

# BCR16PR-12LB

600V - 16A - Triac  
Medium Power Use

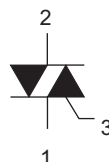
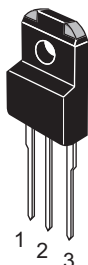
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Rev.0.01  
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## Features

- $I_{T(RMS)}$  : 16 A
- $V_{DRM}$  : 600 V
- $I_{FGTL}, I_{RGTL}, I_{RGTH}$  : 30 mA (20 mA) <sup>Note4</sup>
- $V_{iso}$  : 2000 V
- Insulated Type
- $T_j$  : 150 °C
- Planar Passivation Type
- UL Recognized: File No. E223904

## Outline

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



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

## Applications

Contactless AC switch, light dimmer, electronic flasher unit, hair drier, control of household equipment such as TV sets, refrigerator, washing machine, electric fan, and other general controlling devices

## Maximum Ratings

| Parameter  | Symbol    | Voltage class |      |
|--|-----------|---------------|------|
|  |           | 12            | Unit |
| 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, $T_c = 96^\circ\text{C}$                 |
| Surge on-state current             | $I_{TSM}$    | 160         | A                | 60 Hz sinewave 1 full cycle, peak value, non-repetitive  |
| $I^2t$ for fusion                  | $I^2t$       | 106.5       | A <sup>2</sup> s | Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current                      |
| Peak gate power dissipation        | $P_{GM}$     | 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 | °C               |  |
| Storage temperature                | $T_{stg}$    | -40 to +150 | °C               |  |
| Mass                               | —            | 2.0         | g                | Typical value  |
| Isolation voltage <sup>Note6</sup> | $V_{iso}$    | 2000        | V                | $T_a = 25^\circ\text{C}$ , AC 1 minute<br>T <sub>1</sub> • T <sub>2</sub> • G terminal to case |

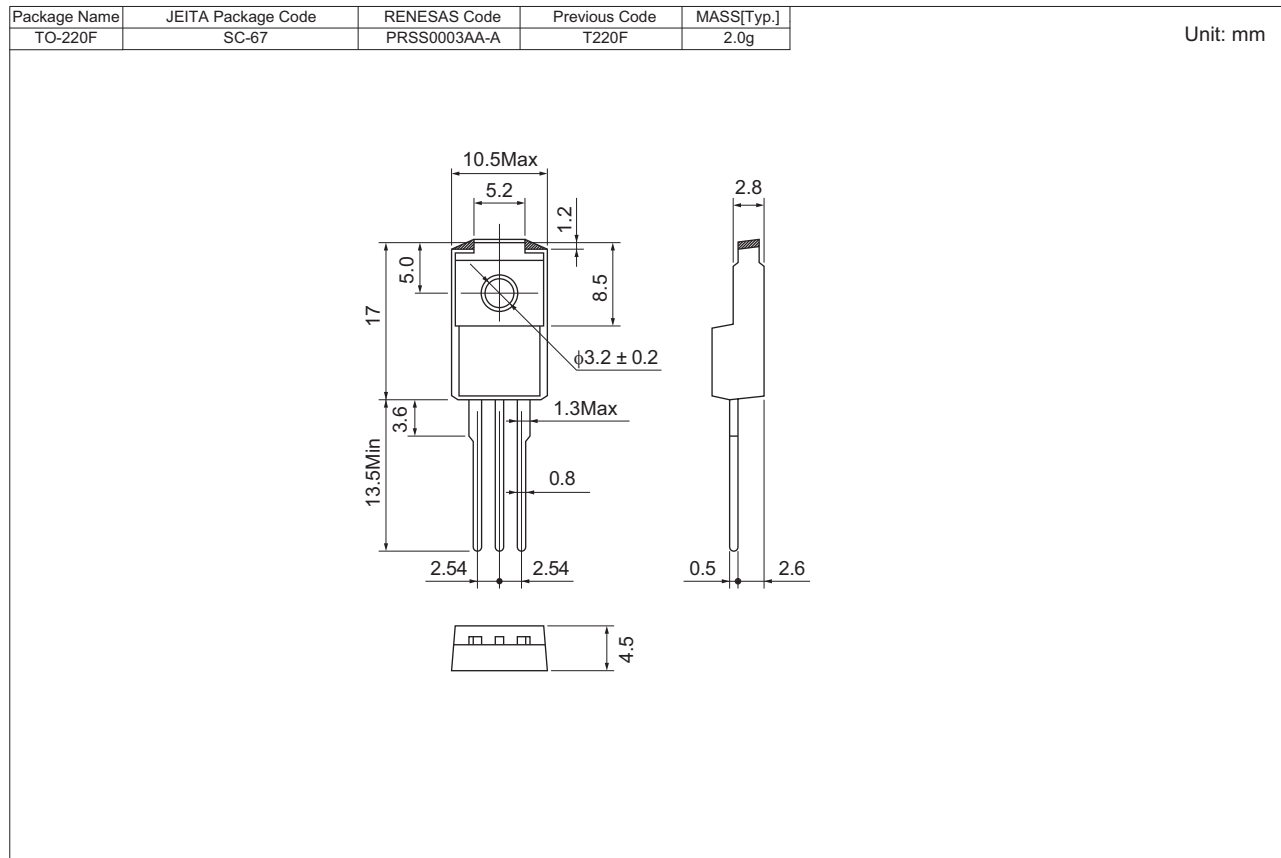
## Electrical Characteristics

| Parameter   | Symbol        | Rated value  |      |      | Unit                      | Test conditions  |
|---|---------------|--------------|------|------|---------------------------|--|
|   |               | Min.         | Typ. | Max. |                           |  |
| 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 <sup>Note4</sup>       | $T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$ |
|   | II            | $I_{RGTI}$   | —    | —    | 30 <sup>Note4</sup>       |  |
|   | III           | $I_{RGTIII}$ | —    | —    | 30 <sup>Note4</sup>       |  |
| Gate non-trigger voltage  | $V_{GD}$      | 0.2          | —    | —    | V                         | $T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$  |
|   |               | 0.1          | —    | —    |                           | $T_j = 150^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$  |
| Thermal resistance  | $R_{th(j-c)}$ | —            | —    | 3.0  | $^\circ\text{C}/\text{W}$ | Junction to case <sup>Note3</sup>  |
| Critical-rate of rise of off-state commutation voltage <sup>Note5</sup> | $(dv/dt)_c$   | 10           | —    | —    | V/ $\mu\text{s}$          | $T_j = 125^\circ\text{C}$  |
|   |               | 1            | —    | —    |                           | $T_j = 150^\circ\text{C}$  |

- 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  $0.5^\circ\text{C}/\text{W}$ .  
 4. High sensitivity ( $I_{GT} \leq 20\text{mA}$ ) is also available ( $I_{GT}$  item: 1).  
 5. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.  
 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>$T_j = 125/150^\circ\text{C}$<br>2. Rate of decay of on-state commutating current<br>$(di/dt)_c = -8.0\text{A}/\text{ms}$<br>3. Peak off-state voltage<br>$V_D = 400\text{V}$ |  |

## Package Dimensions



## Ordering Information

| Orderable Part Number | Packing | Quantity | Remark        |
|-----------------------|---------|----------|---------------|
| BCR16PR-12LB#B00      | Bag     | 100 pcs. | Straight type |
| BCR16PR-12LBA8#B00    | Tube    | 50 pcs.  | A8 Lead form  |

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**Renesas Electronics America Inc.**  
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.  
Tel: +1-408-588-6000, Fax: +1-408-588-6130

**Renesas Electronics Canada Limited**  
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada  
Tel: +1-905-898-5441, Fax: +1-905-898-3220

**Renesas Electronics Europe Limited**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: +44-1628-651-700, Fax: +44-1628-651-804

**Renesas Electronics Europe GmbH**  
Arcadiastrasse 10, 40472 Düsseldorf, Germany  
Tel: +49-211-65030, Fax: +49-211-6503-1327

**Renesas Electronics (China) Co., Ltd.**  
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China  
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

**Renesas Electronics (Shanghai) Co., Ltd.**  
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China  
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

**Renesas Electronics Hong Kong Limited**  
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong  
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

**Renesas Electronics Taiwan Co., Ltd.**  
13F, No. 363, Fu Shing North Road, Taipei, Taiwan  
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

**Renesas Electronics Singapore Pte. Ltd.**  
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949  
Tel: +65-6213-0200, Fax: +65-6213-0300

**Renesas Electronics Malaysia Sdn.Bhd.**  
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: +60-3-7955-3390, Fax: +60-3-7955-9510

**Renesas Electronics Korea Co., Ltd.**  
11F., Samik Laved or Bldg., 720-2 Yeoksam-Dong, Kangnam-Ku, Seoul 135-080, Korea  
Tel: +82-2-558-3737, Fax: +82-2-558-5141