

BCR20PM-14LJ

700V - 20A - Triac
Medium Power Use

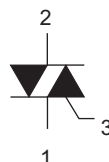
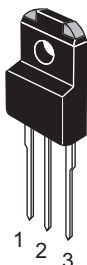
R07DS0982EJ0100
Rev.1.00
Dec 03, 2012

Features

- $I_{T(RMS)}$: 20 A
- V_{DRM} : 800 V ($T_j = 125^\circ\text{C}$)
- T_j : 150 °C
- I_{FGTB} , I_{RGTB} , I_{RGTH} : 30 mA
- Viso: 2000 V
- Insulated Type
- Planar Passivation Type
- UL Recognized: File No. E223904

Outline

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



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

Applications

Vacuum cleaner, electric heater, light dimmer, copying machine, and other general controlling devices

Maximum Ratings

Parameter	Symbol	Voltage class	Unit	Conditions
		14		
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800	V	$T_j = 125^\circ\text{C}$
		700		$T_j = 150^\circ\text{C}$
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	840	V	

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	20	A	Commercial frequency, sine full wave 360° conduction, $T_c = 86^\circ\text{C}$
Surge on-state current	I_{TSM}	200	A	60 Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	167	A^2s	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	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value
Isolation voltage ^{Note5}	Viso	2000	V	$T_a = 25^\circ\text{C}$, AC 1 minute $T_1 \bullet T_2 \bullet G$ terminal to case

Electrical Characteristics

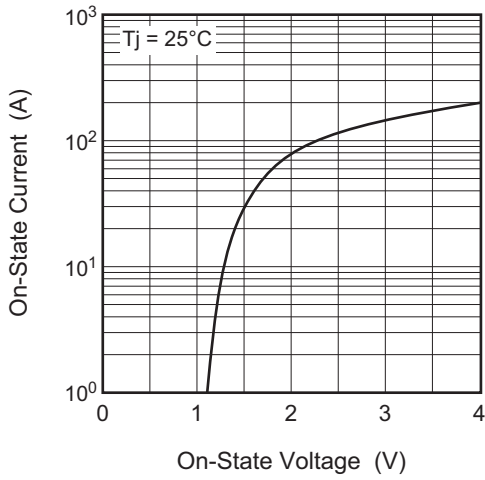
Parameter	Symbol	Rated value			Unit	Test conditions
		Min.	Typ.	Max.		
Repetitive peak off-state current	I_{DRM}	—	—	3.0	mA	$T_j = 150^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.5	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 30\text{A}$, instantaneous measurement
Gate trigger voltage ^{Note2}	I	V_{FGTI}	—	—	1.5	$T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	V_{RGTI}	—	—	1.5	
	III	V_{RGTIII}	—	—	1.5	
Gate trigger current ^{Note2}	I	I_{FGTI}	—	—	30	$T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	30	
	III	I_{RGTIII}	—	—	30	
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	$R_{th(j-c)}$	—	—	3.2	$^\circ\text{C/W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutation voltage ^{Note4}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$
		1	—	—		$T_j = 150^\circ\text{C}$

- 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°C/W .
 4. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.
 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.

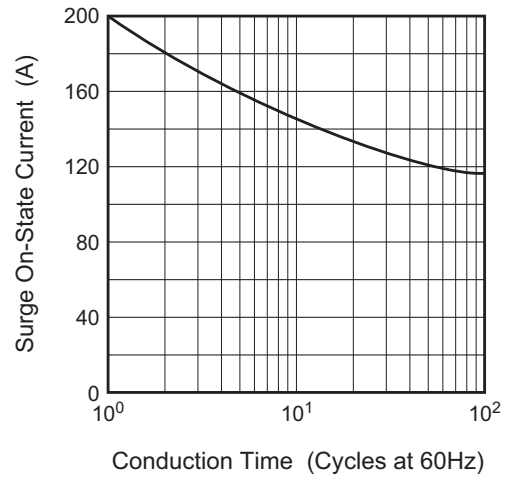
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{A/ms}$ 3. Peak off-state voltage $V_D = 400\text{V}$	

Performance Curves

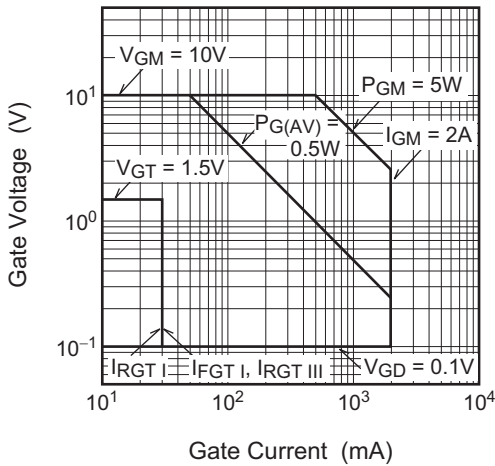
Maximum On-State Characteristics



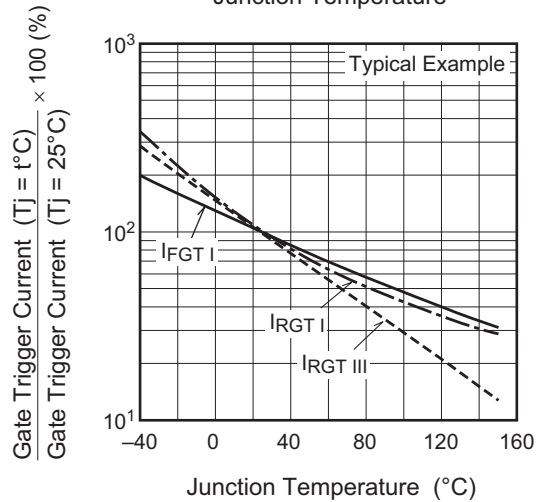
Rated Surge On-State Current



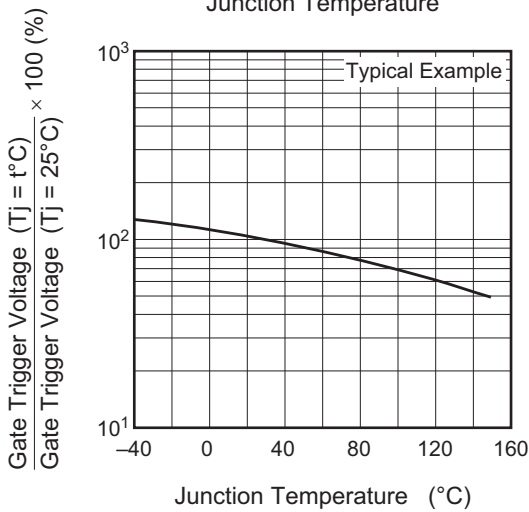
Gate Characteristics (I, II and III)



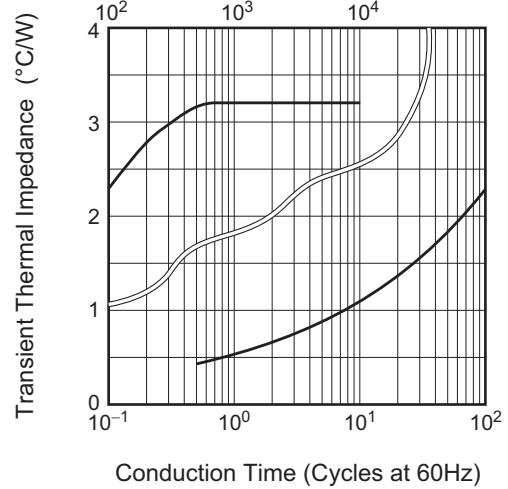
Gate Trigger Current vs. Junction Temperature

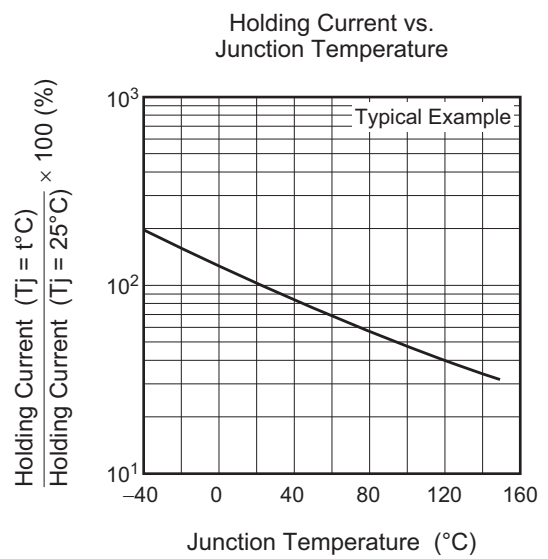
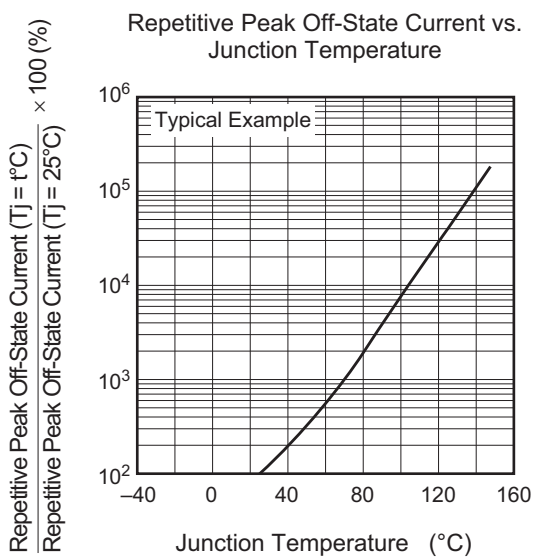
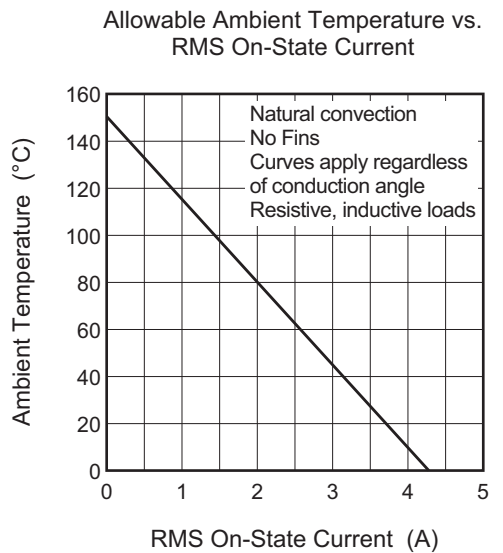
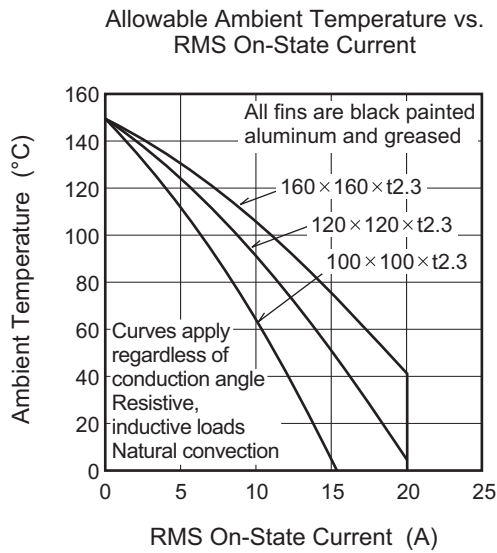
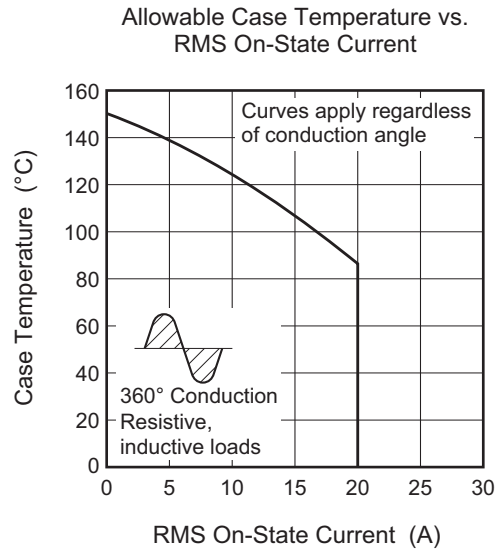
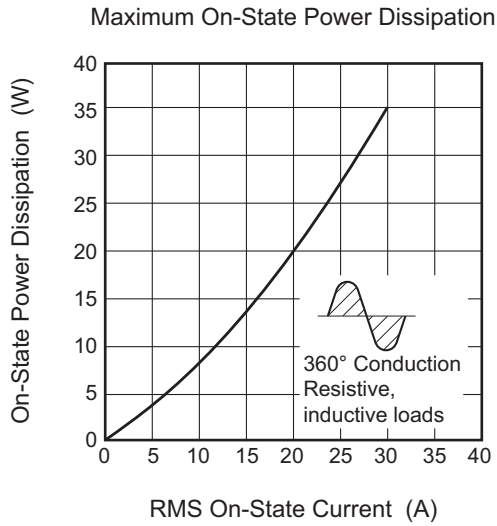


Gate Trigger Voltage vs. Junction Temperature

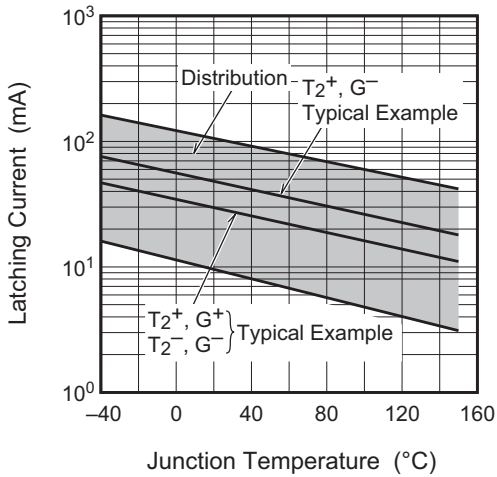


Maximum Transient Thermal Impedance Characteristics (Junction to case)

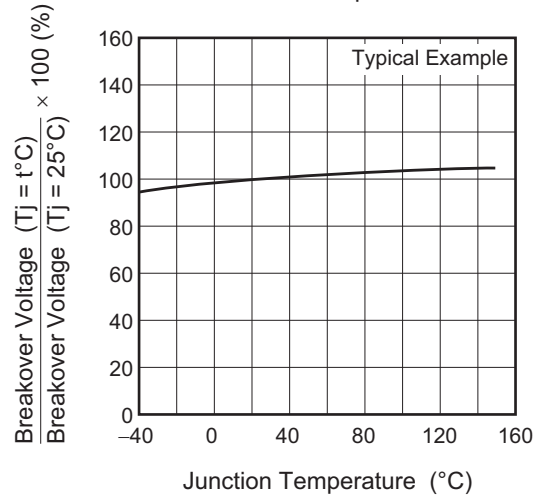




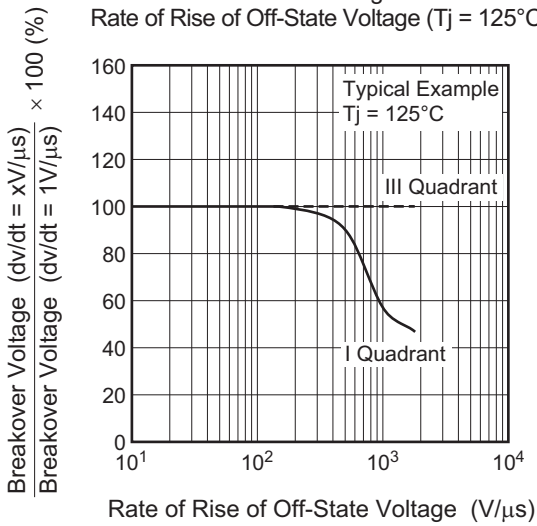
Latching Current vs. Junction Temperature



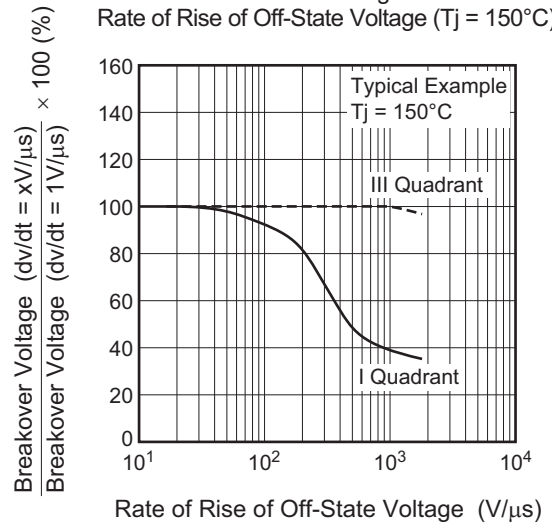
Breakover Voltage vs. Junction Temperature



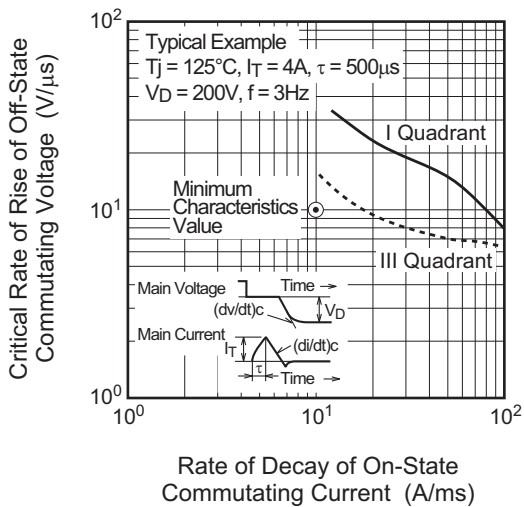
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj = 125°C)



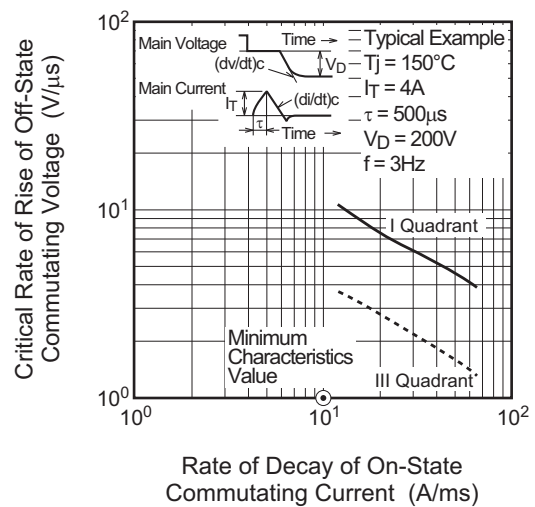
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj = 150°C)



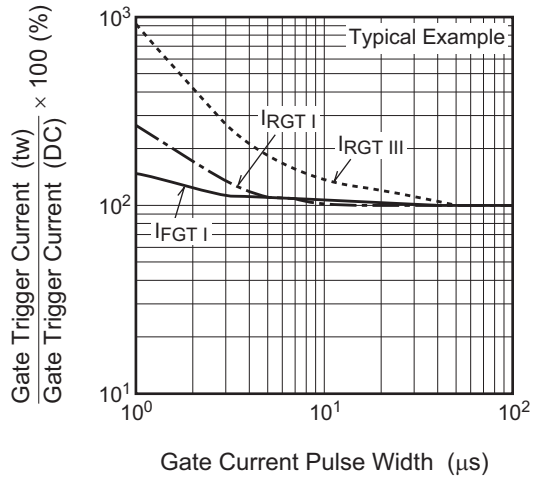
Commutation Characteristics (Tj = 125°C)



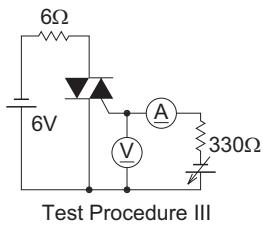
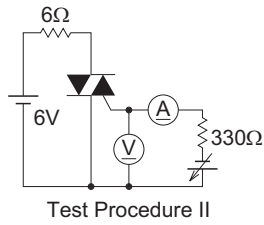
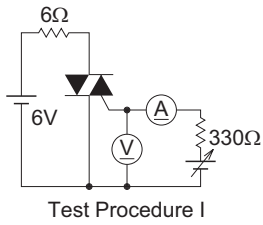
Commutation Characteristics (Tj = 150°C)



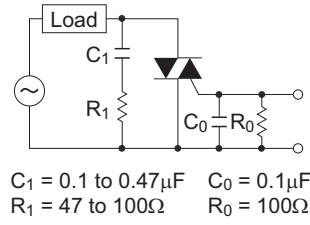
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220F	SC-67	PRSS0003AA-A	T220F	2.0g

Unit: mm

The technical drawing illustrates the BCR20PM-14LJ package dimensions. The top view shows a rectangular body with a width of 10.5 mm (maximum) and a central hole with a diameter of $\phi 3.2 \pm 0.2$ mm. The distance from the center of the hole to the top edge is 5.0 mm, and the distance to the bottom edge is 8.5 mm. The total height of the package is 17 mm. The side view shows a lead length of 13.5 mm (minimum) and a lead thickness of 0.5 mm. The lead is bent at a 90-degree angle, with a lead height of 2.8 mm and a lead width of 2.6 mm. The distance from the base of the lead to the top of the package is 3.6 mm. The distance between the two leads is 2.54 mm. The distance from the center of the hole to the edge of the package is 5.2 mm. The distance from the center of the hole to the top edge of the lead is 1.2 mm. The distance from the center of the hole to the bottom edge of the lead is 1.3 mm (maximum). The distance from the center of the hole to the bottom edge of the package is 0.8 mm. The distance from the center of the hole to the bottom edge of the lead is 4.5 mm.

Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR20PM-14LJ#B00	Bag	100 pcs.	Straight type
BCR20PM-14LJA8#B00	Tube	50 pcs.	A8 Lead form

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