

BCR5LM-14LJ

700V - 5A - Triac
Medium Power Use

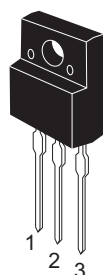
R07DS0949EJ0100
Rev.1.00
Nov 19, 2012

Features

- $I_{T(RMS)}$: 5 A
- V_{DRM} : 800 V ($T_j = 125^\circ\text{C}$)
- T_j : 150°C
- I_{FGTB} , I_{RGTB} , $I_{RGT III}$: 30 mA
- Viso: 1800 V
- Insulated Type
- Planar Passivation Type
- UL Recognized: File No. E223904

Outline

RENESAS Package code: PRSS0003AF-A)
(Package name: TO-220FL)



1. T_1 Terminal
2. T_2 Terminal
3. Gate Terminal

Applications

Switching mode power supply, Washing machine, small motor controller, copying machine, electric heater control, and other general controlling devices

Maximum Ratings

Parameter	Symbol	Voltage class	Unit	Conditions
		14		
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800	V	$T_j = 125^\circ\text{C}$
		700		$T_j = 150^\circ\text{C}$
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	840	V	

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	5	A	Commercial frequency, sine full wave 360° conduction, $T_c = 113^\circ\text{C}$
Surge on-state current	I_{TSM}	50	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	10.4	A^2s	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	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40 to +150	$^\circ\text{C}$	
Mass	—	1.5	g	Typical value
Isolation voltage ^{Note5}	Viso	1800	V	$T_a = 25^\circ\text{C}$, AC 1 minute $T_1 \bullet T_2 \bullet G$ terminal to case

Electrical Characteristics

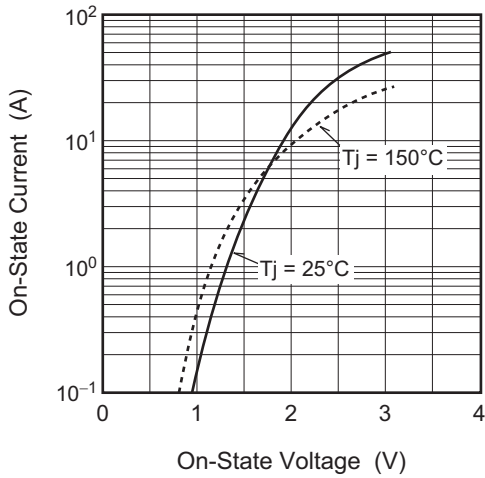
Parameter	Symbol	Rated value			Unit	Test conditions	
		Min.	Typ.	Max.			
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_j = 150^\circ\text{C}$, V_{DRM} applied	
On-state voltage	V_{TM}	—	—	1.8	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 7\text{ A}$, instantaneous measurement	
Gate trigger voltage ^{Note2}	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 ^{Note2}	I	I_{FGTI}	—	—	30	mA	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	30	mA	
	III	I_{RGTIII}	—	—	30	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$	
		0.1	—	—	V	$T_j = 150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	4.9	$^\circ\text{C/W}$	Junction to case ^{Note3}	
Critical-rate of rise of off-state commutation voltage ^{Note4}	$(dv/dt)_c$	5	—	—	V/ μs	$T_j = 125^\circ\text{C}$	
		1	—	—	V/ μs	$T_j = 150^\circ\text{C}$	

- Notes: 1. Gate open.
 2. Measurement using the gate trigger characteristics measurement circuit.
 3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .
 4. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.
 5. Make sure that your finished product containing this device meets your safe isolation requirements.
 For safety, it's advisable that heatsink is electrically floating.

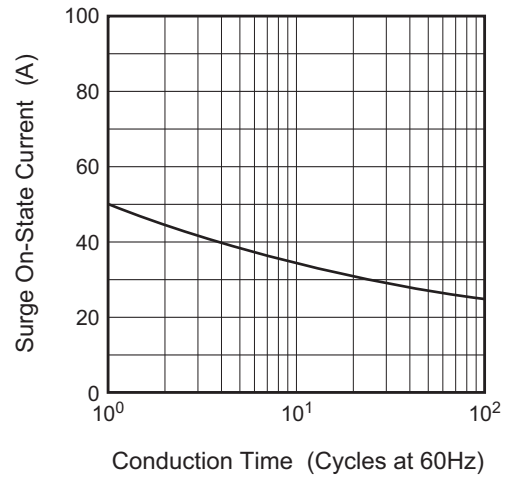
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -2.5\text{A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

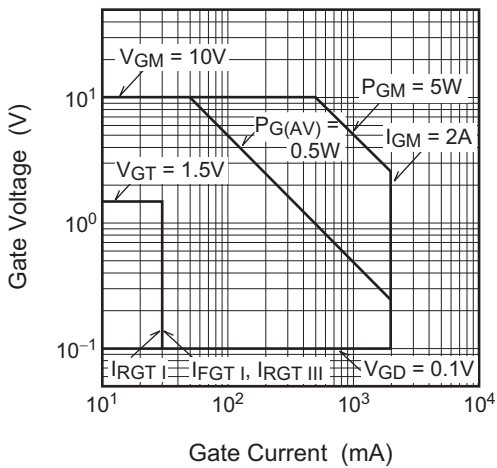
Maximum On-State Characteristics



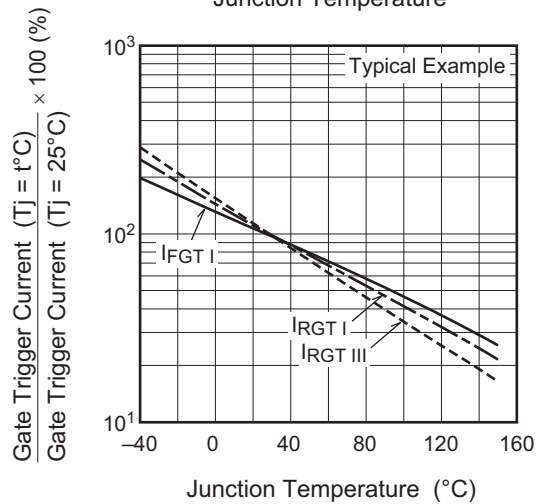
Rated Surge On-State Current



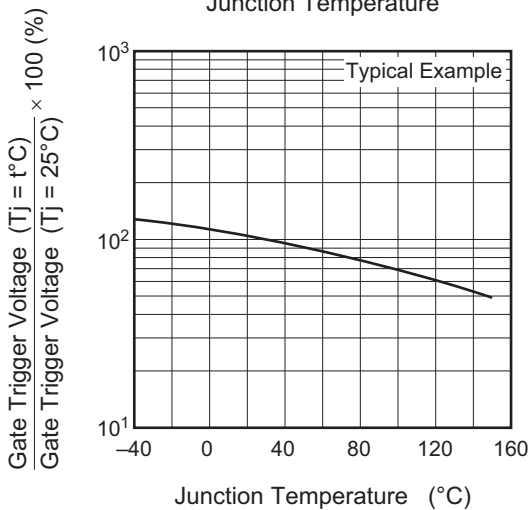
Gate Characteristics (I, II and III)



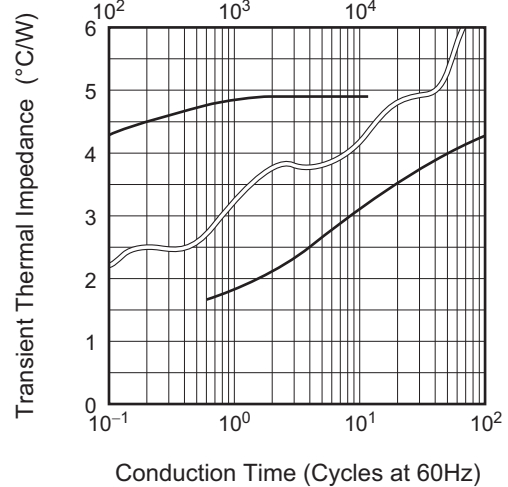
Gate Trigger Current vs. Junction Temperature

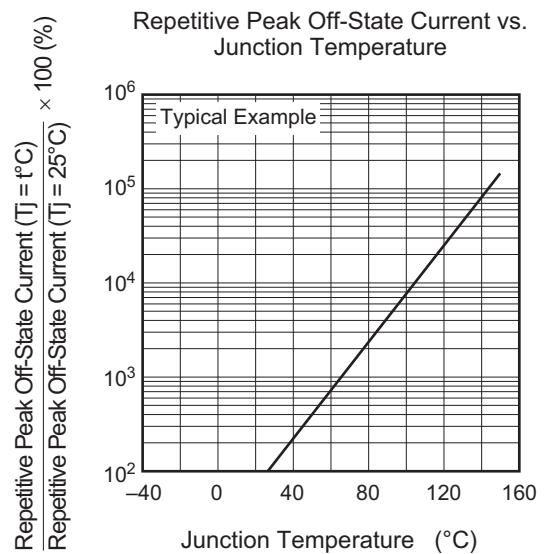
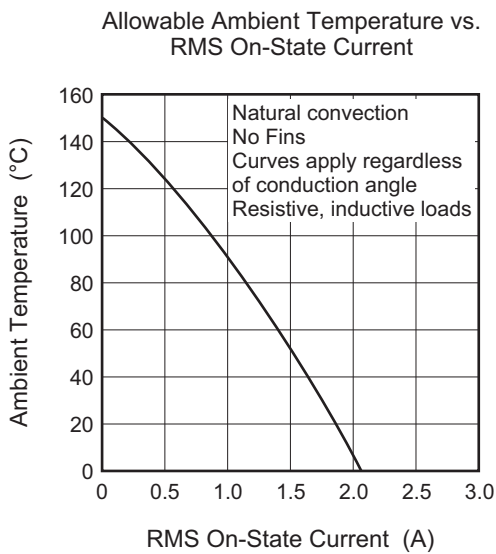
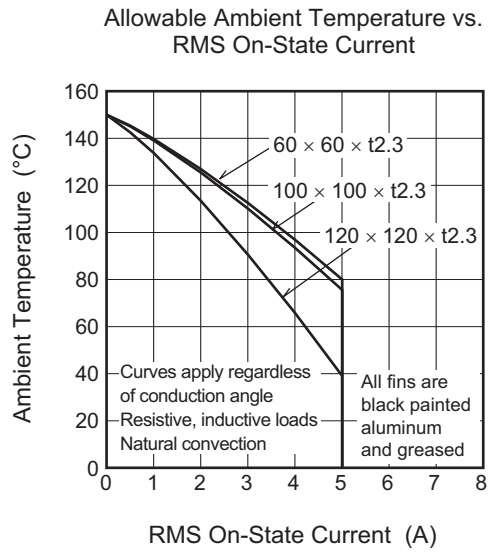
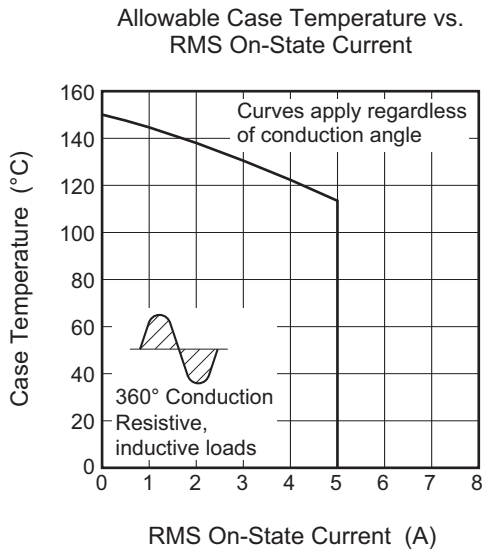
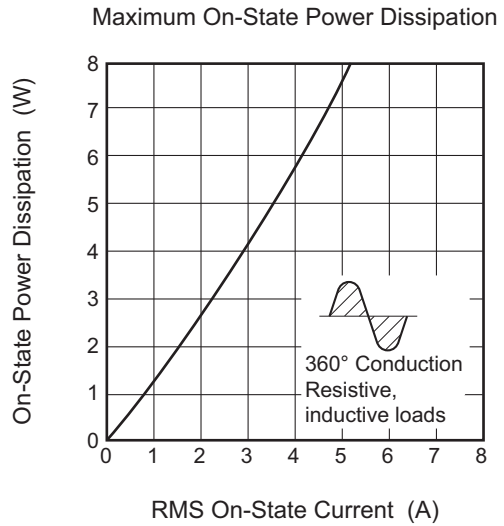
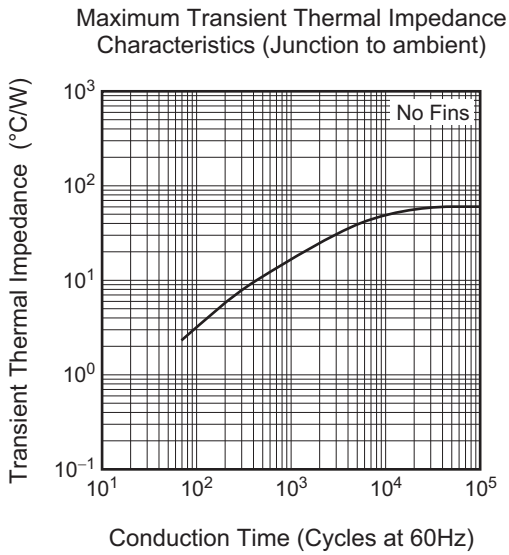


Gate Trigger Voltage vs. Junction Temperature

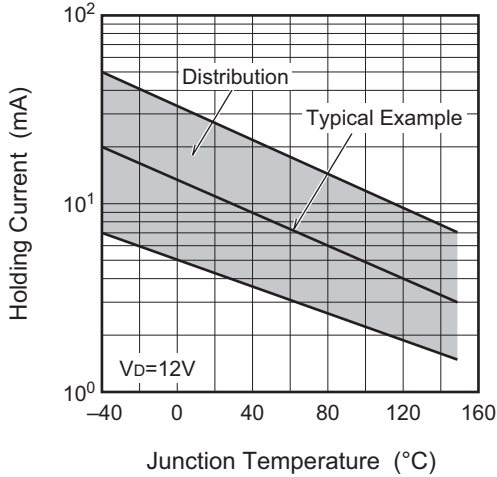


Maximum Transient Thermal Impedance Characteristics (Junction to case)

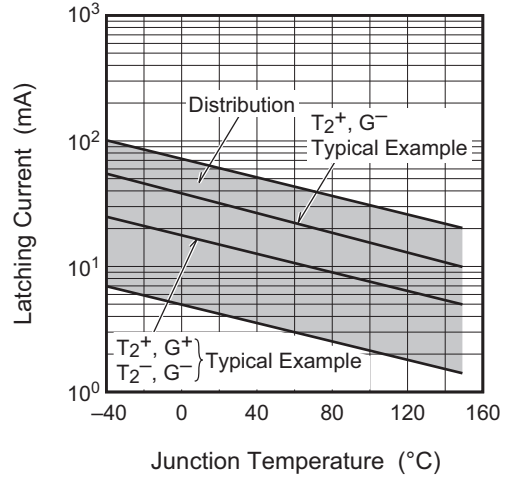




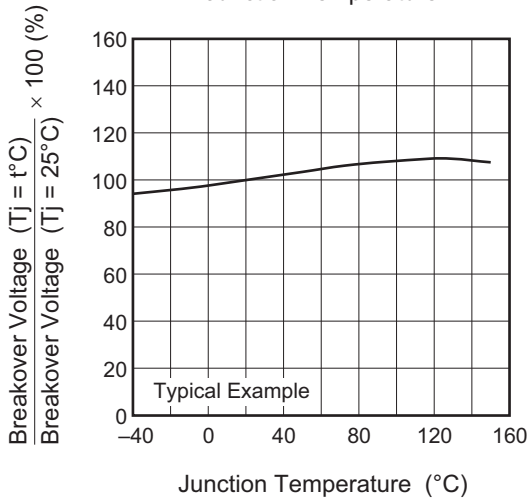
Holding Current vs. Junction Temperature



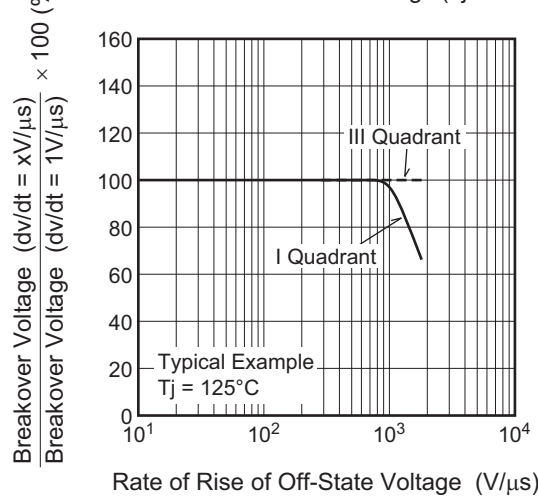
Latching Current vs. Junction Temperature



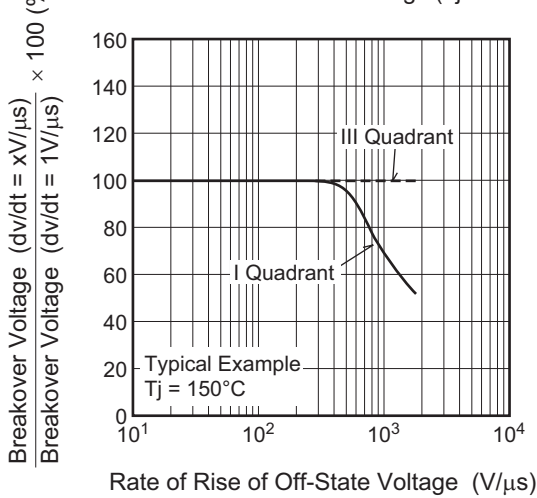
Breakover Voltage vs. Junction Temperature



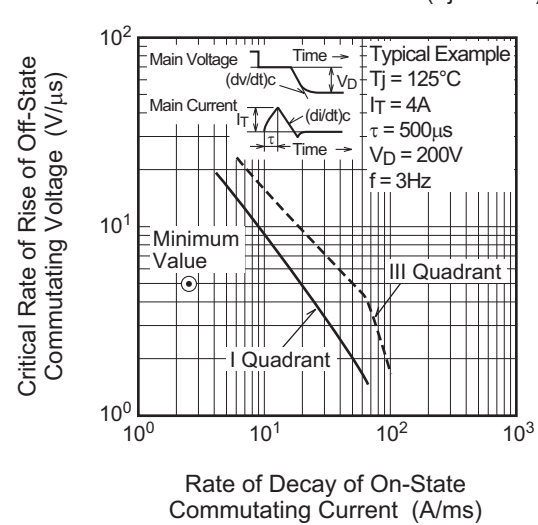
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)

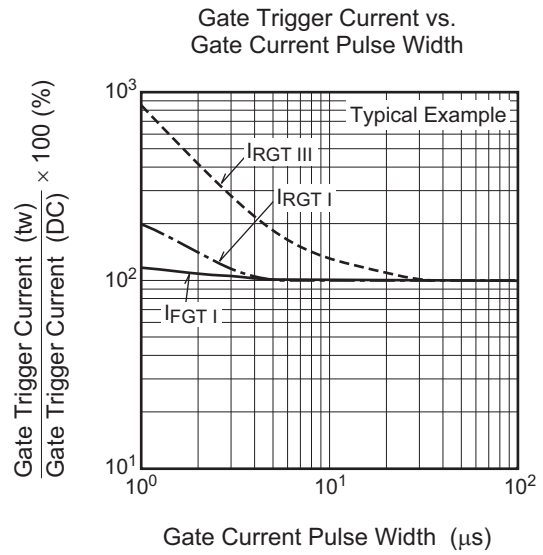
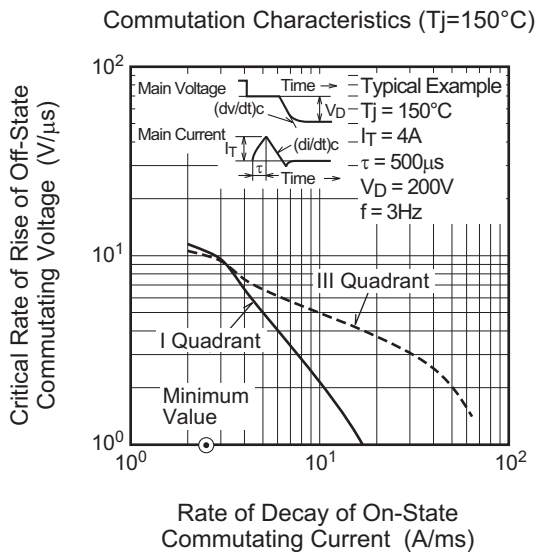


Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)

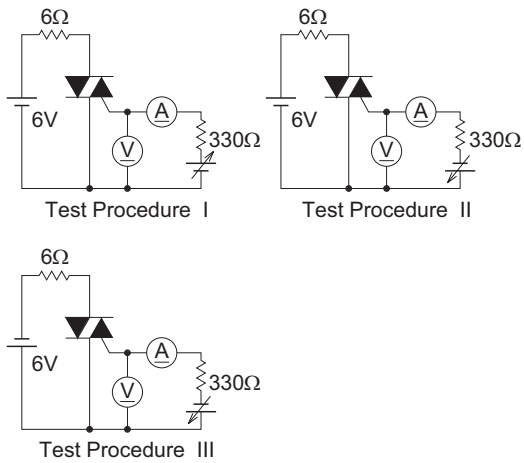


Commutation Characteristics (Tj=125°C)

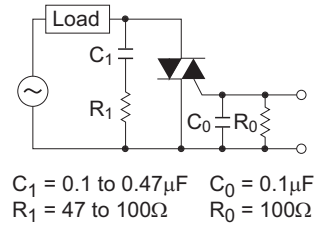




Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
TO-220FL	—	PRSS0003AF-A	TO-220FL	1.5g	

The technical drawing illustrates the package dimensions for the BCR5LM-14LJ. It includes three views: a top view, a side view, and a detail view of the lead. The top view shows a rectangular body with a diameter of 10.0 ± 0.3 mm and a total height of 15.0 ± 0.3 mm. The distance from the top edge to the center of the lead is 3.0 ± 0.3 mm. The distance between the center of the lead and the edge of the body is 6.5 ± 0.3 mm. The lead diameter is 3.2 ± 0.2 mm. The side view shows a total length of 12.5 ± 0.5 mm, with a lead length of 3.6 ± 0.3 mm. The lead diameter is 1.15 ± 0.2 mm. The distance from the bottom edge of the body to the start of the lead is 2.54 ± 0.25 mm. The detail view shows a lead diameter of 2.6 ± 0.2 mm and a lead length of 4.5 ± 0.2 mm. The distance from the bottom edge of the body to the start of the lead is 0.40 ± 0.15 mm. The distance from the center of the lead to the edge of the body is 1.15 ± 0.2 mm. The distance from the center of the lead to the edge of the body is 0.75 ± 0.15 mm. The distance from the center of the lead to the edge of the body is 1.15 ± 0.2 mm.

Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR5LM-14LJ#B00	Tube	50 pcs.	Straight type
BCR5LM-14LJ-A8#B00	Tube	50 pcs.	A8 Lead form

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

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