • $T_2$ • 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 = 150°C, $V_{DRM}$ applied |
| On-state voltage | | $V_{TM}$ | — | — | 1.5 | V | Tc = 25°C, $I_{TM}$ = 4.5 A, instantaneous measurement |
| Gate trigger voltage Note2 | I | $V_{FGTI}$ | — | — | 1.5 | V | Tj = 25°C, $V_D$ = 6 V, $R_L$ = 6 Ω, $R_G$ = 330 Ω |
| | II | $V_{RGTI}$ | — | — | 1.5 | V | |
| | III | $V_{RGTIII}$ | — | — | 1.5 | V | |
| Gate trigger curent Note2 | I | $I_{FGTI}$ | — | — | 20 Note5 | mA | Tj = 25°C, $V_D$ = 6 V, $R_L$ = 6 Ω, $R_G$ = 330 Ω |
| | II | $I_{RGTI}$ | — | — | 20 Note5 | mA | |
| | III | $I_{RGTIII}$ | — | — | 20 Note5 | mA | |
| Gate non-trigger voltage | | $V_{GD}$ | 0.2 | — | — | V | Tj = 125°C, $V_D$ = 1/2 $V_{DRM}$ |
| | | | 0.1 | — | — | V | Tj = 150°C, $V_D$ = 1/2 $V_{DRM}$ |
| Thermal resistance | | $R_{th\ (j-c)}$ | — | — | 4.0 | °C/W | Junction to case Note3 |
| Critical-rate of rise of off-state commutation voltage Note4 | | (dv/dt)c | 5 | — | — | V/μs | Tj = 125°C |
| | | | 1 | — | — | V/μs | Tj = 150°C |

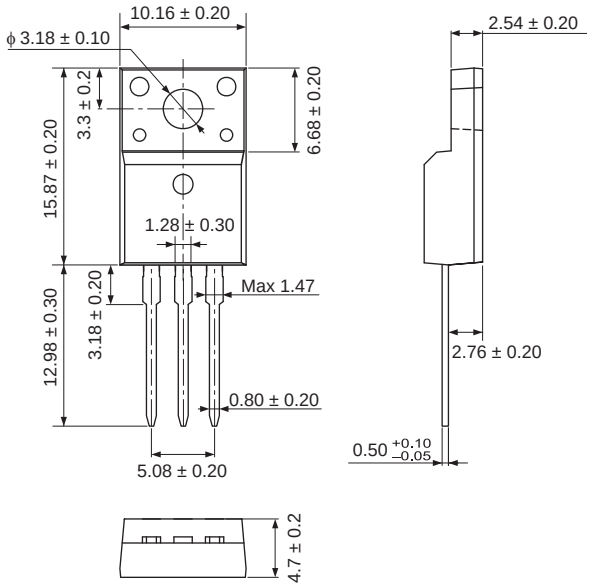
Notes: 1. Gate open.
2. Measurement using the gate trigger characteristics measurement circuit.
3. The contact thermal resistance $R_{th\ (c-f)}$ in case of greasing is 0.5°C/W.
4. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.
5. High sensitivity ($I_{GT} \leq 10$ mA) is also available ($I_{GT}$ item: 1).
6. Make sure that your finished product containing this device meets your safe isolation requirements. For safety, it's advisable that heatsink is electrically floating.

| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|---|
| 1. Junction temperature<br>Tj = 125/150°C<br>2. Rate of decay of on-state commutating current<br>(di/dt)c = –1.5A/ms<br>3. Peak off-state voltage<br>$V_D$ = 400 V |  |

## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|---|---|---|---|---|
| TO-220FP | — | PRSS0003AG-A | — | 1.9g |

Unit: mm




## Ordering Information

| Orderable Part Number | Packing | Quantity | Remark |
|---|---|---|---|
| BCR3FM-12LB#BB0 | Tube | 50 pcs. | Straight type |
| BCR3FM-12LB-A8#BB0 | Tube | 50 pcs. | A8 Lead form |

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

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