

BCR16FM-12LB

600V - 16A - Triac

Medium Power Use

R07DS1188EJ0201

Rev.2.01

Feb. 19, 2019

Features

- $I_T (RMS)$: 16 A
- V_{DRM} : 600 V
- T_j : 150 °C
- I_{FGT1} , I_{RGT1} , $I_{RGT III}$: 30 mA(20mA) ^{Note5}
- Insulated Type
- Planar Passivation Type
- Viso: 2000V

Outline

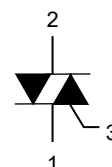
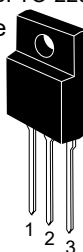
RENESAS Package code: PRSS0003AG-A
(Package name: TO-220FP)

Ordering code
#BB0



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

Ordering code
#BG0
#BH0



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

Application

Motor control, Heater control, Power supply, Solid state relay, and other general purpose AC 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	$I_T (RMS)$	16	A	Commercial frequency, sine full wave 360°conduction, $T_c = 98^\circ\text{C}$ (#BB0, #BH0) ^{Note2} $T_c = 87^\circ\text{C}$ (#BG0) ^{Note2}
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 ^{Note7}	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.
2. Please refer to the Ordering Information.

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 ^{Note3}	I V_{FGTI}	—	—	1.5	V	$T_J = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II V_{RGTI}	—	—	1.5	V	
	III V_{RGTIII}	—	—	1.5	V	
Gate trigger current ^{Note3}	I I_{FGTI}	—	—	30 ^{Note6}	mA	$T_J = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II I_{RGTI}	—	—	30 ^{Note6}	mA	
	III I_{RGTIII}	—	—	30 ^{Note6}	mA	
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 ^{Note4} (#BB0, #BH0) ^{Note2}
		—	—	3.5	$^\circ\text{C/W}$	Junction to case ^{Note4} (#BG0) ^{Note2}
Critical-rate of rise of off-state commutation voltage ^{Note5}	$(dv/dt)_c$	10	—	—	V/ μs	$T_J = 125^\circ\text{C}$
		1	—	—		$T_J = 150^\circ\text{C}$

Notes: 3. Measurement using the gate trigger characteristics measurement circuit.

4. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

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

6. High sensitivity ($I_{GT} \leq 20\text{ mA}$) is also available. (I_{GT} item:1)

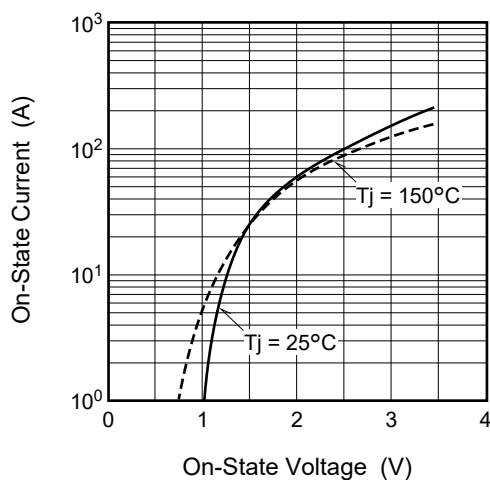
7. Make sure that your finished product containing this device meets your safe isolation requirements.

For safety, it's advisable that heatsink is electrically floating.

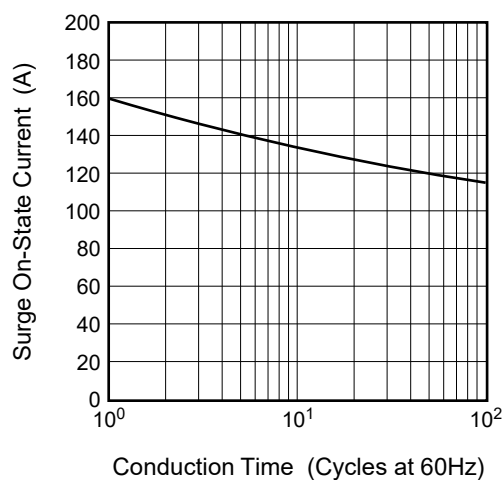
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_J = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -8\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

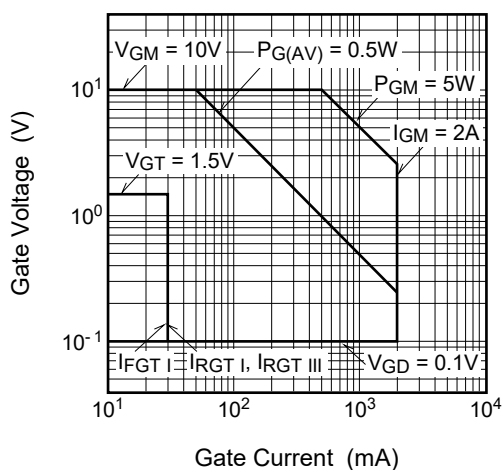
Maximum On-State Characteristics



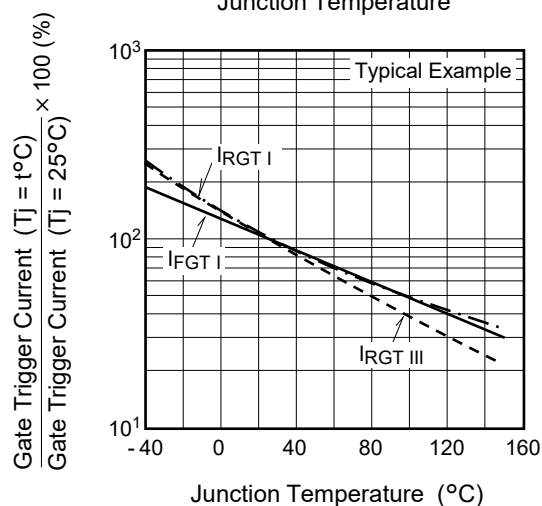
Rated Surge On-State Current



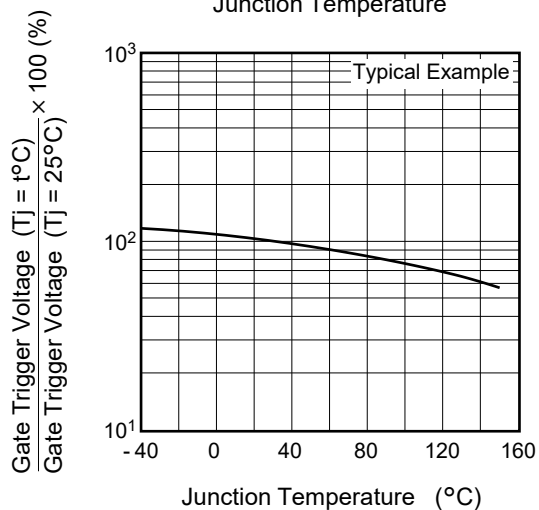
Gate Characteristics (I, II and III)



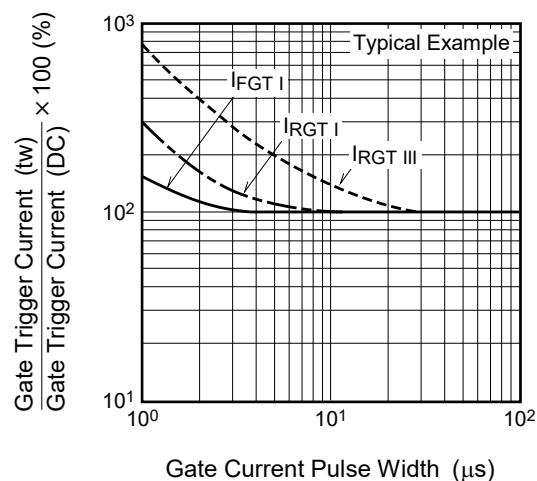
Gate Trigger Current vs. Junction Temperature

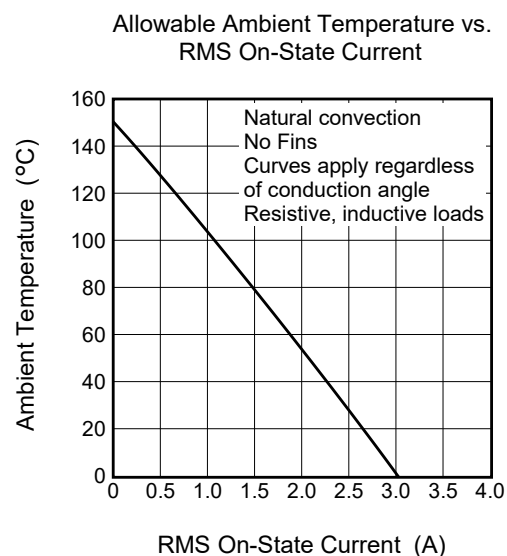
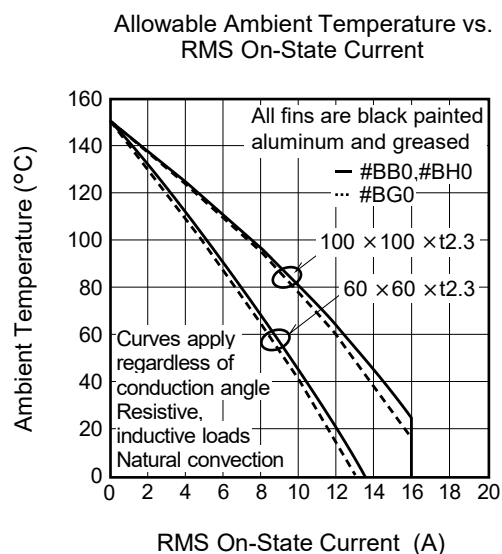
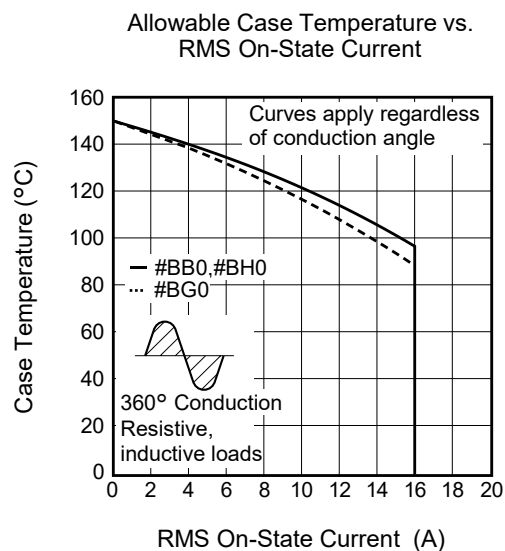
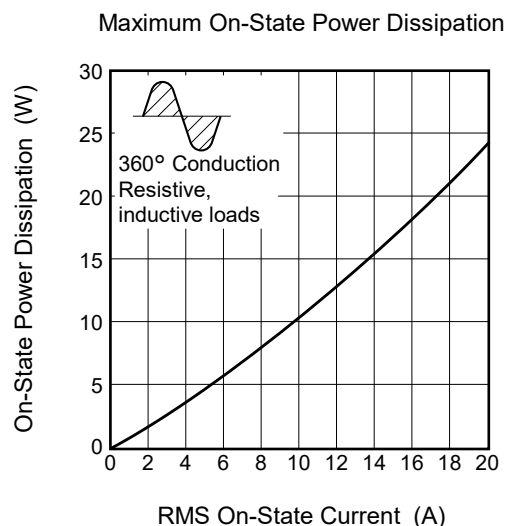
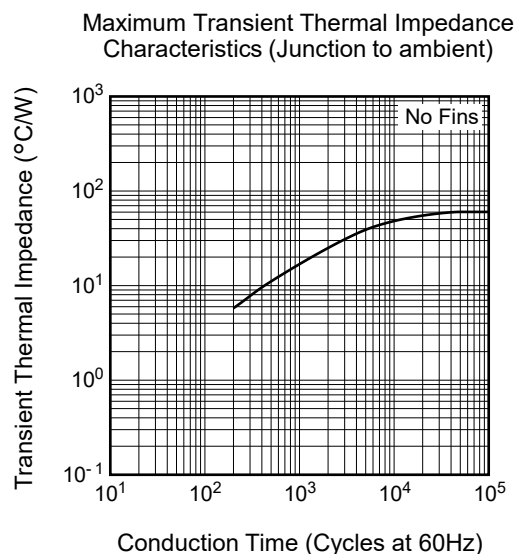
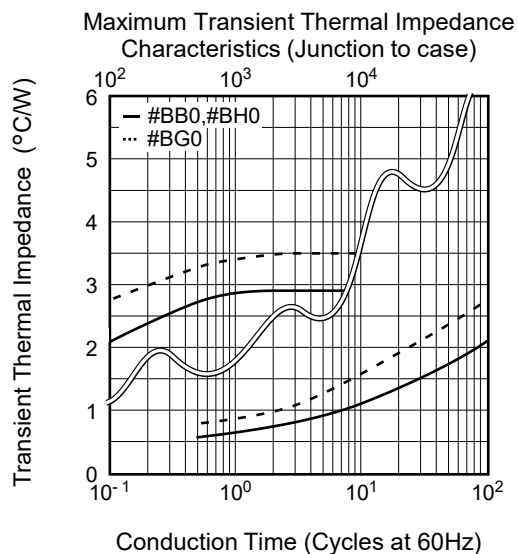


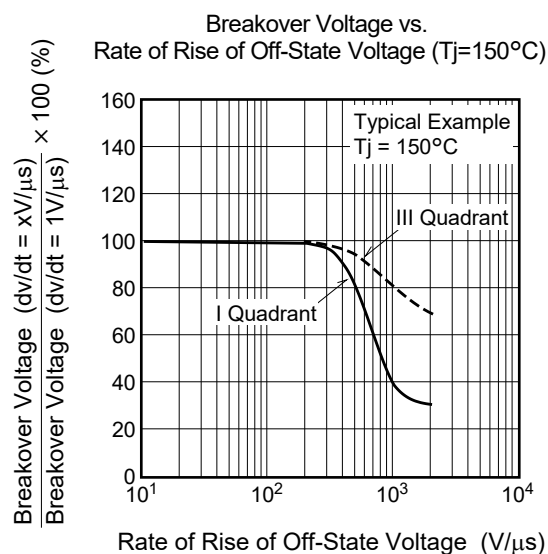
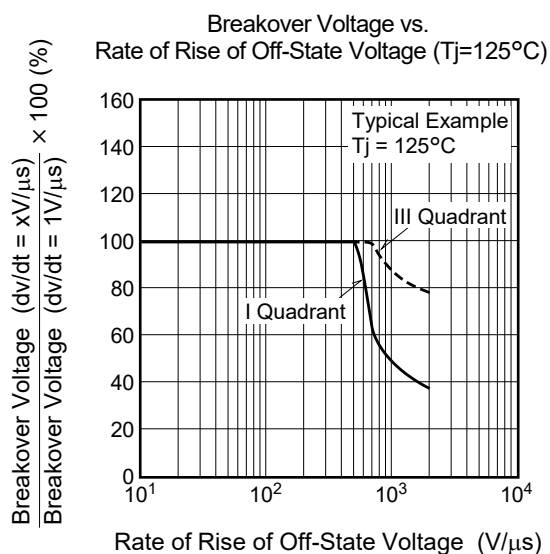
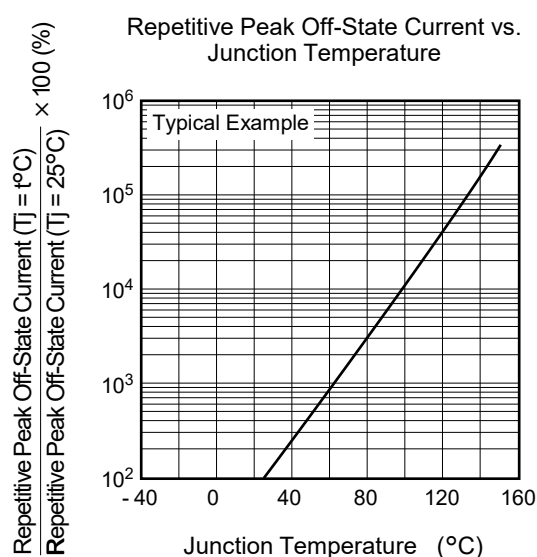
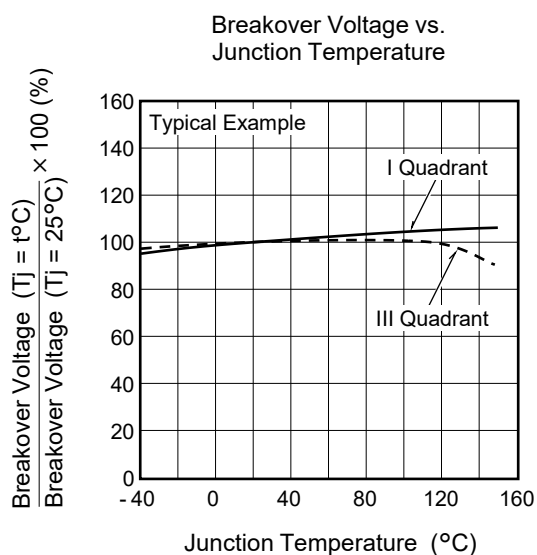
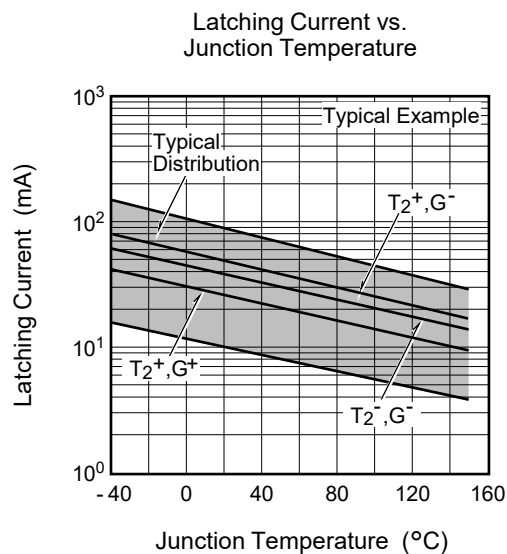
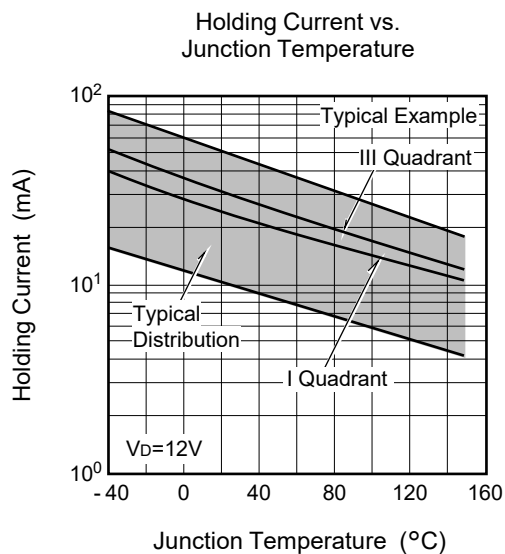
Gate Trigger Voltage vs. Junction Temperature

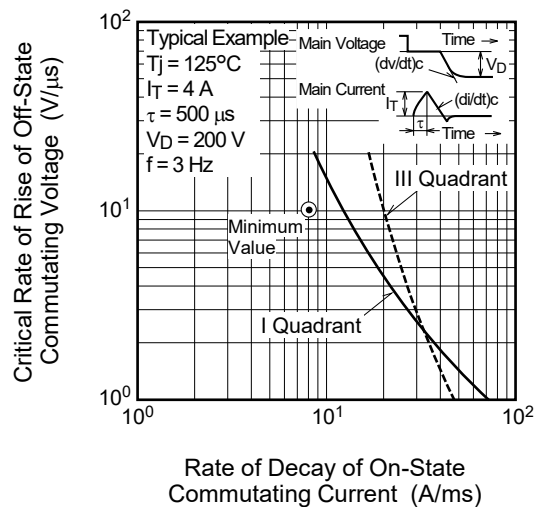
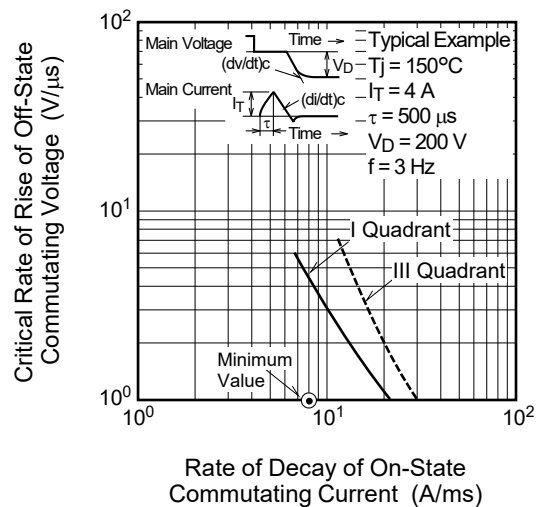


Gate Trigger Current vs. Gate Current Pulse Width

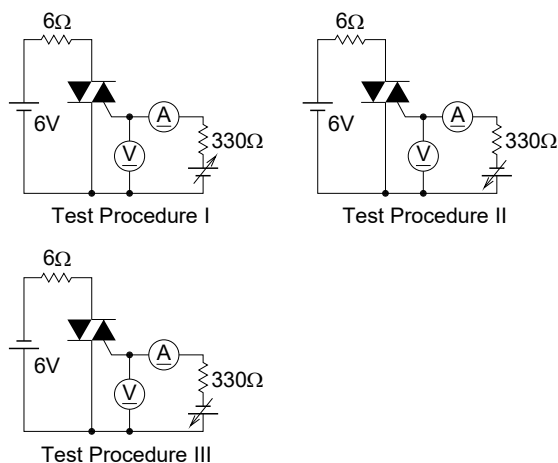




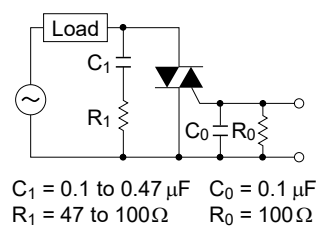


Commutation Characteristics ($T_j=125^\circ\text{C}$)Commutation Characteristics ($T_j=150^\circ\text{C}$)

Gate Trigger Characteristics Test Circuits



Recommended peripheral components for Triac

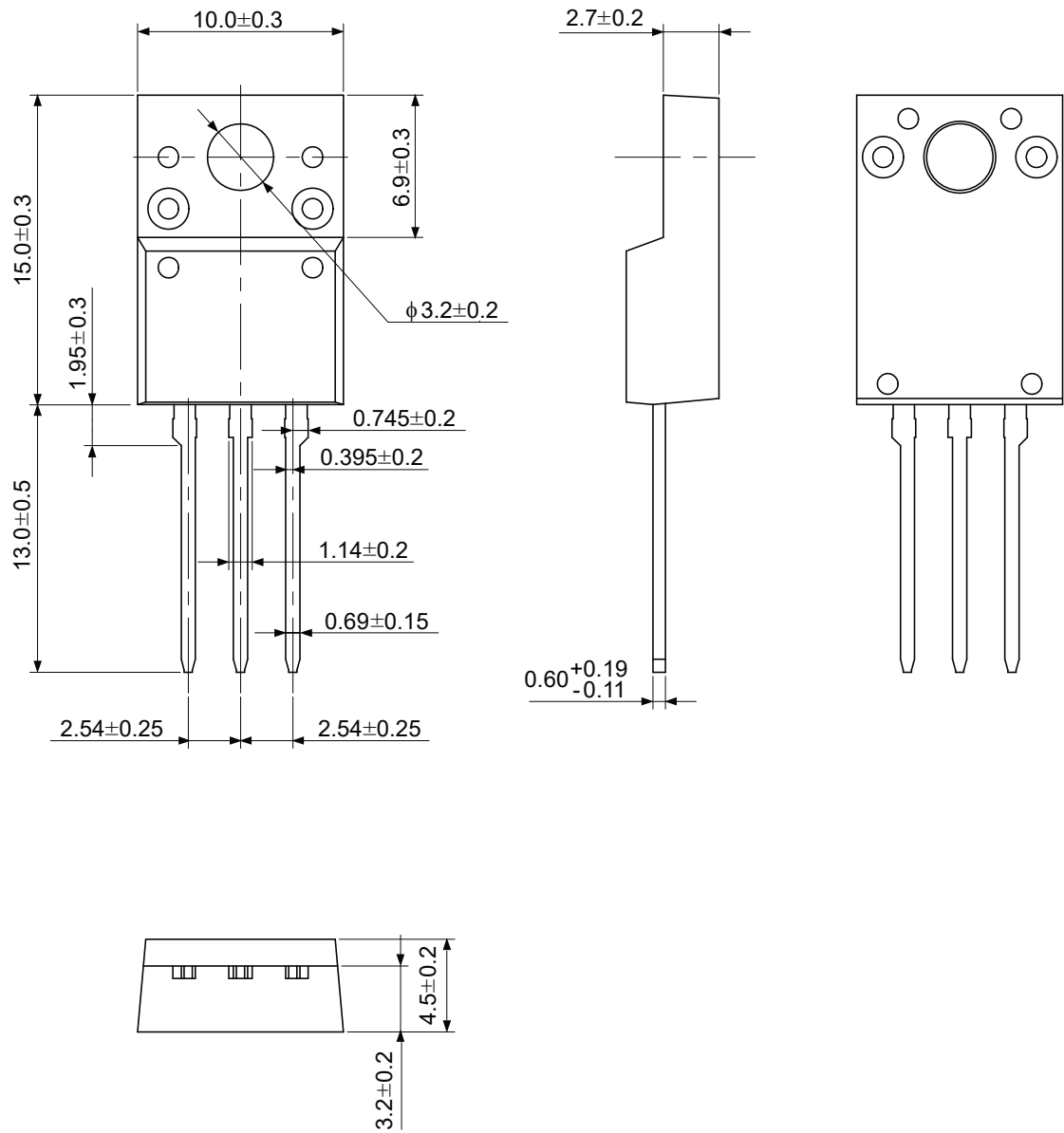


Package Dimensions

Ordering code: #BG0, #BH0

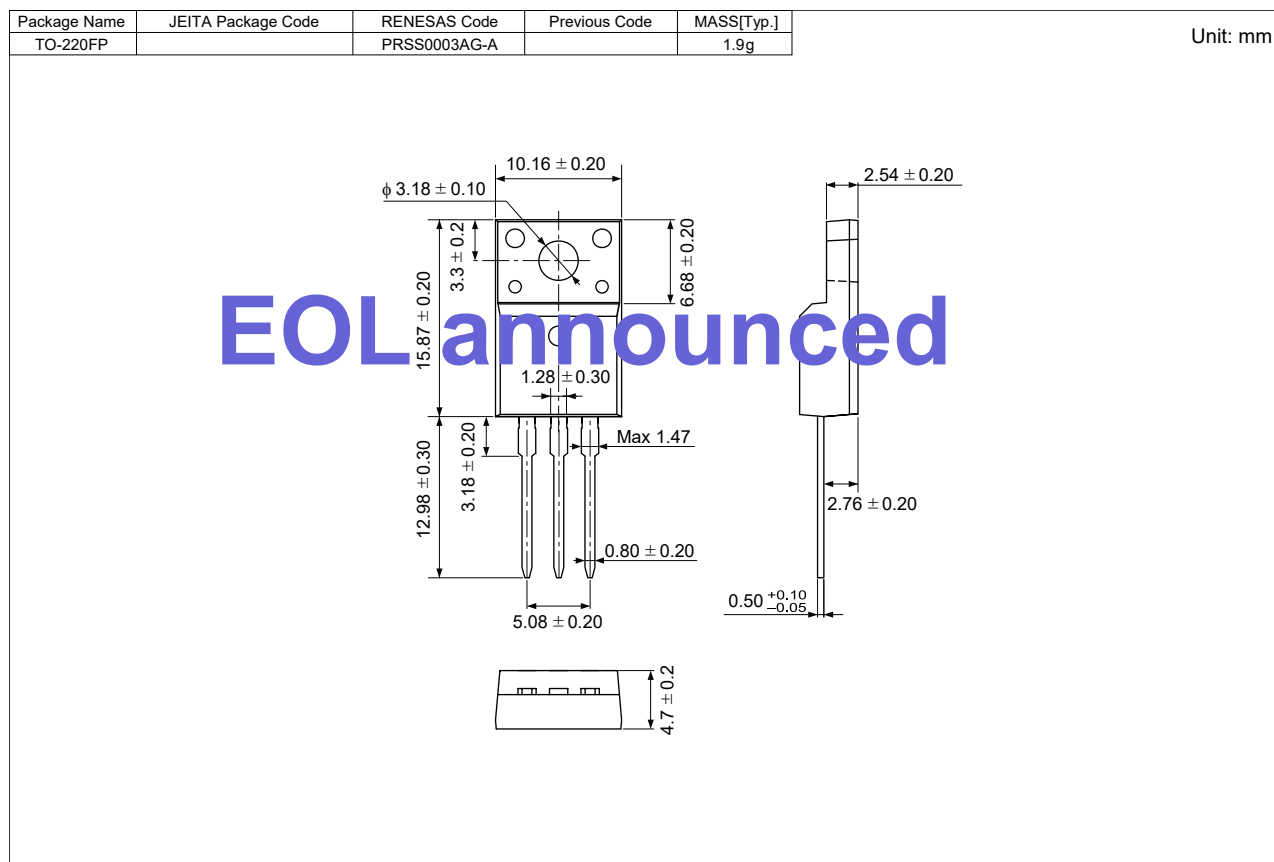
JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
-	PRSS0003AP-A	TO-220FPA	1.65

Unit: mm



Package Dimensions

Ordering code: #BB0 <EOL announced>



Ordering Information

Orderable Part Number	Package	Quantity ^{Note8}	Remark	Status
BCR16FM-12LB#BG0	TO-220FPA	50 pcs./ tube	Straight type	Mass Production
BCR16FM-12LB-1#BG0	TO-220FPA	50 pcs./ tube	Straight type, I _{GT} item:1	
BCR16FM-12LB□□#BG0	TO-220FPA	50 pcs./ tube	□□:Lead form type	
BCR16FM12LB1□□#BG0	TO-220FPA	50 pcs./ tube	□□:Lead form type, I _{GT} item:1	
BCR16FM-12LB#BH0	TO-220FPA	50 pcs./ tube	Straight type	
BCR16FM-12LB-1#BH0	TO-220FPA	50 pcs./ tube	Straight type, I _{GT} item:1	
BCR16FM-12LB□□#BH0	TO-220FPA	50 pcs./ tube	□□:Lead form type	
BCR16FM12LB1□□#BH0	TO-220FPA	50 pcs./ tube	□□:Lead form type, I _{GT} item:1	
BCR16FM-12LB#BB0	TO-220FP	50 pcs./ tube	Straight type	EOL announced
BCR16FM-12LB-1#BB0	TO-220FP	50 pcs./ tube	Straight type, I _{GT} item:1	
BCR16FM12LB1□□#BB0	TO-220FP	50 pcs./ tube	□□:Lead form type, I _{GT} item:1	

Notes: 8. 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