BCR5FM-12RB

600V - 5A - Triac

Medium Power Use

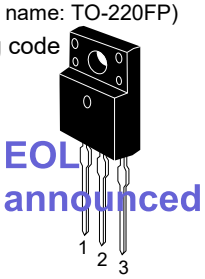
R07DS0956EJ0101
Rev.1.01
Feb. 19, 2019

Features

- $I_{T\,(RMS)}$: 5 A
- V_{DRM} : 600 V
- Tj: 150°C
- I_{FGTI}, I_{RGTI}, $I_{RGT\,III}$: 15 mA (10 mA) Note5
- Insulated Type
- Planar Passivation Type
- Viso: 2000 V

Outline

RENESAS Package code: PRSS0003AG-A
(Package name: TO-220FP)
Ordering code
#BB0



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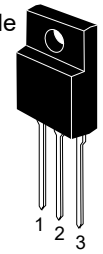
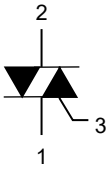




1. T_1 Terminal
2. T_2 Terminal
3. Gate Terminal

Application

Electric rice cooker, electric pot, and other resistive load.

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	$I_{T\,(RMS)}$	5	A	Commercial frequency, sine full wave 360°conduction, Tc = 122°C
Surge on-state current	I_{TSM}	50	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	10.4	A^2s	Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current
Peak gate power dissipation	P_{GM}	3	W	
Average gate power dissipation	$P_{G\,(AV)}$	0.3	W	
Peak gate voltage	V_{GM}	10	V	
Peak gate current	I_{GM}	2	A	
Junction Temperature	Tj	–40 to +150	°C	
Storage temperature	Tstg	–40 to +150	°C	
Isolation voltage Note5	V_{iso}	2000	V	Ta=25°C, AC 1 minute, T_1 • T_2 • G terminal to case

Notes: 1. Gate open.

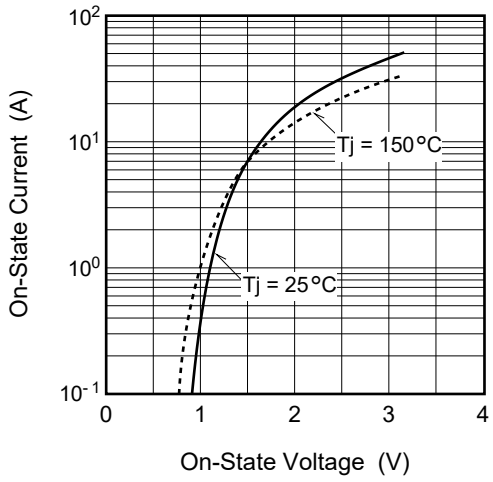
Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current		I_{DRM}	—	—	2.0	mA	Tj = 150°C, V_{DRM} applied
On-state voltage		V_{TM}	—	—	1.5	V	Tc = 25°C, I_{TM} = 7 A, instantaneous measurement
Gate trigger voltage[Note2]	I	V_{FGTI}	—	—	1.5	V	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	V_{RGTI}	—	—	1.5	V	
	III	V_{RGTIII}	—	—	1.5	V	
Gate trigger curent[Note2]	I	I_{FGTI}	—	—	15 [Note4]	mA	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	I_{RGTI}	—	—	15 [Note4]	mA	
	III	I_{RGTIII}	—	—	15 [Note4]	mA	
Gate non-trigger voltage		V_{GD}	0.2	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM}
			0.1	—	—	V	Tj = 150°C, V_D = 1/2 V_{DRM}
Thermal resistance		$R_{th\ (j-c)}$	—	—	4.9	°C/W	Junction to case[Note3]

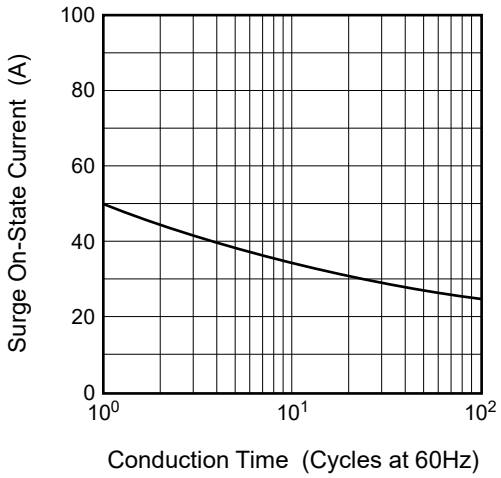
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C /W.
4. High sensitivity ($I_{GT} \leq$ 10 mA) is also available. (I_{GT} item:1)
5. Make sure that your finished product containing this device meets your safe isolation requirements. For safety, it's advisable that heatsink is electrically floating.

Performance Curves

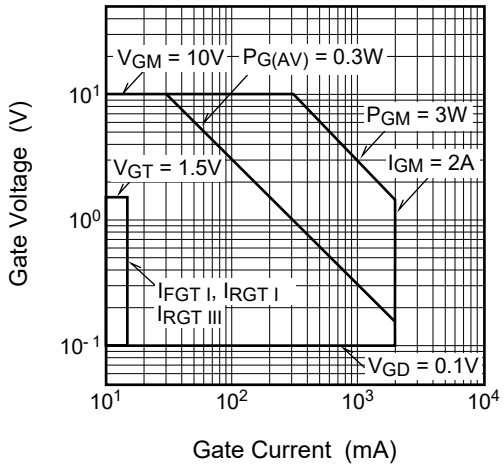
Maximum On-State Characteristics



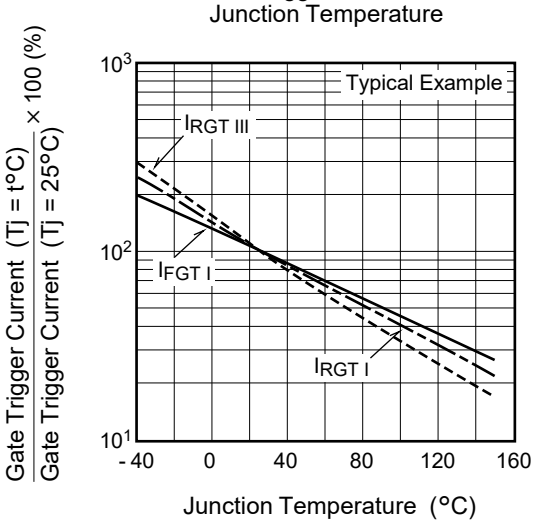
Rated Surge On-State Current



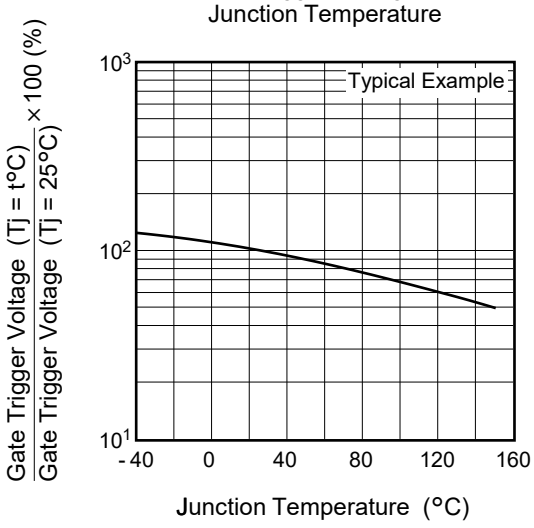
Gate Characteristics (I, II and III)



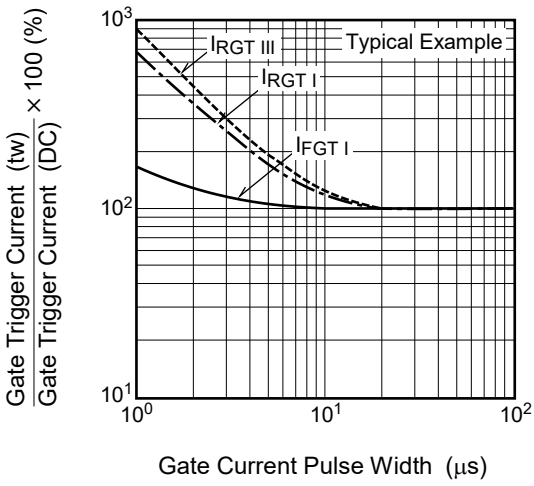
Gate Trigger Current vs. Junction Temperature



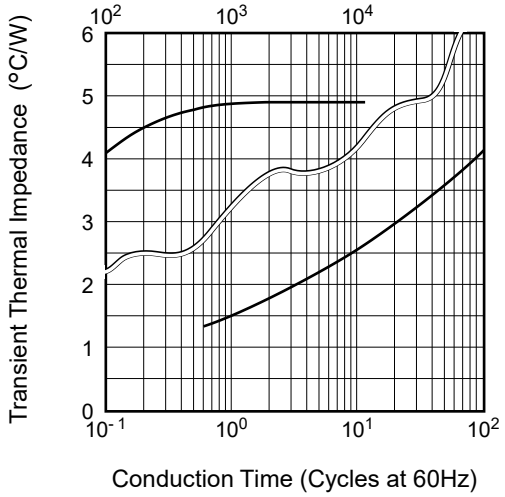
Gate Trigger Voltage vs. Junction Temperature



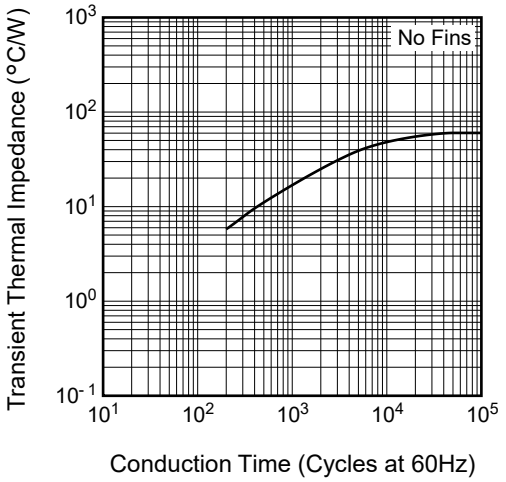
Gate Trigger Current vs. Gate Current Pulse Width



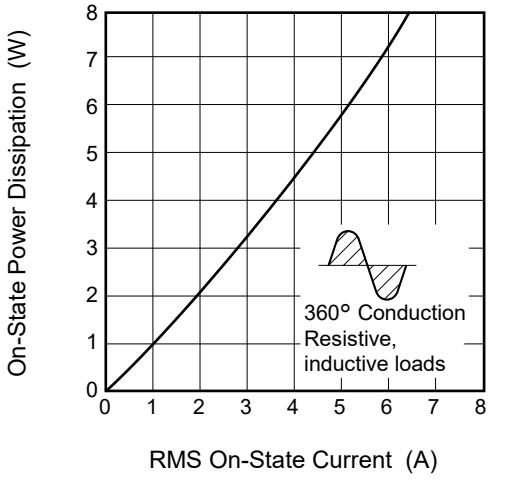
Maximum Transient Thermal Impedance Characteristics (Junction to case)



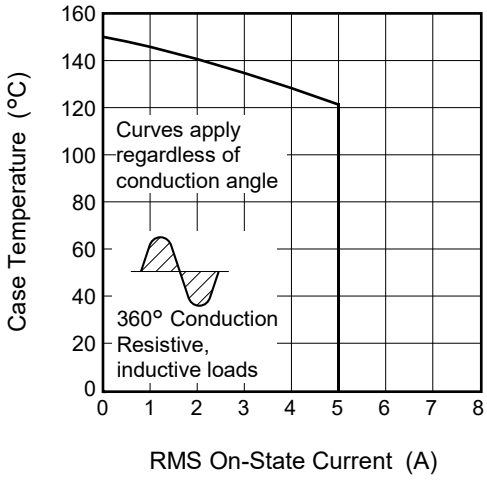
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



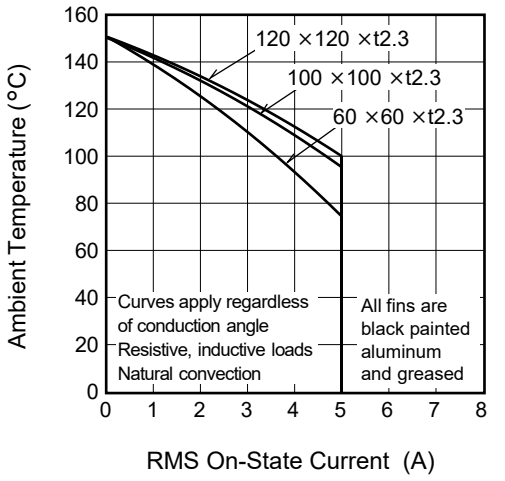
Maximum On-State Power Dissipation



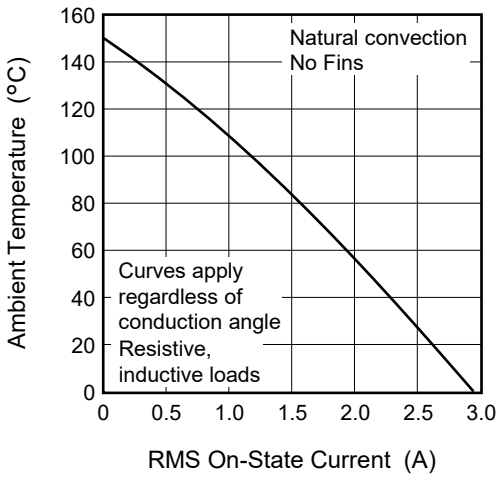
Allowable Case Temperature vs. RMS On-State Current



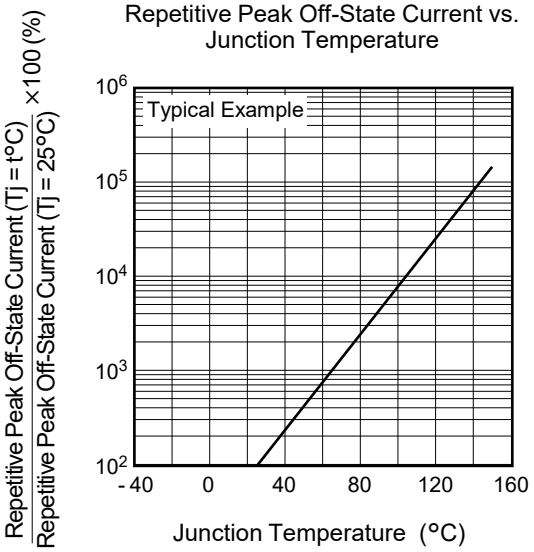
Allowable Ambient Temperature vs. RMS On-State Current



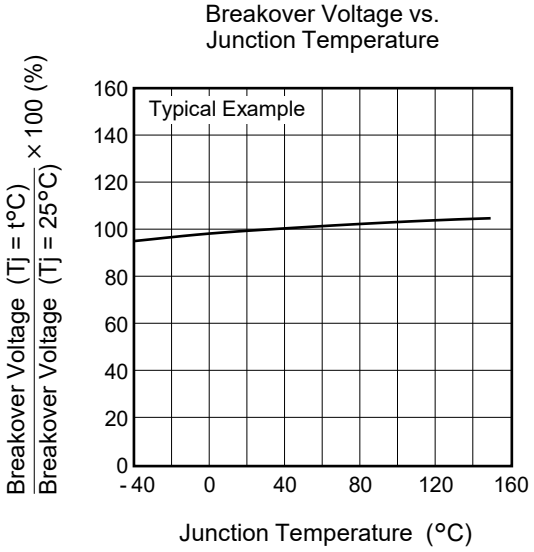
Allowable Ambient Temperature vs. RMS On-State Current



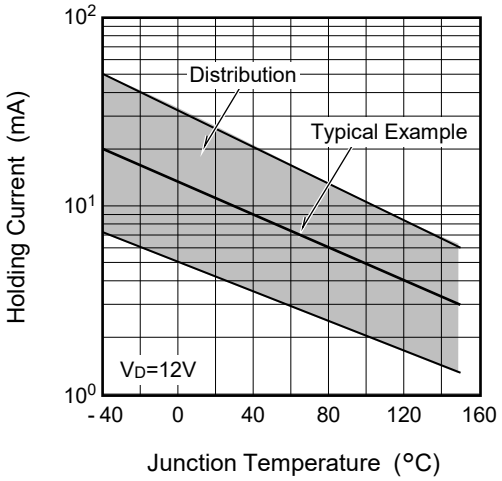
Repetitive Peak Off-State Current vs. Junction Temperature



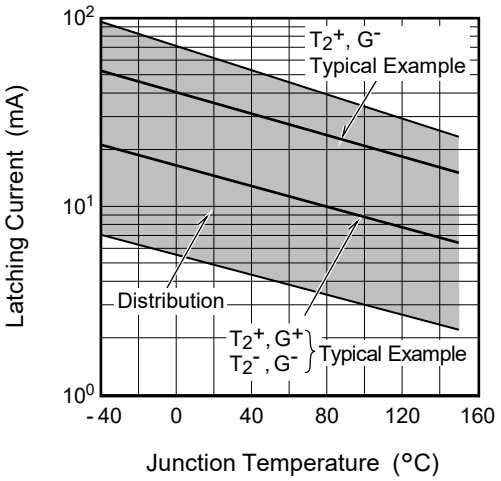
Breakover Voltage vs. Junction Temperature



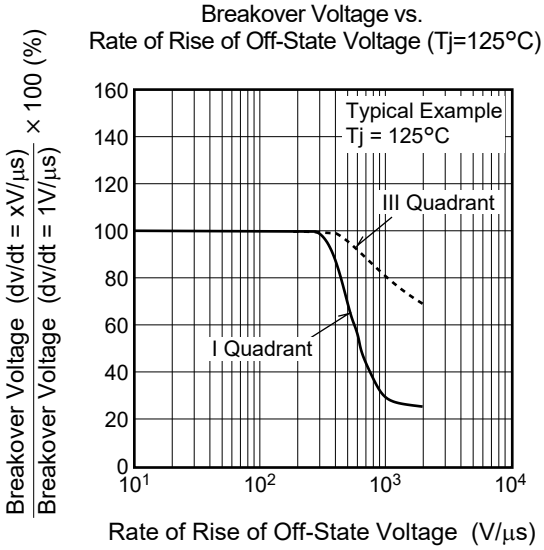
Holding Current vs. Junction Temperature



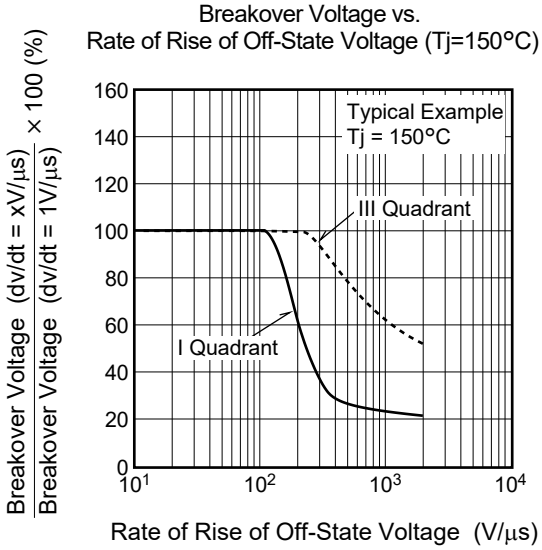
Latching Current vs. Junction Temperature



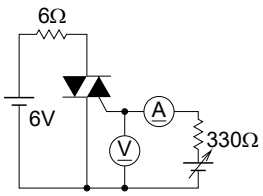
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



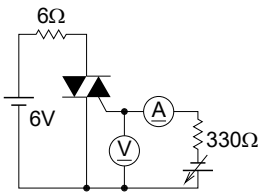
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



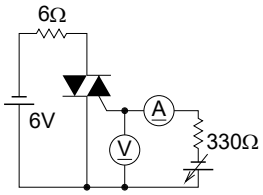
Gate Trigger Characteristics Test Circuits



Test Procedure I

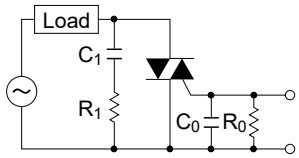


Test Procedure II



Test Procedure III

Recommended peripheral components for Triac



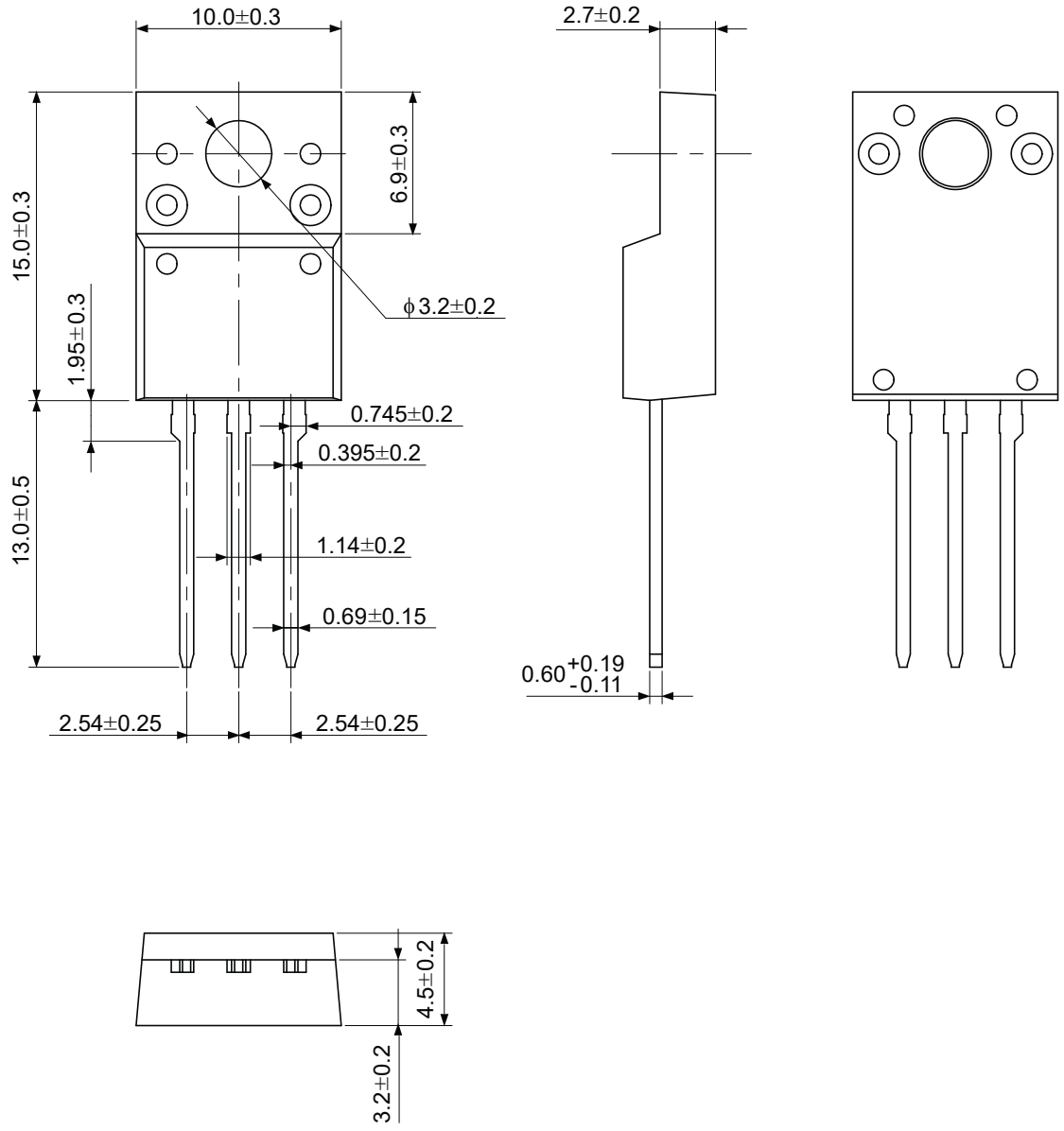
C_1 = 0.1 to 0.47 μF C_0 = 0.1 μF
R_1 = 47 to 100Ω R_0 = 100Ω

Package Dimensions

Ordering code: #BG0

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

Unit: mm

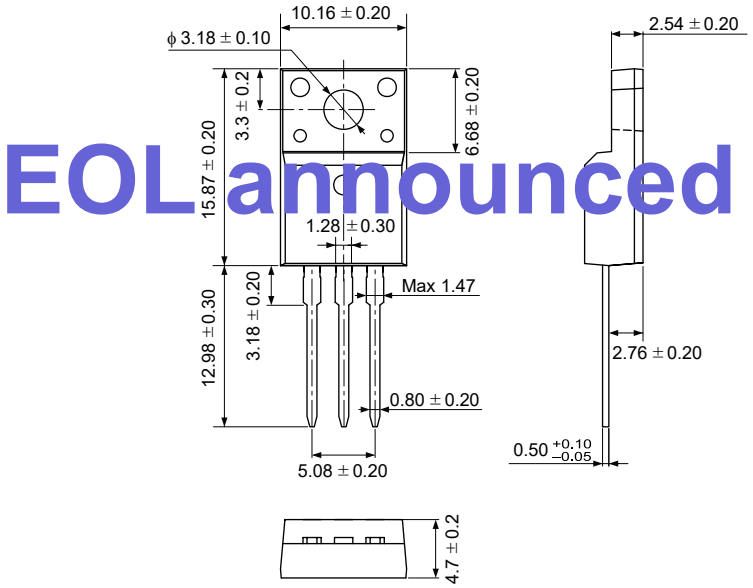


Package Dimensions

Ordering code: #BB0 <EOL announced>

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220FP		PRSS0003AG-A		1.9g

Unit: mm



Ordering Information

Orderable Part Number	Package	Quantity Note6	Remark	Status
BCR5FM-12RB#BG0	TO-220FPA	50 pcs./ tube	Straight type	Mass Production
BCR5FM-12RB-1#BG0	TO-220FPA	50 pcs./ tube	Straight type, I_{GT} item:1	
BCR5FM-12RB-☐☐#BG0	TO-220FPA	50 pcs./ tube	☐☐:Lead form type	
BCR5FM-12RB1☐☐#BG0	TO-220FPA	50 pcs./ tube	☐☐:Lead form type, I_{GT} item:1	
BCR5FM-12RB#BB0	TO-220FP	50 pcs./ tube	Straight type	EOL announced
BCR5FM-12RB-☐☐#BB0	TO-220FP	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
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