

# BCR16PM-16LH

Triac  
Medium Power Use

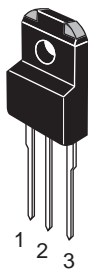
R07DS0505EJ0100  
Rev.1.00  
Jul 07, 2011

## Features

- $I_{T(RMS)}$  : 16 A
- $V_{DRM}$  : 800 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$  : 50 mA or 35mA ( $I_{GT}$  item:1)
- High Commutation
- $V_{iso}$ : 2000 V
- The Product guaranteed maximum junction temperature 150°C
- Insulated Type
- Planar Type
- UL Recognized: File No. E223904

## Outline

RENESAS Package code: PRSS0003AA-A  
(Package name: TO-220F)



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

## Applications

Switching mode power supply, washing machine, motor control, heater control, and other general purpose control applications

## Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		16	
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	800	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	960	V

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	16	A	Commercial frequency, sine full wave 360°conduction, $T_c = 87^\circ\text{C}$
Surge on-state current	$I_{TSM}$	160	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusion	$I^2t$	106.5	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60 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	
Mass	—	2.0	g	Typical value
Isolation voltage	$V_{iso}$	2000	V	$T_a = 25^\circ\text{C}$ , AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case

## Electrical Characteristics

Parameter	Symbol	BCR16PM-16LH-1 (I <sub>GT</sub> item : 1)			BCR16PM-16LH			Unit	Test conditions	
		Min.	Typ.	Max.	Min.	Typ.	Max.			
Repetitive peak off-state current	I <sub>DRM</sub>	—	—	5.0	—	—	5.0	mA	T <sub>j</sub> = 150°C V <sub>DRM</sub> applied	
On-state voltage	V <sub>TM</sub>	—	—	1.5	—	—	1.5	V	T <sub>c</sub> = 25°C, I <sub>TM</sub> = 25 A instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	V <sub>FGTI</sub>	—	—	1.5	—	—	1.5	V	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>	—	—	1.5	—	—	1.5	V	
	III	V <sub>RGTIII</sub>	—	—	1.5	—	—	1.5	V	
Gate trigger current <sup>Note2</sup>	I	I <sub>FGTI</sub>	—	—	35	—	—	50	mA	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>	—	—	35	—	—	50	mA	
	III	I <sub>RGTIII</sub>	—	—	35	—	—	50	mA	
Gate non-trigger voltage	V <sub>GD</sub>	0.2	—	—	0.2	—	—	V	T <sub>j</sub> = 125°C V <sub>D</sub> = 1/2 V <sub>DRM</sub>	
		0.1	—	—	0.1	—	—	V	T <sub>j</sub> = 150°C V <sub>D</sub> = 1/2 V <sub>DRM</sub>	
Thermal resistance	R <sub>th(j-c)</sub>	—	—	3.5	—	—	3.5	°C/W	Junction to case <sup>Note3</sup>	
Critical-rate of decay of on-state commutating current <sup>Note4</sup>	(di/dt) <sub>c</sub>	9	—	—	15	—	—	A/ms	T <sub>j</sub> = 125°C (dv/dt) <sub>c</sub> < 100 V/μs	

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

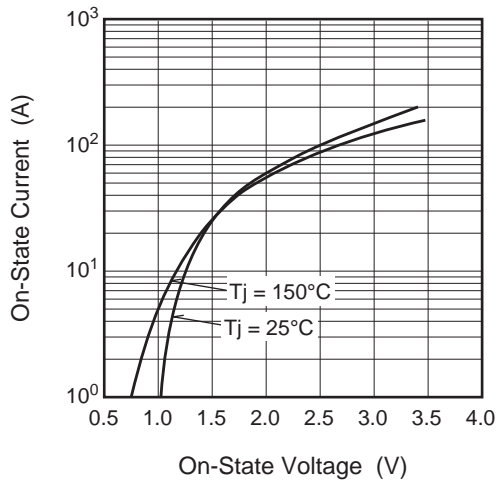
3. The contact thermal resistance R<sub>th(c-f)</sub> in case of greasing is 0.5°C/W.

4. Test conditions of the critical-rate of decay of on-state commutation current are shown in the table below.

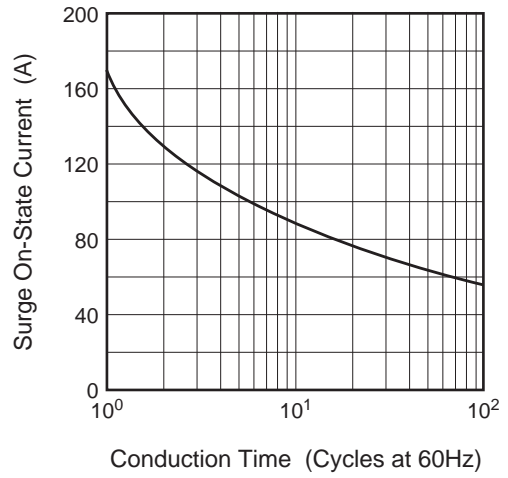
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature T <sub>j</sub> = 125°C 2. Peak off-state voltage V <sub>D</sub> = 400 V 2. Rate of rise of off-state commutating voltage (dv/dt) <sub>c</sub> < 100 V/μs	

Performance Curves

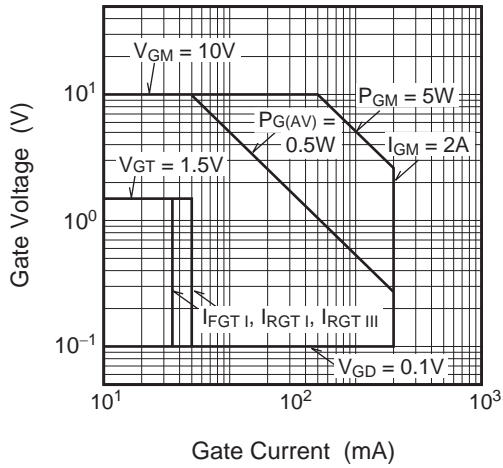
Maximum On-State Characteristics



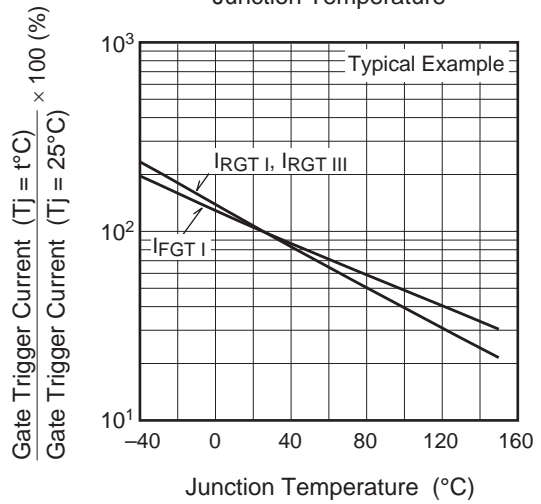
Rated Surge On-State Current



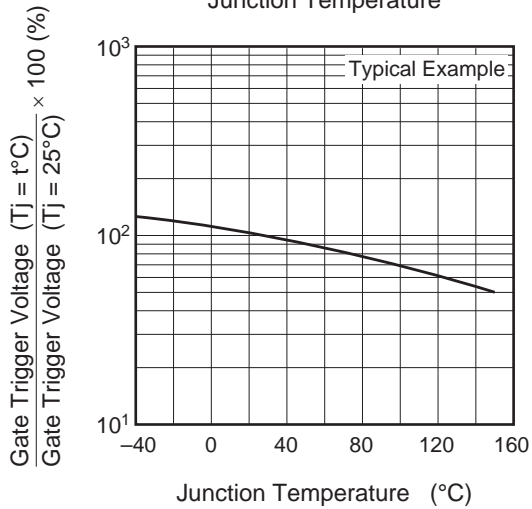
Gate Characteristics



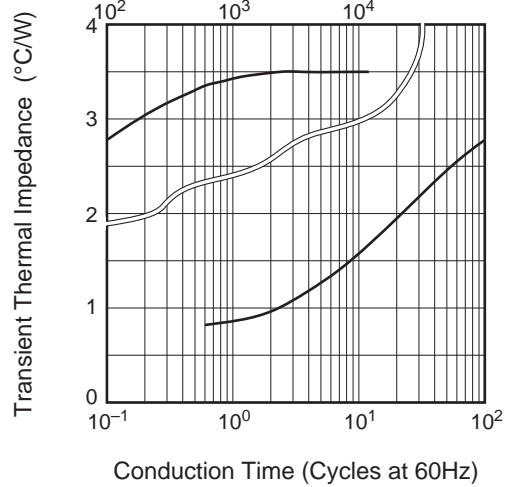
Gate Trigger Current vs. Junction Temperature

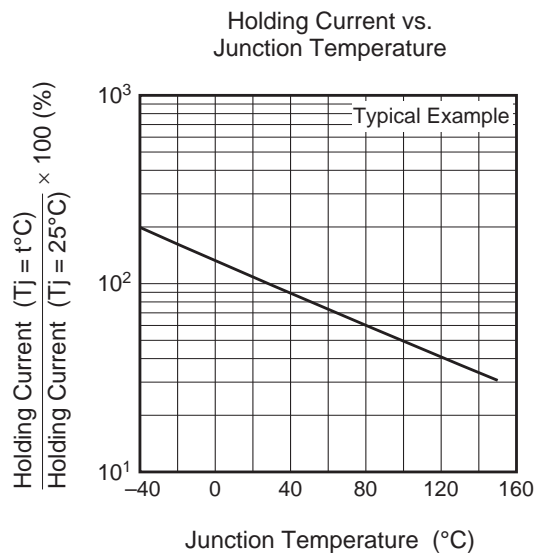
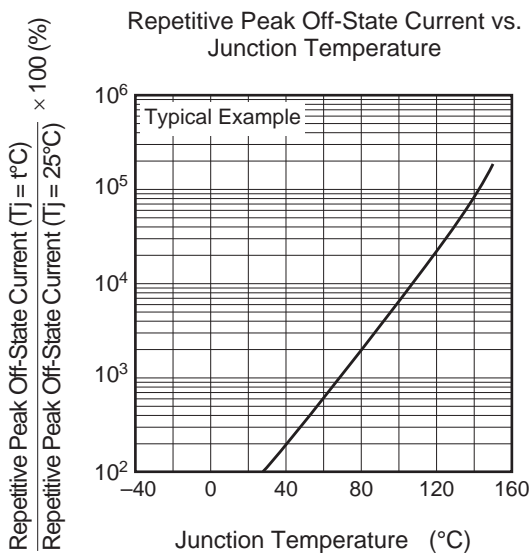
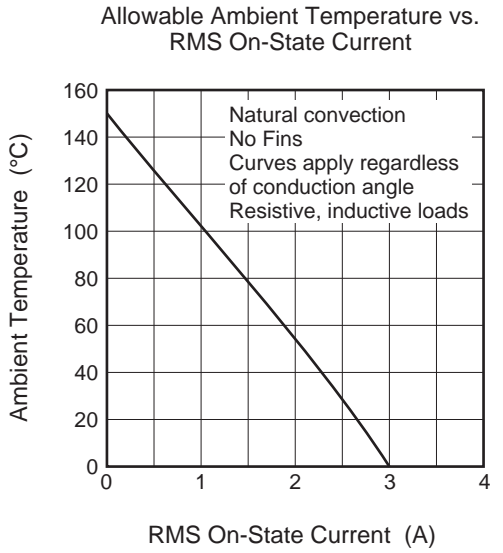
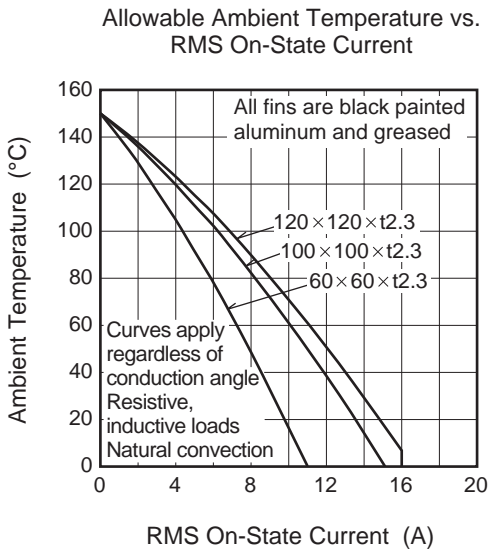
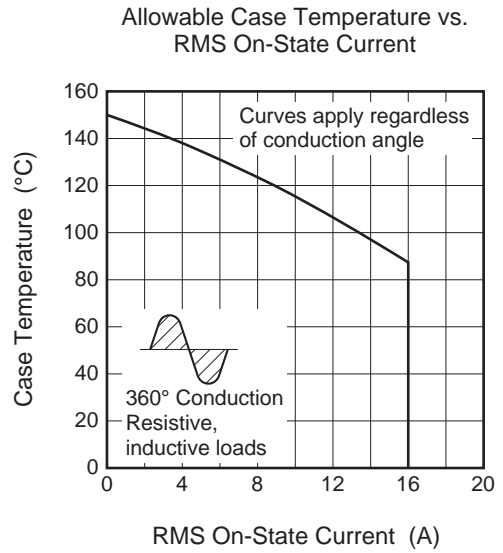
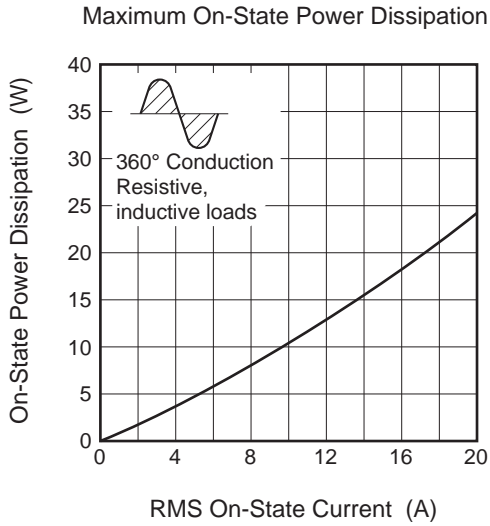


Gate Trigger Voltage vs. Junction Temperature

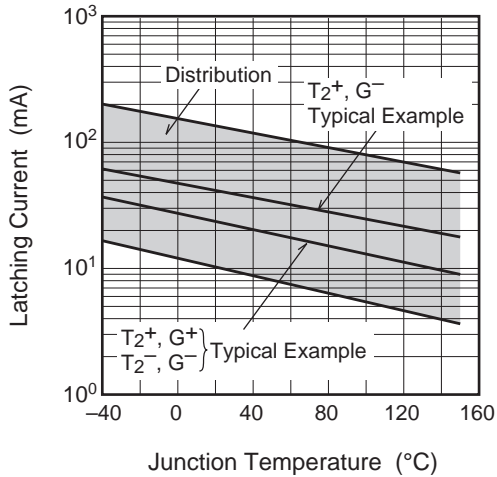


Maximum Transient Thermal Impedance Characteristics (Junction to case)

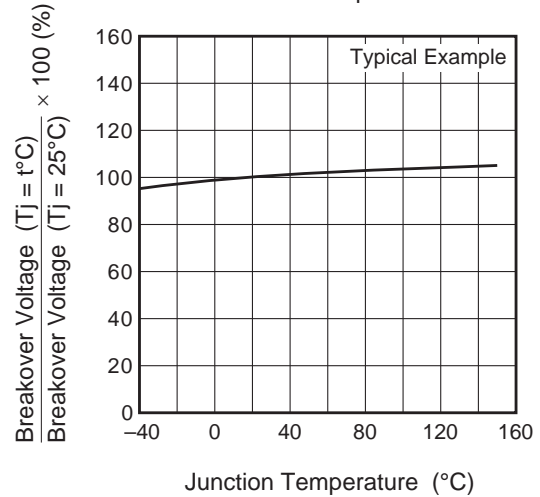




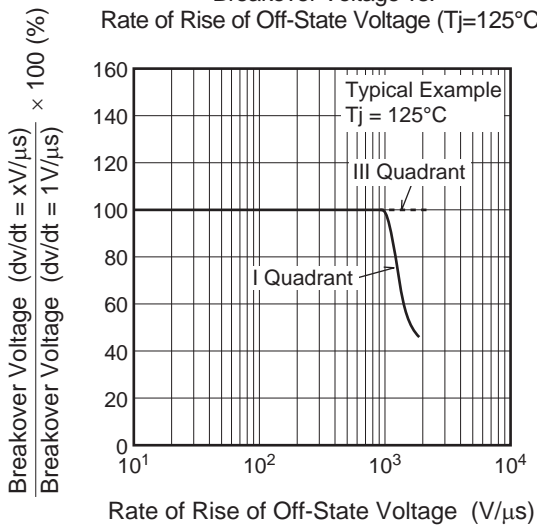
Latching Current vs. Junction Temperature



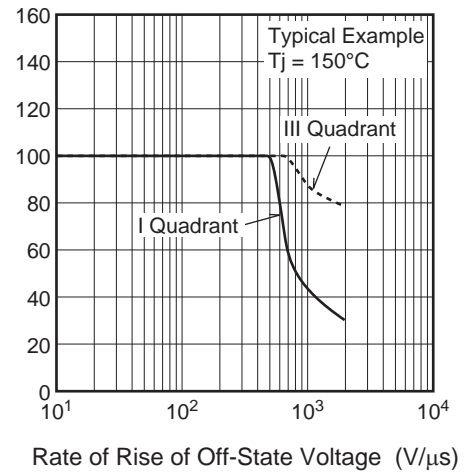
Breakover Voltage vs. Junction Temperature



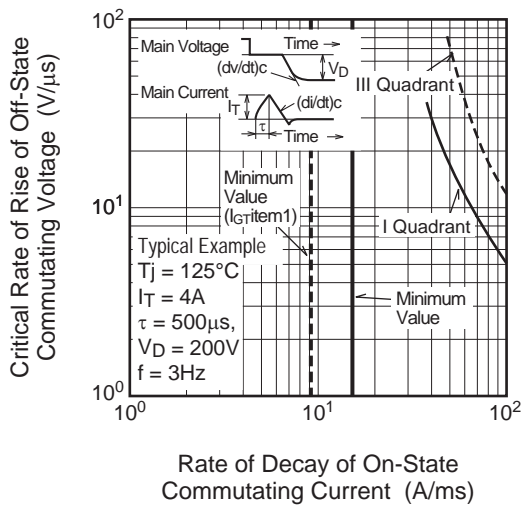
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



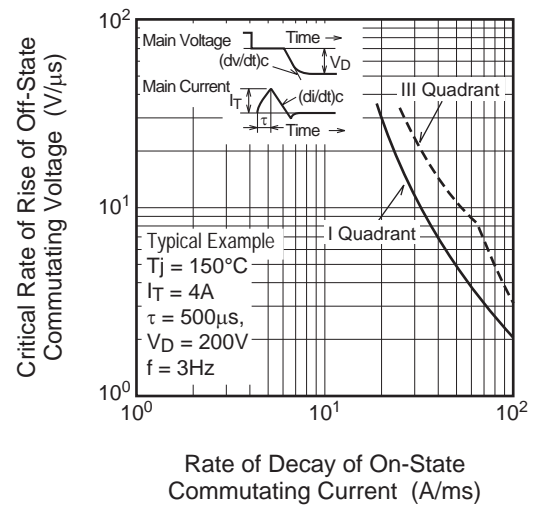
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



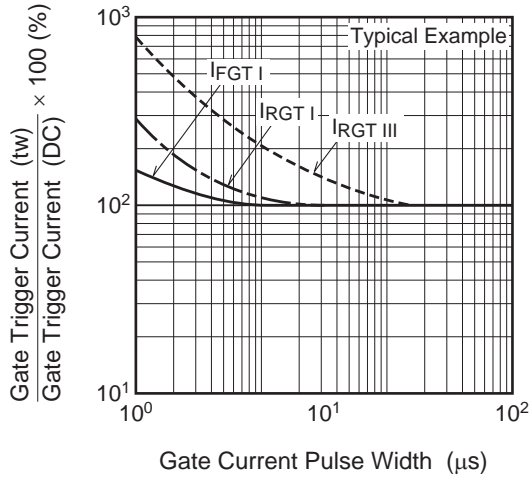
Commutation Characteristics (Tj=125°C)



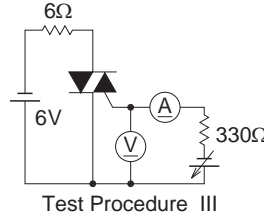
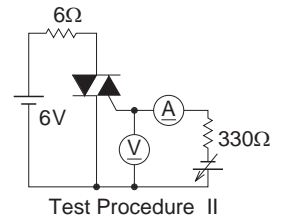
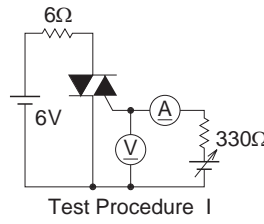
Commutation Characteristics (Tj=150°C)



Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220F	SC-67	PRSS0003AA-A	—	2.0g

Unit: mm

The drawing shows the following dimensions:

- Top view: Total width 10.5Max, lead spacing 5.2, lead width 1.2, body width 5.0, body height 8.5, hole diameter  $\phi 3.2 \pm 0.2$ .
- Side view: Total height 17, lead height 3.6, lead thickness 1.3Max, lead width 0.8, body height 8.5, lead diameter 2.8, lead length 0.5, body length 2.6.
- Bottom view: Lead spacing 2.54, lead width 2.54, body width 4.5.

## Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR16PM-16LH#B00	Bag	100 pcs.	Straight type
BCR16PM-16LH-1#B00	Bag	100 pcs.	Straight type, I <sub>GT</sub> item;1
BCR16PM-16LH-AS#B00	Tube	50 pcs.	AS Lead form
BCR16PM-16LH-1AS#B00	Tube	50 pcs.	AS Lead form, I <sub>GT</sub> item;1

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

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