

# BCR08DS-14A

700V-0.8A-Triac

R07DS0258EJ0300

Rev.3.00

Low Power Use

Dec 01, 2014

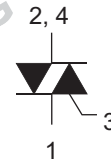
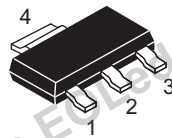
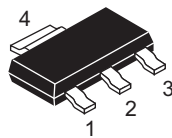
## Features

- $I_{T(RMS)}$  : 0.8 A
- $V_{DRM}$  : 700 V
- $I_{FGT}$ ,  $I_{RGT}$ ,  $I_{RGTIII}$  : 5 mA
- Planar Passivation Type
- Surface Mounted Type
- Completed Pb Free

## Outline

RENESAS Package code: PRSP0004ZB-A  
(Package name: SOT-223)

RENESAS Package code: PRSP0004ZA-A  
(Package name: SOT-223)



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

## Applications

Washing machine, electric fan, air cleaner, other general purpose control applications

## Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		14	
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	700	V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	840	V

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	0.8	A	Commercial frequency, sine full wave 360° conduction, $T_c = 96^\circ\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	8	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	0.26	A <sup>2</sup> s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{GM}$	1	W	
Average gate power dissipation	$P_{G(AV)}$	0.1	W	
Peak gate voltage	$V_{GM}$	6	V	
Peak gate current	$I_{GM}$	0.5	A	
Junction temperature	$T_j$	- 40 to +125	°C	
Storage temperature	$T_{stg}$	- 40 to +125	°C	
Mass	—	0.12	g	Typical value

## Electrical Characteristics

Parameter	Symbol	BCR08DS-14A#B10 BCR08DS-14A#BD0			BCR08DS-14A#B11			Unit	Test conditions	
		Min.	Typ.	Max.	Min.	Typ.	Max.			
Repetitive peak off-state current	$I_{DRM}$	—	—	1.0	—	—	1.0	mA	$T_j = 125^\circ\text{C}$ $V_{DRM}$ applied	
On-state voltage	$V_{TM}$	—	—	2.0	—	—	2.0	V	$T_c = 25^\circ\text{C}$ , $I_{TM} = 1.2$ A instantaneous measurement	
Gate trigger voltage <sup>Note2</sup>	I	$V_{FGTI}$	—	—	2.0	—	—	2.0	V	$T_j = 25^\circ\text{C}$ , $V_D = 6$ V $R_L = 6 \Omega$ , $R_G = 330 \Omega$
	II	$V_{RGTI}$	—	—	2.0	—	—	2.0	V	
	III	$V_{RGTIII}$	—	—	2.0	—	—	2.0	V	
	IV	$V_{FGTIII}$	—	—	—	—	—	2.0	V	
Gate trigger current <sup>Note2</sup>	I	$I_{FGTI}$	—	—	5	—	—	5	mA	$T_j = 25^\circ\text{C}$ , $V_D = 6$ V $R_L = 6 \Omega$ , $R_G = 330 \Omega$
	II	$I_{RGTI}$	—	—	5	—	—	5	mA	
	III	$I_{RGTIII}$	—	—	5	—	—	5	mA	
	IV	$I_{FGTIII}$	—	—	—	—	—	7	mA	
Gate non-trigger voltage	$V_{GD}$	0.2	—	—	0.2	—	—	V	$T_j = 125^\circ\text{C}$ $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	25	—	—	25	$^\circ\text{C}/\text{W}$	Junction to case <sup>Note3</sup>	
Critical-rate of rise of off-state commutating voltage <sup>Note4</sup>	$(dv/dt)_c$	0.5	—	—	0.5	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	
Critical-rate of rise of off-state voltage <sup>Note5</sup>	$dv/dt$	200	—	—	200	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	

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

3. Case temperature is measured on the  $T_2$  tab.

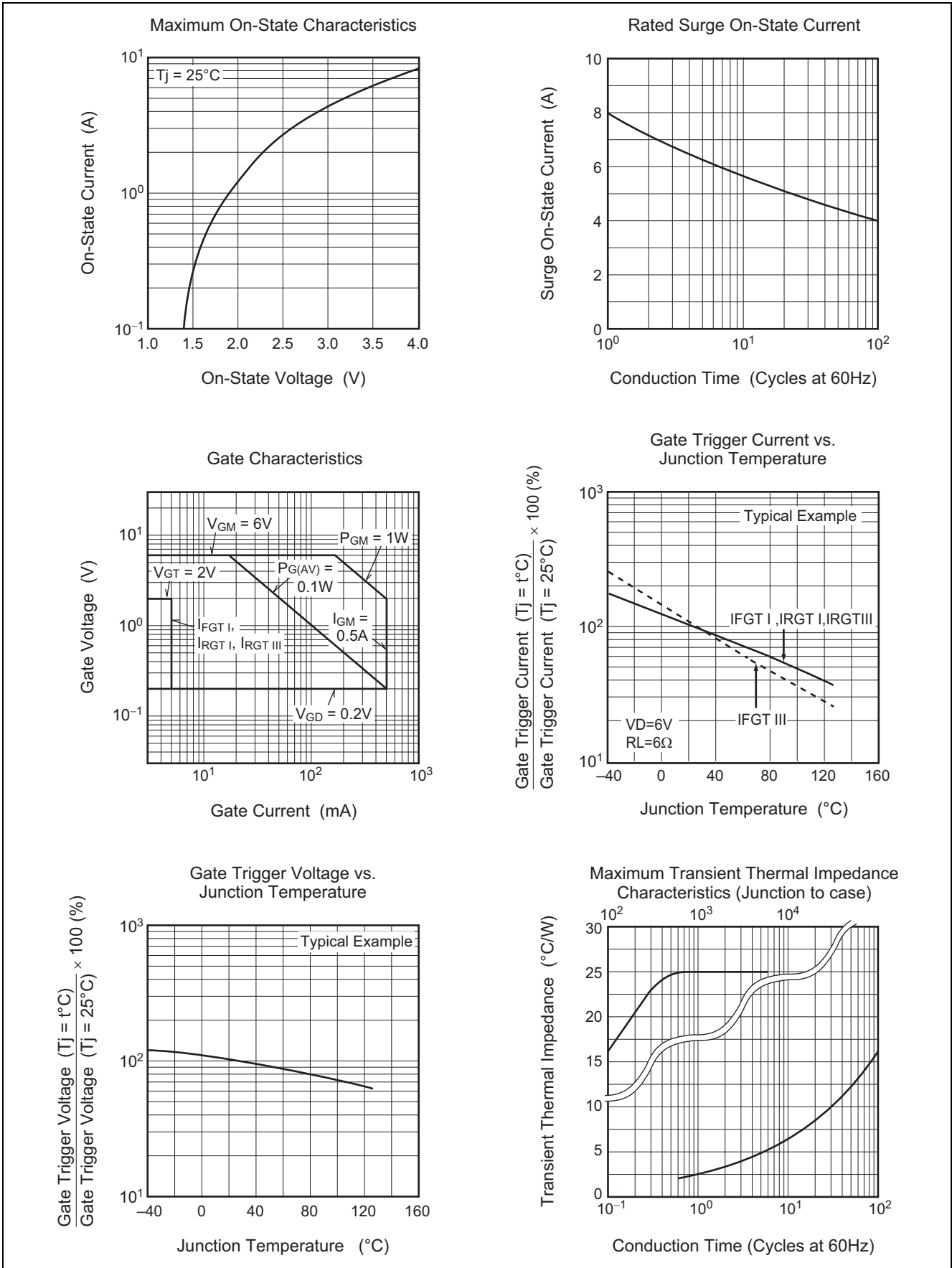
4. Test conditions of the critical-rate of rise of off-state commutating voltage are shown in the table below.

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 $(di/dt)_c = -0.4$ A/ms 3. Peak off-state voltage $V_D = 400$ V	

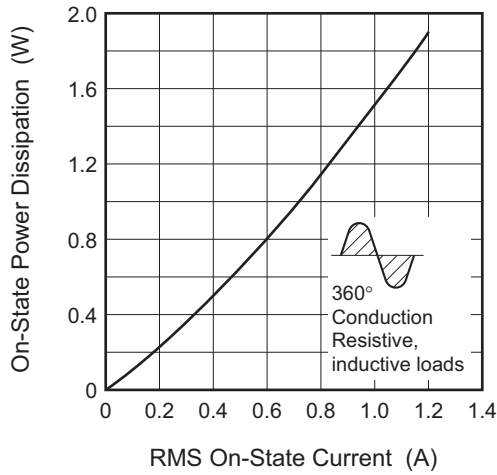
5. Test conditions of the critical-rate of rise of off-state voltage are shown in the table below.

Test conditions	Off-state voltage waveforms
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Off-state voltage waveform Linear waveform 3. Peak off-state voltage $V_D = 200$ V 4. Gate open	

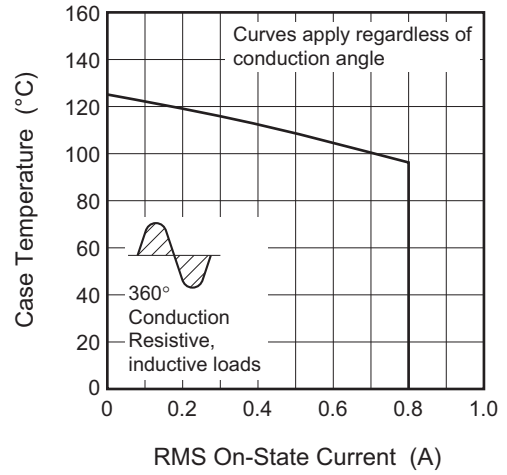
Performance Curves



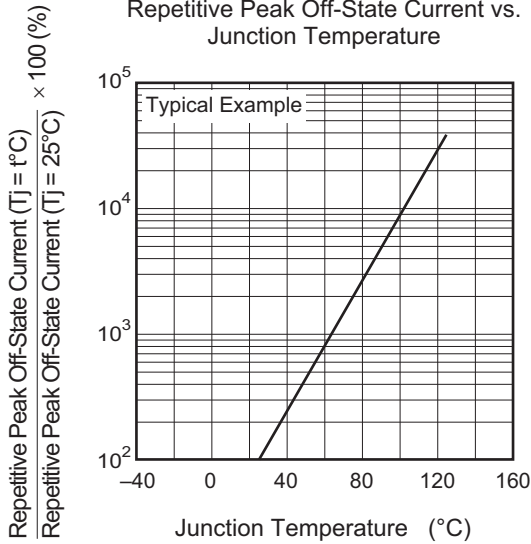
Maximum On-State Power Dissipation



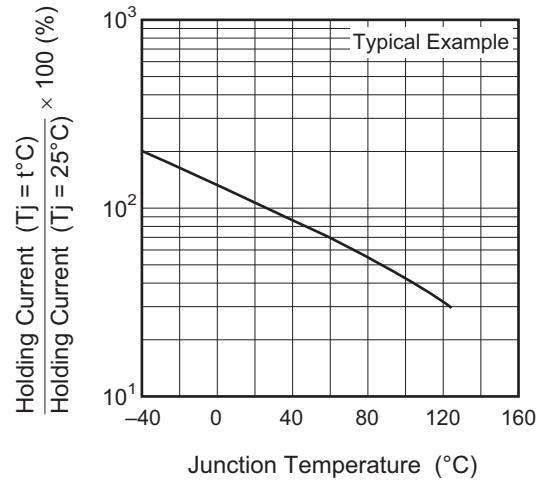
Allowable Case Temperature vs. RMS On-State Current



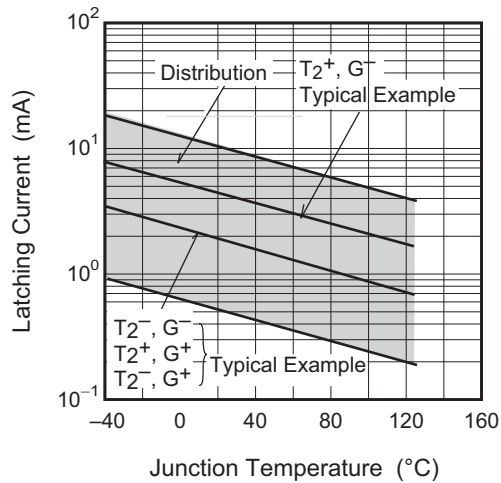
Repetitive Peak Off-State Current vs. Junction Temperature



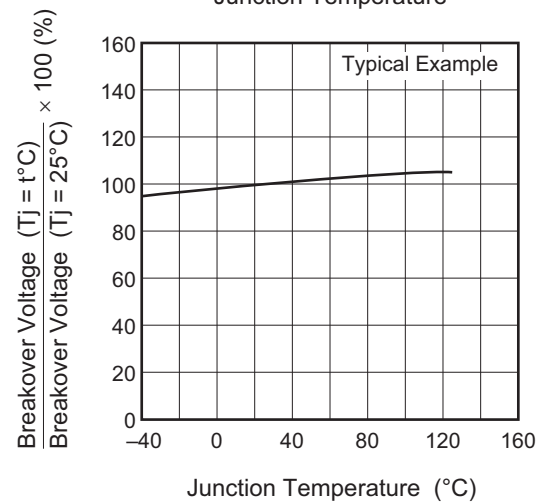
Holding Current vs. Junction Temperature



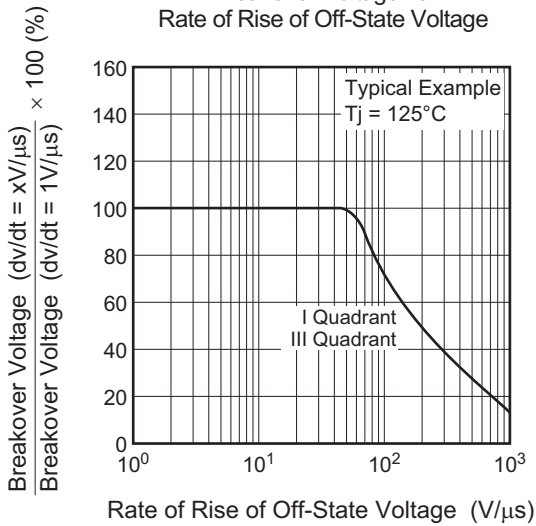
Latching Current vs. Junction Temperature



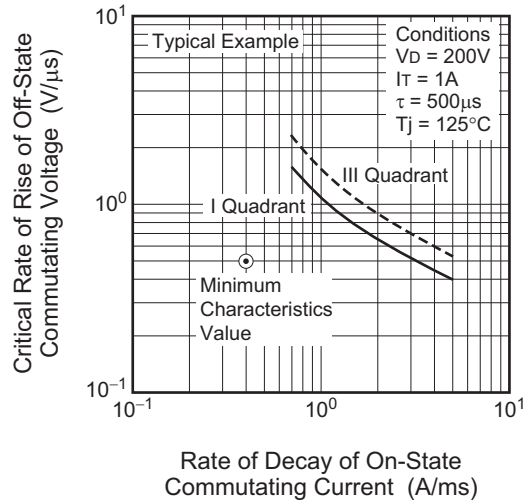
Breakover Voltage vs. Junction Temperature



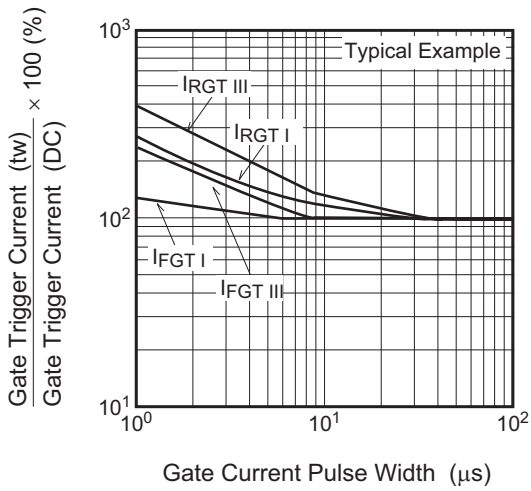
Breakover Voltage vs. Rate of Rise of Off-State Voltage



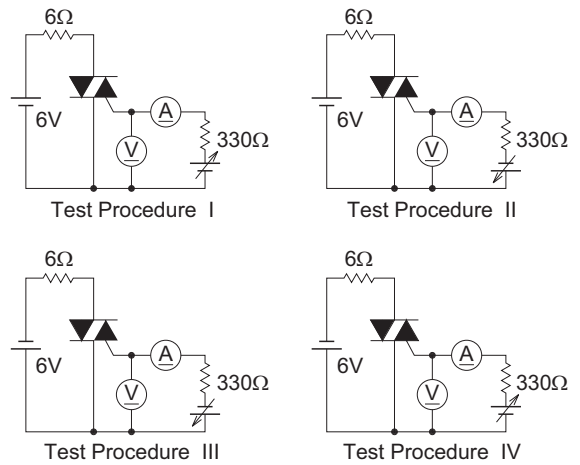
Commutation Characteristics (Tj=125°C)



Gate Trigger Current vs. Gate Current Pulse Width



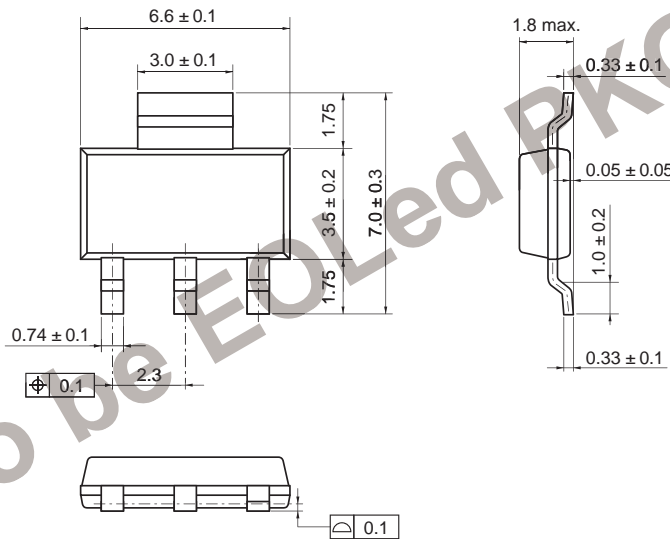
Gate Trigger Characteristics Test Circuits



Package Dimensions

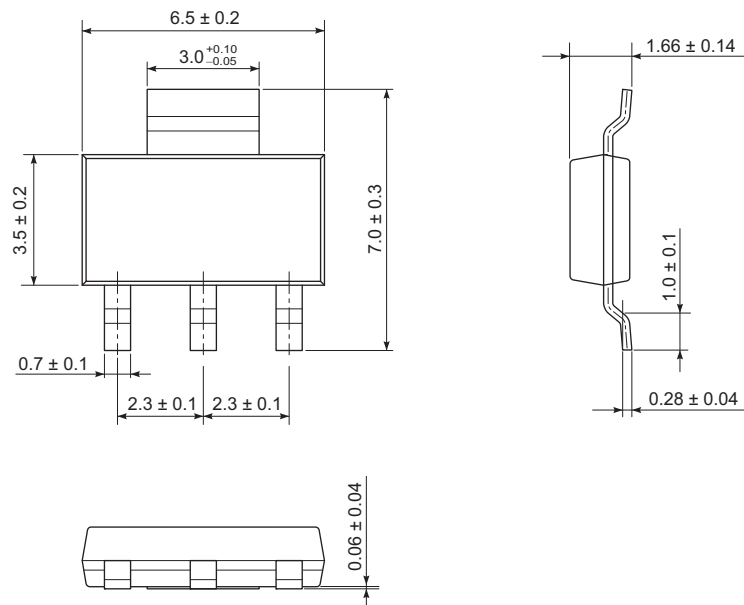
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
SOT-223	—	PRSP0004ZA-A	—	0.12g

Unit: mm



Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
SOT-223	—	PRSP0004ZB-A	SOT-223A	0.12g

Unit: mm



**Ordering Information**

<b>Orderable Part Number</b>	<b>Packing</b>	<b>Quantity</b>	<b>Remark</b>
BCR08DS-14AT13#B10	Embossed Tape	3000 pcs.	Not Recommended for New Design
BCR08DS-14AT13#B11	Embossed Tape	3000 pcs.	Not Recommended for New Design
BCR08DS-14AT13#BD0	Embossed Tape	3000 pcs.	Taping direction "T1"

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

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