

BCR1AM-12A

600V-1A-Triac
Low Power Use

R07DS0177EJ0500
Rev.5.00
Aug 03, 2015

Features

- $I_{T(RMS)}$: 1 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , I_{RGTIII} : 7 mA
- Non-Insulated Type
- Planar Passivation Type
- Halogen-free options available (#BD0)

Outline

RENESAS Package code: PRSS0003EA-A
(Package name: TO-92*)

RENESAS Package code: PRSS0003DJ-A
(Package name: TO-92)



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

Applications

Washing machine, electric fan, air purifier, electric pot, rice-cooker, electric blanket, refrigerator, Solid State Relay, and other general purpose AC control applications

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	$I_{T(RMS)}$	1.0	A	Commercial frequency, sine full wave 360° conduction, $T_c = 56^{\circ}\text{C}$ ^{Note3}
Surge on-state current	I_{TSM}	10	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	0.41	A ² 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	—	0.23	g	Typical value

Notes: 1. Gate open.

Electrical Characteristics

Parameter	Symbol	Rated value			Unit	Test conditions	
		Min.	Typ.	Max.			
Repetitive peak off-state current	I_{DRM}	—	—	0.5	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied	
On-state voltage	V_{TM}	—	—	1.6	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 1.5\text{ A}$, Instantaneous measurement	
Gate trigger voltage ^{Note2}	I	V_{FGTI}	—	—	2.0	V	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	V_{RGTI}	—	—	2.0	V	
	III	V_{RGTIII}	—	—	2.0	V	
Gate trigger current ^{Note2}	I	I_{FGTI}	—	—	7	mA	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	7	mA	
	III	I_{RGTIII}	—	—	7	mA	
Gate non-trigger voltage	V_{GD}	0.1	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	50	$^\circ\text{C/W}$	Junction to case ^{Note3}	
Critical-rate of rise of off-state commutating voltage ^{Note4}	$(dv/dt)_c$	2	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	

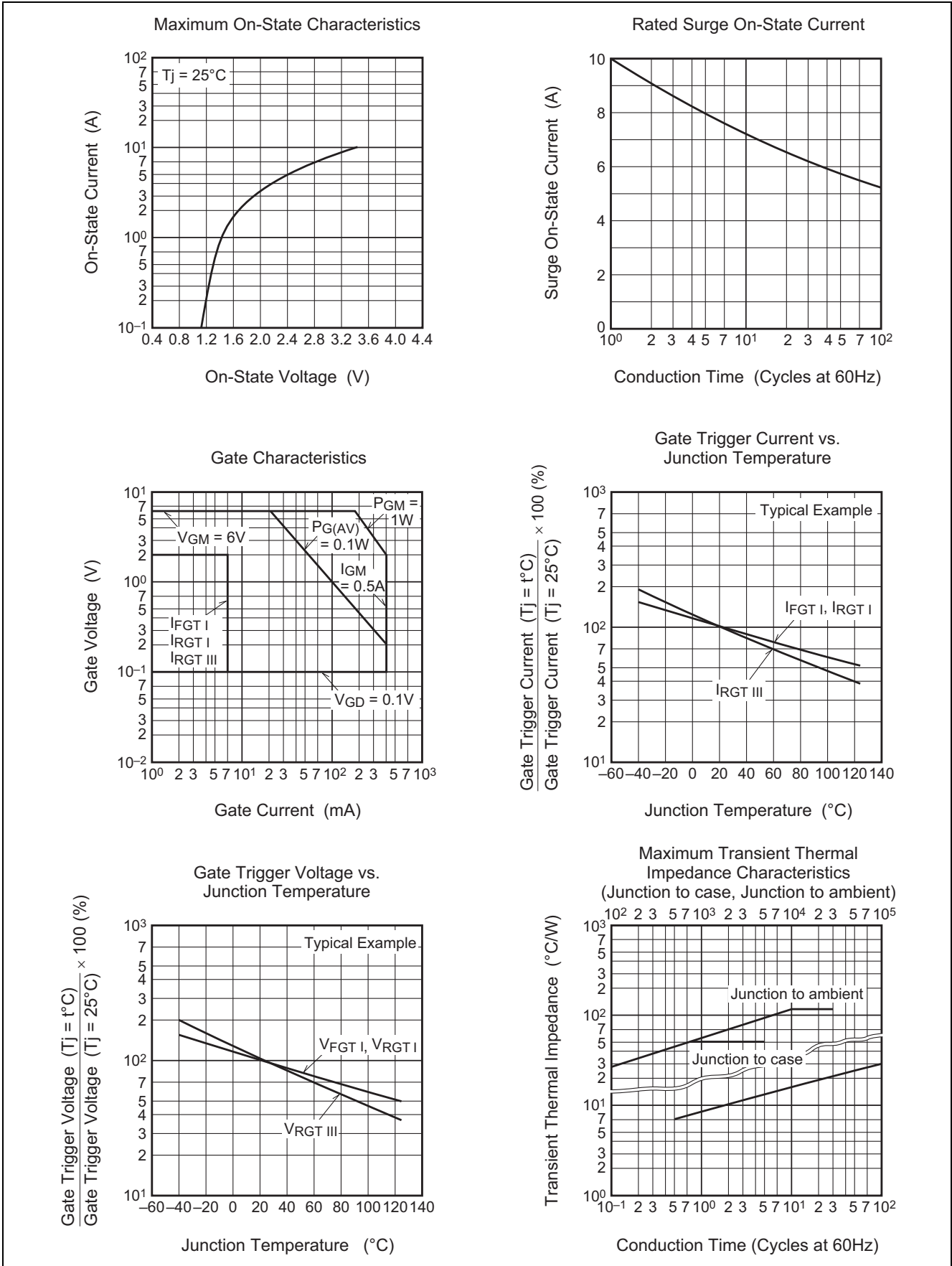
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

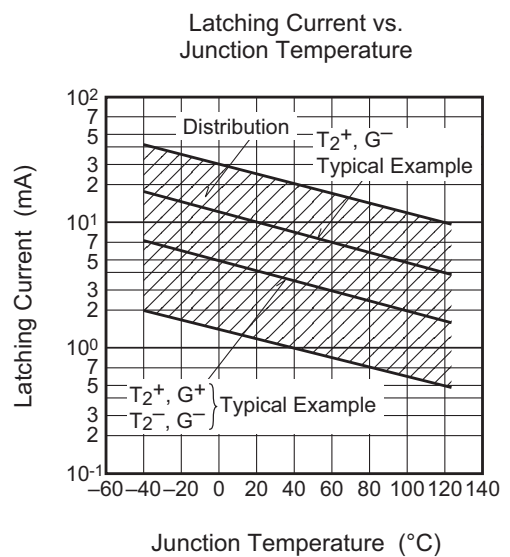
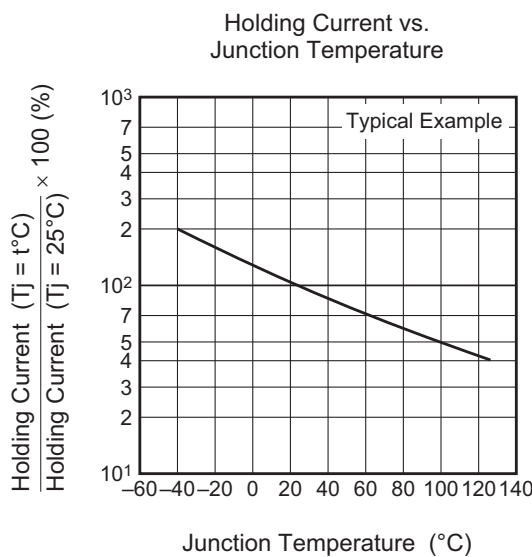
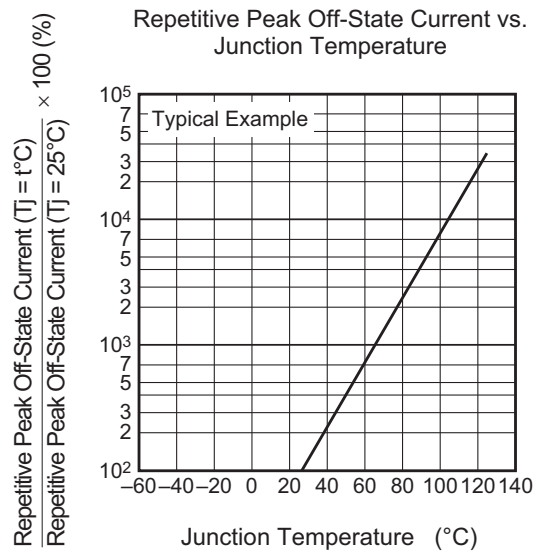
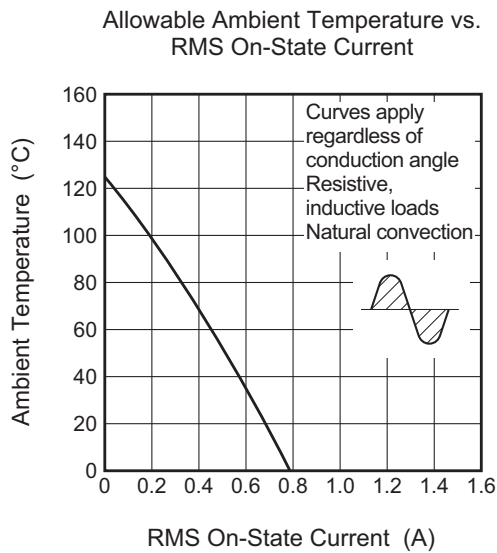
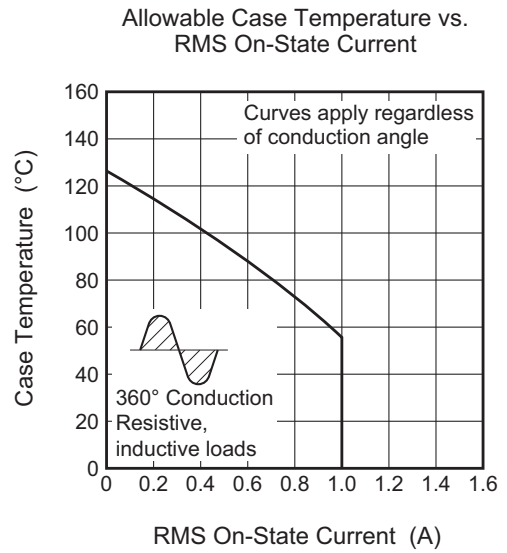
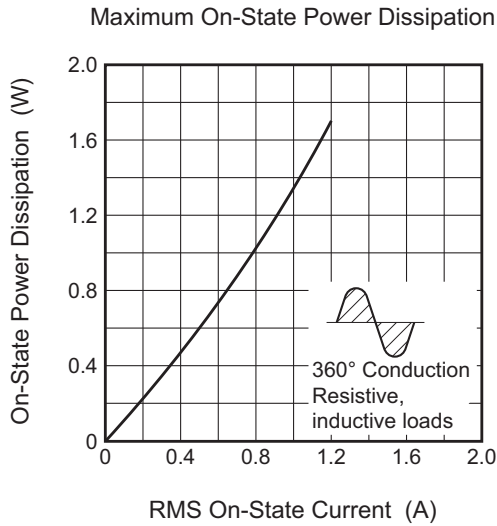
3. Case temperature is measured at the T_2 terminal 1.5 mm away from the molded case.

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

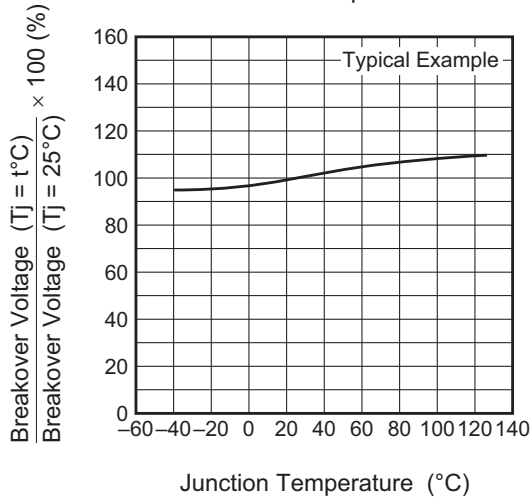
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -0.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

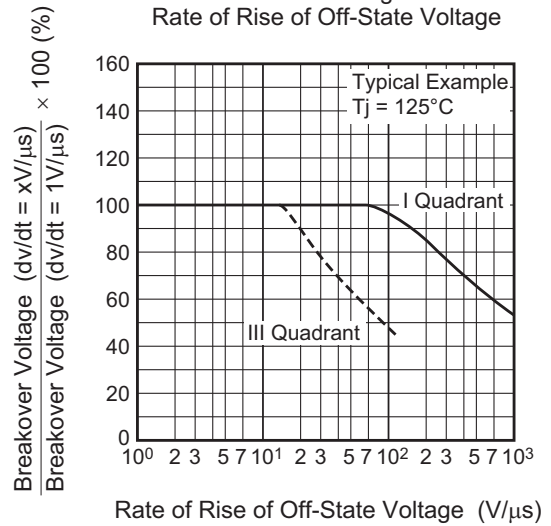




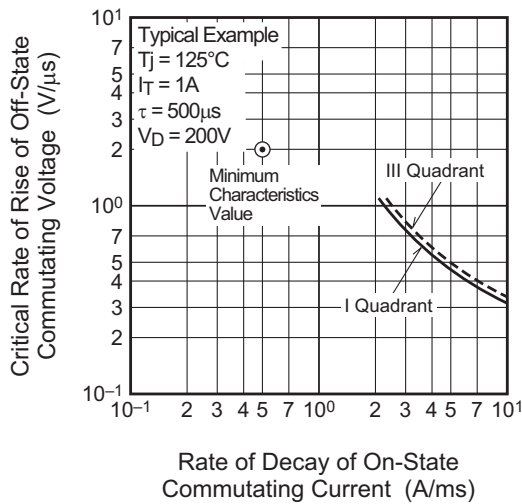
Breakover Voltage vs. Junction Temperature



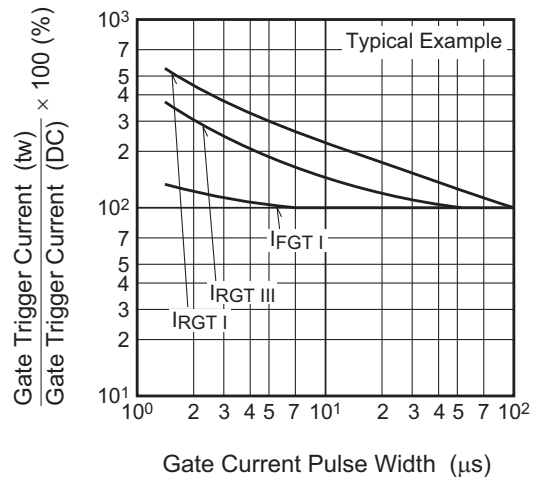
Breakover Voltage vs. Rate of Rise of Off-State Voltage



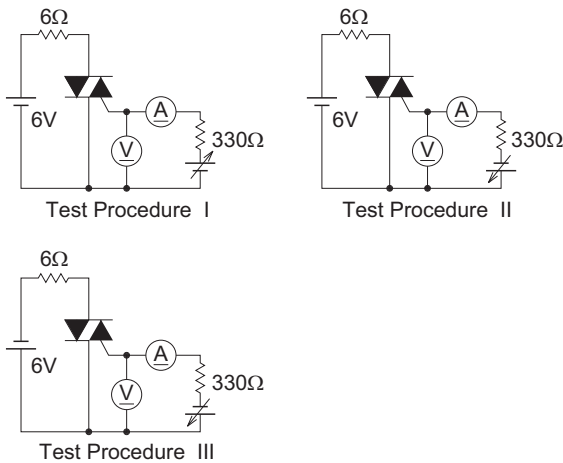
Commutation Characteristics



Gate Trigger Current vs. Gate Current Pulse Width



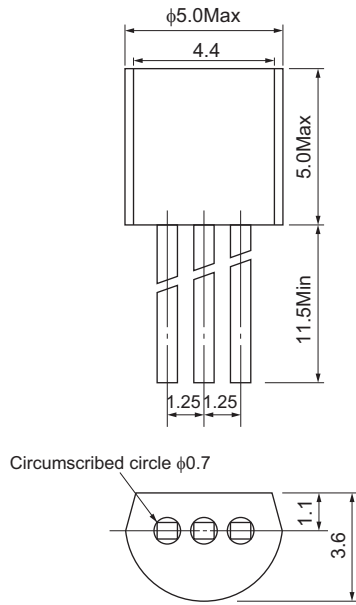
Gate Trigger Characteristics Test Circuits



Package Dimensions

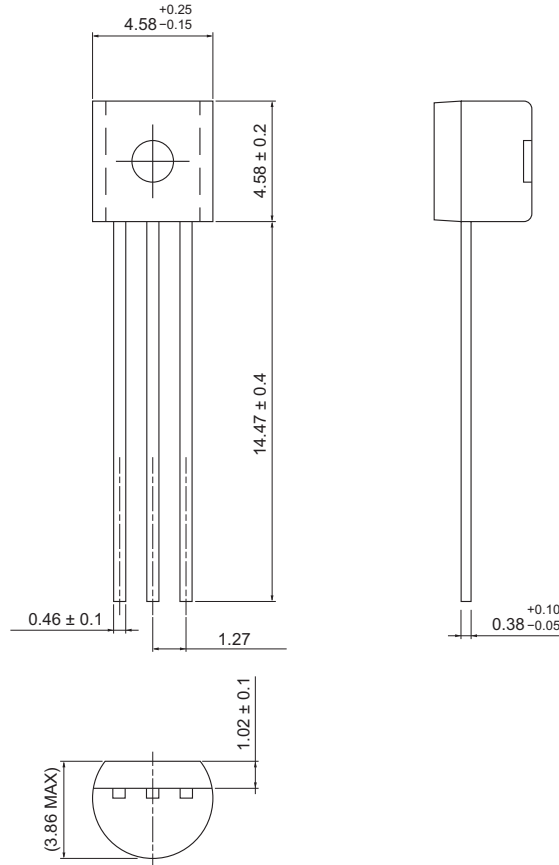
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-92*	SC-43A	PRSS0003EA-A	T920	0.23g

Unit: mm



JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
SC-43A	PRSS0003DJ-A	TO-92	0.23

Unit: mm



Ordering Information

Orderable Part Number	Package	Packing ^{Note5}	Quantity	Remark	Quality Grade ^{Note7}
BCR1AM-12A#C01	TO-92*	Plastic Bag	500 pcs.	Straight type	General Industrial & Consumer Use
BCR1AM-12A-A6#C01	TO-92*	Plastic Bag	500 pcs.	A6 Lead form	General Industrial & Consumer Use
BCR1AM-12A-TB#C01	TO-92*	Adhesive Tape	2000 pcs.	A8 Lead form	General Industrial & Consumer Use
BCR1AM-12A#BD0	TO-92	Plastic Bag	1000 pcs.	Straight type Halogen-free	General Industrial & Consumer Use
BCR1AM-12A-A6#BD0	TO-92	Plastic Bag	1000 pcs.	A6 Lead form Halogen-free	General Industrial & Consumer Use
BCR1AM-12A#FD0	TO-92	Plastic Bag	1000 pcs.	Straight type	Special Consumer Use ^{Note6}
BCR1AM-12A-A6#FD0	TO-92	Plastic Bag	1000 pcs.	A6 Lead form	Special Consumer Use ^{Note6}

Notes: 5. Please confirm the specification about the shipping in detail.

6. "Special Consumer Use" grade product is not tested for the "Temperature Humidity Bias" reliability in the condition of rated V_{DRM} . Please be sure to implement qualification tests and judge whether the product meets your criteria. If necessary, please apply moisture-proof measures according to user's conditions.
7. For further details about the classification in the Standard quality grade, please refer to the application note.

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