

# BCR16RM-12LB

Triac

Medium Power Use

REJ03G1714-0100

Rev.1.00

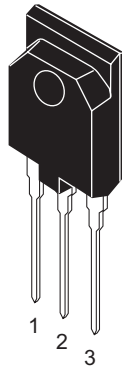
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## Features

- $I_{T(RMS)}$  : 16 A
- $V_{DRM}$  : 600 V
- $I_{FGTI}$ ,  $I_{RGTI}$ ,  $I_{RGTHI}$  : 30 mA
- $V_{ISO}$  : 2000 V
- The product guaranteed maximum junction temperature of 150°C
- Insulated Type
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0003ZA-A  
(Package name: TO-3PFM)



1. T<sub>1</sub> Terminal
2. T<sub>2</sub> 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 <sup>Note1</sup>     | $V_{DRM}$ | 600           | V    |
| Non-repetitive peak off-state voltage <sup>Note1</sup> | $V_{DSM}$ | 720           | V    |

| Parameter                      | Symbol      | Ratings      | Unit                 | Conditions   |
|--------------------------------|-------------|--------------|----------------------|--|
| RMS on-state current           | $I_T (RMS)$ | 16           | A                    | Commercial frequency, sine full wave 360° conduction, $T_c = 117^\circ\text{C}$  |
| Surge on-state current         | $I_{TSM}$   | 160          | A                    | 50 Hz sinewave 1 full cycle, peak value, non-repetitive                          |
| $I^2t$ for fusing              | $I^2t$      | 128          | $\text{A}^2\text{s}$ | Value corresponding to 1 cycle of half wave 50 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 | $^\circ\text{C}$     |  |
| Storage temperature            | $T_{stg}$   | - 40 to +150 | $^\circ\text{C}$     |  |
| Mass                           | —           | 5.2          | g                    | Typical value  |
| Isolation voltage              | Viso        | 2000         | V                    | $T_a = 25^\circ\text{C}$ , AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case |

Notes: 1. Gate open.

### Electrical Characteristics

| Parameter   | Symbol        | Min.         | Typ. | Max. | Unit                      | Test conditions   |
|---|---------------|--------------|------|------|---------------------------|---|
| Repetitive peak off-state current                                       | $I_{DRM}$     | —            | —    | 2.0  | mA                        | $T_j = 150^\circ\text{C}$ , $V_{DRM}$ applied   |
| On-state voltage  | $V_{TM}$      | —            | —    | 1.5  | V                         | $T_c = 25^\circ\text{C}$ , $I_{TM} = 25\text{ A}$ , Instantaneous measurement           |
| Gate trigger voltage <sup>Note2</sup>                                   | I             | $V_{FGTI}$   | —    | —    | 1.5                       | $T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$ |
|   | II            | $V_{RGTI}$   | —    | —    | 1.5                       |   |
|   | III           | $V_{RGTIII}$ | —    | —    | 1.5                       |   |
| Gate trigger current <sup>Note2</sup>                                   | I             | $I_{FGTI}$   | —    | —    | 30                        | $T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$ |
|   | II            | $I_{RGTI}$   | —    | —    | 30                        |   |
|   | III           | $I_{RGTIII}$ | —    | —    | 30                        |   |
| Gate non-trigger voltage  | $V_{GD}$      | 0.2/0.1      | —    | —    | V                         | $T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$                       |
| Thermal resistance  | $R_{th(j-c)}$ | —            | —    | 1.8  | $^\circ\text{C}/\text{W}$ | Junction to case <sup>Note3</sup>   |
| Critical-rate of rise of off-state commutating voltage <sup>Note4</sup> | $(dv/dt)_c$   | 10/1         | —    | —    | $\text{V}/\mu\text{s}$    | $T_j = 125^\circ\text{C}/150^\circ\text{C}$   |

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

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

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

| Test conditions  | Commutating voltage and current waveforms (inductive load) |
|--|--|
| 1. Junction temperature<br>$T_j = 125^\circ\text{C}/150^\circ\text{C}$<br>2. Rate of decay of on-state commutating current<br>$(di/dt)_c = - 8.0\text{ A/ms}$<br>3. Peak off-state voltage<br>$V_D = 400\text{ V}$ |  |