

# BCR8CS-12LB

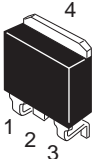

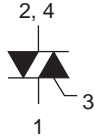
Triac  
Medium Power Use

R07DS0223EJ0400  
(Previous: REJ03G0468-0300)  
Rev.4.00  
Dec 14, 2010

## Features

- $I_{T(RMS)}$  : 8 A
- $V_{DRM}$  : 600 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGT III}$  : 30 mA (20 mA)<sup>Note6</sup>
- The product guaranteed maximum junction temperature of 150°C
- Non-Insulated Type
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0004AE-B (Package name: LDK(S)-(1) )	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, $T_c = 130^\circ\text{C}$ <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	A <sup>2</sup> 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 +150	°C	
Storage temperature	$T_{stg}$	- 40 to +150	°C	
Mass	—	1.3	g	Typical value

Notes: 1. Gate open.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	$I_{\text{DRM}}$	—	—	2.0	mA	$T_j = 150^\circ\text{C}$ , $V_{\text{DRM}}$ applied
On-state voltage	$V_{\text{TM}}$	—	—	1.5	V	$T_c = 25^\circ\text{C}$ , $I_{\text{TM}} = 12\text{ A}$ , Instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	$V_{\text{FGTI}}$	—	—	1.5	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{\text{RGTI}}$	—	—	1.5	
	III	$V_{\text{RGTIII}}$	—	—	1.5	
Gate trigger current <sup>Note2</sup>	I	$I_{\text{FGTI}}$	—	—	$30^{\text{Note6}}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{\text{RGTI}}$	—	—	$30^{\text{Note6}}$	
	III	$I_{\text{RGTIII}}$	—	—	$30^{\text{Note6}}$	
Gate non-trigger voltage	$V_{\text{GD}}$	0.2/0.1	—	—	V	$T_j = 125^\circ\text{C}/150^\circ\text{C}$ , $V_D = 1/2 V_{\text{DRM}}$
Thermal resistance	$R_{\text{th (j-c)}}$	—	—	2.0	$^\circ\text{C}/\text{W}$	Junction to case <sup>Note3 Note4</sup>
Critical-rate of rise of off-state commutating voltage <sup>Note5</sup>	$(dv/dt)_c$	10/1	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}/150^\circ\text{C}$

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

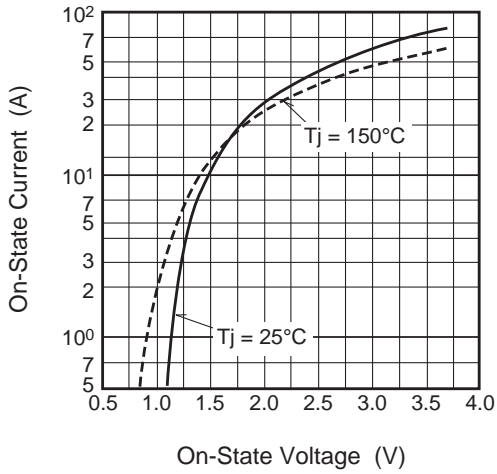
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

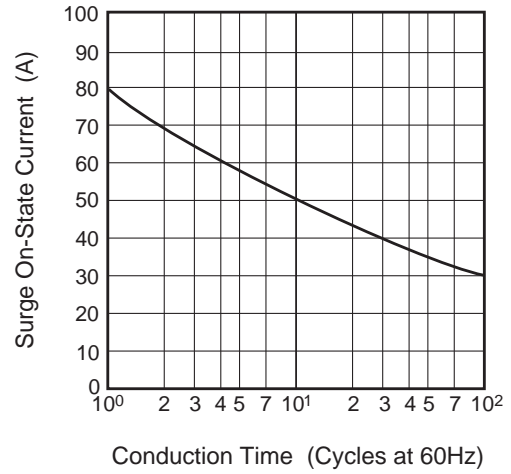
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -4.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

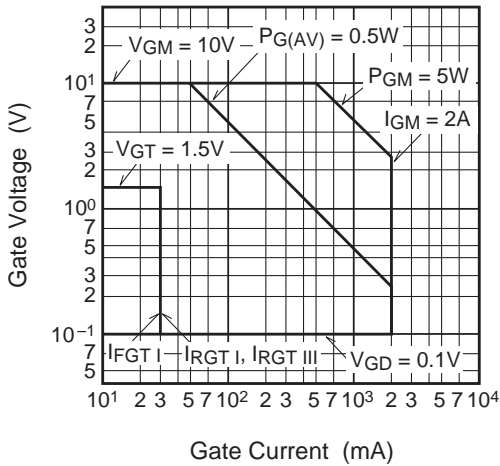
Maximum On-State Characteristics



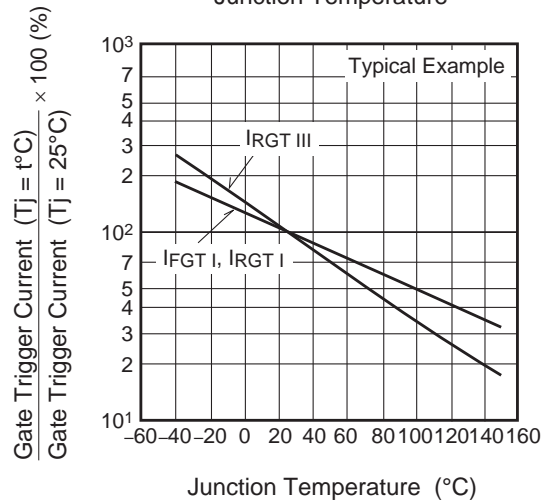
Rated Surge On-State Current



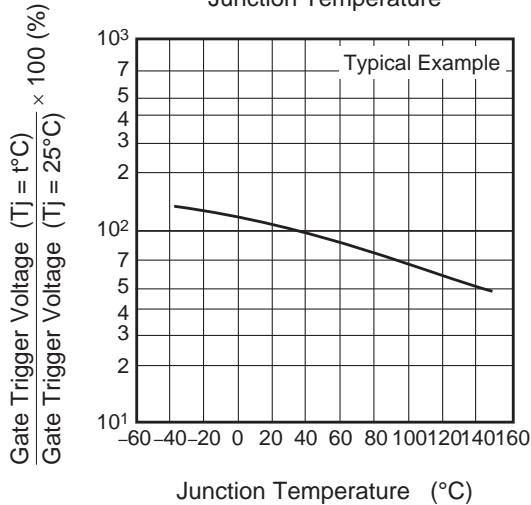
Gate Characteristics (I, II and III)



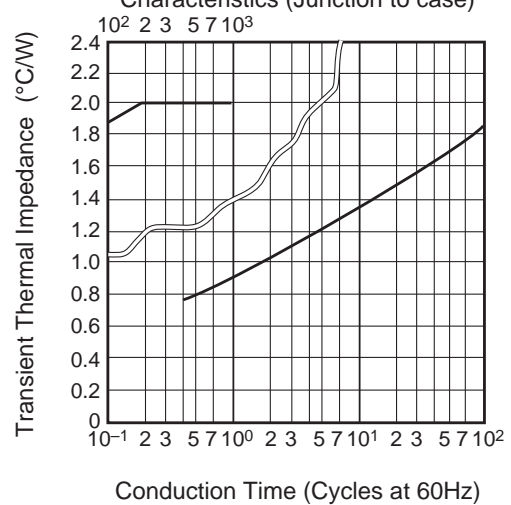
Gate Trigger Current vs. Junction Temperature



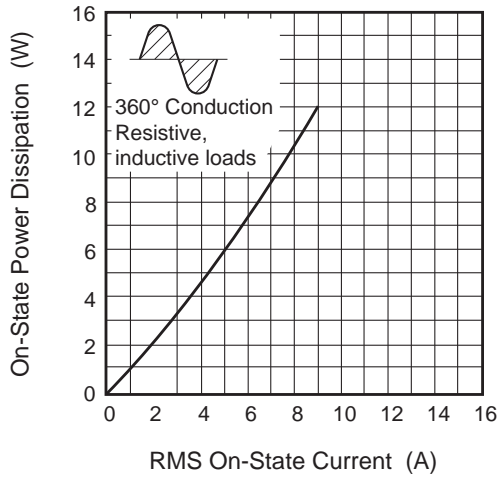
Gate Trigger Voltage vs. Junction Temperature



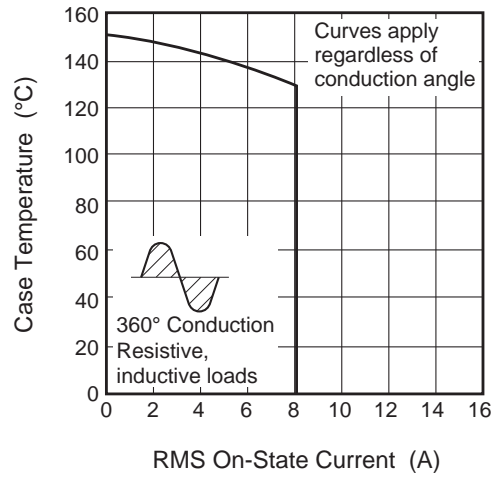
Maximum Transient Thermal Impedance Characteristics (Junction to case)



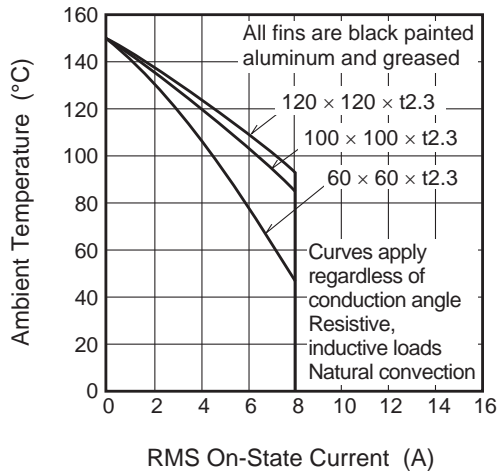
Maximum On-State Power Dissipation



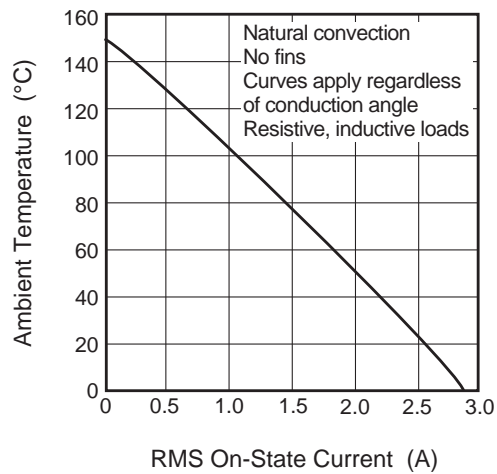
Allowable Case Temperature vs. RMS On-State Current



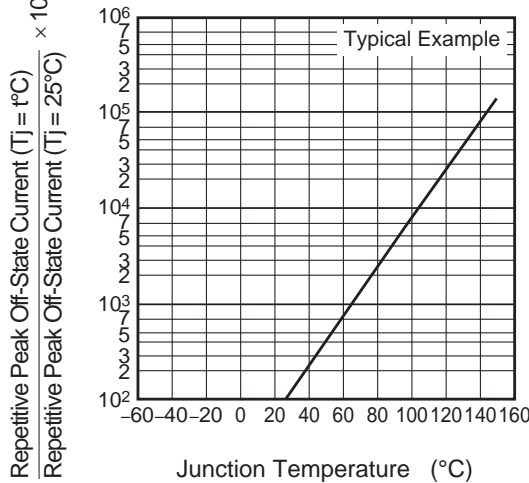
Allowable Ambient Temperature vs. RMS On-State Current



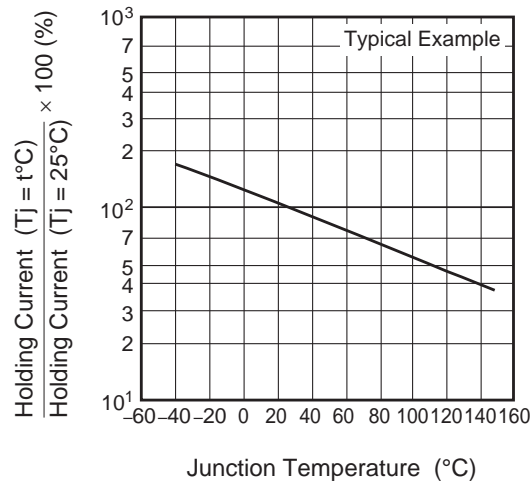
Allowable Ambient Temperature vs. RMS On-State Current



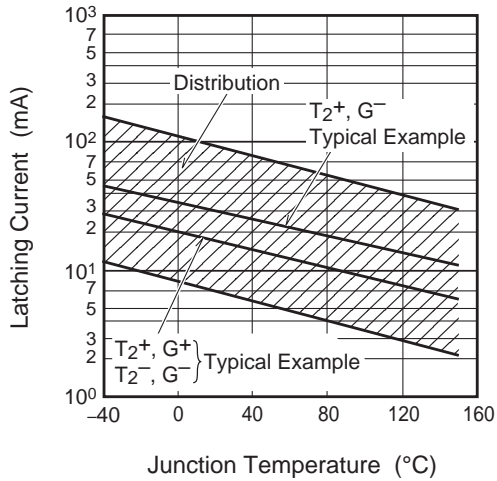
Repetitive Peak Off-State Current vs. Junction Temperature



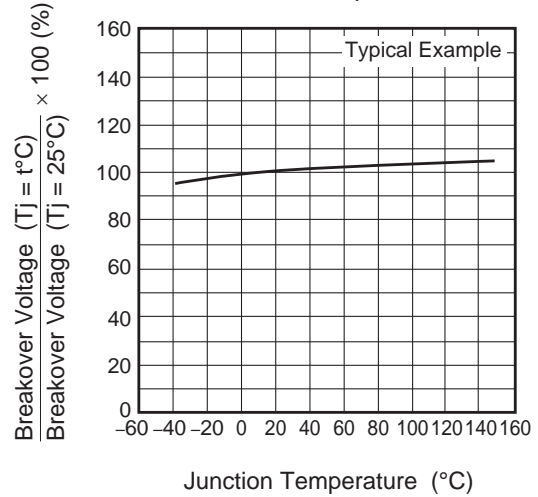
Holding Current vs. Junction Temperature



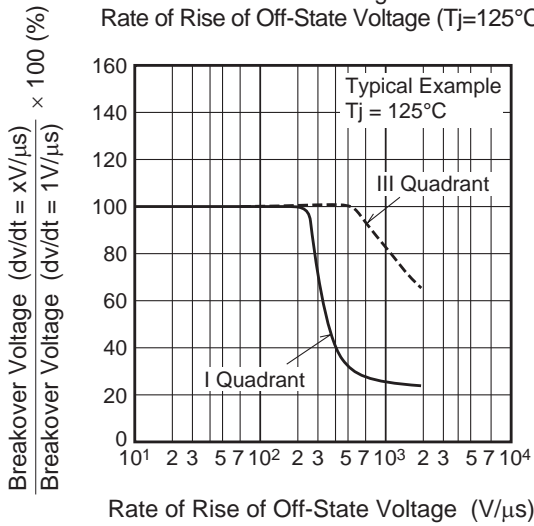
Latching Current vs. Junction Temperature



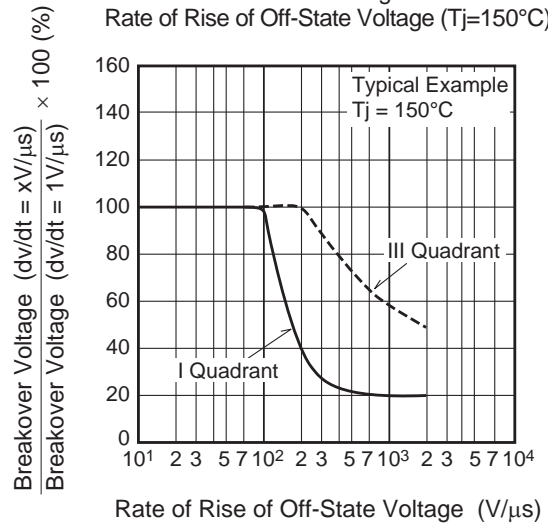
Breakover Voltage vs. Junction Temperature



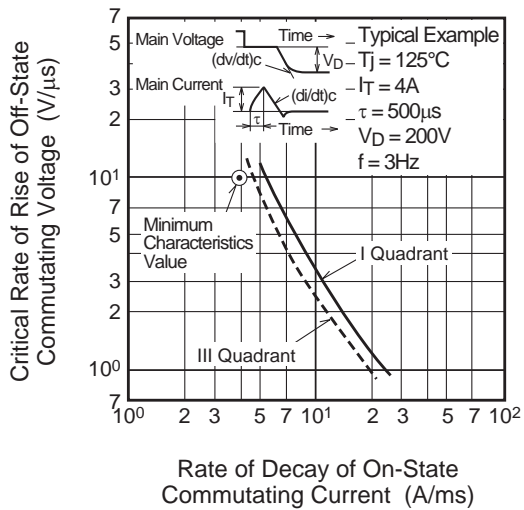
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



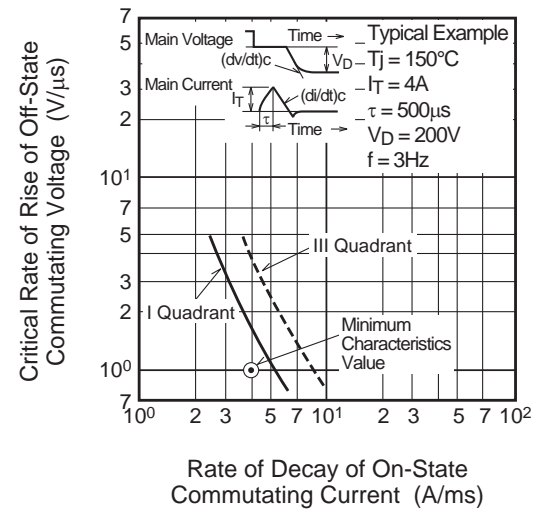
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



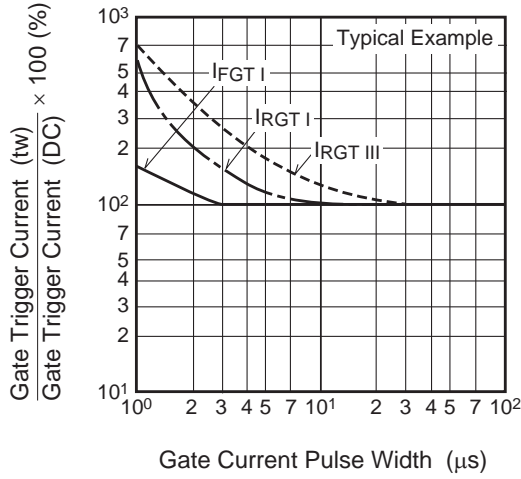
Commutation Characteristics (Tj=125°C)



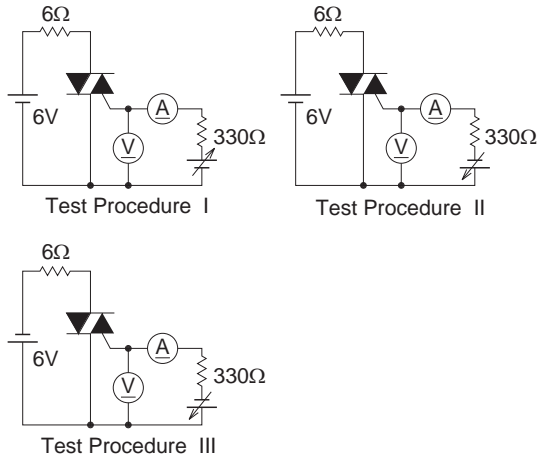
Commutation Characteristics (Tj=150°C)



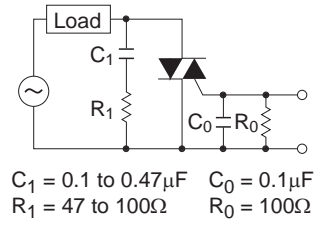
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac

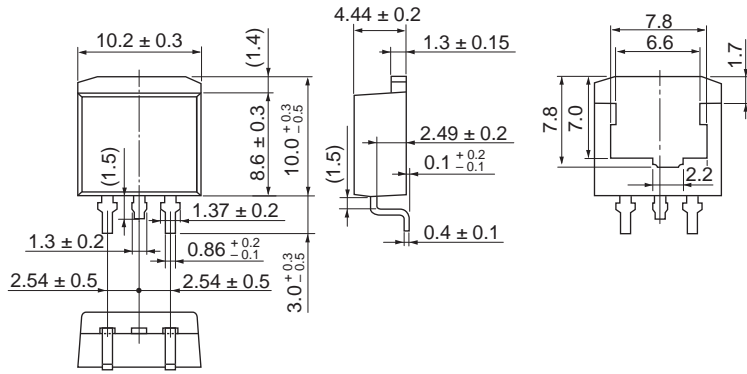


$C_1 = 0.1 \text{ to } 0.47 \mu\text{F}$      $C_0 = 0.1 \mu\text{F}$   
 $R_1 = 47 \text{ to } 100 \Omega$          $R_0 = 100 \Omega$

Package Dimensions

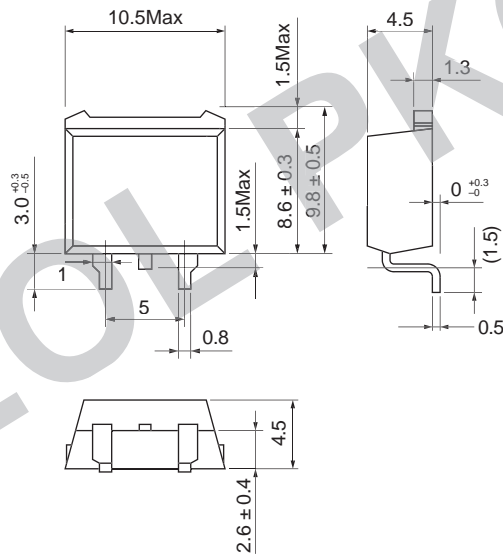
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDBPAK(S)-(1)	SC-83	PRSS0004AE-B	LDBPAK(S)-(1) / LDBPAK(S)-(1)V	1.30g

Unit: mm



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

Unit: mm



**Ordering Information**

<b>Orderable Part Number</b>	<b>Packing</b>	<b>Quantity</b>	<b>Remark</b>
BCR8CS-12LB#B00	Tube	50 pcs.	—
BCR8CS-12LB-T11#B00	Embossed Tape	1000 pcs.	Taping direction "T1"



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