

# BCR3LM-12RB

600V - 3A - Triac

R07DS0863EJ0100

Rev.1.00

Low Power Use

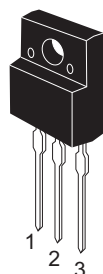
Nov 14, 2012

## Features

- $I_{T(RMS)}$  : 3 A
- $V_{DRM}$  : 600 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$ : 15 mA (10 mA)<sup>Note3</sup>
- $V_{ISO}$ : 1800 V
- The Product guaranteed maximum junction temperature 150°C
- Insulated Type
- Planar Type
- UL Recognized: File No. E223904

## Outline

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



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

## Applications

Electric rice cooker, electric pot, and other heater control

## 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	$I_{T(RMS)}$	3	A	Commercial frequency, sine full wave 360° conduction, Tc = 130°C
Surge on-state current	$I_{TSM}$	30	A	60 Hz sine wave 1 full cycle, peak value, non-repetitive
I <sup>2</sup> t for fusion	I <sup>2</sup> t	3.7	A <sup>2</sup> s	Value corresponding to 1 cycle of half wave 60Hz, 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	Tj	-40 to +150	°C	
Storage temperature	Tstg	-40 to +150	°C	
Mass	—	1.5	g	Typical value
Isolation voltage <sup>Note5</sup>	Viso	1800	V	Ta = 25°C, AC 1 minute T <sub>1</sub> • T <sub>2</sub> • 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	$T_c = 25^\circ\text{C}$ , $I_{TM} = 4.5\text{A}$ , instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGT_I}$	—	—	1.5	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{RGT_I}$	—	—	1.5	
	III	$V_{RGT_{III}}$	—	—	1.5	
Gate trigger current <sup>Note2</sup>	I	$I_{FGT_I}$	—	—	15 <sup>Note3</sup>	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGT_I}$	—	—	15 <sup>Note3</sup>	
	III	$I_{RGT_{III}}$	—	—	15 <sup>Note3</sup>	
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	$R_{th(j-c)}$	—	—	5.2	$^\circ\text{C/W}$	Junction to case <sup>Note4</sup>

Notes: 1. Gate open

2. Measurement using the gate trigger characteristics measurement circuit.

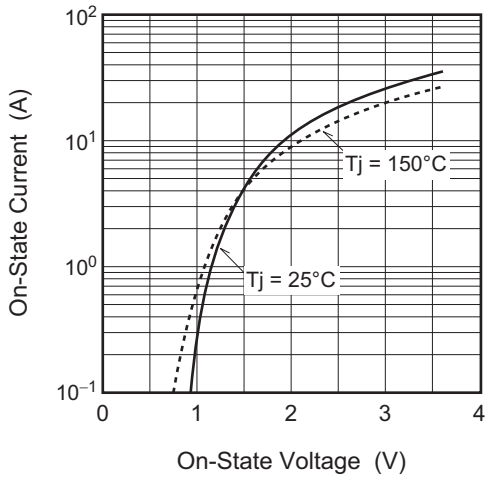
3. High sensitivity ( $I_{GT} \leq 10\text{ mA}$ ) is also available. (IGT item: 1)

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

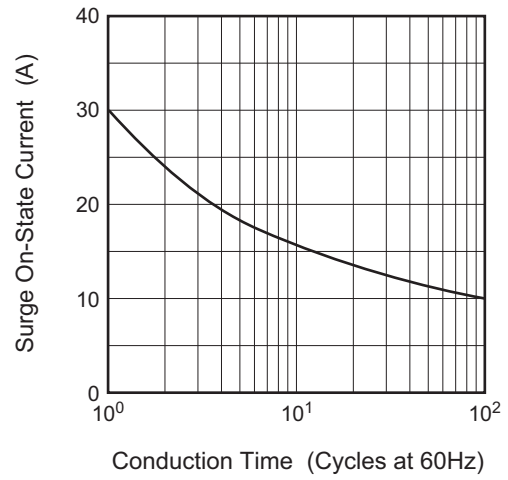
5. Make sure that your finished product containing this device meets your safe isolation requirements. For safety, it's advisable that heatsink is electrically floating.

Performance Curves

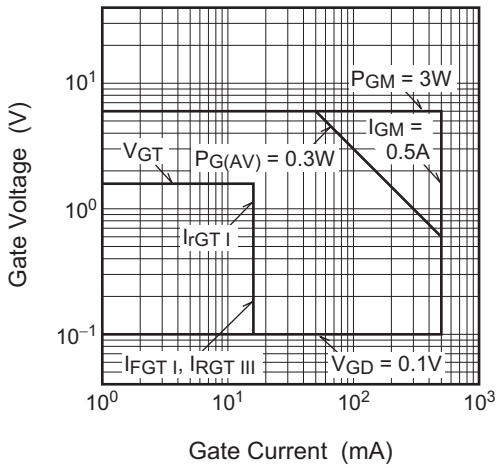
Maximum On-State Characteristics



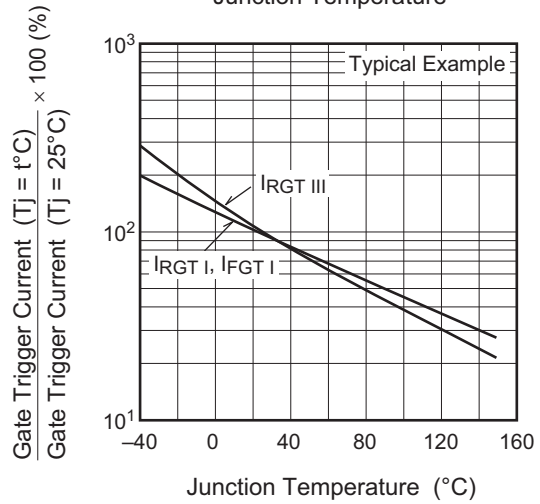
Rated Surge On-State Current



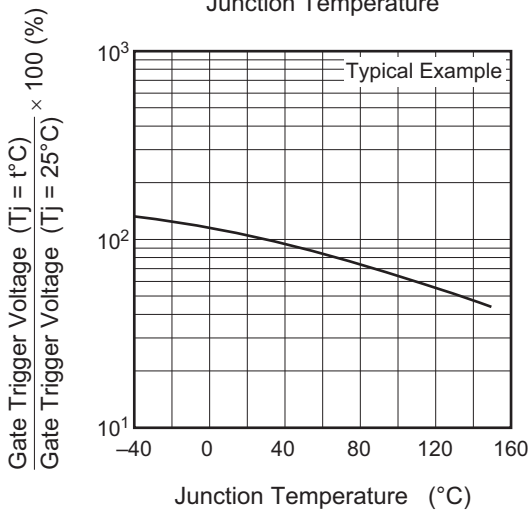
Gate Characteristics (I, II and III)



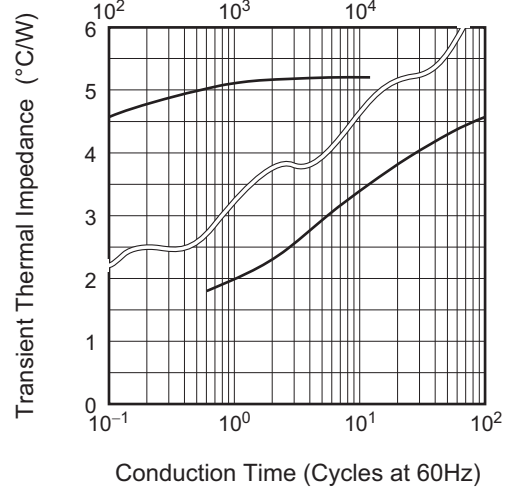
Gate Trigger Current vs. Junction Temperature



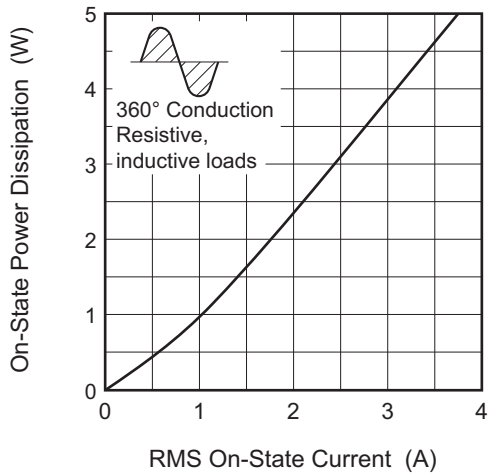
Gate Trigger Voltage vs. Junction Temperature



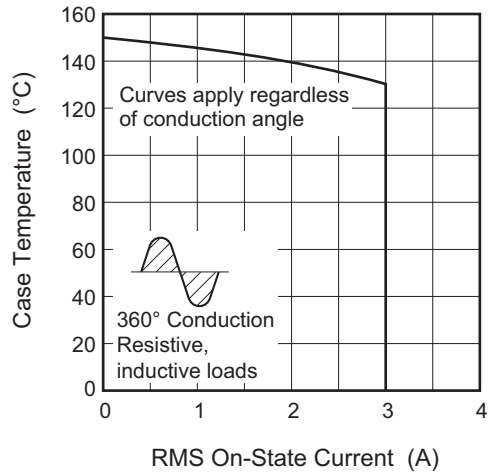
Maximum Transient Thermal Impedance Characteristics (Junction to case)



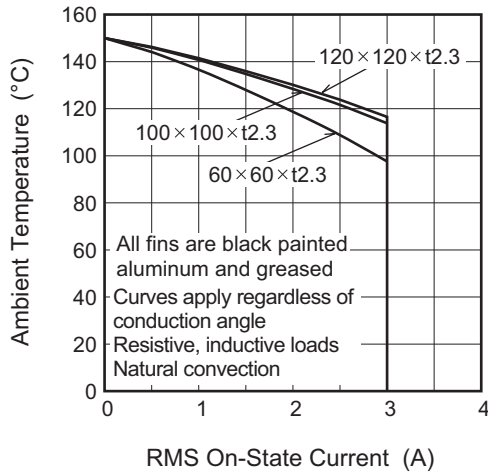
Maximum On-State Power Dissipation



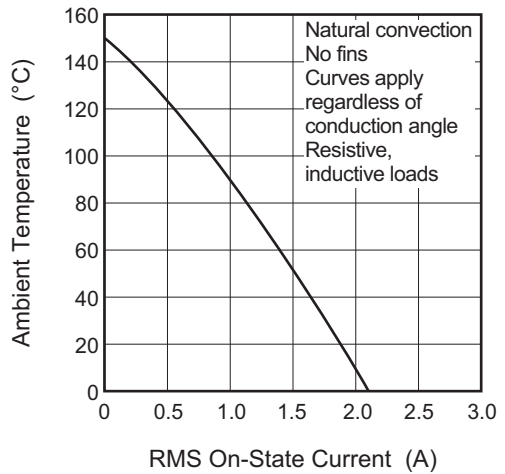
Allowable Case Temperature vs. RMS On-State Current



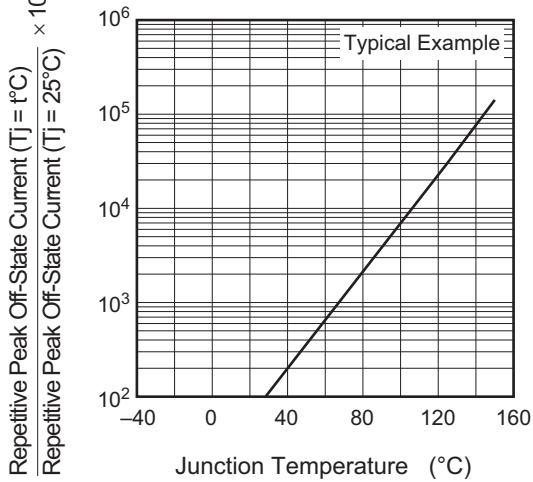
Allowable Ambient Temperature vs. RMS On-State Current



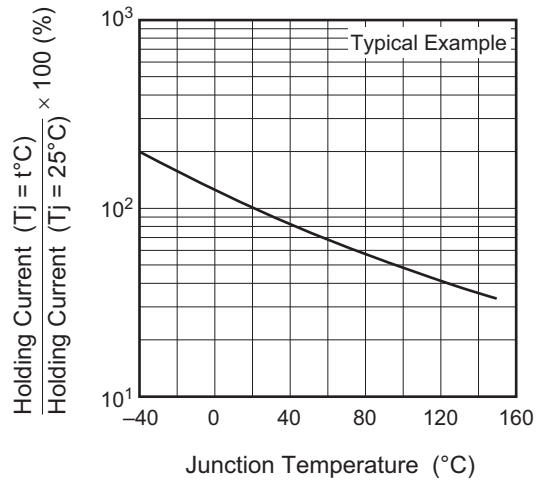
Allowable Ambient Temperature vs. RMS On-State Current



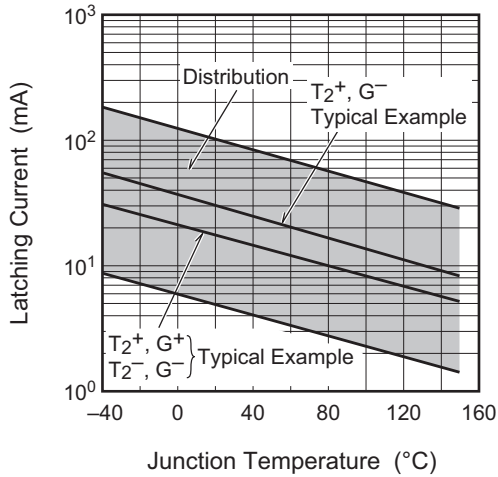
Repetitive Peak Off-State Current vs. Junction Temperature



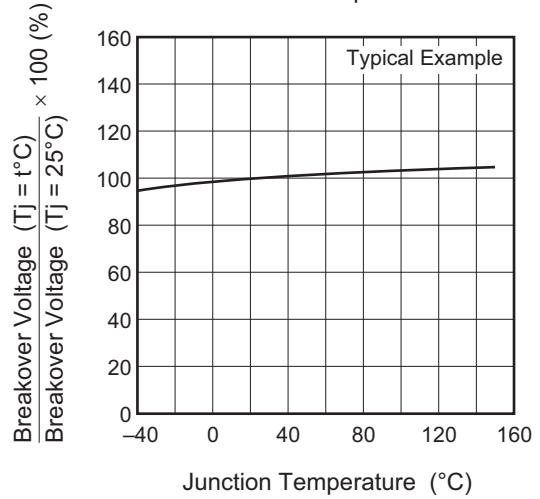
Holding Current vs. Junction Temperature



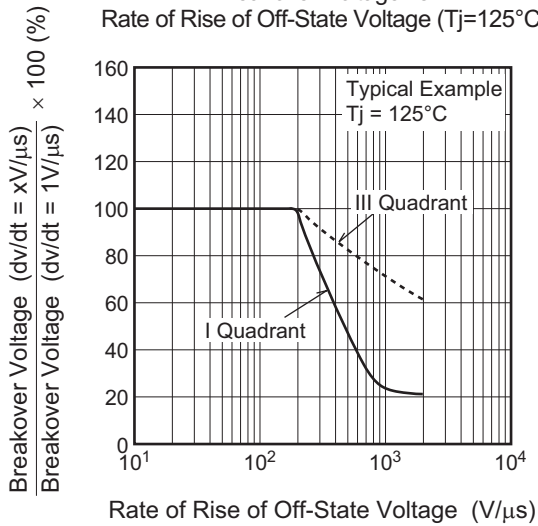
Latching Current vs. Junction Temperature



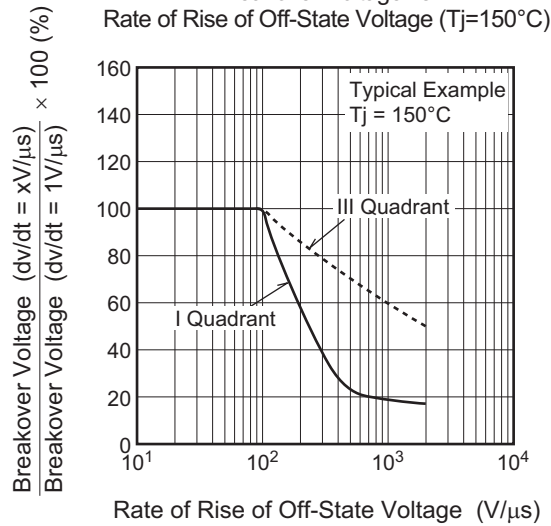
Breakover Voltage vs. Junction Temperature



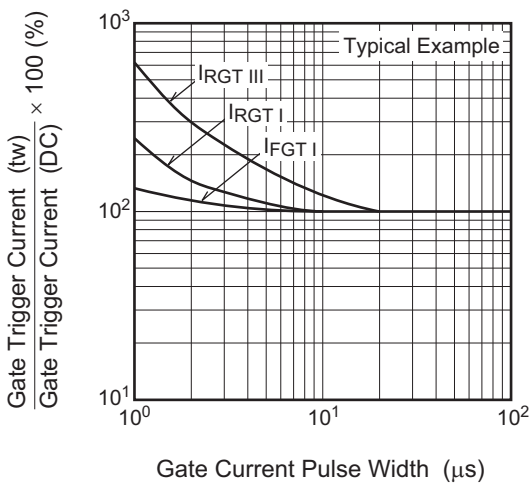
Breakover Voltage vs. Rate of Rise of Off-State Voltage ( $T_j=125^{\circ}\text{C}$ )



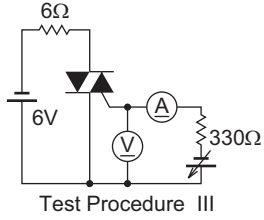
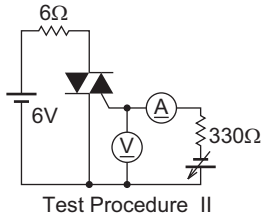
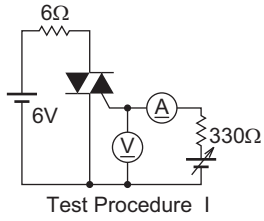
Breakover Voltage vs. Rate of Rise of Off-State Voltage ( $T_j=150^{\circ}\text{C}$ )



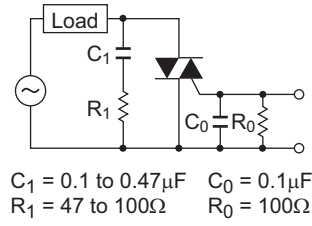
Gate Trigger Current vs. Gate Current Pulse Width



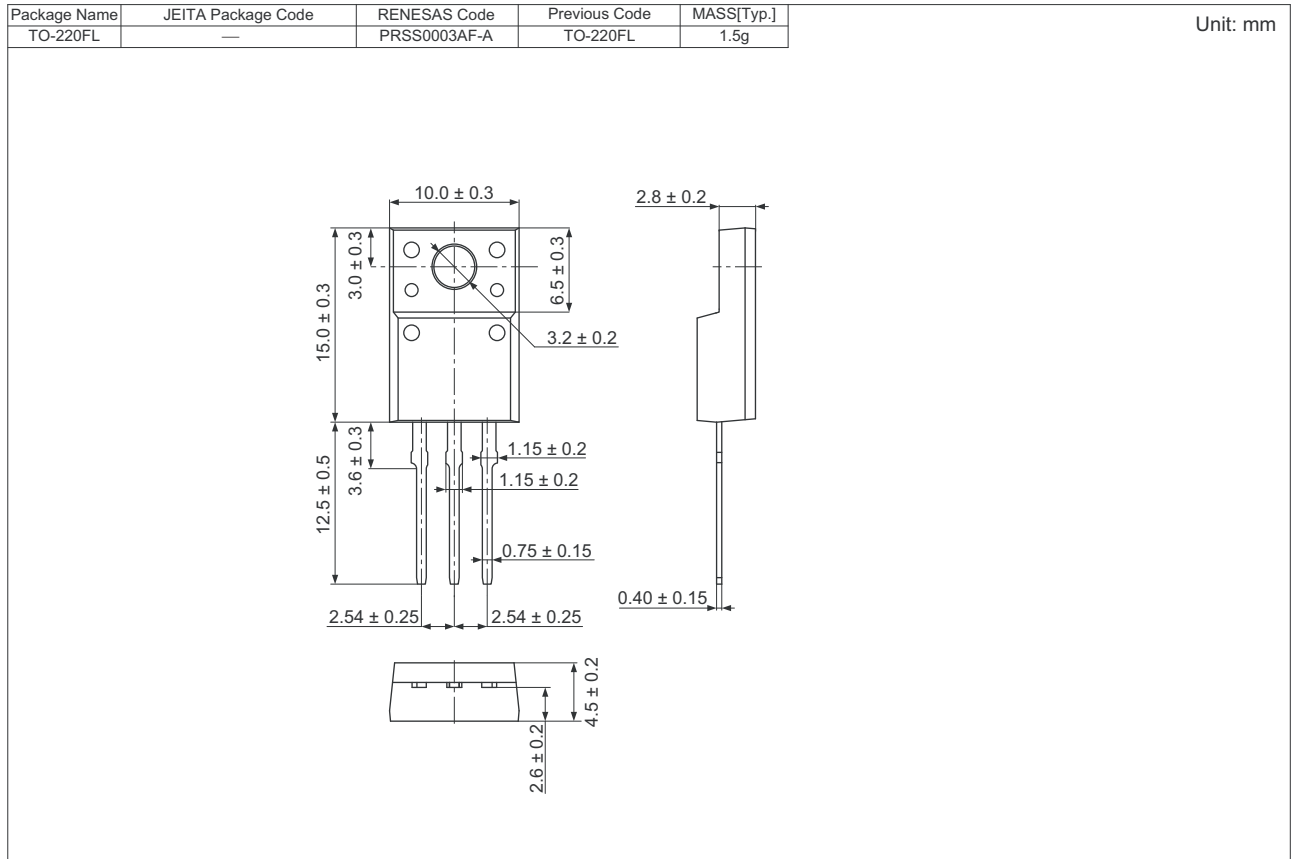
Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions



Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR3LM-12RB#B00	Tube	50 pcs.	Straight type
BCR3LM-12RB-A8#B00	Tube	50 pcs.	A8 Lead form

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

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