

BCR5LM-12RB

600V - 5A - Triac
Medium Power Use

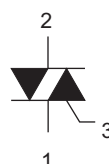
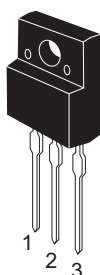
R07DS0969EJ0100
Rev.1.00
Dec 20, 2012

Features

- $I_{T(RMS)}$: 5 A
- V_{DRM} : 600 V
- $I_{FGTL}, I_{RGTL}, I_{RGTH}$: 15 mA
- V_{ISO} : 1800 V
- Insulated Type
- T_j : 150 °C
- Planar Passivation Type
- UL Recognized: File No. E223904

Outline

RENESAS Package code: PRSS0003AF-A)
(Package name: TO-220FL)



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

Applications

Electric rice cooker, electric pot, and other heater control

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, $T_c = 122^\circ\text{C}$
Surge on-state current	I_{TSM}	50	A	60 Hz sine wave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	10.4	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}	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	
Mass	—	1.5	g	Typical value
Isolation voltage ^{Note4}	V_{ISO}	1800	V	$T_a = 25^\circ\text{C}$, AC 1 minute T ₁ • T ₂ • G terminal to case

Electrical Characteristics

Parameter	Symbol	Rated value			Unit	Test conditions
		Min.	Typ.	Max.		
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	$T_c = 25^\circ\text{C}$, $I_{TM} = 7\text{A}$, instantaneous measurement
Gate trigger voltage ^{Note2}	I	V_{FGT1}	—	—	1.5	$T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	V_{RGT1}	—	—	1.5	
	III	V_{RGTIII}	—	—	1.5	
Gate trigger current ^{Note2}	I	I_{FGT1}	—	—	15	$T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGT1}	—	—	15	
	III	I_{RGTIII}	—	—	15	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$
		0.1	—	—	V	$T_j = 150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	4.9	$^\circ\text{C}/\text{W}$	Junction to case ^{Note3}

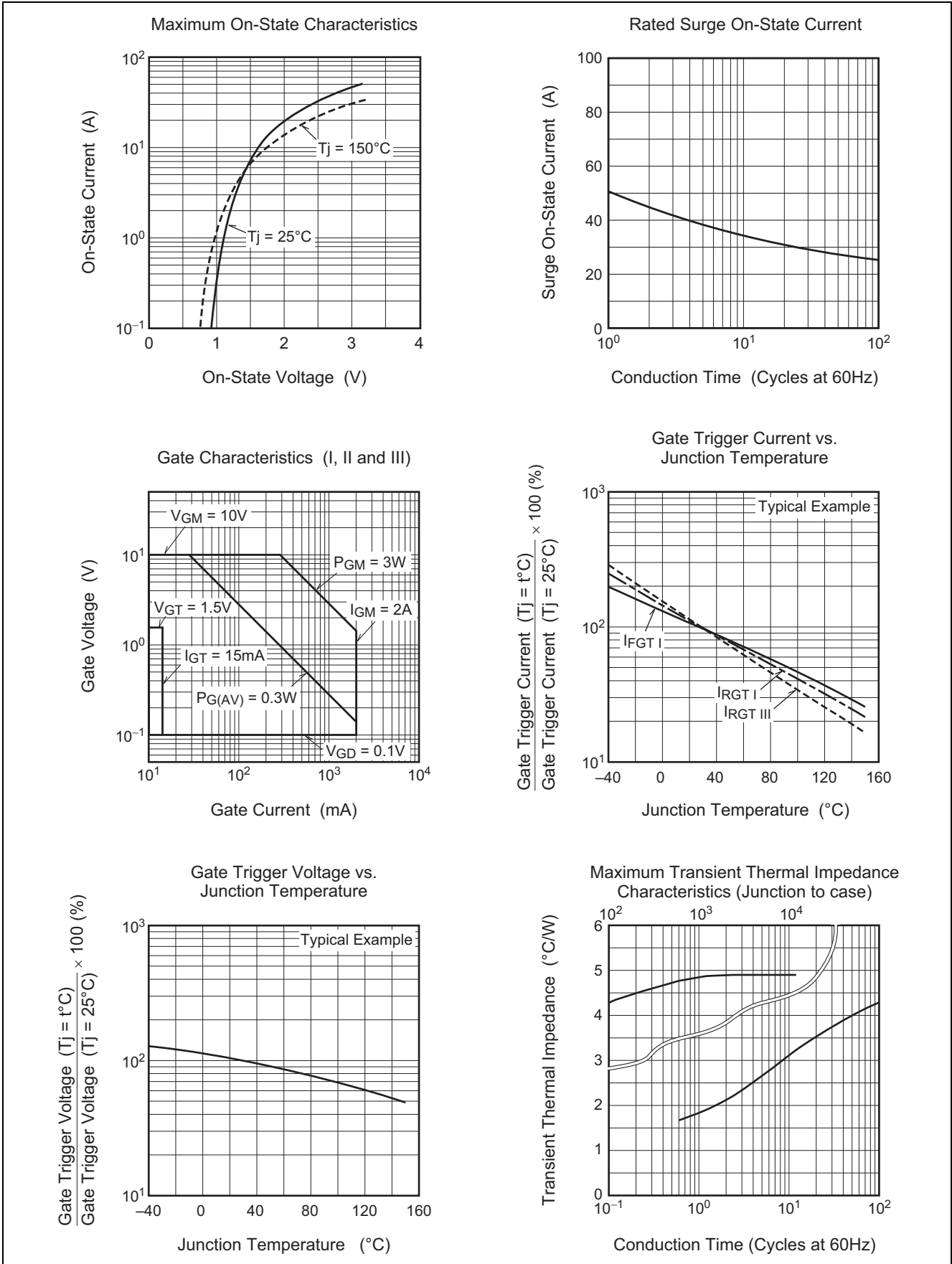
Notes: 1. Gate open.

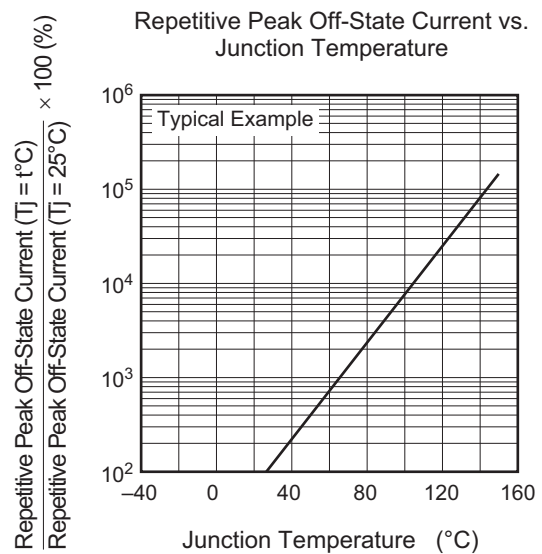
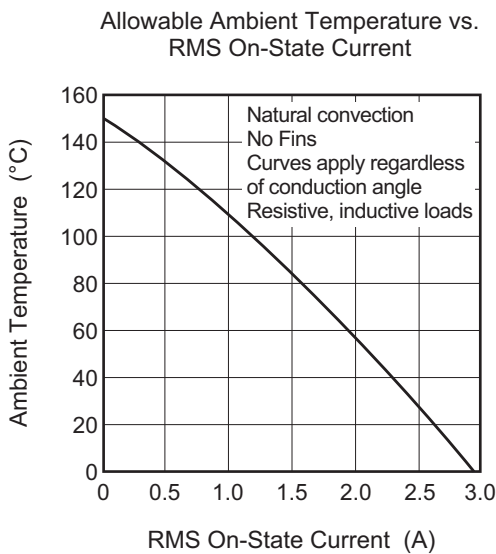
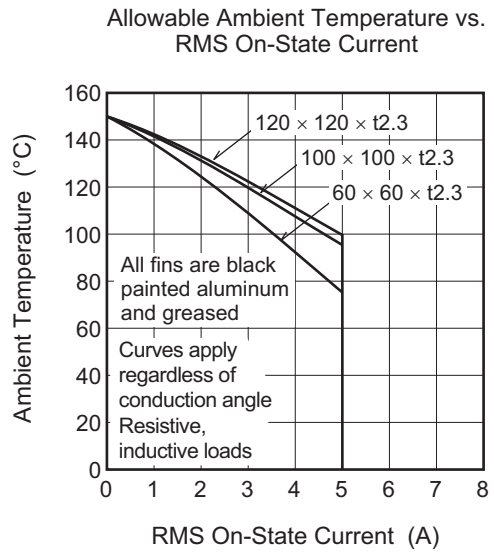
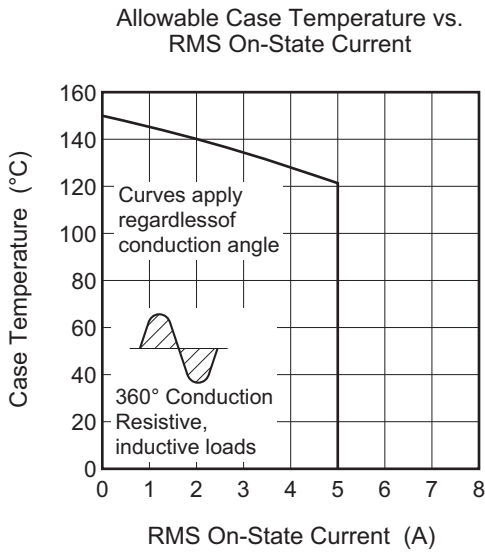
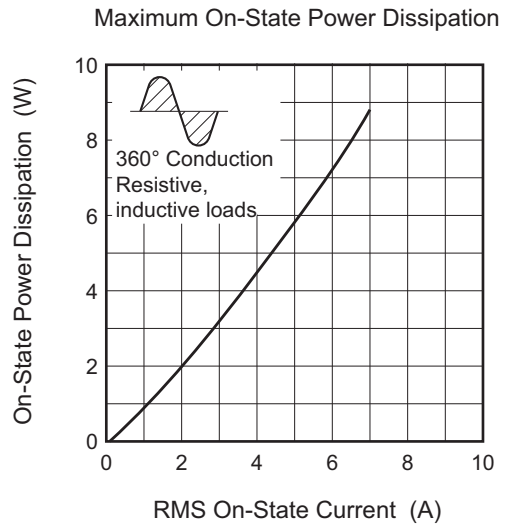
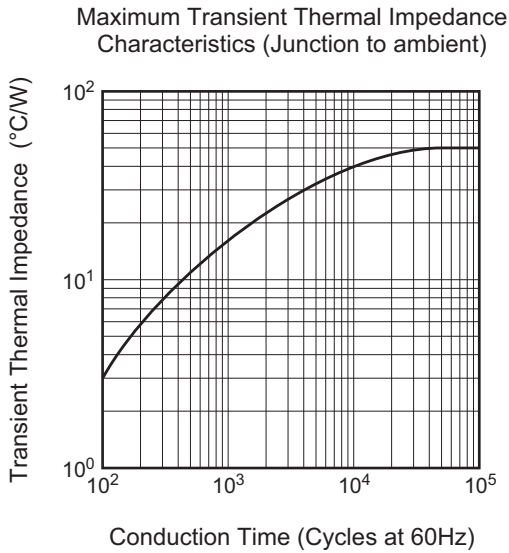
2. Measurement using the gate trigger characteristics measurement circuit

3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

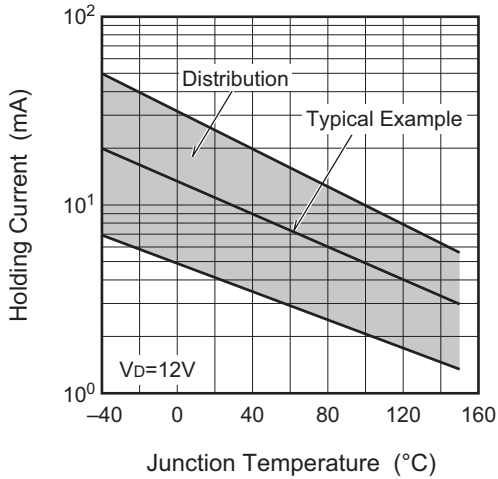
4. Make sure that your finished product containing this device meets your safe isolation requirements.
For safety, it's advisable that heatsink is electrically floating.

Main Characteristics

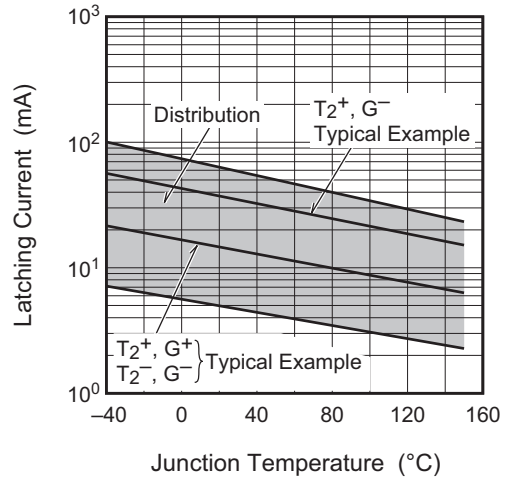




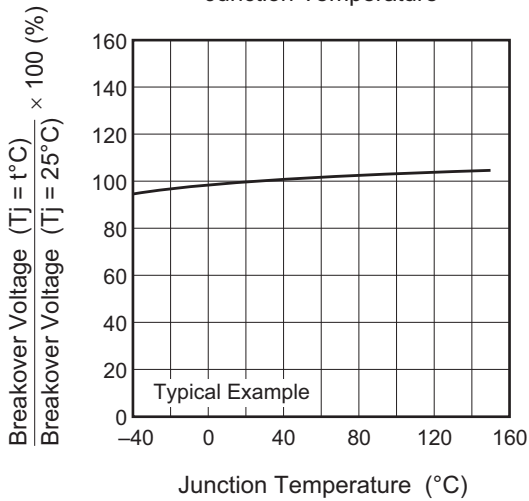
Holding Current vs. Junction Temperature



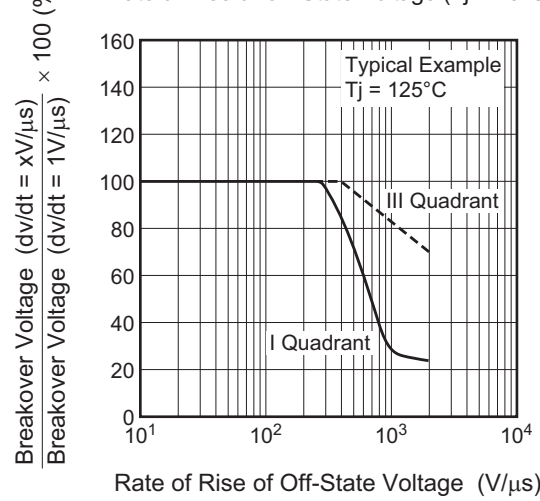
Latching Current vs. Junction Temperature



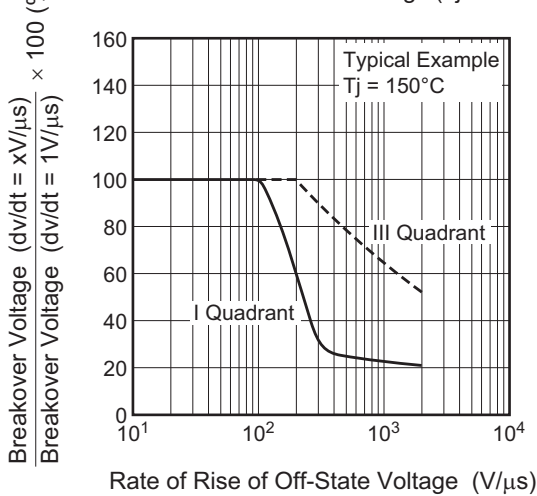
Breakover Voltage vs. Junction Temperature



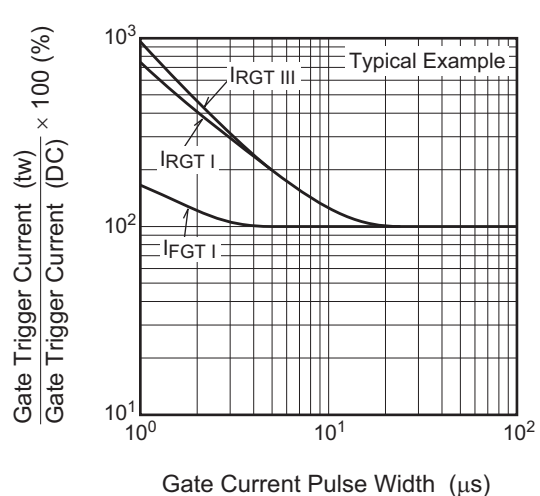
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



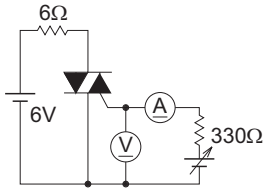
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



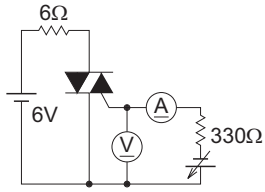
Gate Trigger Current vs. Gate Current Pulse Width



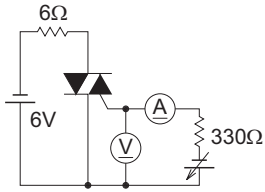
Gate Trigger Characteristics Test Circuits



Test Procedure I

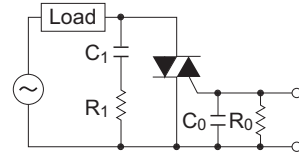


Test Procedure II



Test Procedure III

Recommended Circuit Values Around The Triac



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

Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
TO-220FL	—	PRSS0003AF-A	TO-220FL	1.5g	

The technical drawing illustrates the dimensions of the BCR5LM-12RB package. The top view shows a rectangular body with a width of 10.0 ± 0.3 mm and a height of 15.0 ± 0.3 mm. A central circular feature has a diameter of 3.0 ± 0.3 mm. The distance from the top edge to the center of this feature is 3.2 ± 0.2 mm. The distance from the center to the right edge is 6.5 ± 0.3 mm. The side view shows a total height of 12.5 ± 0.5 mm, with a top section of 3.6 ± 0.3 mm. The lead length is 2.8 ± 0.2 mm. The lead thickness is 0.40 ± 0.15 mm. The distance from the bottom edge to the start of the lead is 2.54 ± 0.25 mm. The lead width is 1.15 ± 0.2 mm. The distance from the center to the lead edge is 0.75 ± 0.15 mm. The detail view shows a lead length of 4.5 ± 0.2 mm and a lead thickness of 2.6 ± 0.2 mm.

Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR5LM-12RB#B00	Tube	50 pcs.	Straight type
BCR5LM-12RB-A8#B00	Tube	50 pcs.	A8 Lead form

Note: Please confirm the specification about the shipping in detail.

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