

BCR16PM-12LA

Triac

Medium Power Use

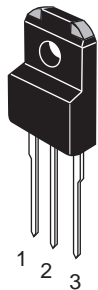
R07DS0110EJ0300
 (Previous: REJ03G0306-0200)
 Rev.3.00
 Sep 13, 2010

Features

- $I_{T(RMS)}$: 16 A
- V_{DRM} : 600 V
- I_{FGT} , I_{RGT} , $I_{RGT III}$: 30 mA (20 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

Contactless AC switch, light dimmer, electronic flasher unit, hair drier, control of household equipment such as TV sets, refrigerator, washing machine, electric fan, and other general controlling devices

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)	16	A	Commercial frequency, sine full wave 360° conduction, $T_c = 71^\circ\text{C}$
Surge on-state current	I_{TSM}	160	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	106.5	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	5.0	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 +125	$^\circ\text{C}$	
Storage temperature	T_{stg}	- 40 to +125	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value
Isolation voltage	Viso	2000	V	$T_a = 25^\circ\text{C}$, 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	$T_j = 125^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.5	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 25\text{ A}$, 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 ^{Note5}	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	30 ^{Note5}	
	III	I_{RGTIII}	—	—	30 ^{Note5}	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	3.0	$^\circ\text{C}/\text{W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutating voltage ^{Note4}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$

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

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

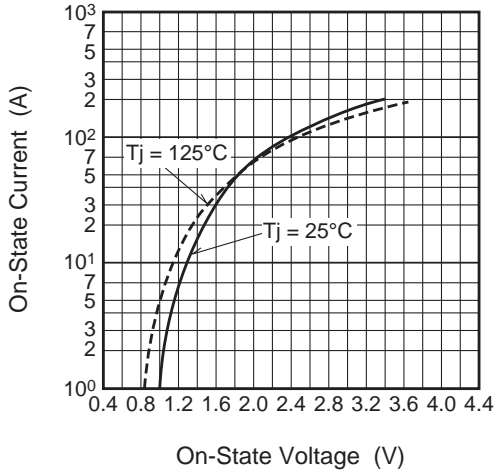
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

5. High sensitivity ($I_{GT} \leq 20\text{mA}$) is also available. (I_{GT} item: 1)

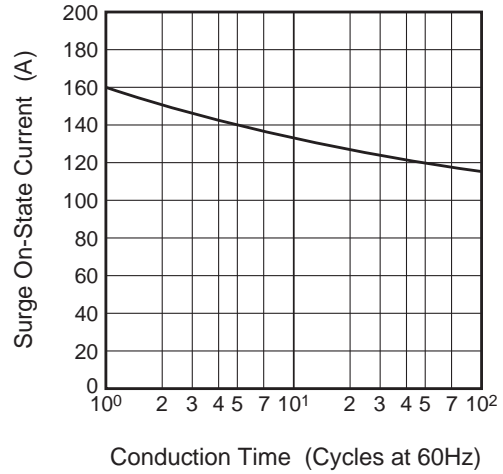
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -8.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

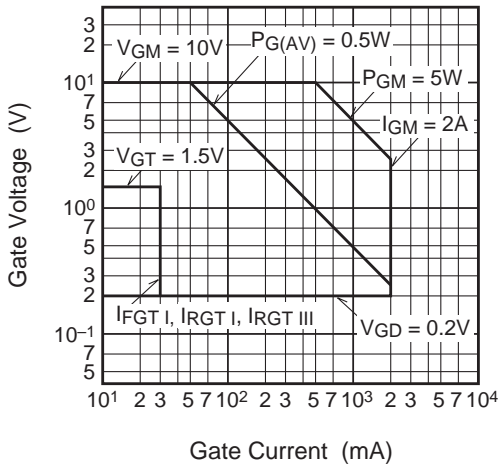
Maximum On-State Characteristics



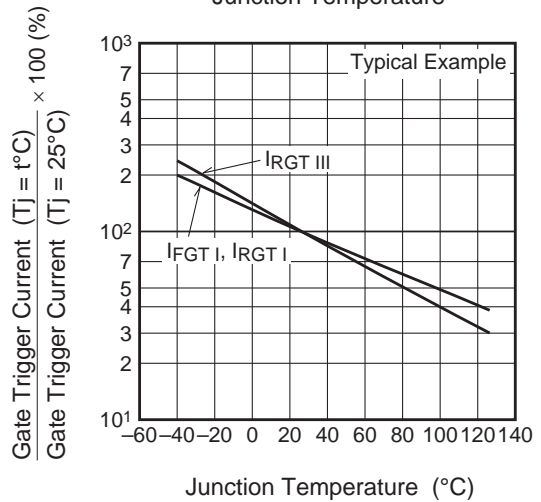
Rated Surge On-State Current



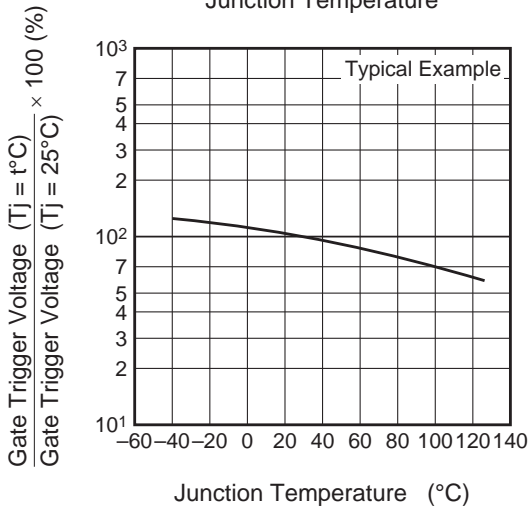
Gate Characteristics (I, II and III)



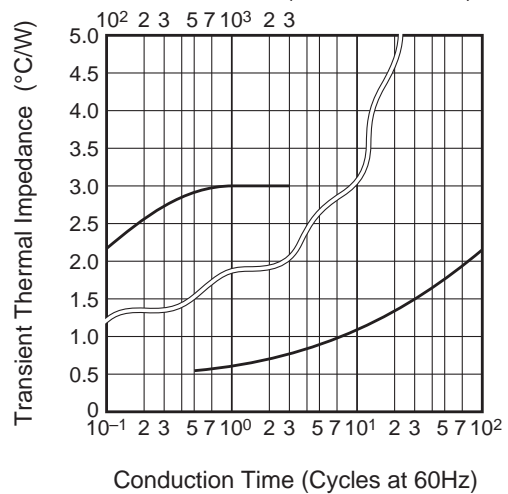
Gate Trigger Current vs. Junction Temperature

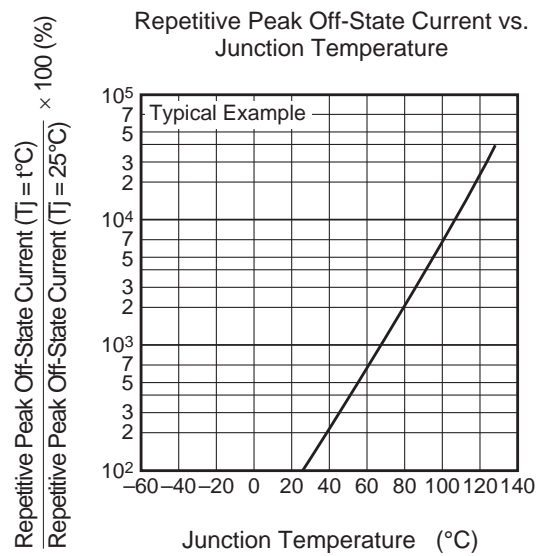
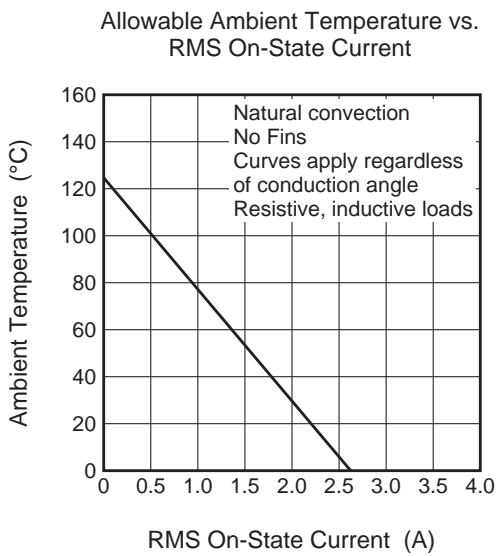
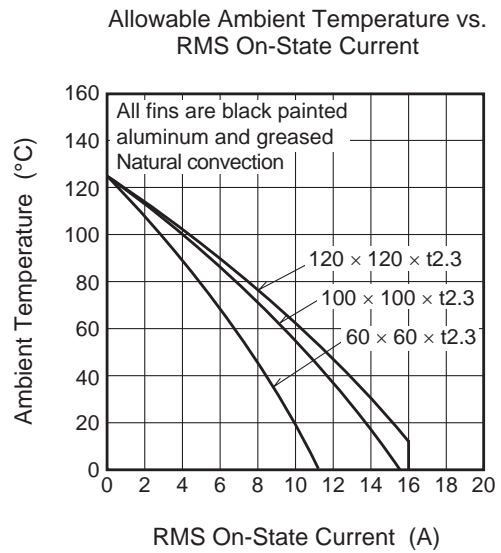
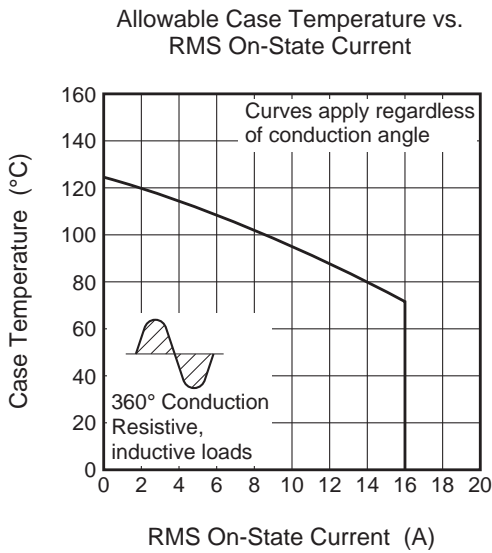
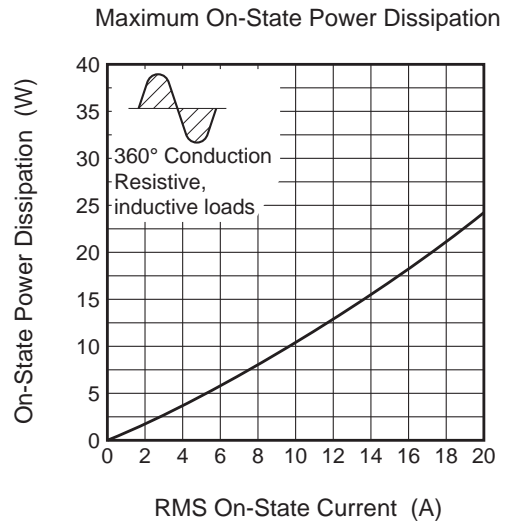
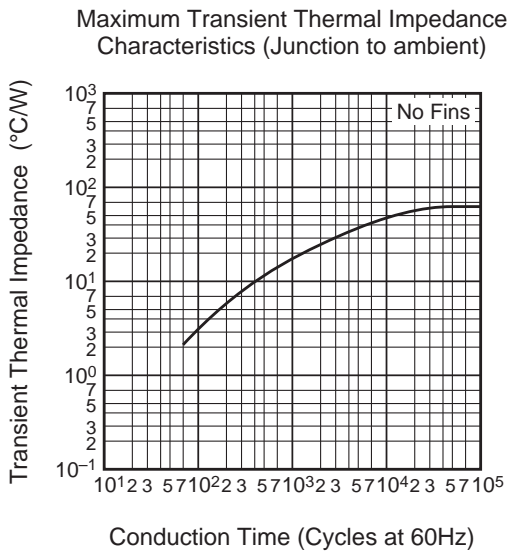


Gate Trigger Voltage vs. Junction Temperature

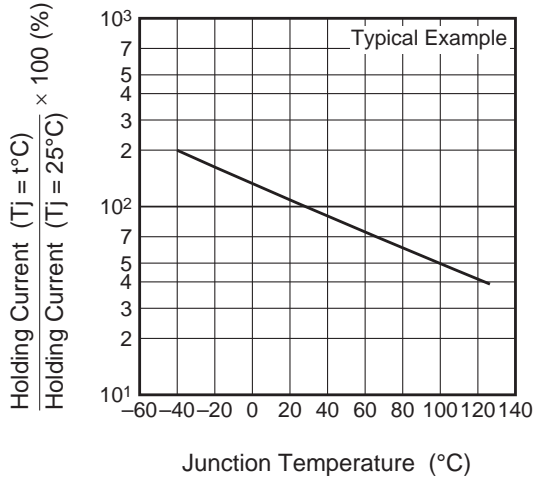


Maximum Transient Thermal Impedance Characteristics (Junction to case)

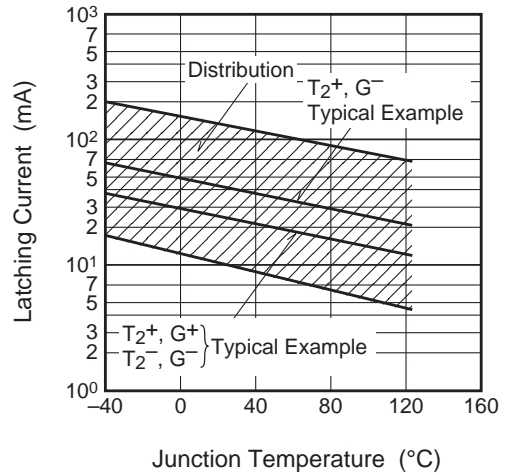




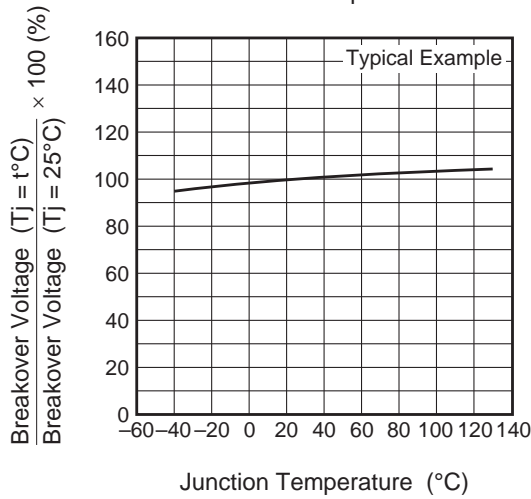
Holding Current vs. Junction Temperature



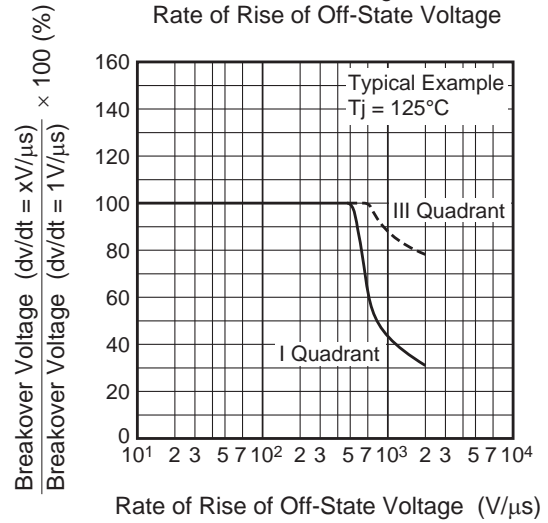
Latching Current vs. Junction Temperature



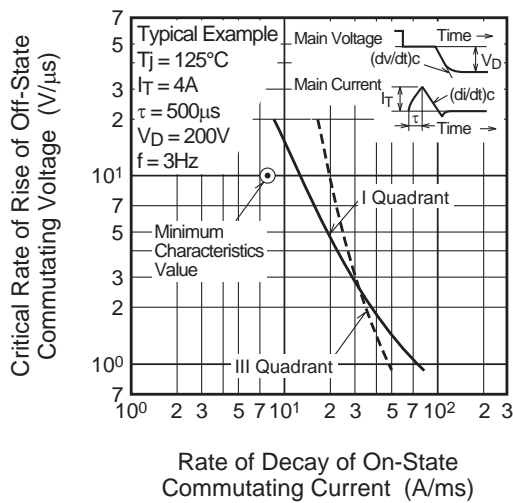
Breakover Voltage vs. Junction Temperature



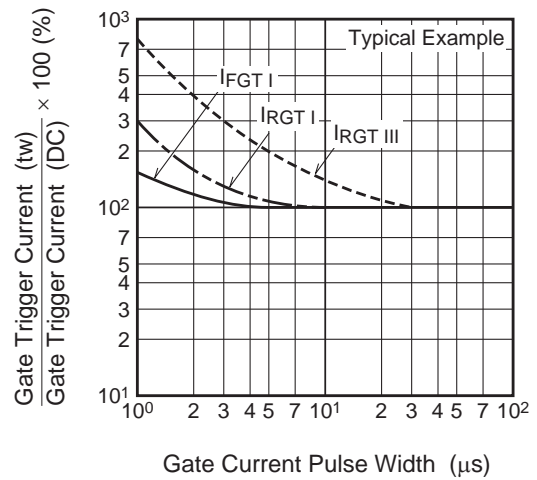
Breakover Voltage vs. Rate of Rise of Off-State Voltage



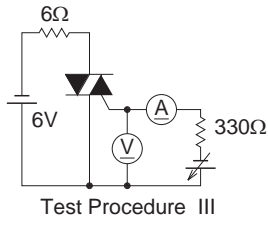
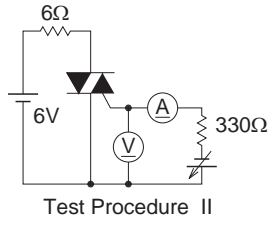
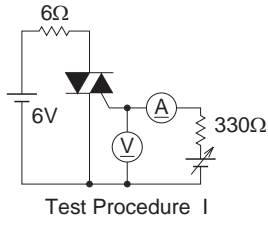
Commutation Characteristics



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 BCR16PM-12LA package in three views: top, side, and bottom. The top view shows a square body with a diameter of 10.5 mm (maximum) and a central hole with a diameter of 5.2 mm. The height of the body is 17 mm. The side view shows a total height of 13.5 mm (minimum) and a lead length of 2.6 mm. The bottom view shows a square footprint with a side length of 4.5 mm. Key dimensions include: 10.5Max (top width), 5.2 (top hole diameter), 1.2 (top thickness), 5.0 (top body height), 8.5 (top body height to lead start), 1.3Max (lead thickness), 0.8 (lead thickness), 2.54 (lead spacing), 13.5Min (total height), 3.6 (lead length), 2.54 (lead spacing), 0.5 (lead thickness), 2.6 (lead length), and 4.5 (bottom width). A hole diameter of $\phi 3.2 \pm 0.2$ is also indicated.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	BCR16PM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR16PM-12LA-A8

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

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