

BCR3FM-12RB

600V - 3A - Triac

Medium Power Use

R07DS0962EJ0200

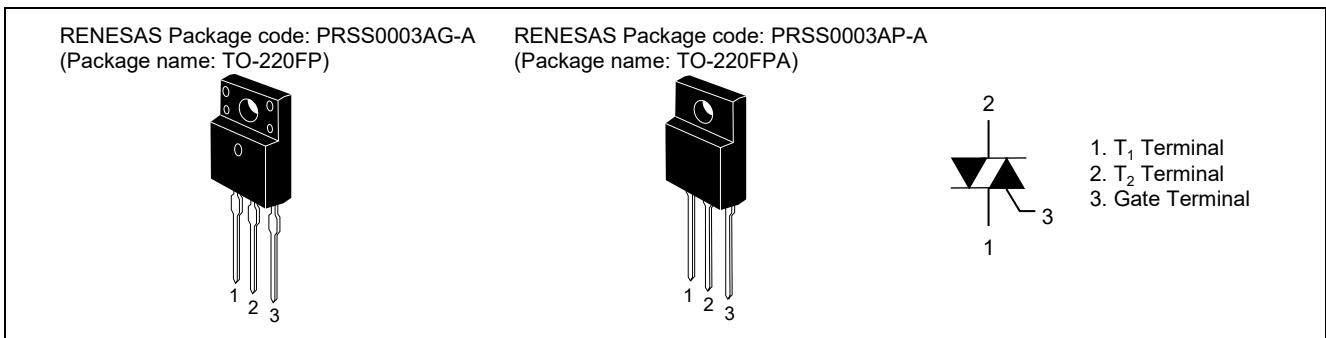
Rev.2.00

Apr 14, 2017

Features

- $I_T (RMS)$: 3 A
- V_{DRM} : 600 V
- T_j : 150 °C
- I_{FGT1} , I_{RGT1} , $I_{RGT III}$: 15 mA (10 mA)^{Note5}
- Insulated Type
- Planar Passivation Type
- Viso: 2000 V

Outline



Application

Electric rice cooker, electric pot, and other general purpose resistive loads.

Maximum Ratings

Parameter	Symbol	Voltage class	
		12	Unit
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	$I_T (RMS)$	3	A	Commercial frequency, sine full wave 360° conduction, T _c = 136°C (#BB0, See Ordering Info.) T _c = 130°C (#BG0, #FG0, #FA0)
Surge on-state current	I_{TSM}	30	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I ² t for fusion	I ² t	3.7	A ² s	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}	6	V	
Peak gate current	I_{GM}	0.5	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°C, AC 1 minute, T ₁ • T ₂ • G terminal to case

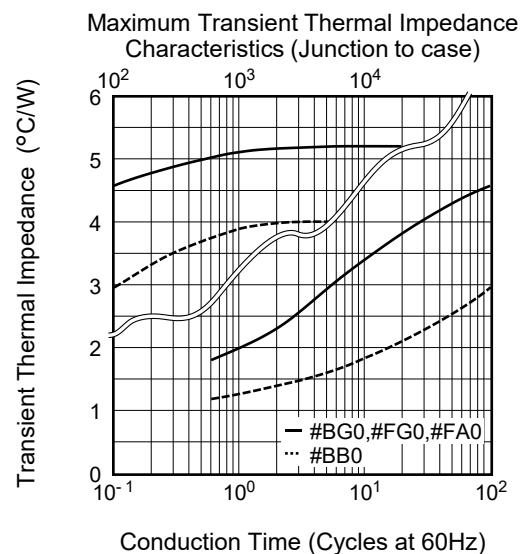
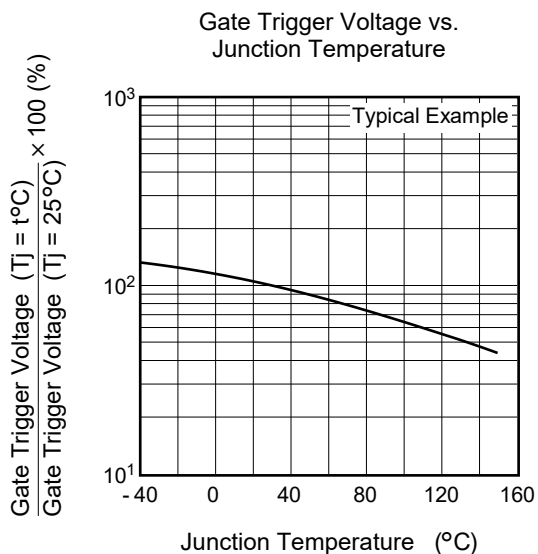
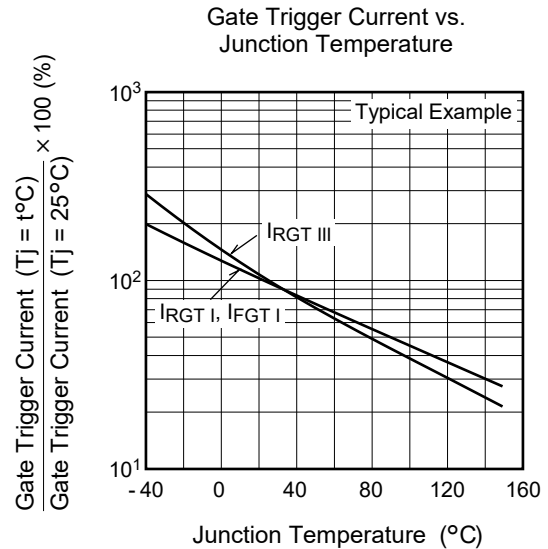
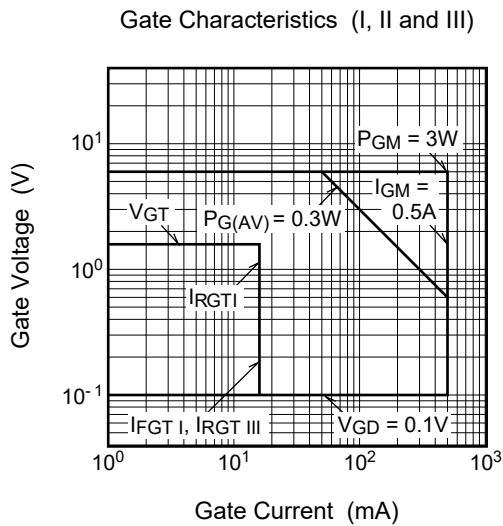
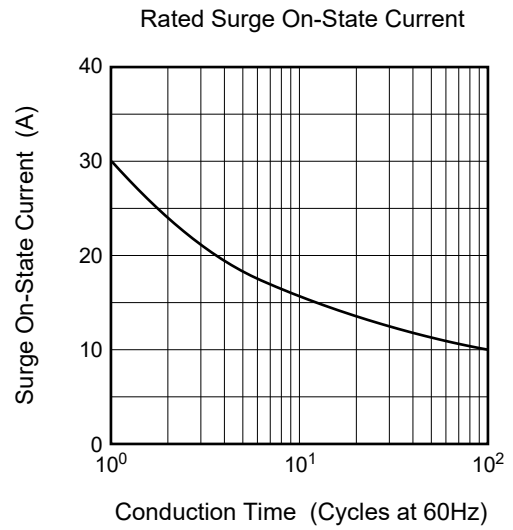
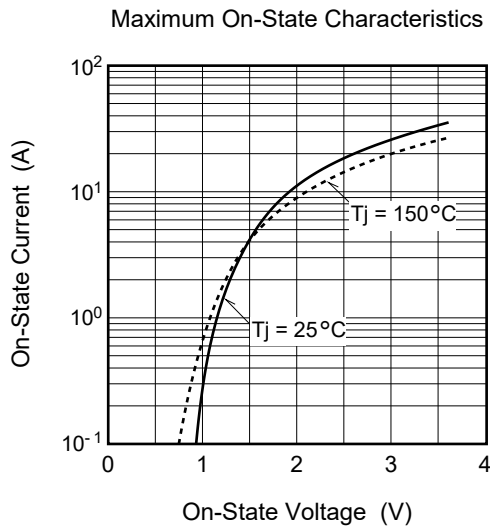
Notes: 1. Gate open.

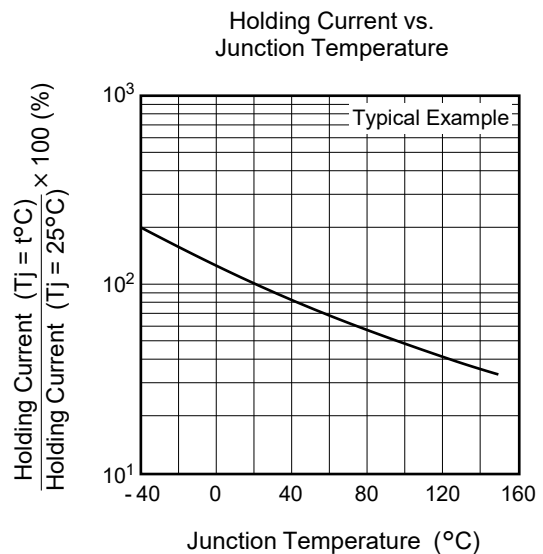
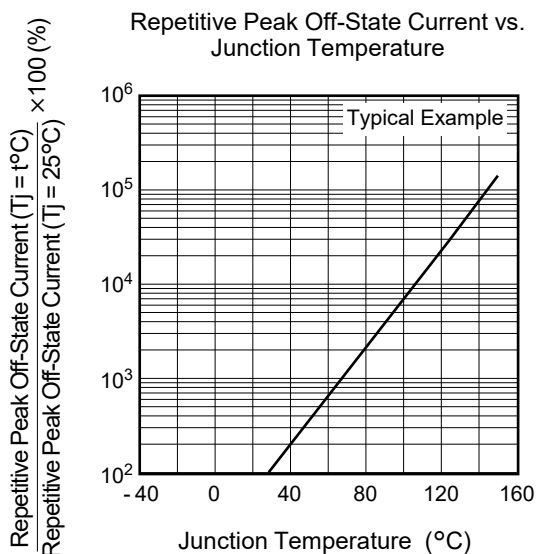
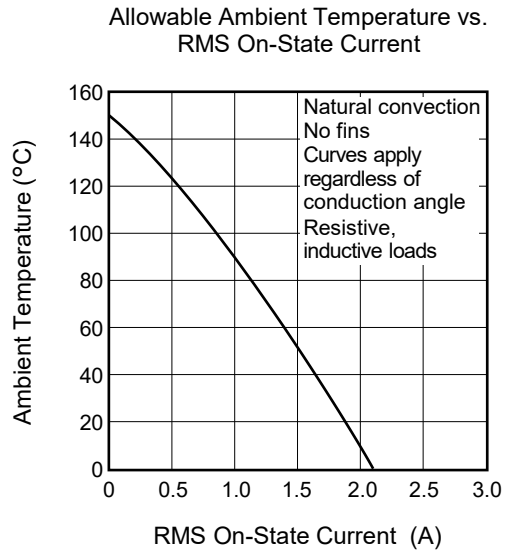
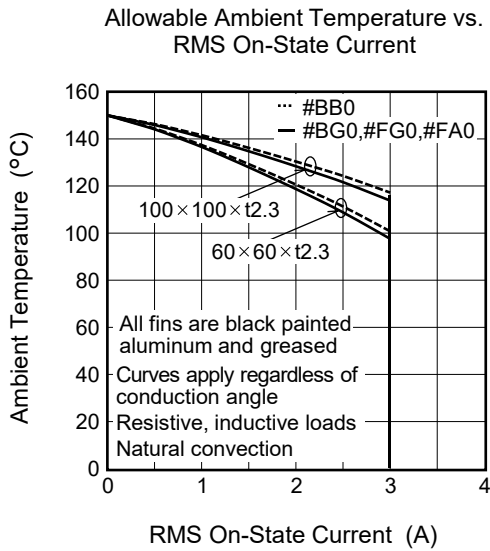
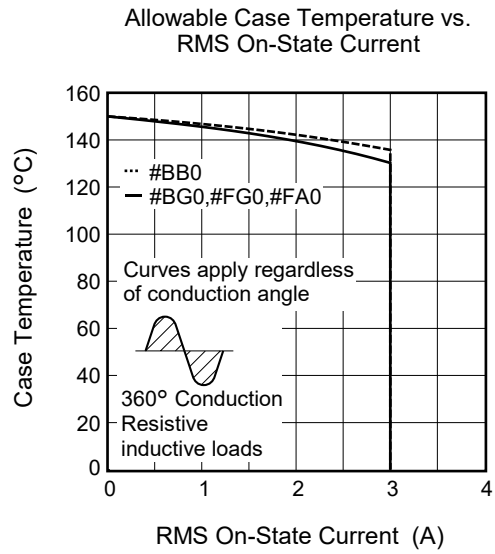
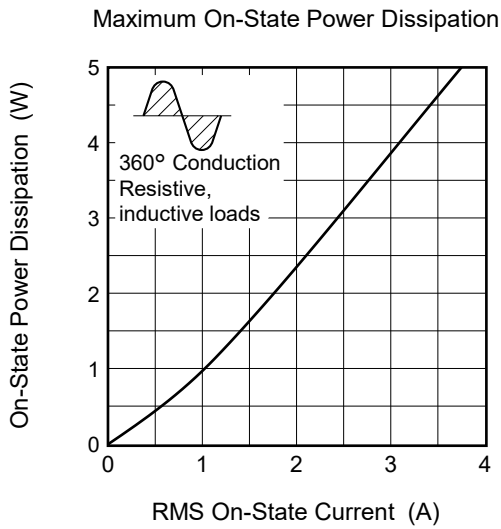
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_J = 150^\circ\text{C}$, V_{DRM} applied	
On-state voltage	V_{TM}	—	—	1.5	V	$T_C = 25^\circ\text{C}$, $I_{TM} = 4.5\text{A}$, instantaneous measurement	
Gate trigger voltage ^{Note2}	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 ^{Note2}	I	I_{FGTI}	—	—	15 ^{Note4}	mA	$T_J = 25^\circ\text{C}$, $V_D = 6\text{V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	15 ^{Note4}	mA	
	III	I_{RGTIII}	—	—	15 ^{Note4}	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	$R_{th(j-c)}$	—	—	4.0	$^\circ\text{C/W}$	Junction to case ^{Note3} #BB0 (See Ordering Info.)	
		—	—	5.2	$^\circ\text{C/W}$	Junction to case ^{Note3} #BG0, #FG0, #FA0	

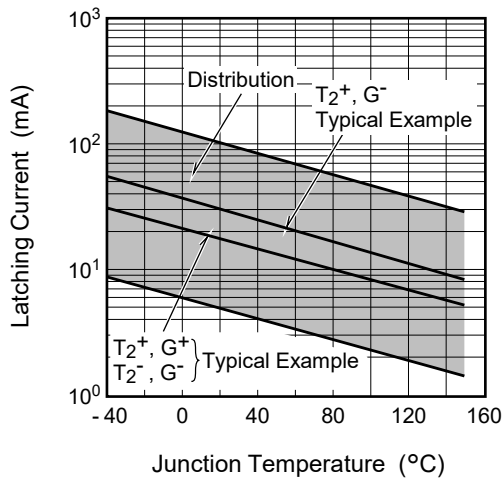
- Notes: 2. Measurement using the gate trigger characteristics measurement circuit.
 3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .
 4. High sensitivity ($I_{GT} \leq 10\text{mA}$) is also available. (I_{GT} item:1)
 5. Make sure that your finished product containing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

Performance Curves

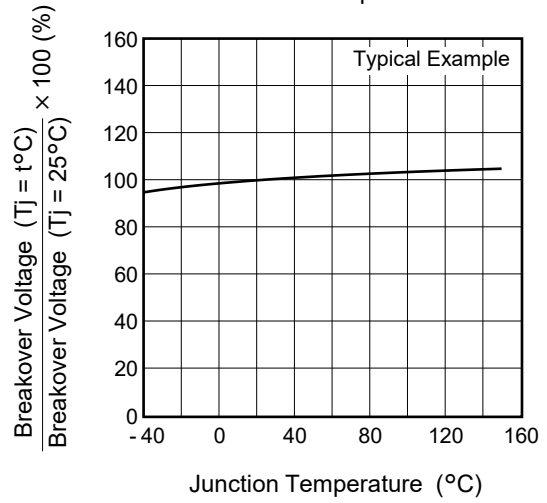




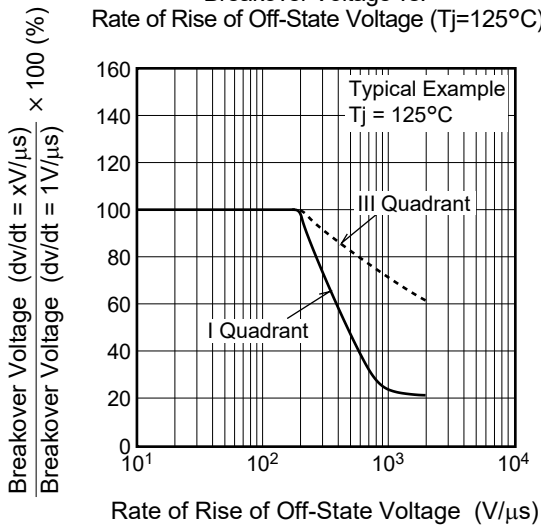
Latching Current vs. Junction Temperature



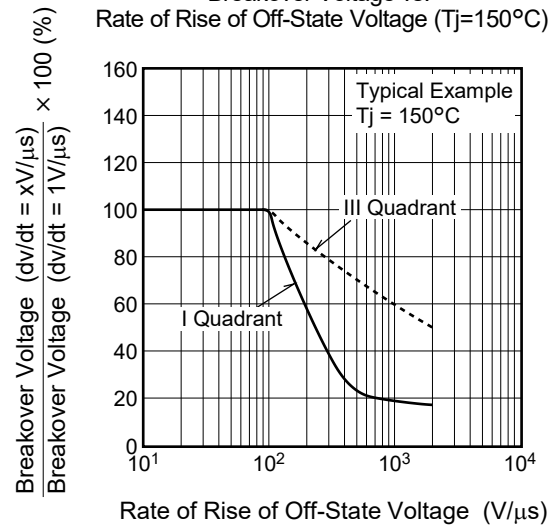
Breakover Voltage vs. Junction Temperature



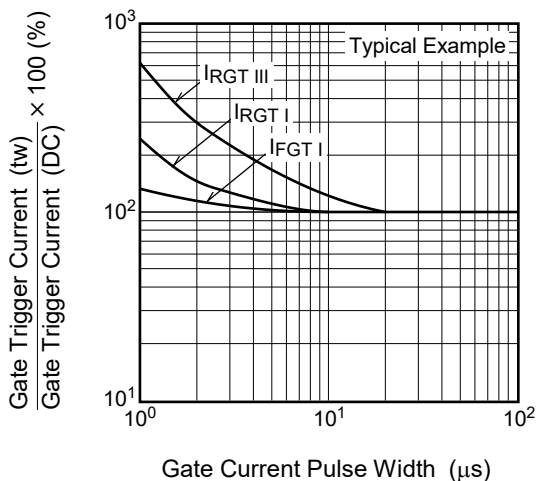
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



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

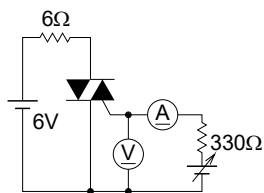


Gate Trigger Current vs. Gate Current Pulse Width

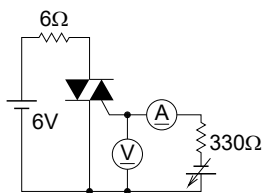


Gate Trigger Characteristics Test Circuits

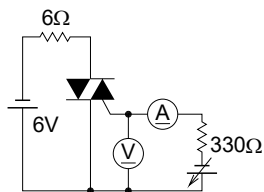
Recommended peripheral components for Triac



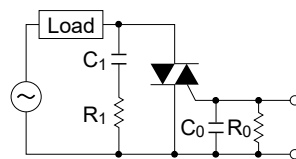
Test Procedure I



Test Procedure II



Test Procedure III



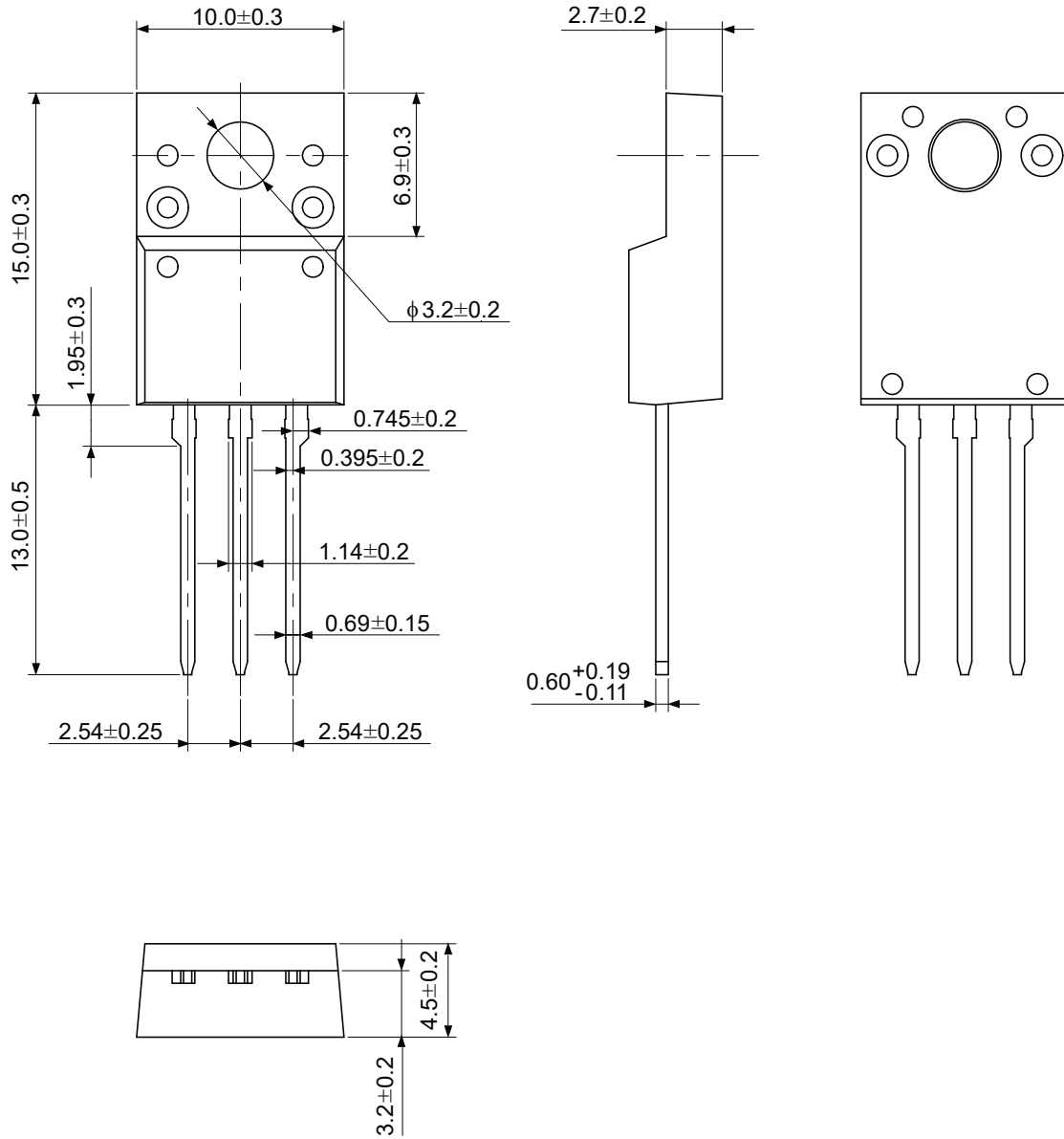
$C_1 = 0.1$ to $0.47 \mu\text{F}$ $C_0 = 0.1 \mu\text{F}$
 $R_1 = 47$ to 100Ω $R_0 = 100 \Omega$

Package Dimensions

TO-220FPA (PRSS0003AP-A)

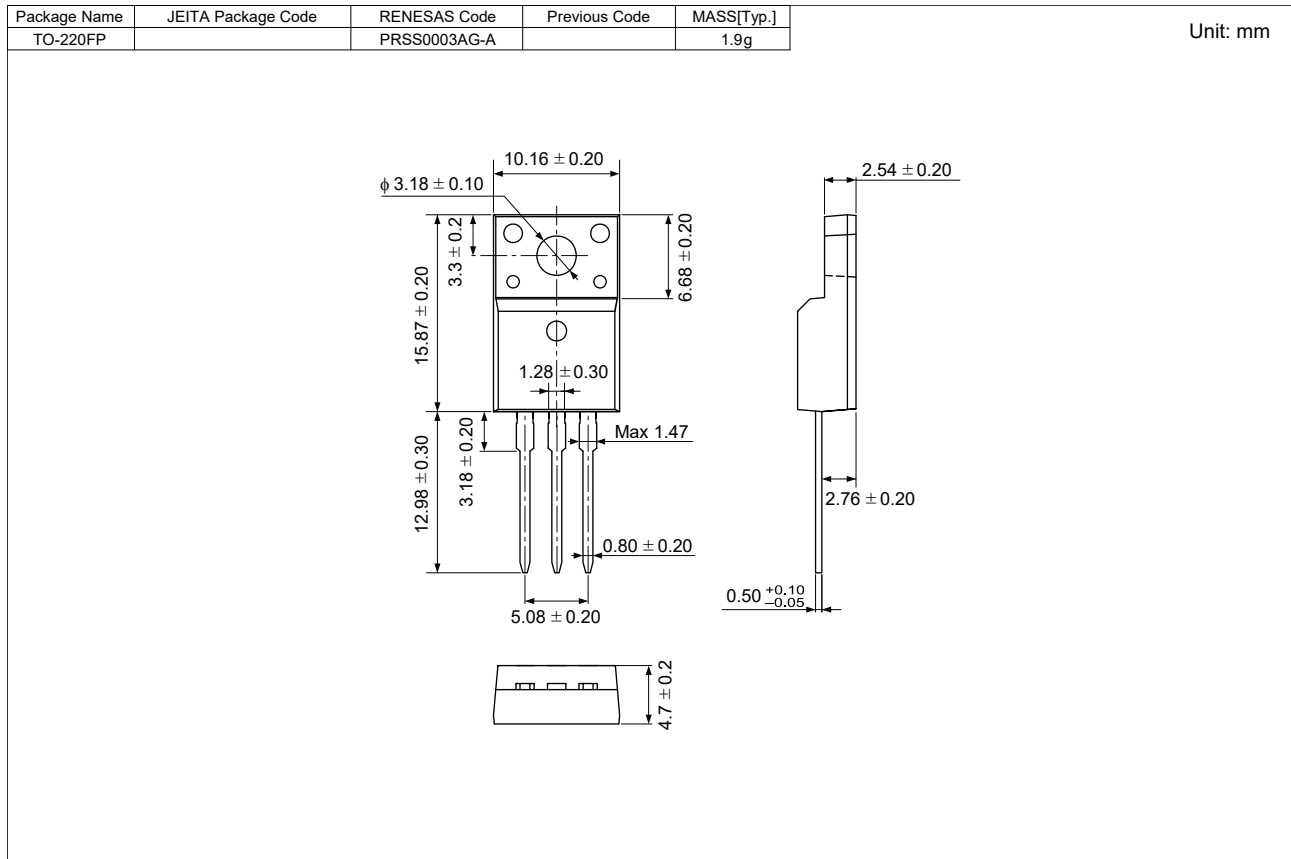
JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
-	PRSS0003AP-A	TO-220FPA	1.65

Unit: mm



Package Dimensions

TO-220FP (PRSS0003AG-A) <Not Recommended for New Design>



Ordering Information

Orderable Part Number	Package	Quantity ^{Note6}	Remark	Quality Grade ^{Note8}
BCR3FM-12RB#BG0	TO-220FPA	50 pcs./ tube	Straight type	General Industrial & General Consumer Use
BCR3FM-12RB-1#BG0	TO-220FPA	50 pcs./ tube	Straight type, IGT item:1	
BCR3FM-12RB-□□#BG0	TO-220FPA	50 pcs./ tube	□□:Lead form type	
BCR3FM-12RB1□□#BG0	TO-220FPA	50 pcs./ tube	□□:Lead form type, IGT item:1	
BCR3FM-12RB#BB0	TO-220FP	50 pcs./ tube	Straight type	Special Consumer Use ^{Note7}
BCR3FM-12RB#FG0	TO-220FPA	50 pcs./ tube	Straight type	
BCR3FM-12RB-□□#FG0	TO-220FPA	50 pcs./ tube	□□:Lead form type	
BCR3FM-12RB#FA0	TO-220FP	50 pcs./ tube	Straight type	

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

7. "Special Consumer Use" grade product is not tested for the "Temperature Humidity Bias" reliability in the condition of rated V_{DRM} . Please be sure to implement qualification tests and judge whether the product meets your criteria. If necessary, please apply moisture-proof measures according to user's conditions.

8. For further details about the classification in the Standard quality grade, please refer to the application note.

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