

BCR20AM-12LA

Triac

Medium Power Use

REJ03G0299-0300

Rev.3.00

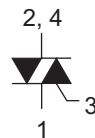
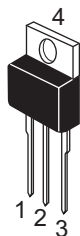
Nov 30, 2007

Features

- $I_{T(RMS)}$: 20 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , $I_{RGT III}$: 30 mA (20 mA)^{Note6}
- Non-Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PRSS0004AA-A
(Package name: TO-220)



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

Applications

Vacuum cleaner, electric heater, light dimmer, copying machine, and controller for other motor and heater

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	$I_{T(RMS)}$	20	A	Commercial frequency, sine full wave 360° conduction, $T_c = 109^{\circ}\text{C}$ ^{Note3}
Surge on-state current	I_{TSM}	200	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	167	A^2s	Value corresponding to 1 cycle of half wave 60Hz, 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 +125	$^{\circ}\text{C}$	
Storage temperature	T_{stg}	- 40 to +125	$^{\circ}\text{C}$	
Mass	—	2.0	g	Typical value

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	$T_c = 25^{\circ}\text{C}$, $I_{TM} = 30\text{ A}$, Instantaneous measurement
Gate trigger voltage ^{Note2}	I V_{FGTI}	—	—	1.5	V	$T_j = 25^{\circ}\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II V_{RGTI}	—	—	1.5	V	
	III V_{RGTIII}	—	—	1.5	V	
Gate trigger current ^{Note2}	I I_{FGTI}	—	—	30 ^{Note6}	mA	$T_j = 25^{\circ}\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II I_{RGTI}	—	—	30 ^{Note6}	mA	
	III I_{RGTIII}	—	—	30 ^{Note6}	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^{\circ}\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	0.8	$^{\circ}\text{C/W}$	Junction to case ^{Note3 Note4}
Critical-rate of rise of off-state commutating voltage ^{Note5}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}$

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

3. Case temperature is measured at the T_2 tab 1.5 mm away from the molded case.

4. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 1.0°C/W .

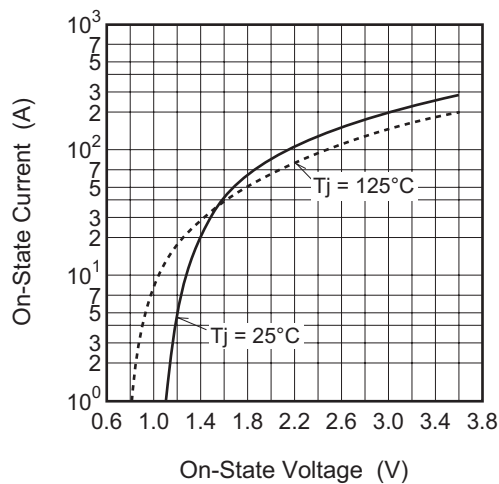
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

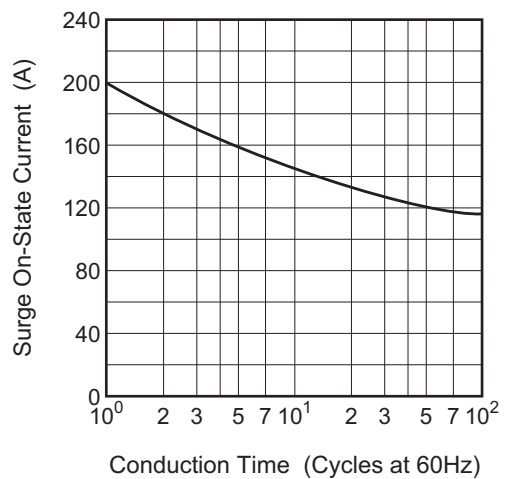
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^{\circ}\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -10\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

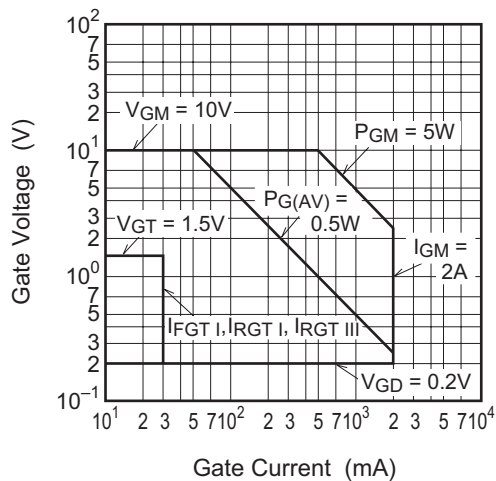
Maximum On-State Characteristics



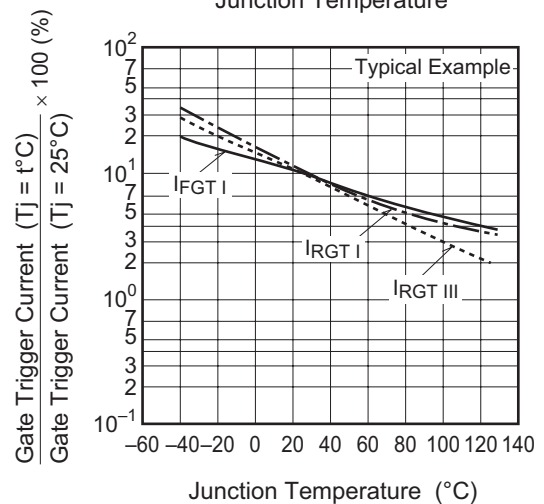
Rated Surge On-State Current



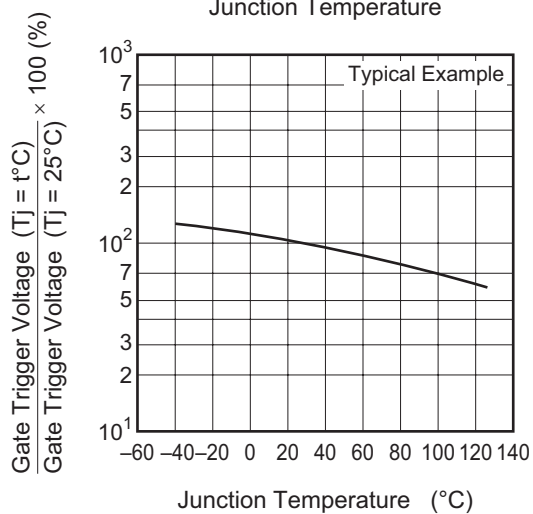
Gate Characteristics (I, II and III)



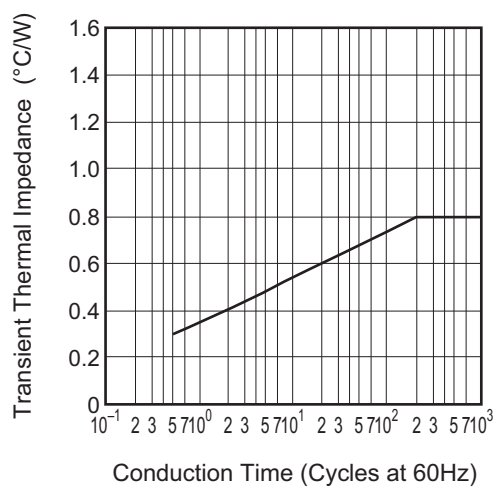
Gate Trigger Current vs. Junction Temperature

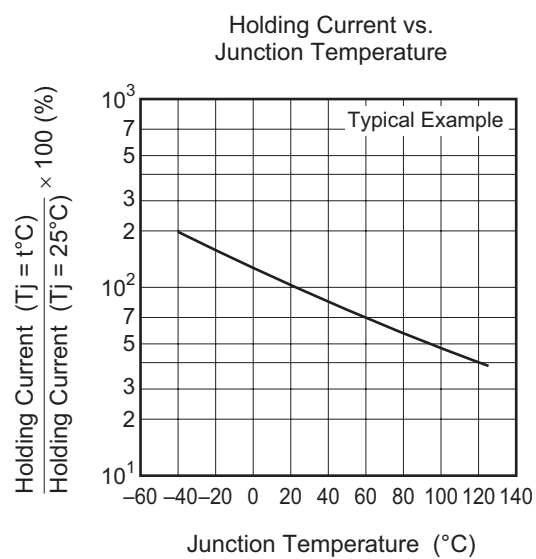
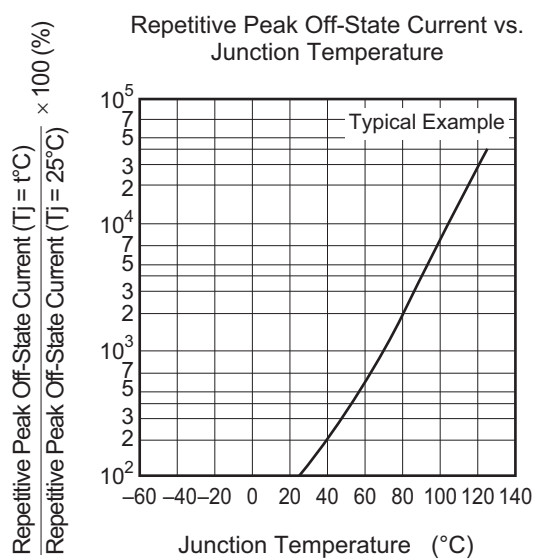
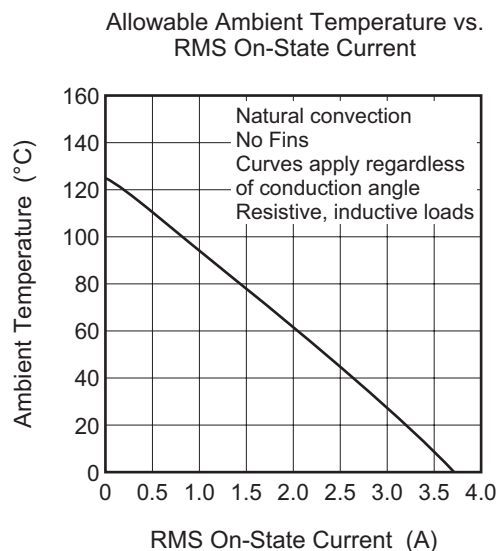
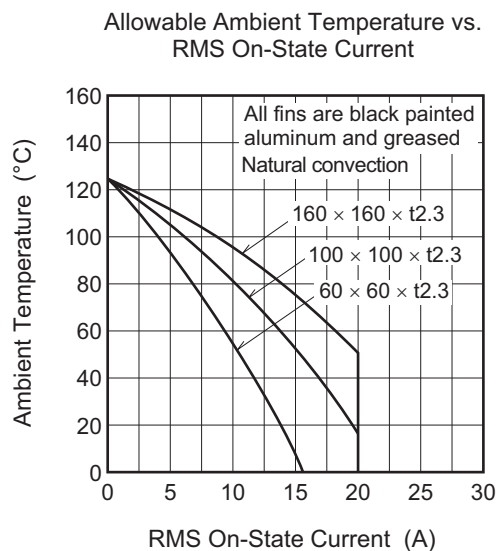
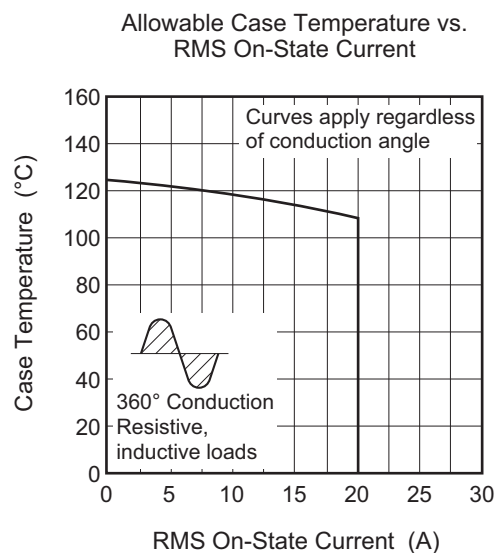
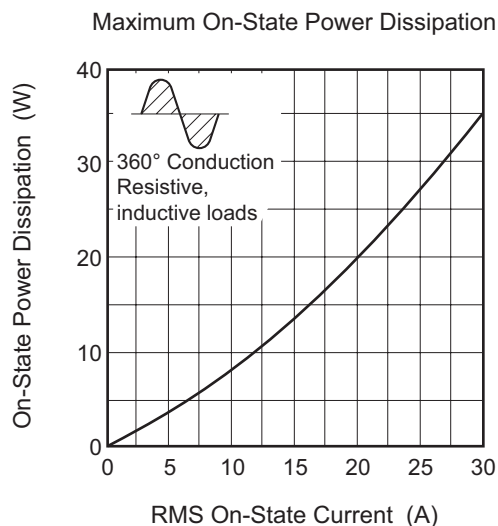


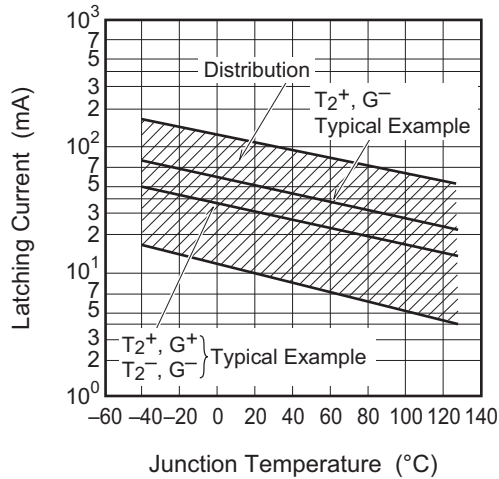
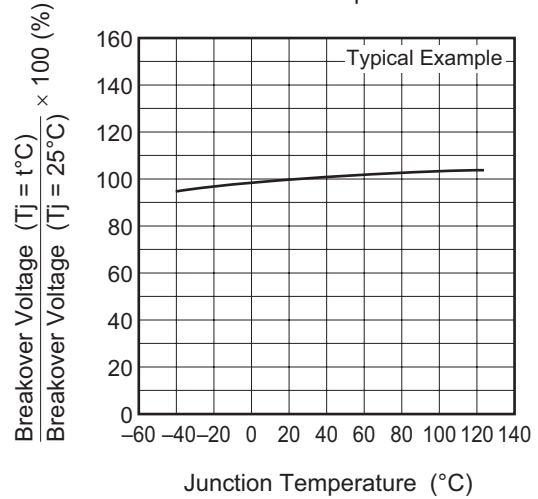
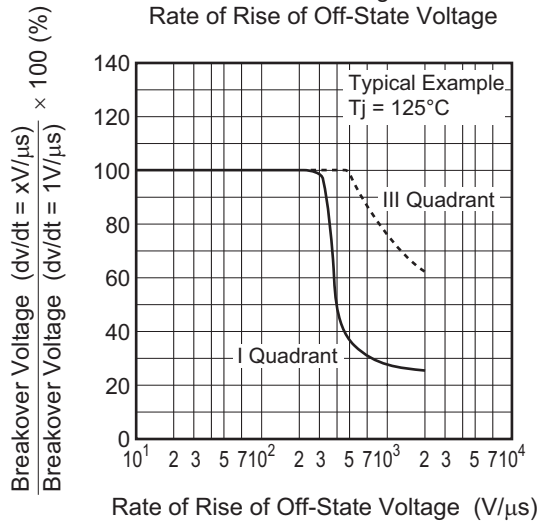
Gate Trigger Voltage vs. Junction Temperature



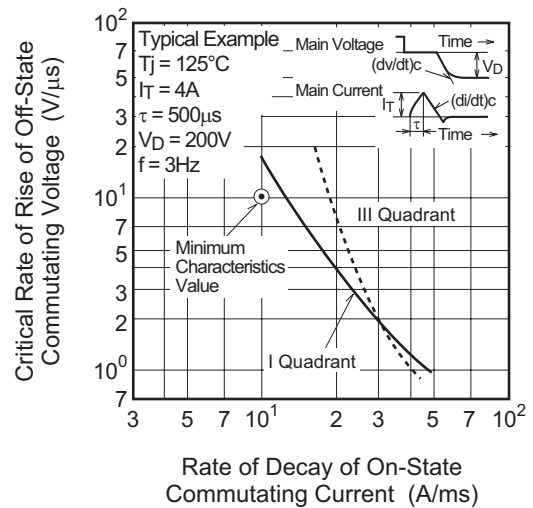
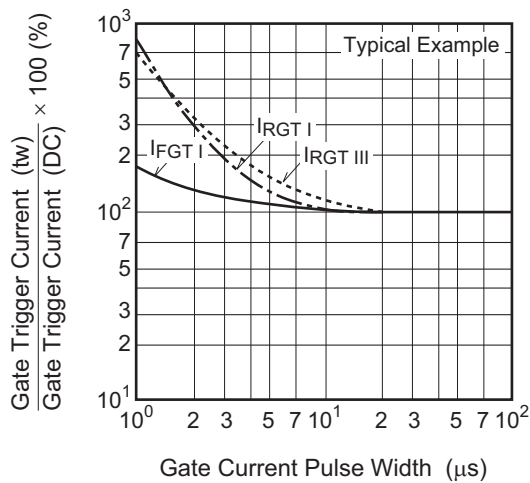
Maximum Transient Thermal Impedance Characteristics (Junction to case)



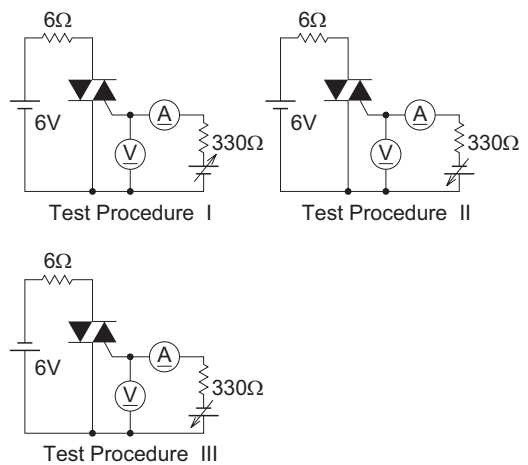


Latching Current vs.
Junction TemperatureBreakover Voltage vs.
Junction TemperatureBreakover Voltage vs.
Rate of Rise of Off-State Voltage

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.]	Unit: mm
TO-220	SC-46	PRSS0004AA-A	—	2.0g	

The drawing shows the mechanical specifications of the BCR20AM-12LA package. The top view shows a rectangular body with a width of 10.5Max mm and a height of 16Max mm. A circular feature with a diameter of $\phi 3.6$ mm is located on the top surface. The side view shows a total height of 12.5Min mm, with a lead height of 3.8Max mm. The lead width is 0.8 mm, and the lead pitch is 2.54 mm. The bottom view shows a width of 2.54 mm and a height of 4.5Max mm. The lead form is shown in a separate view with a width of 0.5 mm and a height of 2.6 mm.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	BCR20AM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR20AM-12LA-A8

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

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Renesas Technology Malaysia Sdn. Bhd
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April 1st, 2010
Renesas Electronics Corporation

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