

# BCR8CM-12LA

## Triac

Medium Power Use

REJ03G0295-0300

Rev.3.00

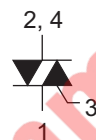
Nov 30, 2007

### Features

- $I_{T(RMS)}$  : 8 A
- $V_{DRM}$  : 600 V
- $I_{FGTI}$ ,  $I_{RGTI}$ ,  $I_{RGT III}$  : 30 mA (20 mA)<sup>Note6</sup>
- Non-Insulated Type
- Planar Passivation Type

### Outline

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



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

### Applications

Contactless AC switch, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, refrigerator, washing machine, infrared kotatsu, carpet, electric fan, and solenoid driver, small motor control, copying machine, electric tool, electric heater control, and other general purpose control applications

### Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	600	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	720	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T$ (RMS)	8	A	Commercial frequency, sine full wave 360° conduction, $T_c = 105^\circ\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	80	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	26	$\text{A}^2\text{s}$	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	$T_c = 25^\circ\text{C}$ , $I_{TM} = 12\text{ A}$ , Instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	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 <sup>Note2</sup>	I	$I_{FGTI}$	—	30 <sup>Note6</sup>	mA	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{RGTI}$	—	30 <sup>Note6</sup>	mA	
	III	$I_{RGTIII}$	—	30 <sup>Note6</sup>	mA	
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	2.0	$^\circ\text{C/W}$	Junction to case <sup>Note3 Note4</sup>
Critical-rate of rise of off-state commutating voltage <sup>Note5</sup>	$(dv/dt)_c$	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  $1.0^\circ\text{C/W}$ .

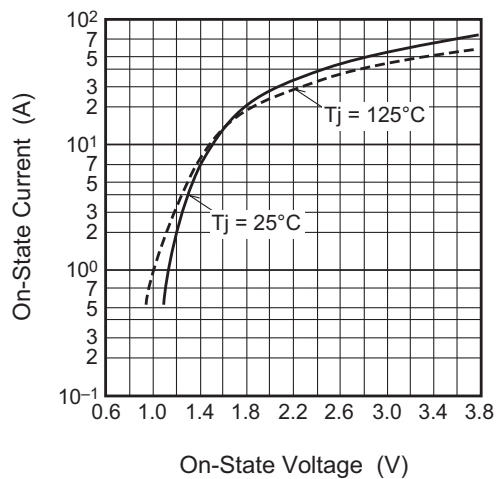
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

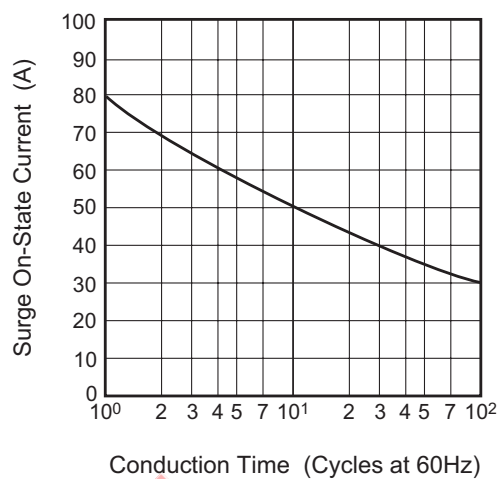
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -4.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

## Performance Curves

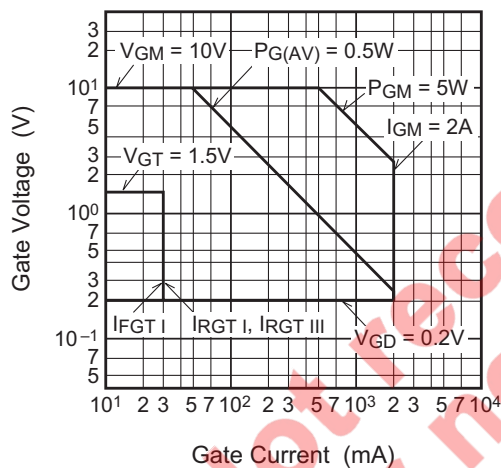
Maximum On-State Characteristics



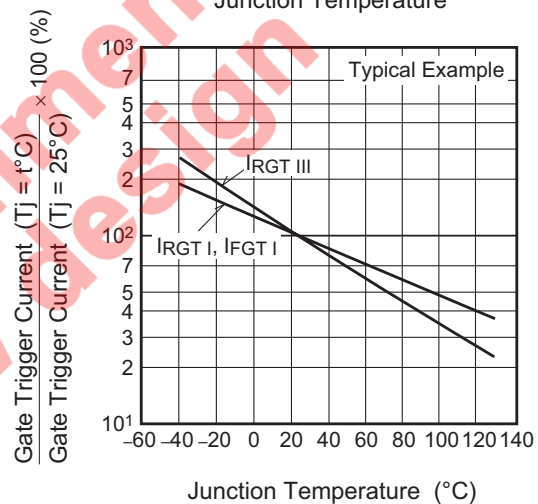
Rated Surge On-State Current



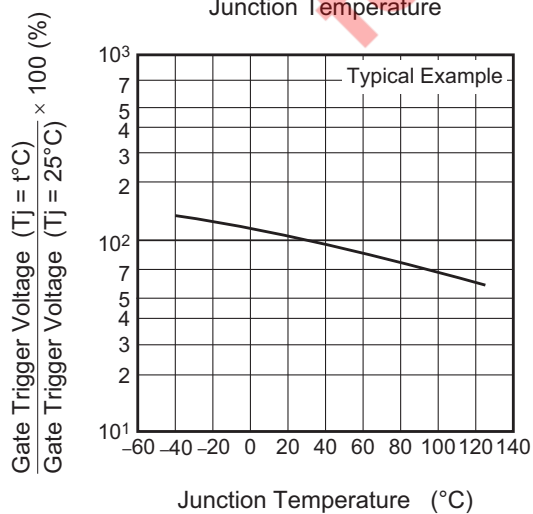
Gate Characteristics (I, II and III)



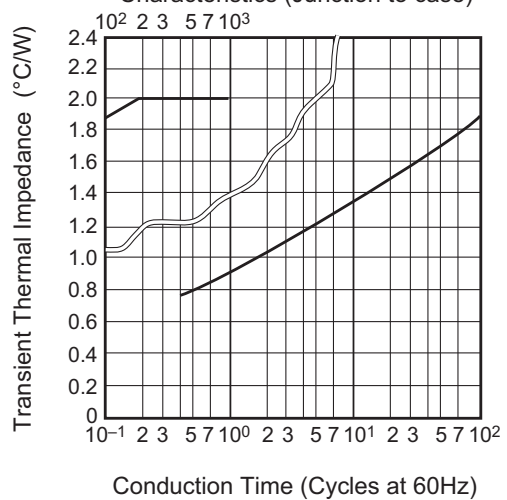
Gate Trigger Current vs. Junction Temperature

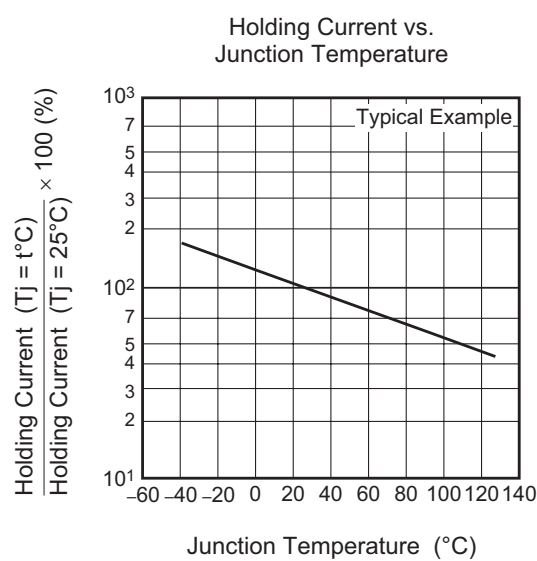
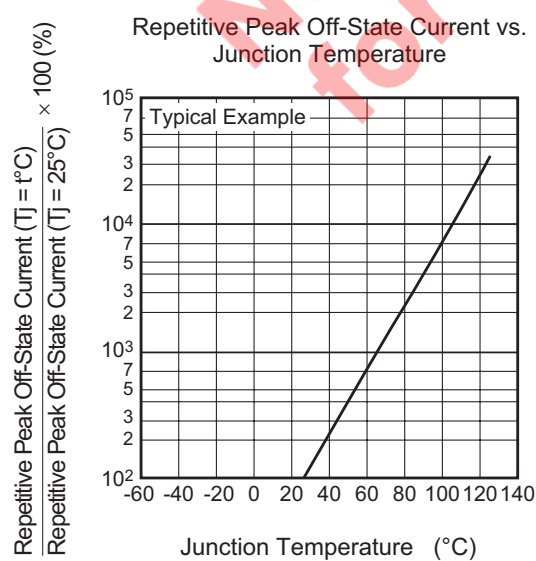
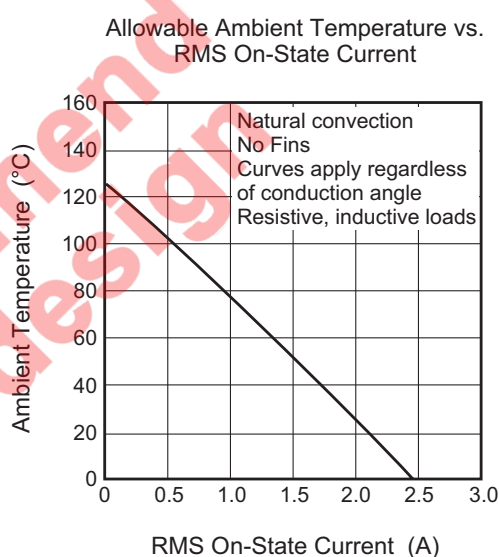
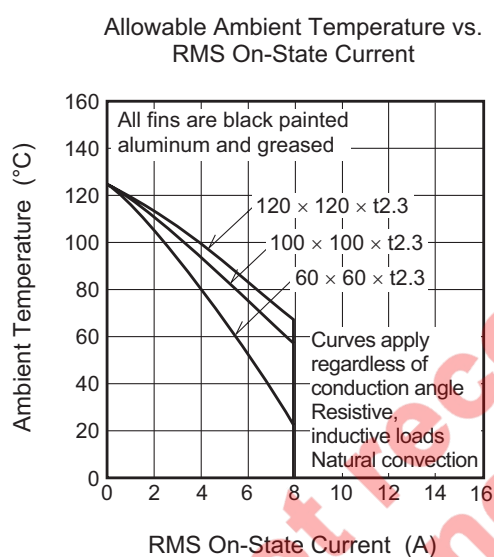
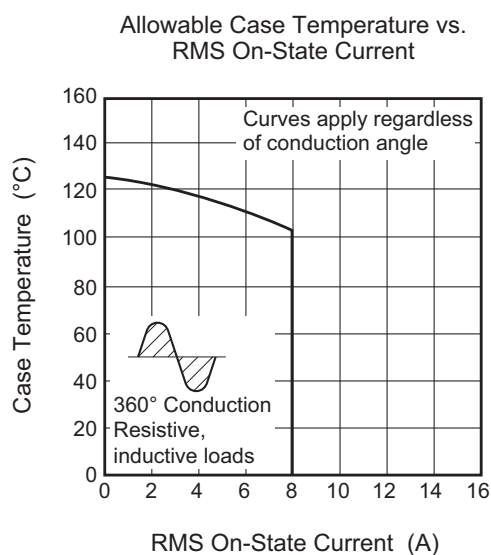
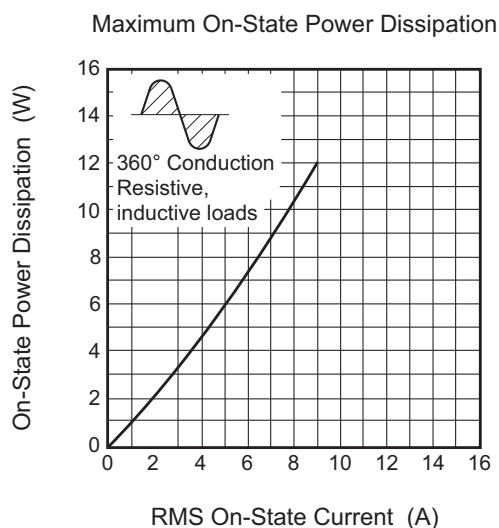


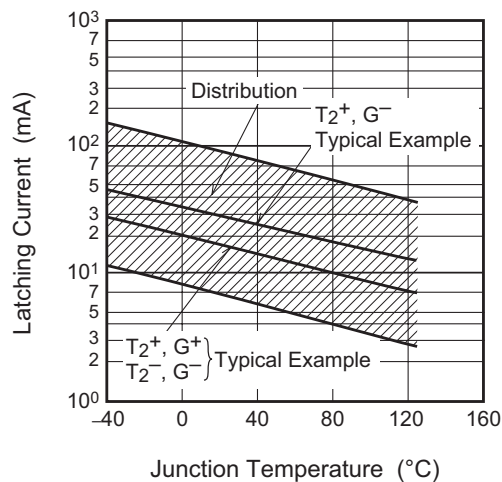
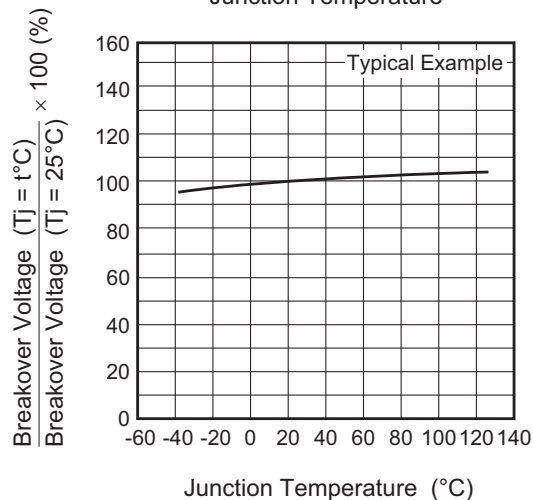
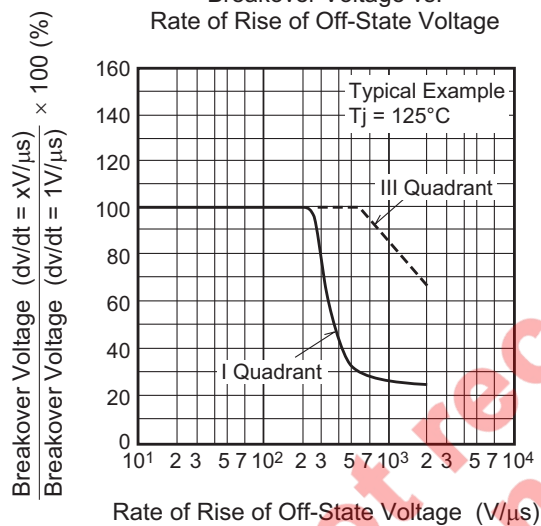
Gate Trigger Voltage vs. Junction Temperature



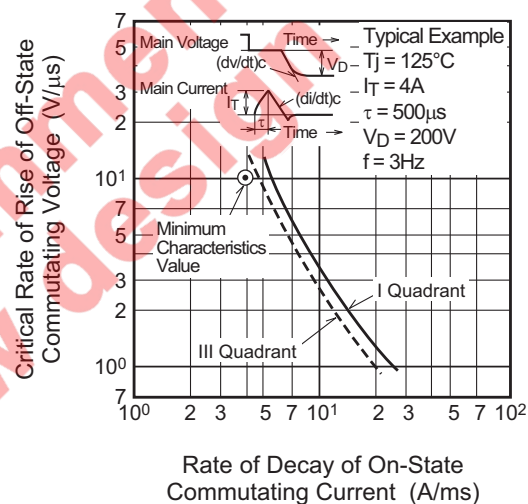
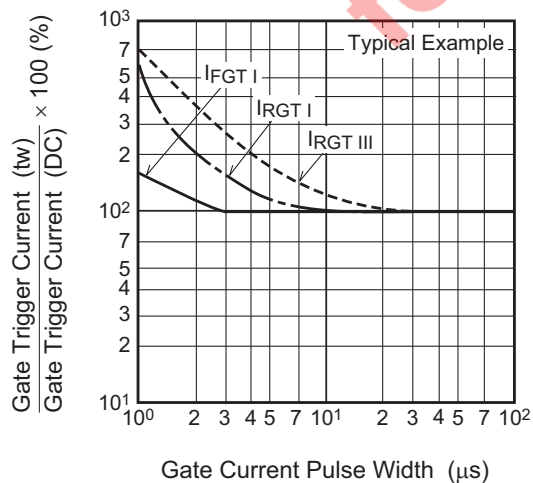
Maximum Transient Thermal Impedance Characteristics (Junction to case)



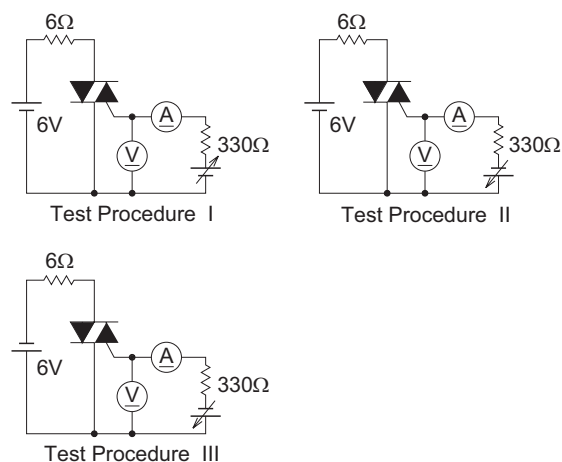


Latching Current vs.  
Junction TemperatureBreakover Voltage vs.  
Junction TemperatureBreakover Voltage vs.  
Rate of Rise of Off-State Voltage

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 technical drawing illustrates the dimensions of the BCR8CM-12LA TO-220 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 length of 3.8Max mm. The lead thickness is 0.8 mm, and the lead width at the base is 2.54 mm. The bottom view shows a rectangular base with a width of 2.54 mm and a height of 4.5Max mm. A side view of the lead shows a thickness of 0.5 mm and a width of 2.6 mm. A detail view of the lead shows a thickness of 1.3 mm and a width of 4.5 mm.

## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	BCR8CM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR8CM-12LA-A8

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

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