

BCR5PM-12LA

Triac

Medium Power Use

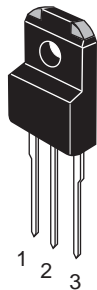
R07DS0100EJ0300
 (Previous: REJ03G0302-0200)
 Rev.3.00
 Sep 13, 2010

Features

- $I_{T(RMS)}$: 5 A
- V_{DRM} : 600 V
- I_{FGT} , I_{RGT} , $I_{RGT III}$: 20 mA (10 mA)^{Note5}
- V_{iso} : 2000 V
- Insulated Type
- Planar Passivation Type
- UL Recognized : Yellow Card No. E223904

Outline

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



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

Applications

Switching mode power supply, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, refrigerator, washing machine, infrared kotatsu, carpet, and solenoid driver, small motor control, copying machine, electric tool, electric heater control, and other general controlling device

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, $T_c = 95^\circ C$
Surge on-state current	I_{TSM}	50	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	10.4	A^2s	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}	10	V	
Peak gate current	I_{GM}	2	A	
Junction temperature	T_j	- 40 to +125	$^\circ C$	
Storage temperature	T_{stg}	- 40 to +125	$^\circ C$	
Mass	—	2.0	g	Typical value
Isolation voltage	Viso	2000	V	$T_a = 25^\circ C$, AC 1 minute, $T_1 \cdot T_2 \cdot G$ 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	$T_j = 125^\circ C$, V_{DRM} applied	
On-state voltage	V_{TM}	—	—	1.8	V	$T_c = 25^\circ C$, $I_{TM} = 7 A$, Instantaneous measurement	
Gate trigger voltage ^{Note2}	I	V_{FGTI}	—	—	1.5	V	$T_j = 25^\circ C$, $V_D = 6 V$, $R_L = 6 \Omega$, $R_G = 330 \Omega$
	II	V_{RGTI}	—	—	1.5	V	
	III	V_{RGTIII}	—	—	1.5	V	
Gate trigger current ^{Note2}	I	I_{FGTI}	—	—	20 ^{Note5}	mA	$T_j = 25^\circ C$, $V_D = 6 V$, $R_L = 6 \Omega$, $R_G = 330 \Omega$
	II	I_{RGTI}	—	—	20 ^{Note5}	mA	
	III	I_{RGTIII}	—	—	20 ^{Note5}	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ C$, $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	4.0	$^\circ C/W$	Junction to case ^{Note3}	
Critical-rate of rise of off-state commutating voltage ^{Note4}	$(dv/dt)_c$	5	—	—	$V/\mu s$	$T_j = 125^\circ C$	

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

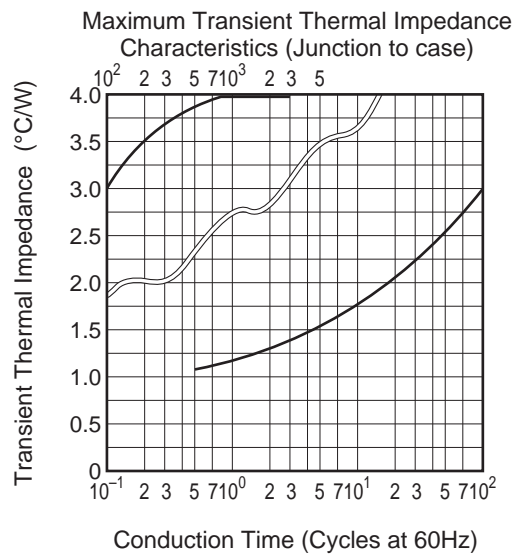
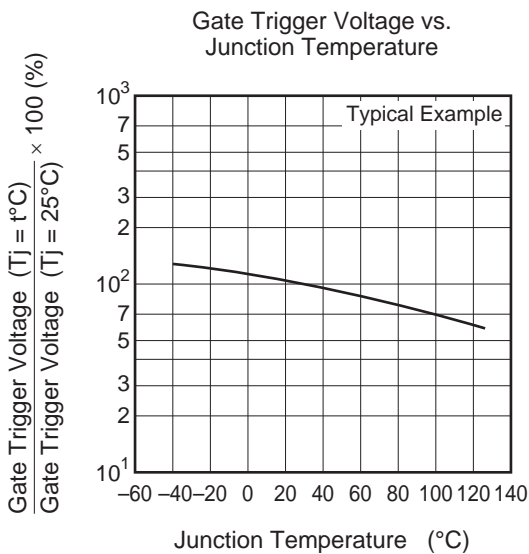
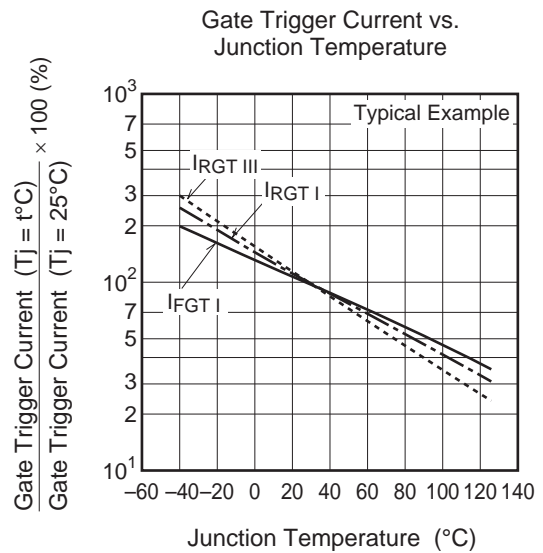
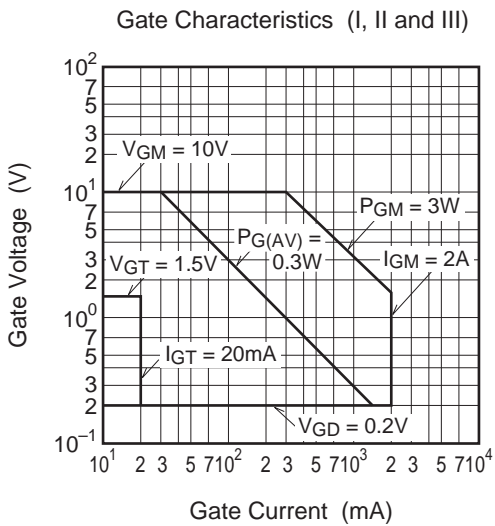
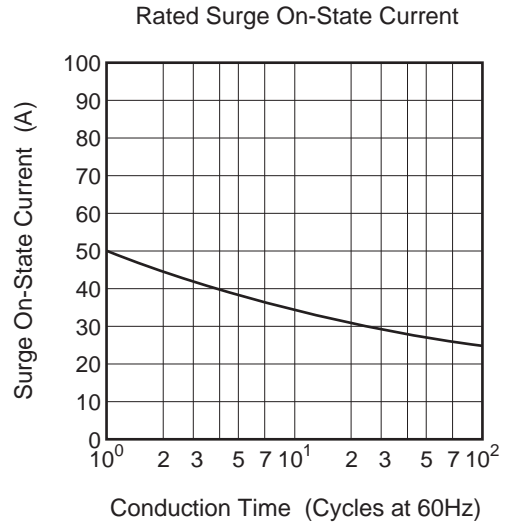
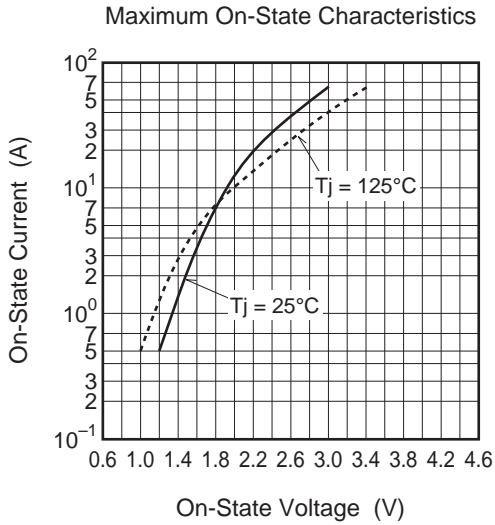
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ C/W$.

4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

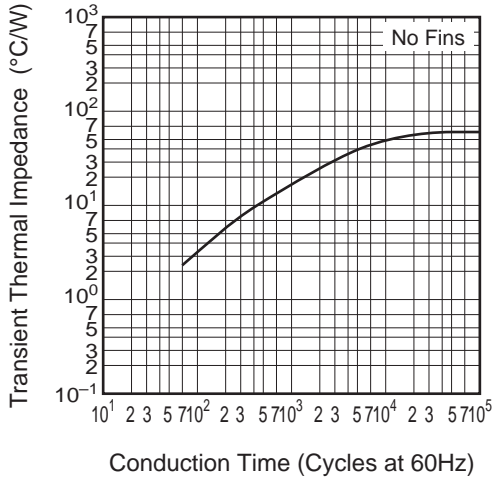
5. High sensitivity ($I_{GT} \leq 10 mA$) is also available. (I_{GT} item: 1)

Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ C$ 2. Rate of decay of on-state commutating current $(di/dt)_c = - 2.5 A/ms$ 3. Peak off-state voltage $V_D = 400 V$	

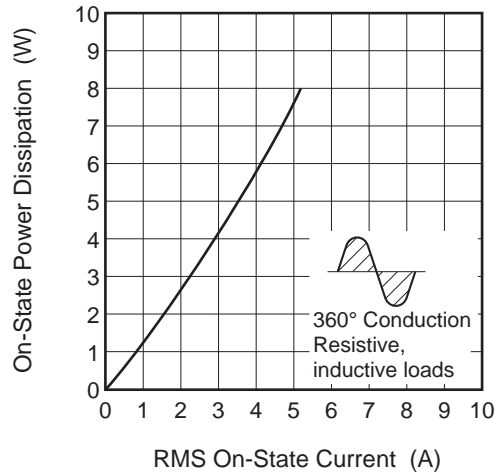
Performance Curves



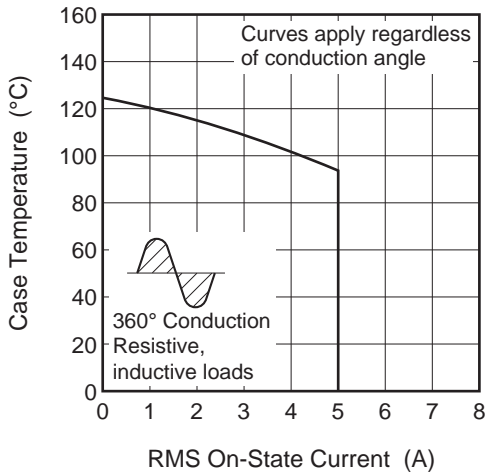
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



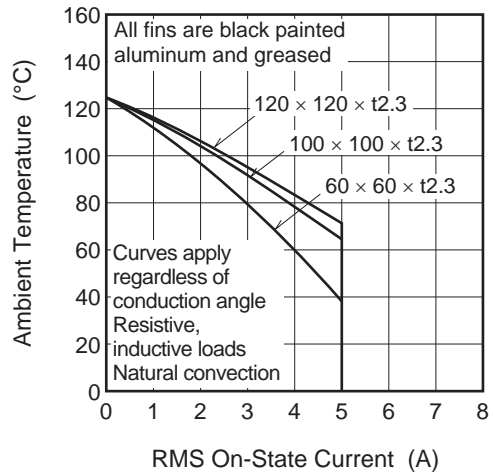
Maximum On-State Power Dissipation



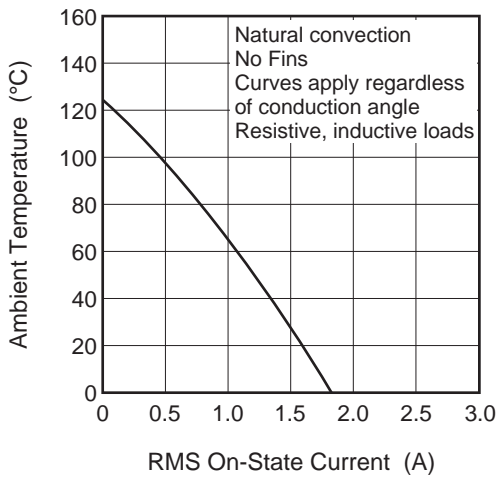
Allowable Case Temperature vs. RMS On-State Current



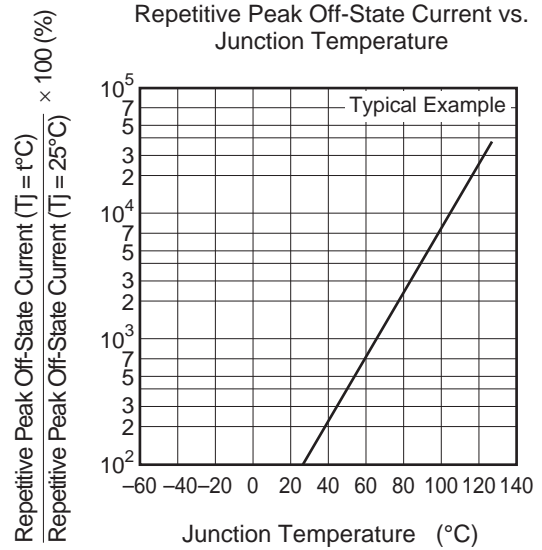
Allowable Ambient Temperature vs. RMS On-State Current



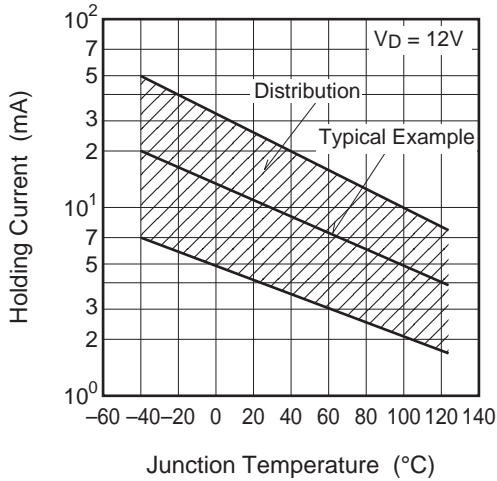
Allowable Ambient Temperature vs. RMS On-State Current



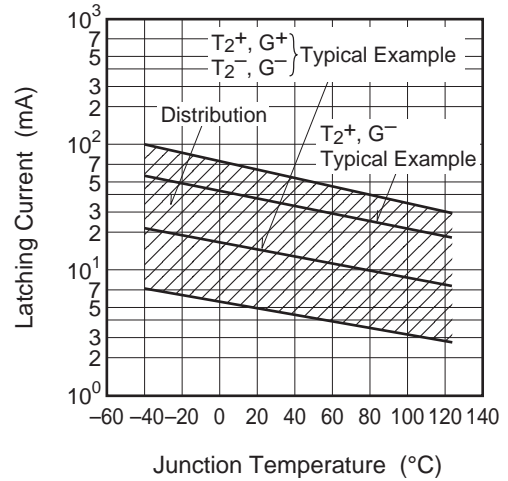
Repetitive Peak Off-State Current vs. Junction Temperature



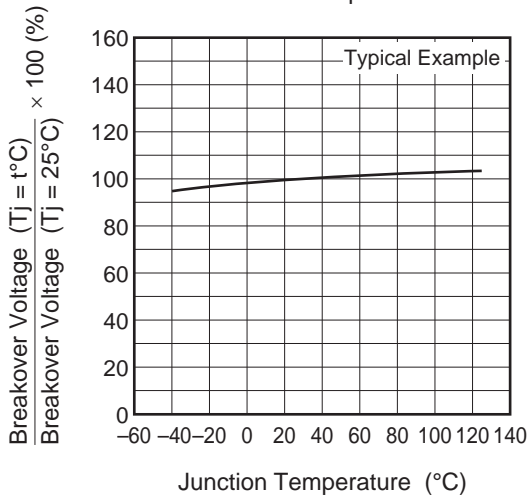
Holding Current vs. Junction Temperature



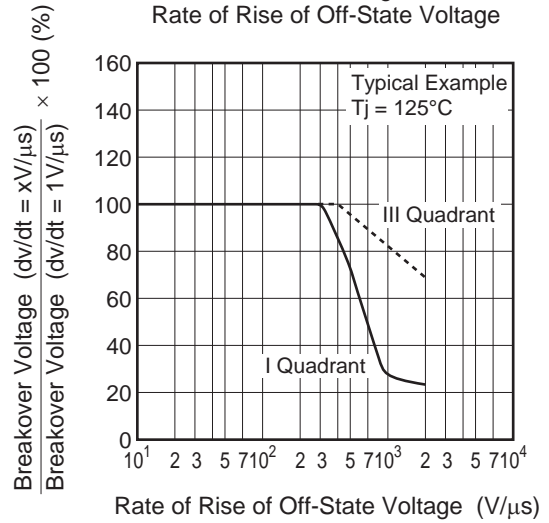
Latching Current vs. Junction Temperature



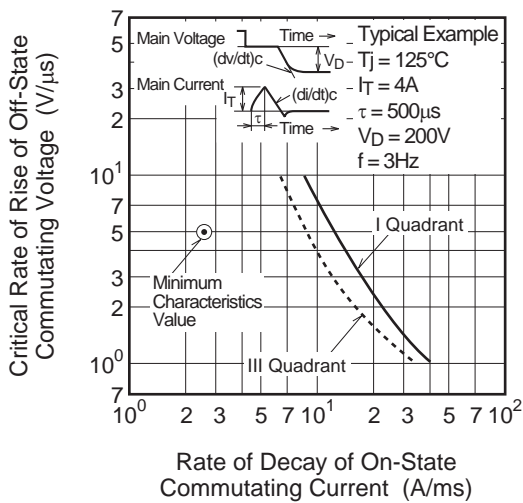
Breakover Voltage vs. Junction Temperature



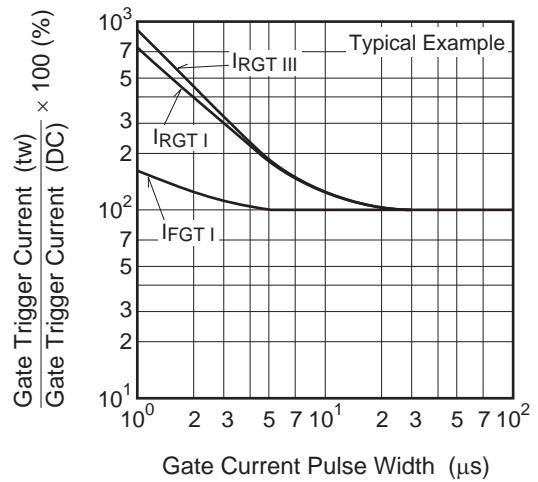
Breakover Voltage vs. Rate of Rise of Off-State Voltage



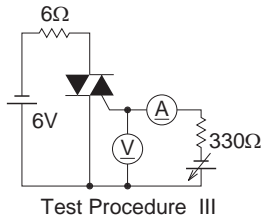
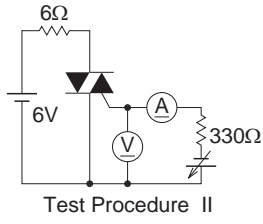
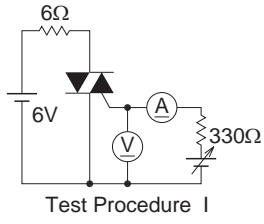
Commutation Characteristics



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 technical drawing illustrates the BCR5PM-12LA package in three views: top, side, and bottom. The top view shows a square body with a diameter of 10.5Max and a central hole with a diameter of 5.2. The side view shows a total height of 17, with a top section of 5.0 and a bottom section of 8.5. The bottom view shows a square base with a side length of 4.5. The drawing also indicates a lead diameter of $\phi 3.2 \pm 0.2$, a lead length of 1.3Max, and a lead thickness of 0.8. The lead pitch is 2.54, and the lead width is 0.5. The lead length from the base to the top of the lead is 2.6.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	BCR5PM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR5PM-12LA-A8

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

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1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
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Renesas Electronics Europe Limited
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Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
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Renesas Electronics (Shanghai) Co., Ltd.
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Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
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