

# BCR25FM-12LB

600V - 25A - Triac

Medium Power Use

R07DS0964EJ0300

Rev.3.00


May 31, 2018

## Features

- $I_T (RMS)$ : 25 A
- $V_{DRM}$ : 600 V
- $T_j$ : 150 °C
- $I_{FGT1}$ ,  $I_{RGT1}$ ,  $I_{RGT III}$ : 50 mA
- Insulated Type
- Planar Passivation Type
- Viso: 2000 V

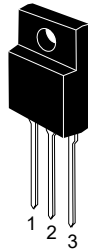
## Outline

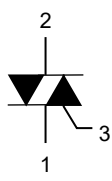
RENESAS Package code: PRSS0003AG-A  
(Package name: TO-220FP)



To be EOLed PKG

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





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

## Application

Contactless AC switch, electric heater control, Printer, Copier and other general purpose AC control applications.

## 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	$I_T (RMS)$	25	A	Commercial frequency, sine full wave 360° conduction, $T_c = 62\text{ °C}$
Surge on-state current	$I_{TSM}$	250	A	50 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusion	$I^2t$	313	A <sup>2</sup> 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 <sup>Note6</sup>	$V_{iso}$	2000	V	$T_a=25\text{ °C}$ , AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case

Notes: 1. Gate open.

## Electrical Characteristics

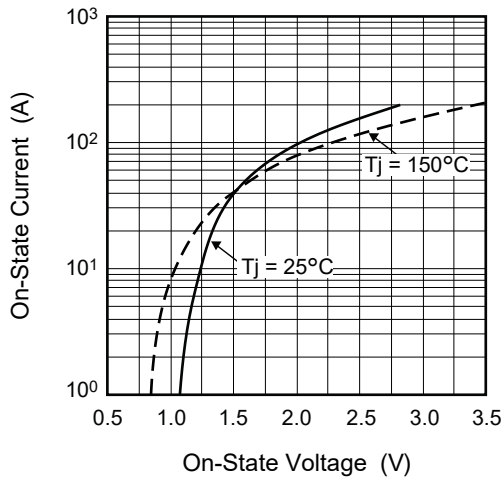
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	I <sub>DRM</sub>	—	—	3.0	mA	T <sub>J</sub> = 125°C, V <sub>DRM</sub> applied
		—	—	5.0	mA	T <sub>J</sub> = 150°C, V <sub>DRM</sub> applied
On-state voltage	V <sub>TM</sub>	—	—	1.5	V	T <sub>C</sub> = 25°C, I <sub>TM</sub> = 40A, instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	V <sub>FGTI</sub>	—	—	2.0	T <sub>J</sub> = 25°C, V <sub>D</sub> = 6 V, R <sub>L</sub> = 6 Ω, R <sub>G</sub> = 330 Ω
	II	V <sub>RGTI</sub>	—	—	2.0	
	III	V <sub>RGTIII</sub>	—	—	2.0	
Gate trigger current <sup>Note2</sup>	I	I <sub>FGTI</sub>	—	—	50	T <sub>J</sub> = 25°C, V <sub>D</sub> = 6 V, R <sub>L</sub> = 6 Ω, R <sub>G</sub> = 330 Ω
	II	I <sub>RGTI</sub>	—	—	50	
	III	I <sub>RGTIII</sub>	—	—	50	
Gate non-trigger voltage	V <sub>GD</sub>	0.2	—	—	V	T <sub>J</sub> = 125°C, V <sub>D</sub> = 1/2 V <sub>DRM</sub>
		0.1	—	—		T <sub>J</sub> = 150°C, V <sub>D</sub> = 1/2 V <sub>DRM</sub>
Thermal resistance	R <sub>th(j-c)</sub>	—	—	2.8	°C/W	Junction to case <sup>Note3</sup>
		—	—	—		
Critical-rate of rise of off-state commutation voltage <sup>Note4</sup>	(dv/dt) <sub>c</sub>	10	—	—	V/μs	T <sub>J</sub> = 125°C
		1	—	—		T <sub>J</sub> = 150°C

- Notes:
- Measurement using the gate trigger characteristics measurement circuit.
  - The contact thermal resistance R<sub>th(c-f)</sub> in case of greasing is 0.5°C/W.
  - Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.
  - Make sure that your finished product containing this device meets your safe isolation requirements.  
For safety, it's advisable that heatsink is electrically floating.

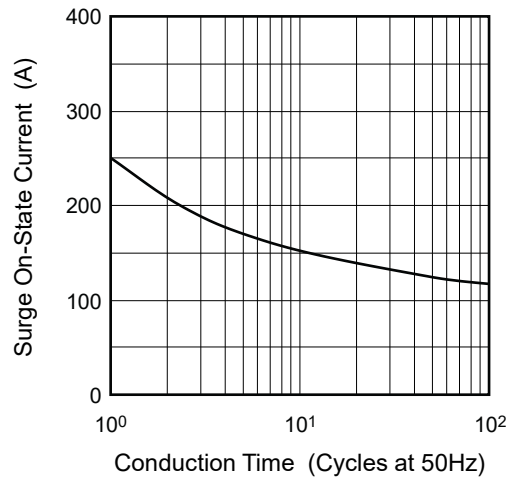
Test conditions	Commutating voltage and current waveforms (inductive load)
<ol style="list-style-type: none"> <li>Junction temperature T<sub>J</sub> = 125 °C / 150 °C</li> <li>Rate of decay of on-state commutating current (di/dt)<sub>c</sub> = - 13 A/ms</li> <li>Peak off-state voltage V<sub>D</sub> = 400 V</li> </ol>	

Performance Curves

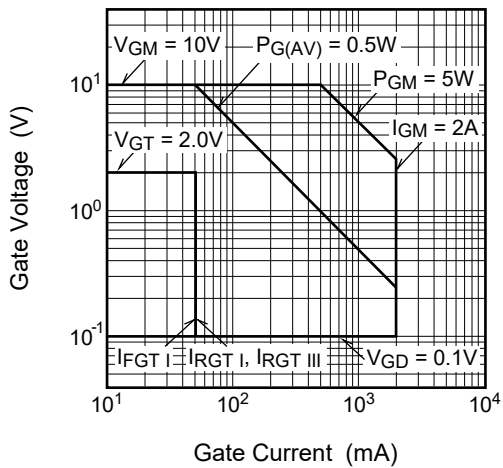
Maximum On-State Characteristics



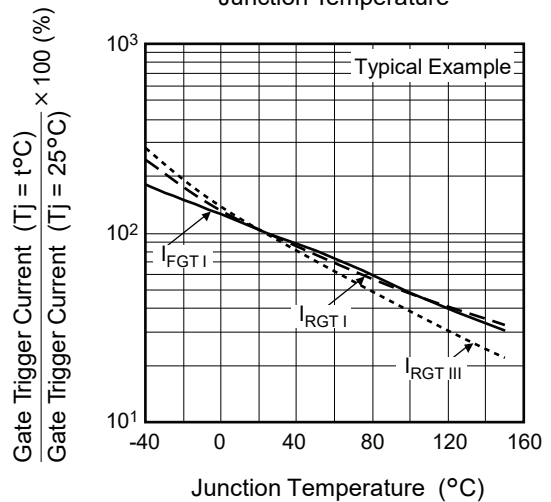
Rated Surge On-State Current



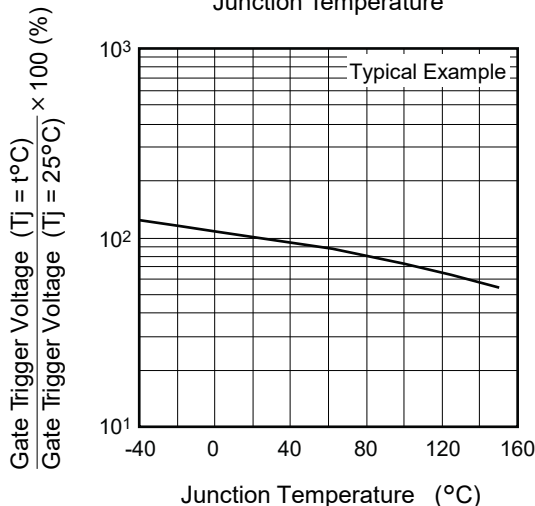
Gate Characteristics (I, II and III)



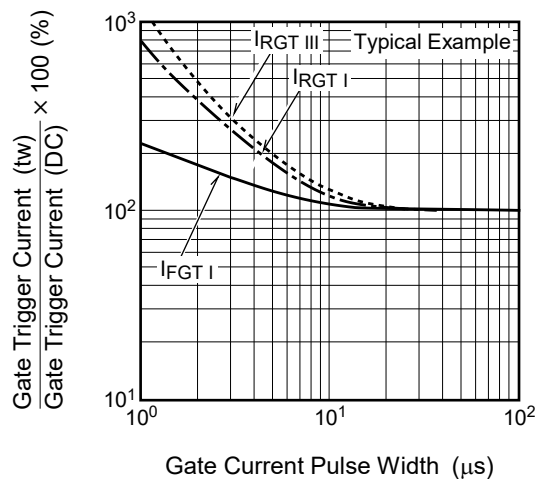
Gate Trigger Current vs. Junction Temperature

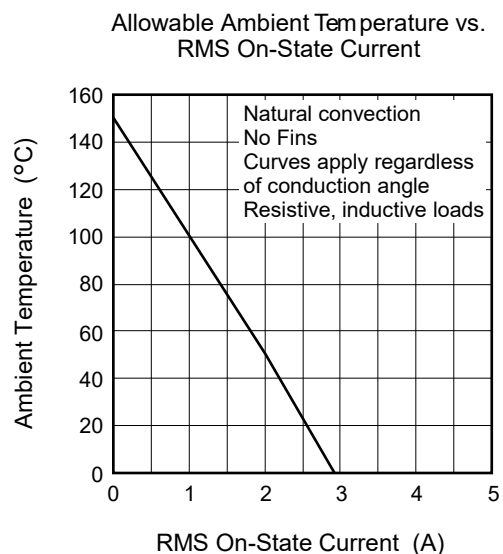
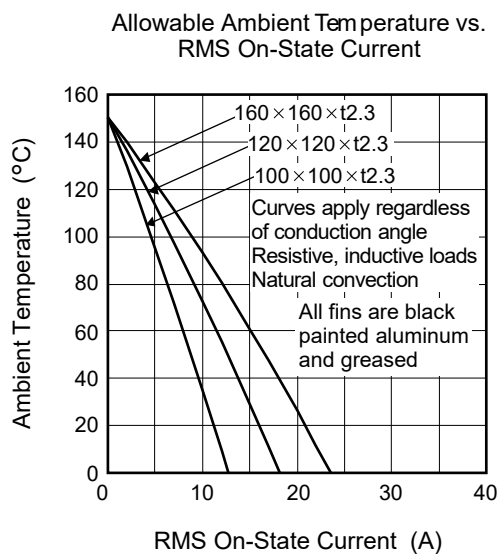
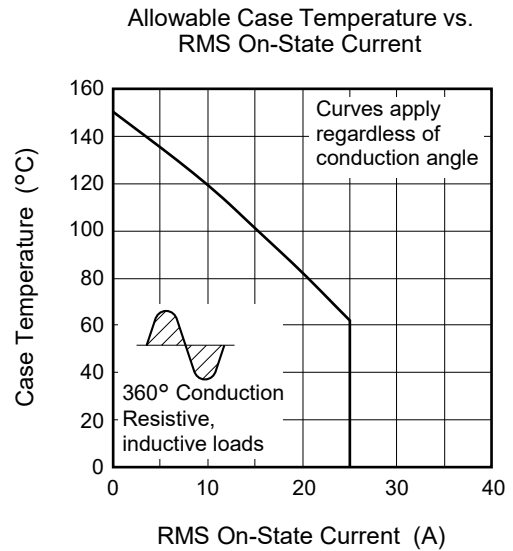
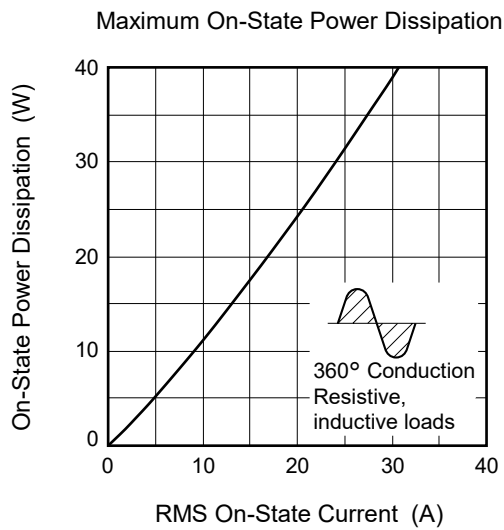
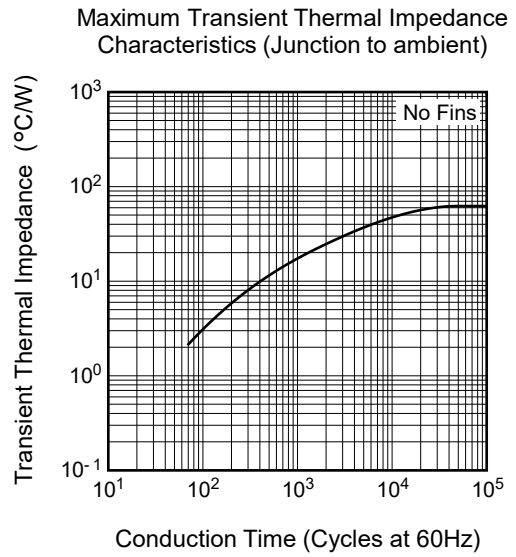
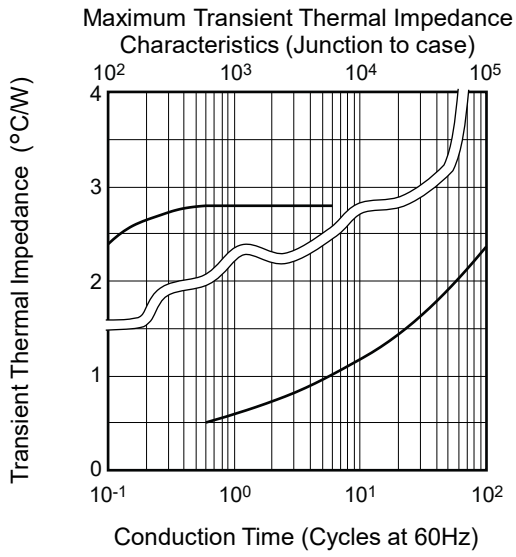


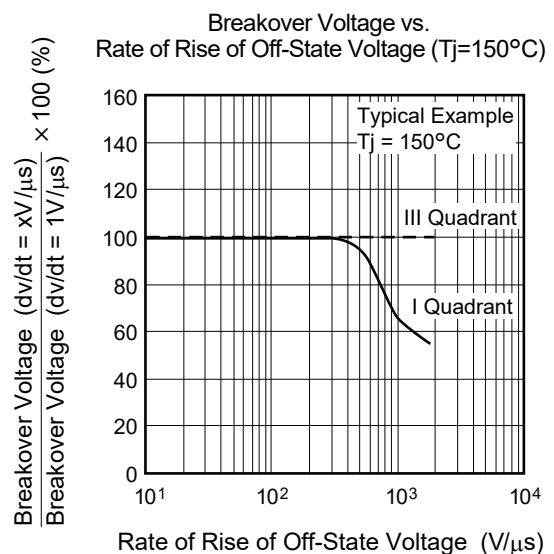
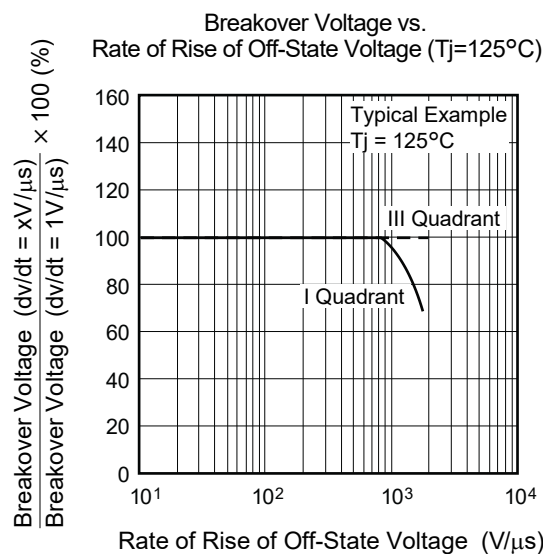
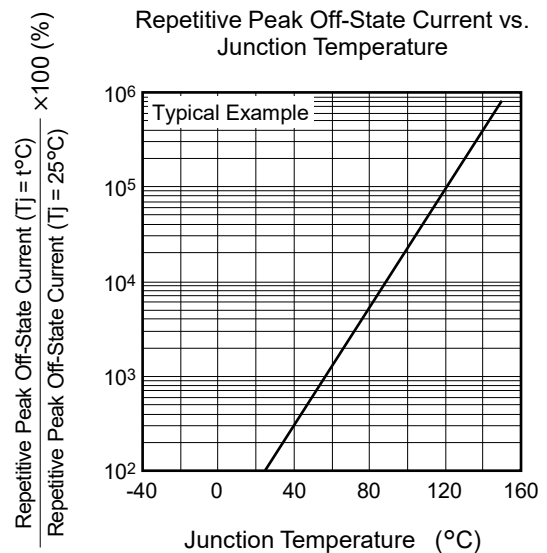
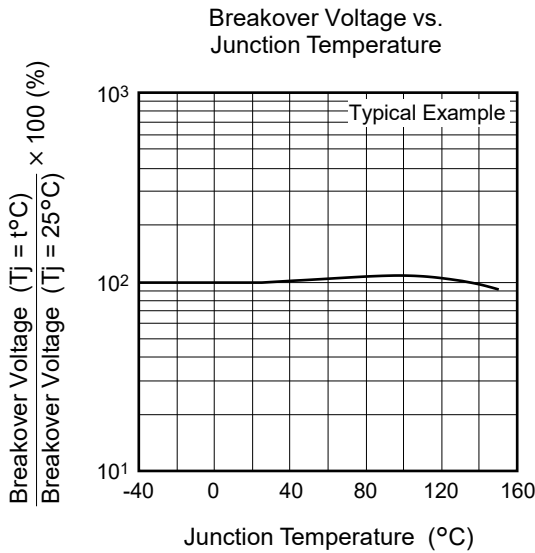
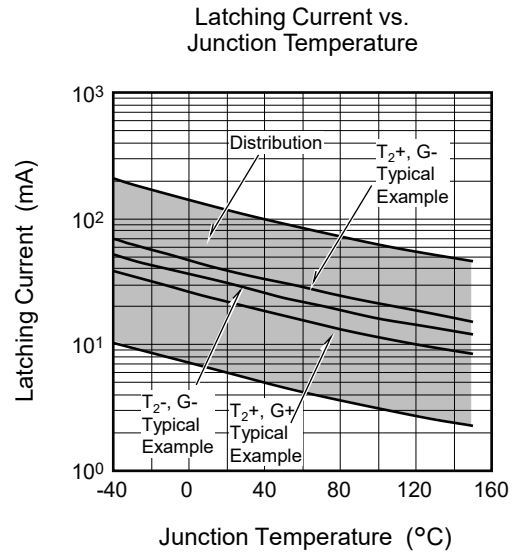
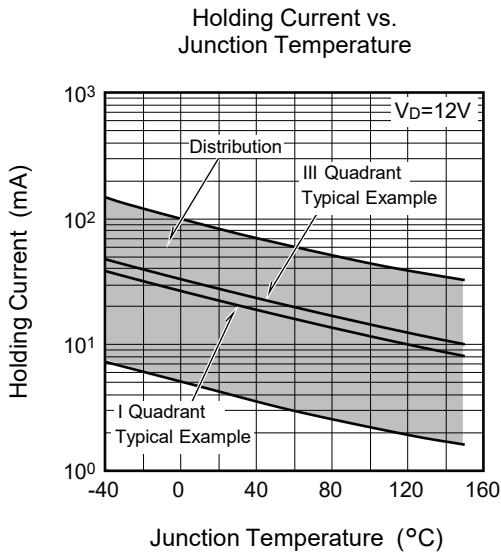
Gate Trigger Voltage vs. Junction Temperature



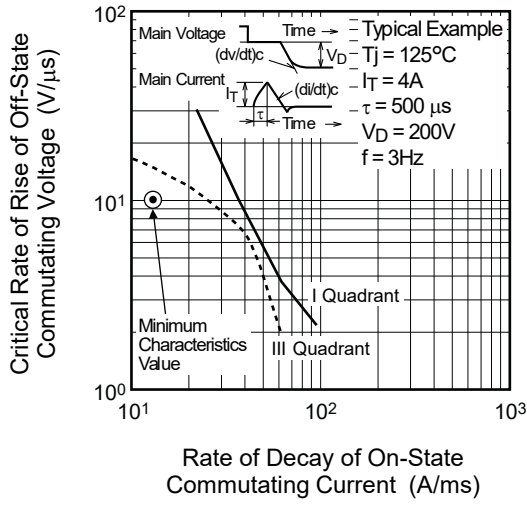
Gate Trigger Current vs. Gate Current Pulse Width



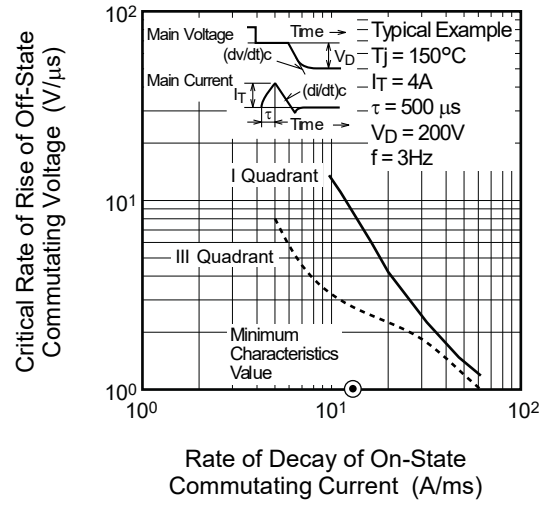




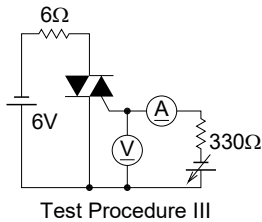
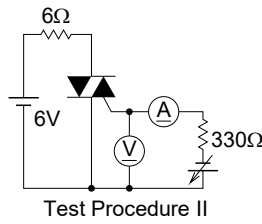
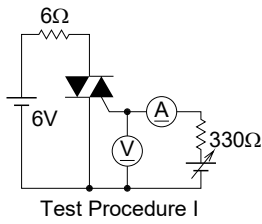
Commutation Characteristics (Tj=125°C)



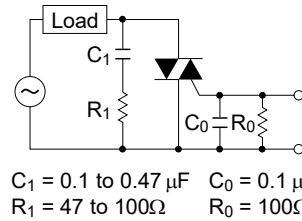
Commutation Characteristics (Tj=150°C)



Gate Trigger Characteristics Test Circuits



Recommended peripheral components for Triac

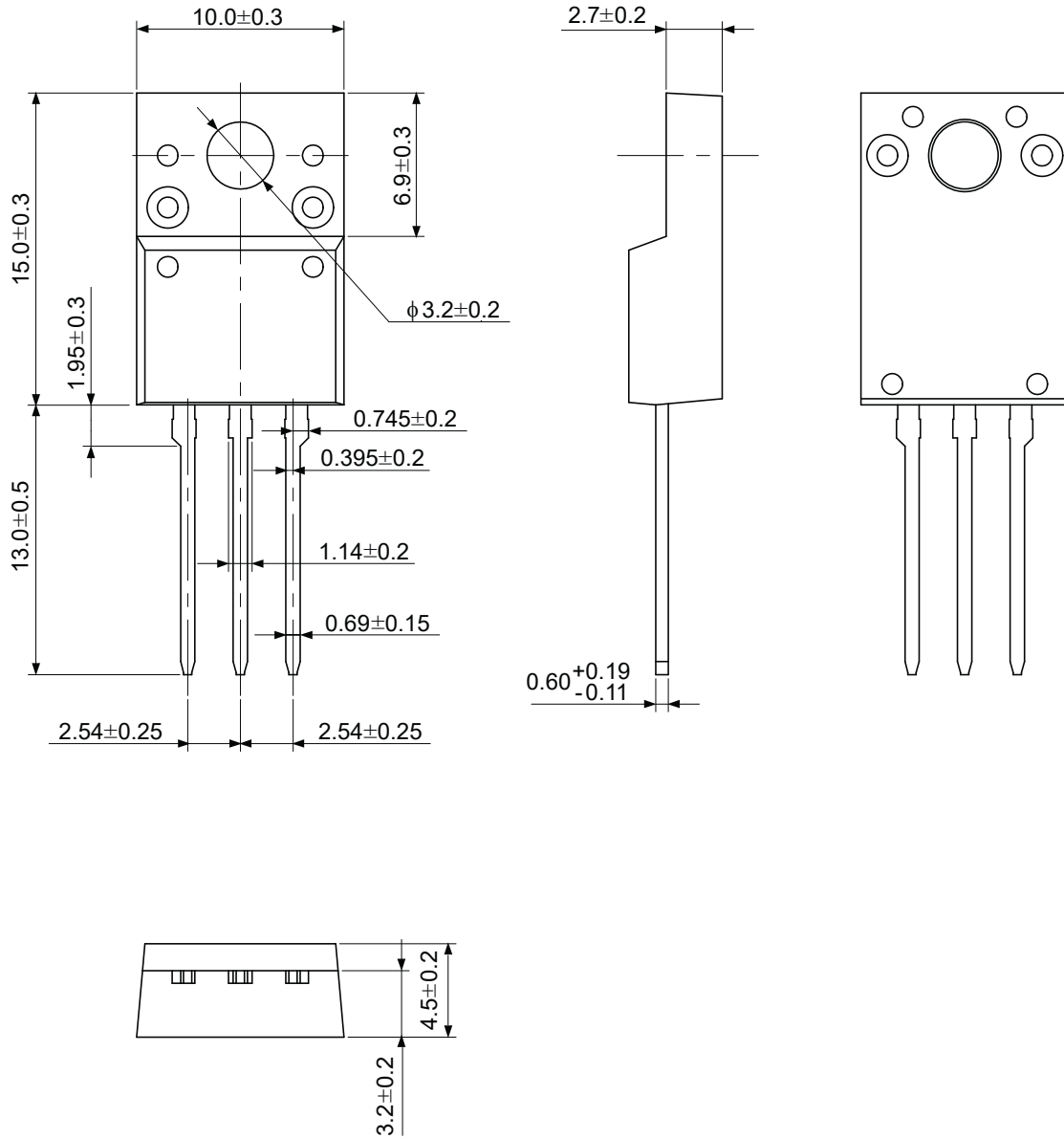


### Package Dimensions

Ordering code: #BH0

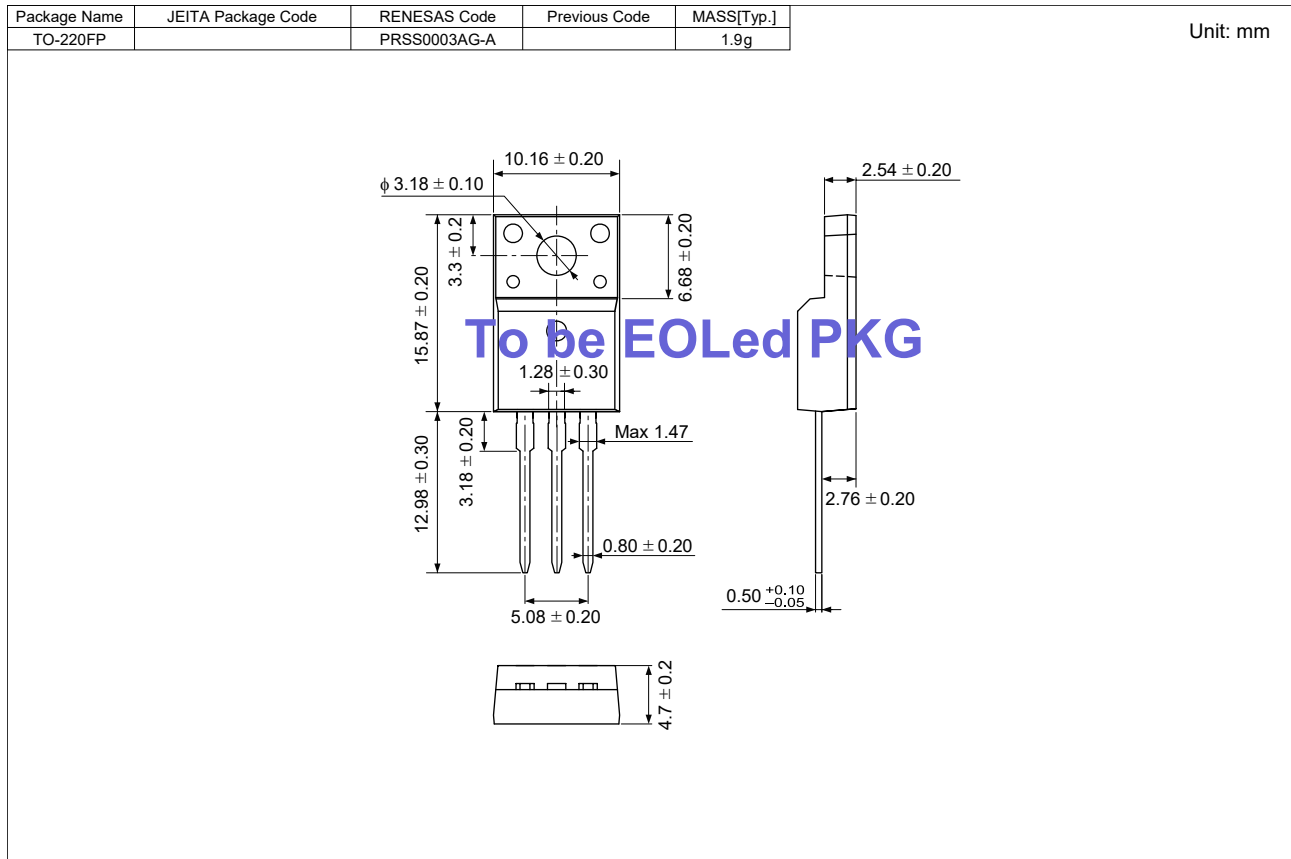
JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
-	PRSS0003AP-A	TO-220FPA	1.65

Unit: mm



## Package Dimensions

Ordering code: #BB0 <To be EOLed>



## Ordering Information

Orderable Part Number	Package	Quantity <sup>Note6</sup>	Remark	Status
BCR25FM-12LB#BH0	TO-220FPA	50 pcs./ tube	Straight type	Under Development
BCR25FM-12LB□□#BH0	TO-220FPA	50 pcs./ tube	□□:Lead form type	
BCR25FM-12LB#BB0	TO-220FP	50 pcs./ tube	Straight type	EOL Candidate

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



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#### Renesas Electronics America Inc.

2801 Scott Boulevard Santa Clara, CA 95050-2549, U.S.A.  
Tel: +1-408-588-6000, Fax: +1-408-588-6130

#### 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: +44-1628-585-100, Fax: +44-1628-585-900

#### 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, P. R. China 200333  
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 II Stage, Indiranagar, Bangalore, India  
Tel: +91-80-67208700, Fax: +91-80-67208777

#### Renesas Electronics Korea Co., Ltd.

12F., 234 Teheran-ro, Gangnam-Gu, Seoul, 135-080, Korea  
Tel: +82-2-558-3737, Fax: +82-2-558-5141