

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# BCR8CS-12LA

Triac

Medium Power Use

REJ03G0338-0300

Rev.3.00

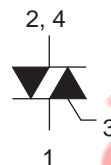
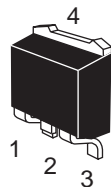
Nov 30, 2007

## 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: PRSS0004AB-A  
(Package name: TO-220S)



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

## Applications

Solid state relay, hybrid IC

## 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	—	1.2	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 on the  $T_2$  tab.

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

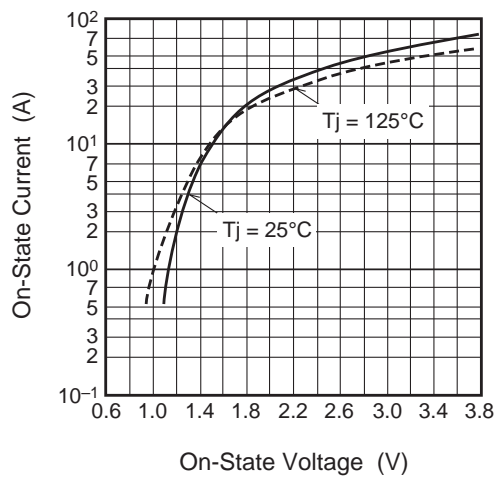
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

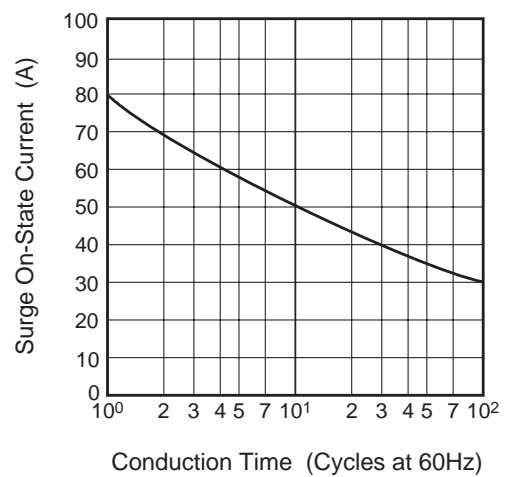
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -4.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

## Performance Curves

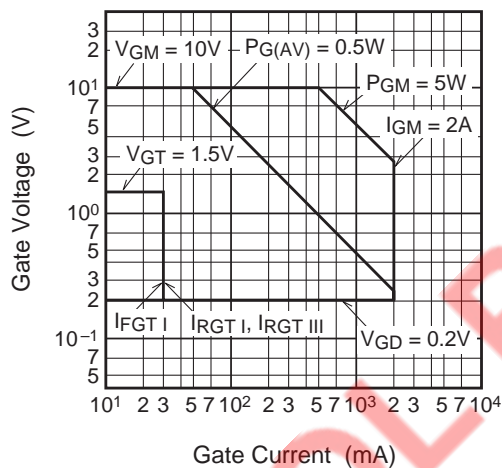
Maximum On-State Characteristics



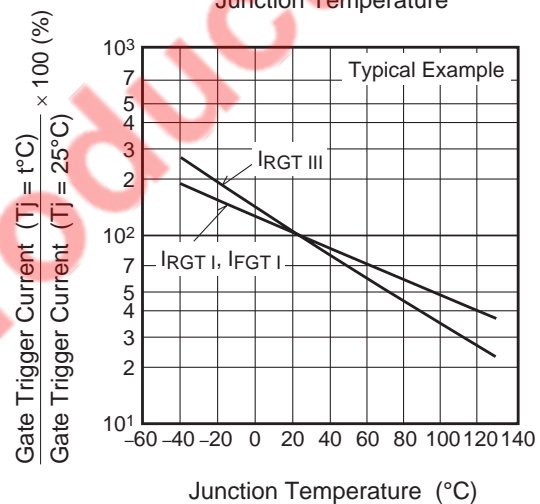
Rated Surge On-State Current



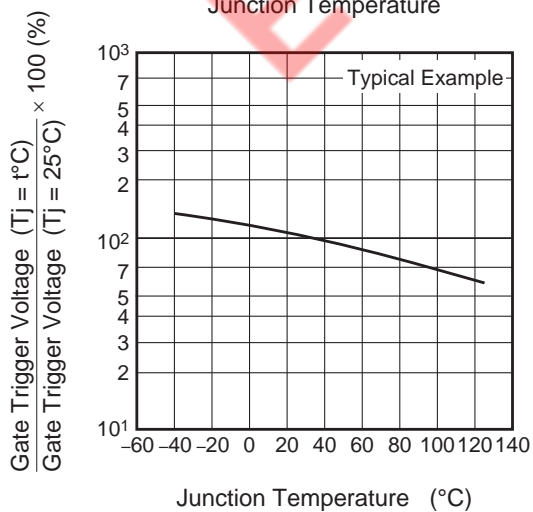
Gate Characteristics (I, II and III)



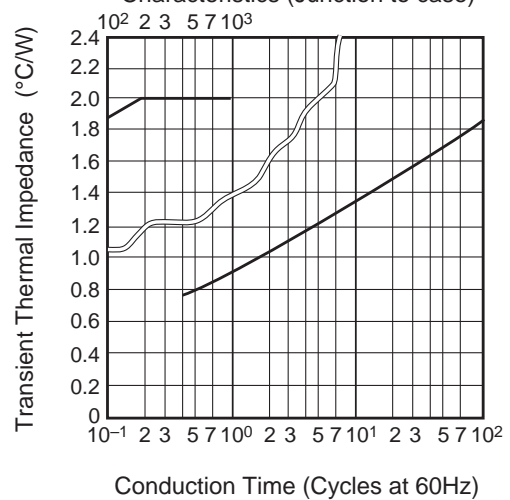
Gate Trigger Current vs. Junction Temperature

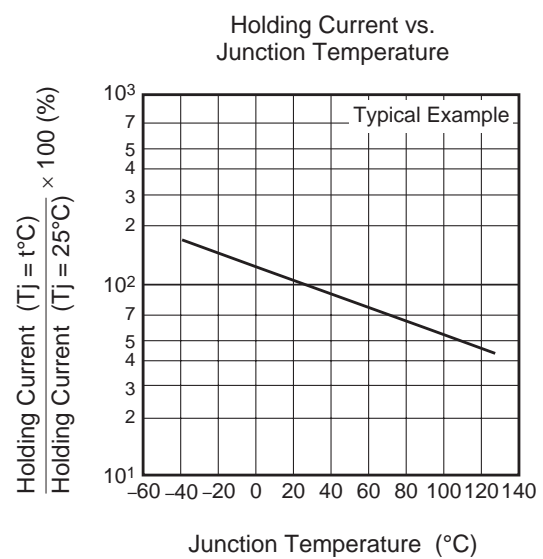
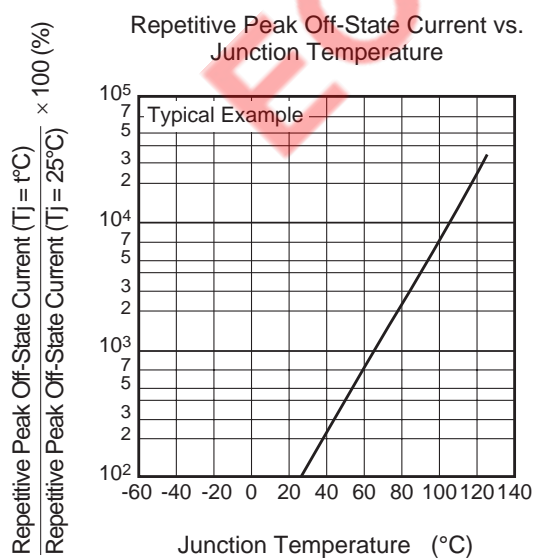
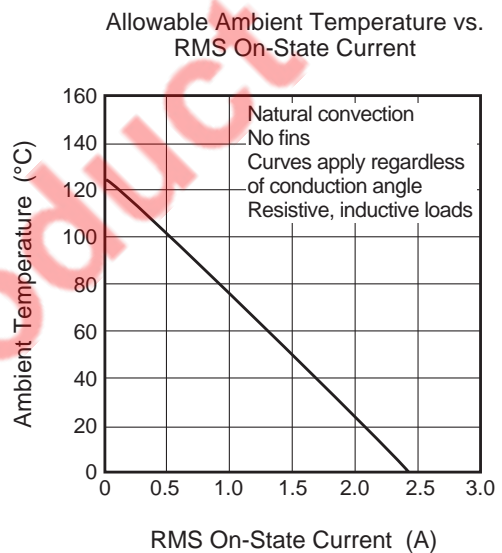
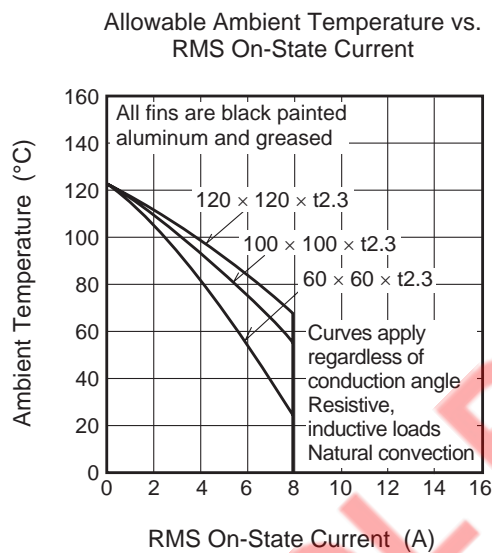
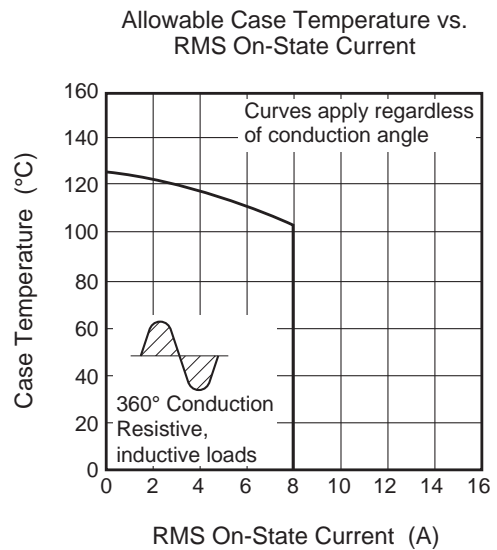
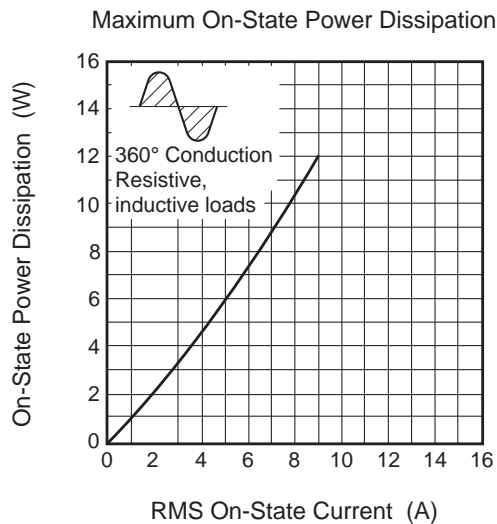


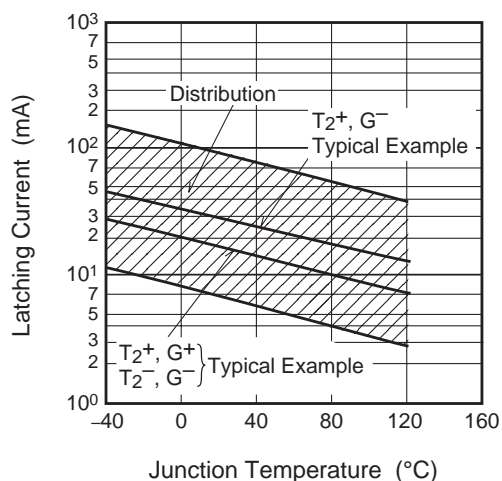
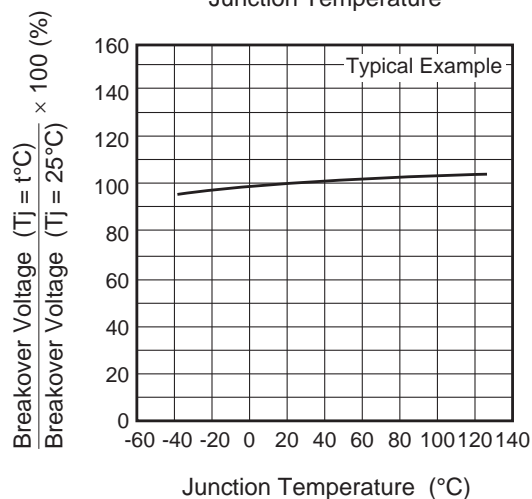
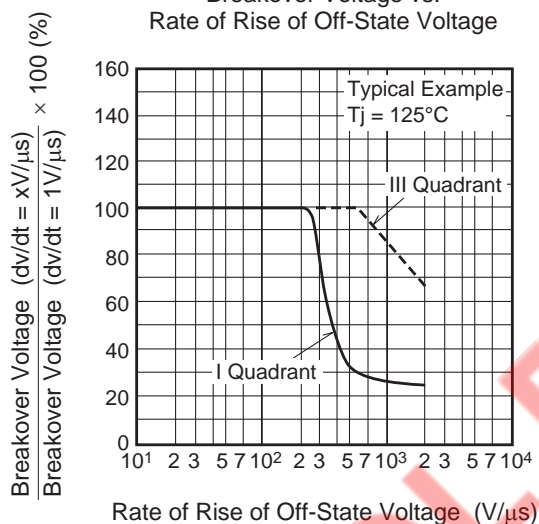
Gate Trigger Voltage vs. Junction Temperature



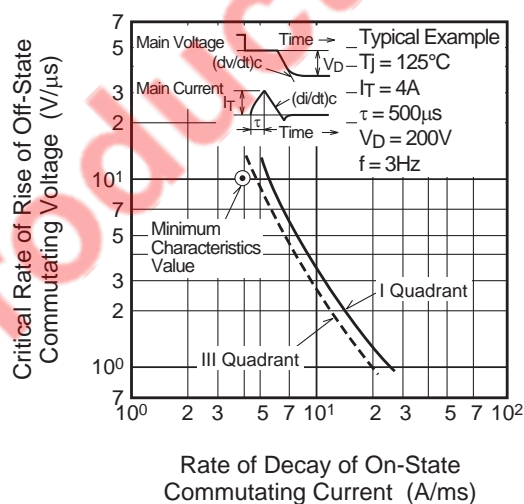
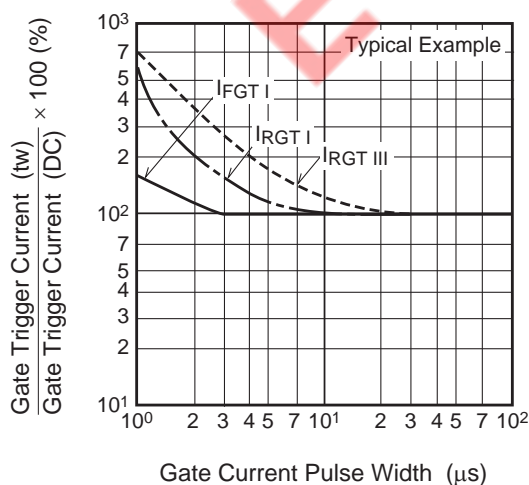
Maximum Transient Thermal Impedance Characteristics (Junction to case)



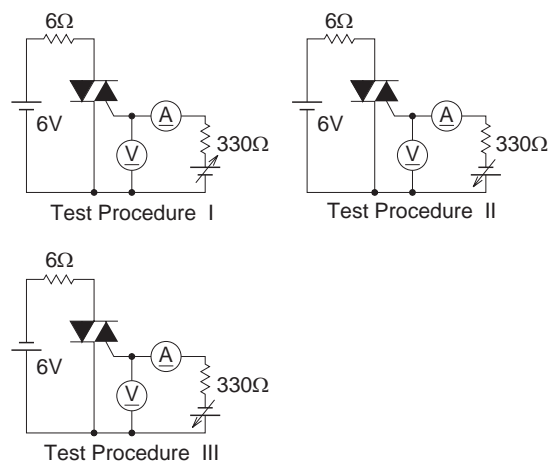


Latching Current vs.  
Junction TemperatureBreakover Voltage vs.  
Junction TemperatureBreakover Voltage vs.  
Rate of Rise of Off-State Voltage

Commutation Characteristics

Gate Trigger Current vs.  
Gate Current Pulse Width

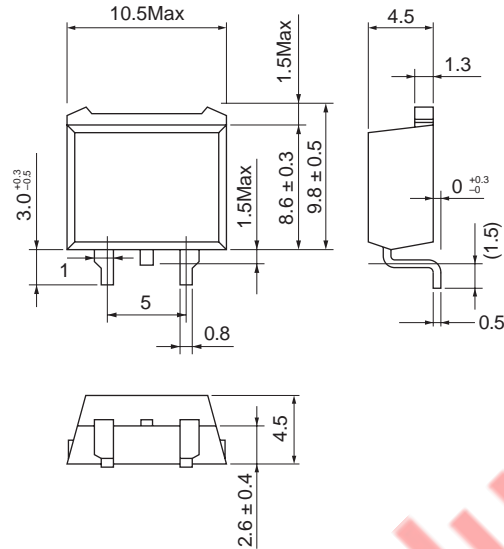
Gate Trigger Characteristics Test Circuits



## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220S	SC-83	PRSS0004AB-A	TO-220S	1.2g

Unit: mm



## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	1000	Type name – T +Direction (1 or 2) +1	BCR8CS-12LA-T11
Surface-mounted type	Plastic Magazine (Tube)	50	Type name	BCR8CS-12LA

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



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