

BCR16FR-12LB

600V - 16A - Triac

R07DS1462EJ0100

Medium Power Use

Rev.1.00

Oct. 10, 2019

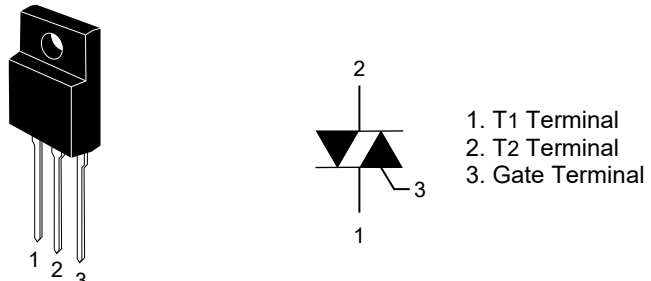
Features

- $I_{T(RMS)}$: 16 A
- V_{DRM} : 600 V
- T_j : 150 °C
- I_{FGTI} , I_{RGTI} , $I_{RGT III}$: 30 mA
- Insulated Type
- Planar Passivation Type
- Viso: 2000V

Outline

RENESAS Package code: PRSS0003AP-A
(Package name: TO-220FPA)

Ordering code
#BH0



1. T1 Terminal
2. T2 Terminal
3. Gate Terminal

Application

For applications that frequently turn on with a large inrush current such as printer fusers, motors, etc.

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 | $I_{T(RMS)}$ | 16 | A | Commercial frequency, sine full wave 360°conduction, $T_c = 98^\circ\text{C}$ |
| Surge on-state current | I_{TSM} | 160 | A | 50 Hz sinewave 1 full cycle, peak value, non-repetitive |
| I^2t for fusion | I^2t | 106.5 | A ² 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 | °C | |
| Storage temperature | T_{stg} | -40 to +150 | °C | |
| Isolation voltage ^{Note5} | V_{iso} | 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

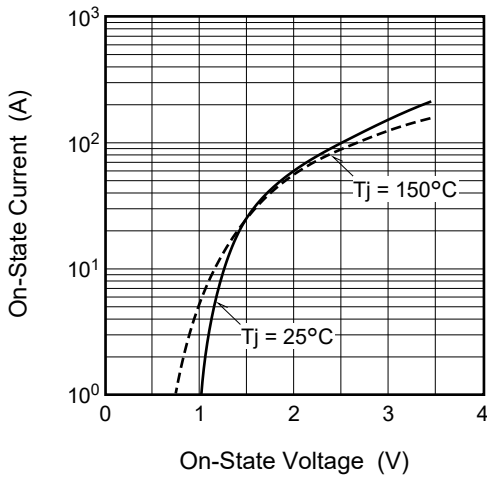
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|---|---------------|--------------|------|------|------------------------|--|
| Repetitive peak off-state current | I_{DRM} | — | — | 2.0 | mA | $T_j = 150^\circ\text{C}$, V_{DRM} applied |
| On-state voltage | V_{TM} | — | — | 1.5 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 25\text{ A}$, instantaneous measurement |
| Gate trigger voltage ^{Note2} | 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 ^{Note2} | 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 | — | — | 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 | $R_{th(j-c)}$ | — | — | 2.9 | $^\circ\text{C/W}$ | Junction to case ^{Note3} |
| Critical-rate of rise of off-state commutation voltage ^{Note4} | $(dv/dt)_c$ | 10 | — | — | $\text{V}/\mu\text{s}$ | $T_j = 125^\circ\text{C}$ |
| | | 1 | — | — | | $T_j = 150^\circ\text{C}$ |

- 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.
 5. Make sure that your finished product containing this device meets your safe isolation requirements.
 For safety, it's advisable that heatsink is electrically floating.

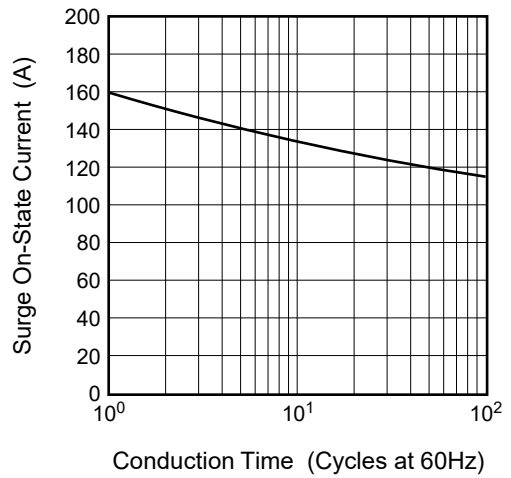
| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|--|
| 1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -8\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$ | |

Performance Curves

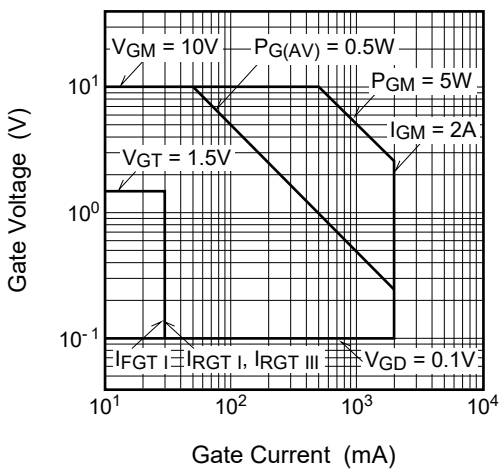
Maximum On-State Characteristics



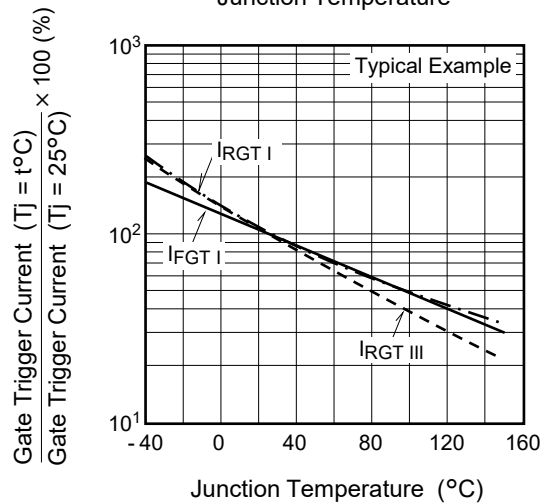
Rated Surge On-State Current



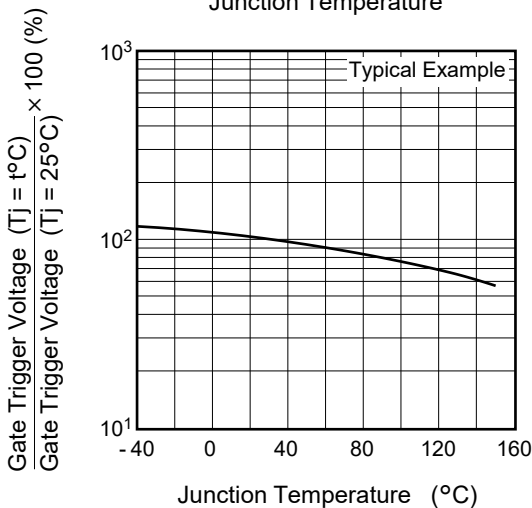
Gate Characteristics (I, II and III)



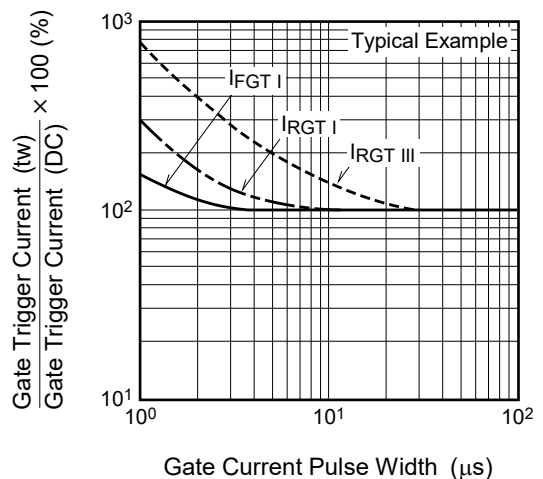
Gate Trigger Current vs. Junction Temperature

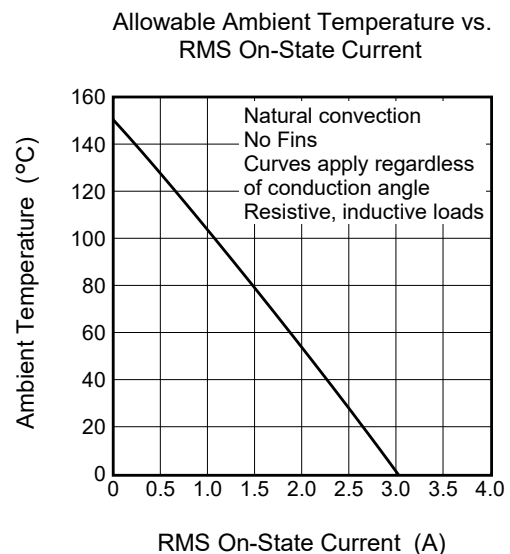
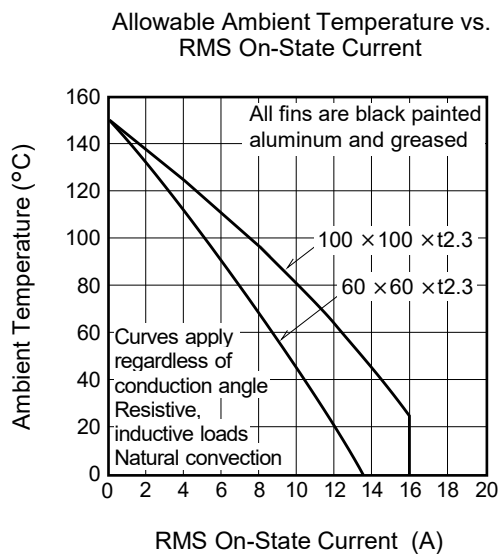
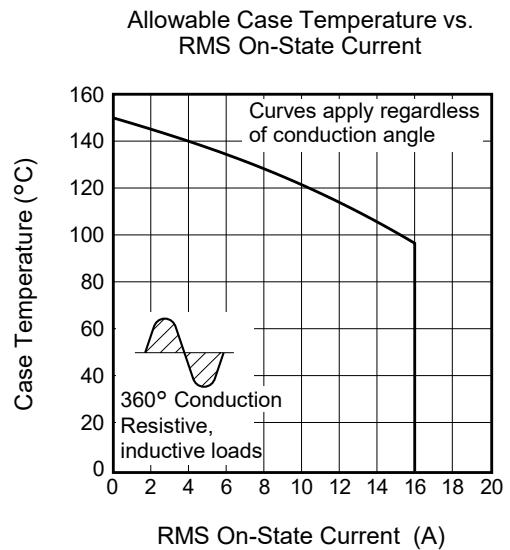
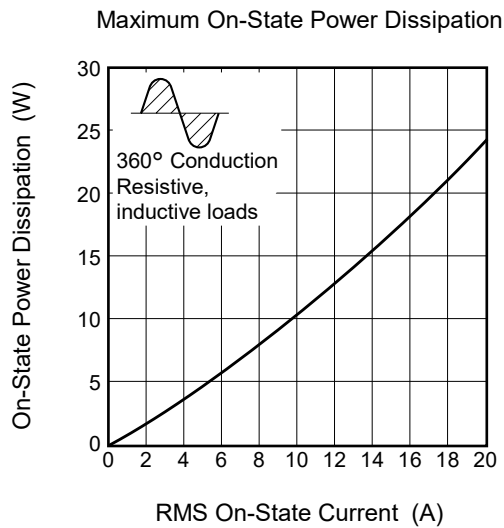
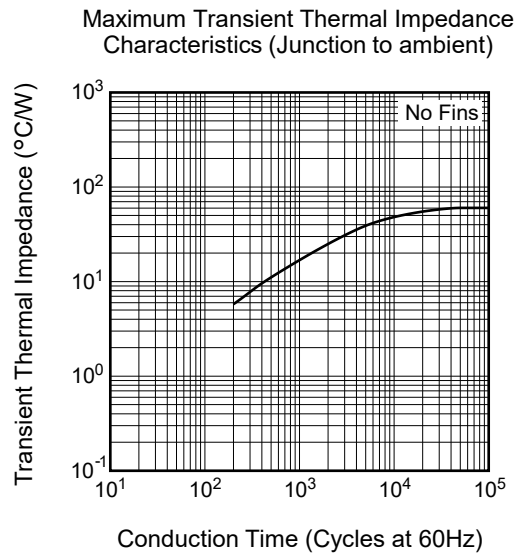
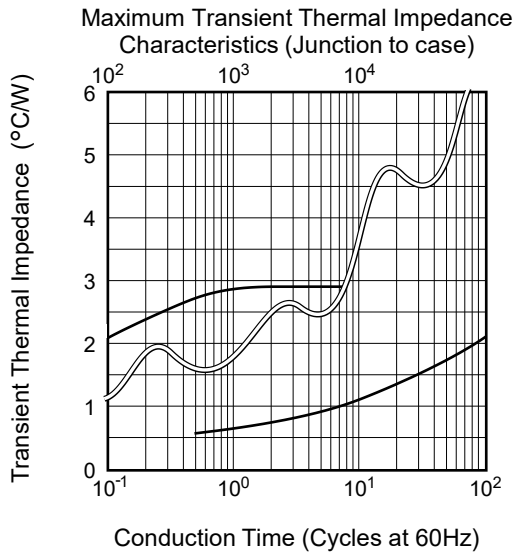


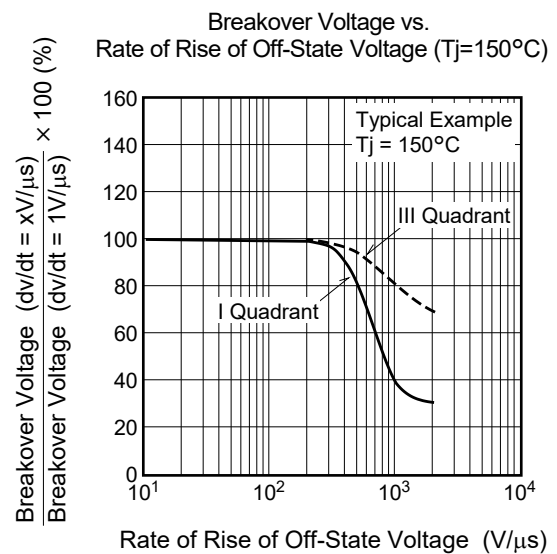
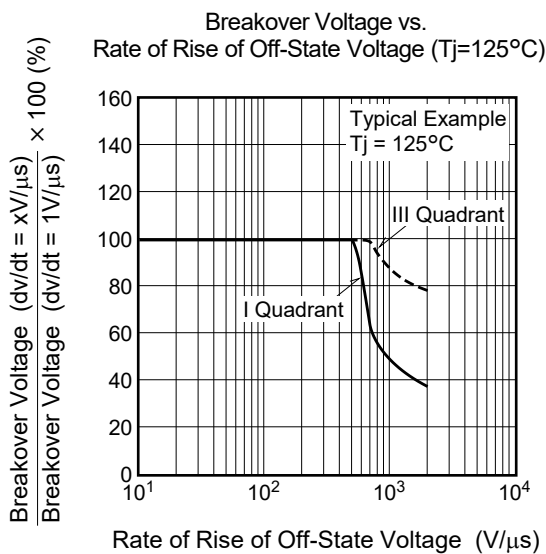
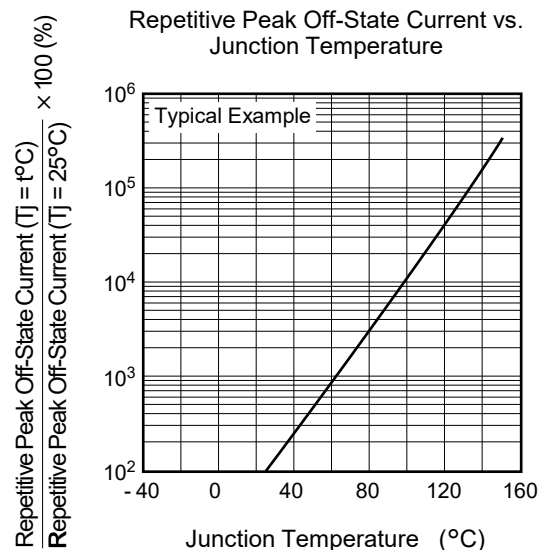
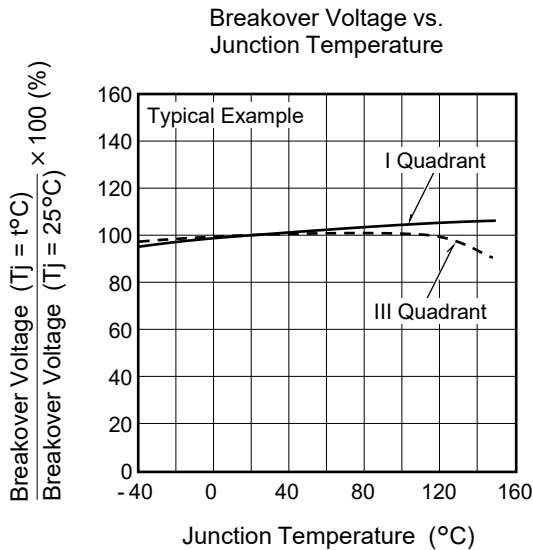
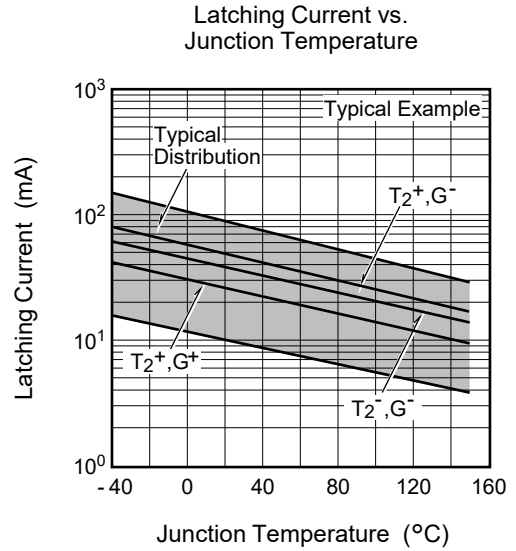
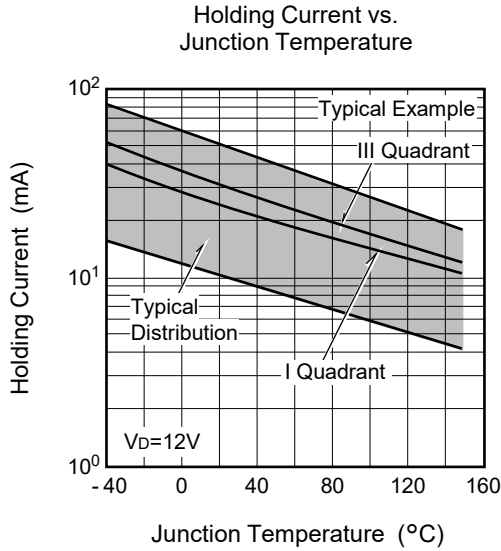
Gate Trigger Voltage vs. Junction Temperature



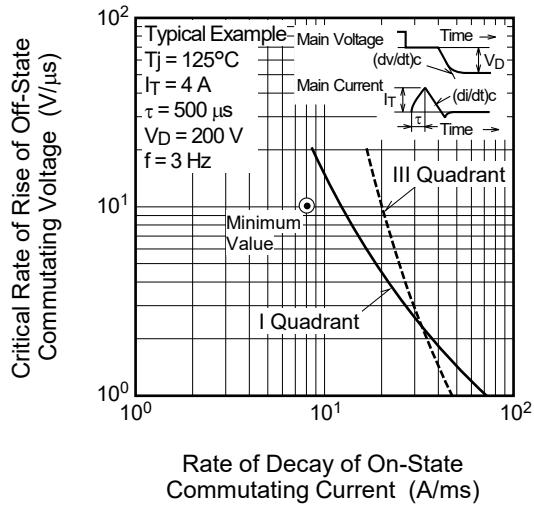
Gate Trigger Current vs. Gate Current Pulse Width



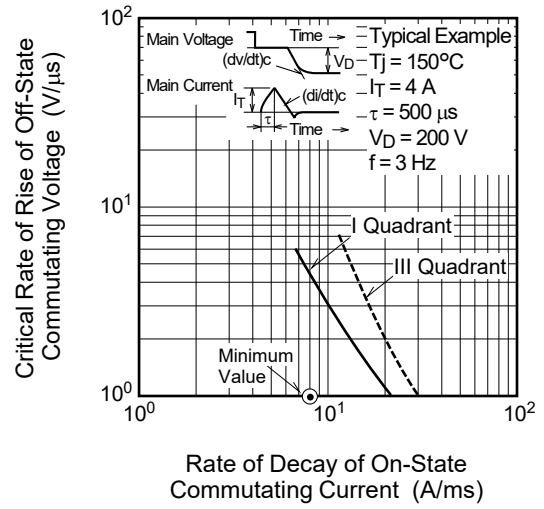




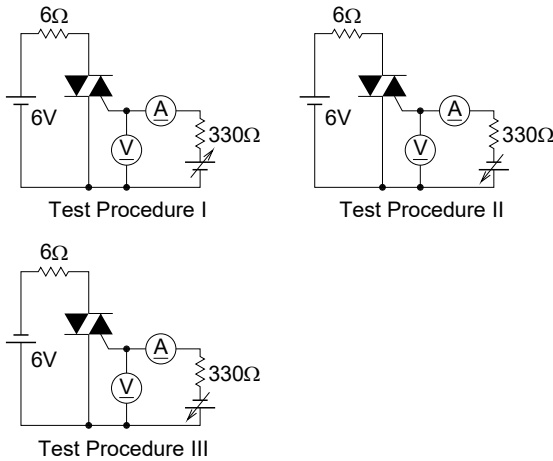
Commutation Characteristics (Tj=125°C)



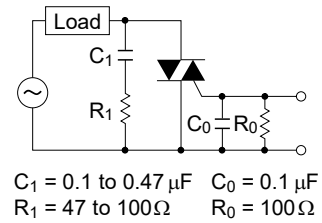
Commutation Characteristics (Tj=150°C)



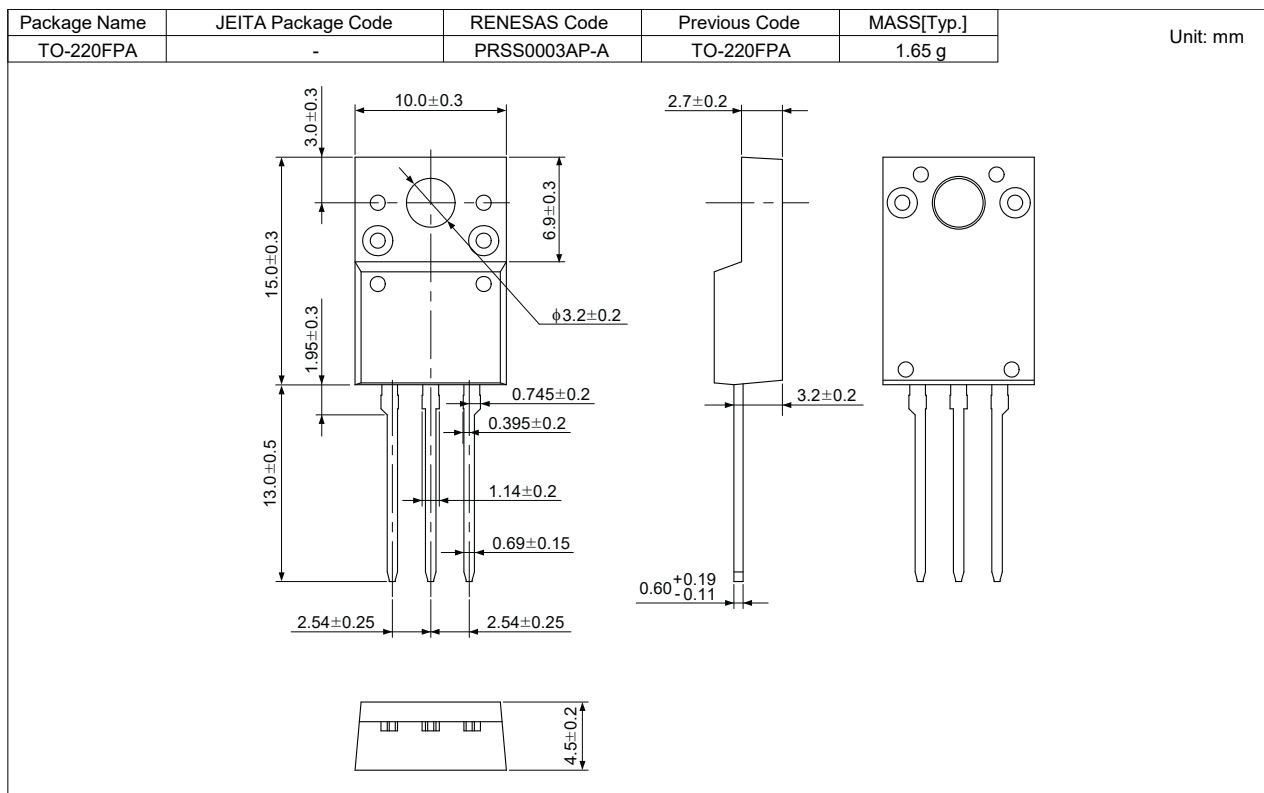
Gate Trigger Characteristics Test Circuits



Recommended peripheral components for Triac



Package Dimensions



Ordering Information

| Orderable Part Number | Package | Quantity ^{Note6} | Remark | Status |
|-----------------------|-----------|---------------------------|-------------------|-----------------|
| BCR16FR-12LB#BH0 | TO-220FPA | 50 pcs./ tube | Straight type | Mass Production |
| BCR16FR-12LB□□#BH0 | TO-220FPA | 50 pcs./ tube | □□:Lead form type | |

Notes: 6. Please confirm the specification about the shipping in detail.

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Renesas Electronics Corporation
TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan

Renesas Electronics America Inc.
1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.
Tel: +1-408-432-8888, Fax: +1-408-434-5351

Renesas Electronics Canada Limited
9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

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

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709 Quantum Plaza, No.27 ZhichunLu, Haidian District, Beijing, 100191 P. R. China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, 200333 P. R. China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852 2886-9022

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, 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 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.
No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.
17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5338