

BCR12LM-16LB

Triac

R07DS0672EJ0100

Midium Power Use

Rev.1.00

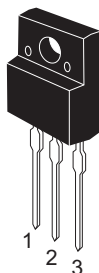
Jul 23, 2012

Features

- $I_{T(RMS)}$: 12A
- V_{DRM} : 800 V
- T_j : 150 °C
- I_{FGT} , I_{RGT} , $I_{RGT III}$:30 mA
- V_{iso} :1800V
- The Product guaranteed maximum junction temperature 150°C
- Insulated Type
- Planar Passivation Type
- UL Recognized: File No. E223904

Outline

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



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

Applications

Switching mode power supply, washing machine, motor control, heater control, and other general purpose control applications.

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		16	
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	800	V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	960	V

Notes: 1. Gate open.

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T(RMS)}$	12	A	Commercial frequency, sine full wave 360° conduction, $T_c = 90^\circ\text{C}$ ^{Note3}
Surge on-state current	I_{TSM}	120	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusion	I^2t	60	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	Viso	1800	V	$T_a = 25^\circ\text{C}$, AC 1 minute $T_1 \square T_2 \square G$ 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}	—	—	1.6	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 20\text{A}$, 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	$R_{th(j-c)}$	—	—	4.1	$^\circ\text{C}/\text{W}$	Junction to case ^{Note3}	
Critical-rate of rise of off-state commutation voltage ^{Note4}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$	
		1	—	—	$\text{V}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	

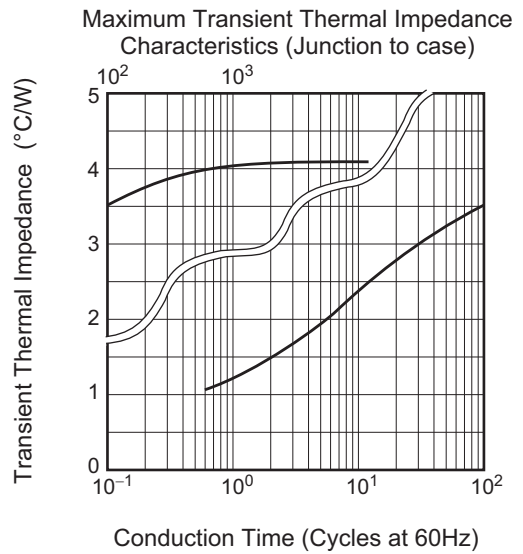
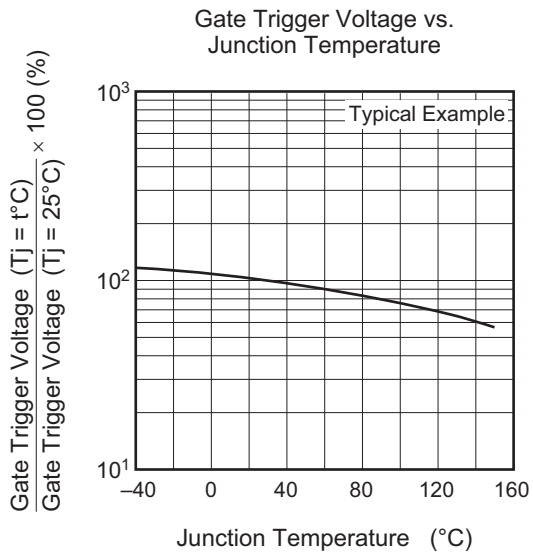
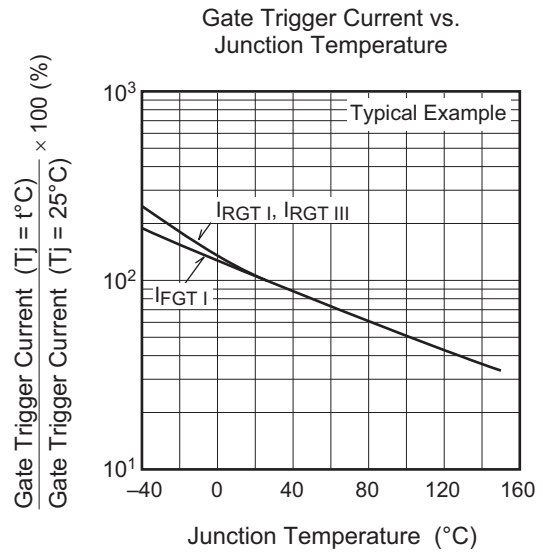
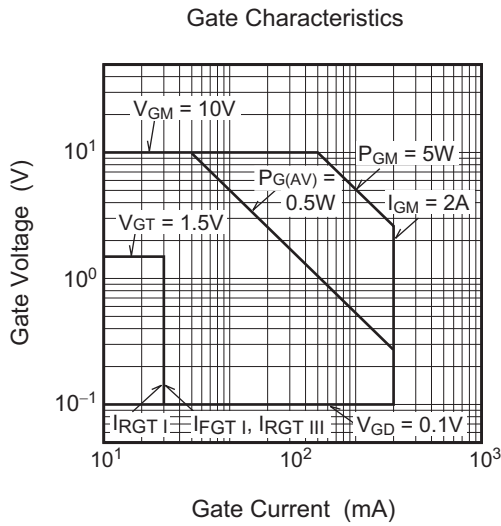
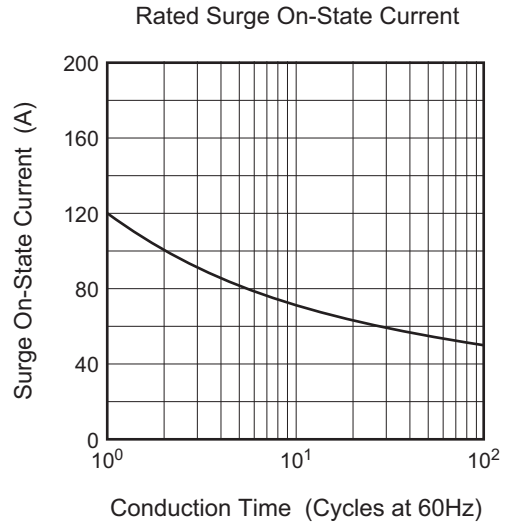
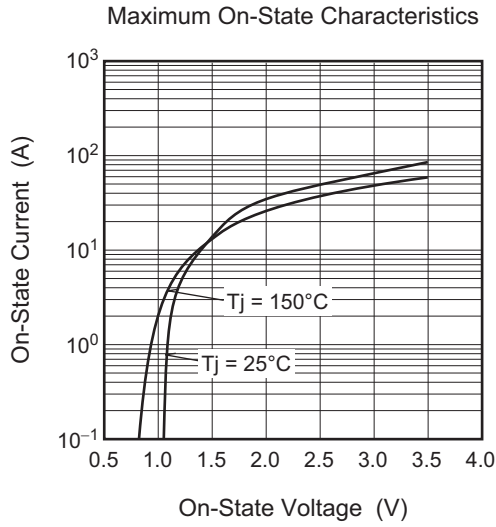
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

3. The contact thermal resistance $R_{th}(c-f)$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

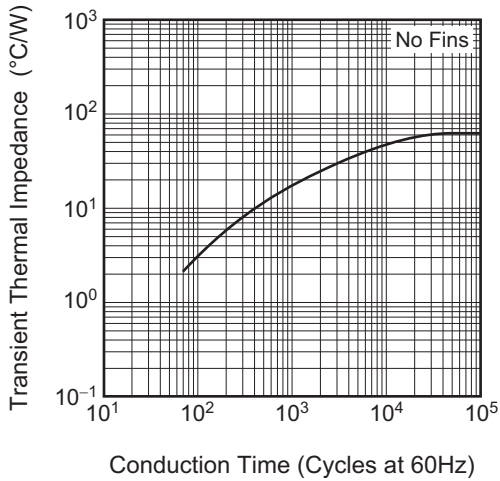
4. Test conditions of the critical-rate of rise of off-state commutation voltage is shown in the table below.

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 $(di/dt)_c = -6\text{A}/\text{ms}$ 3. Peak off-state voltage $V_D = 400\text{V}$	

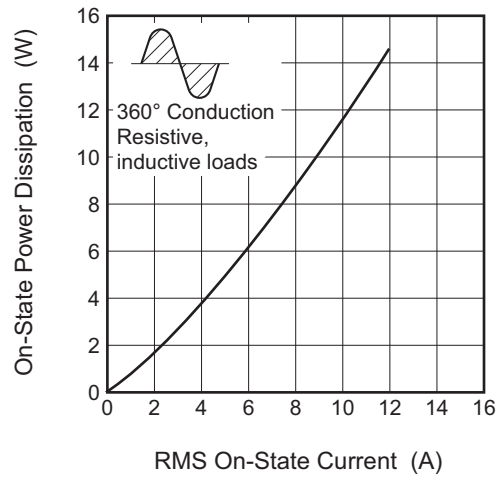
Performance Curves



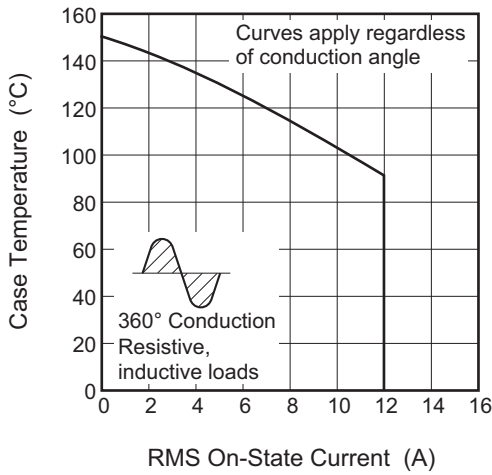
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



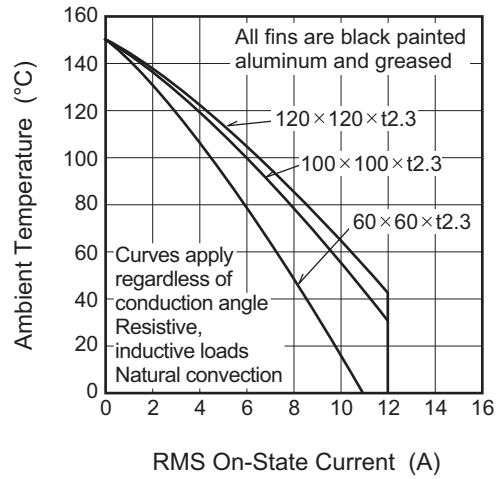
Maximum On-State Power Dissipation



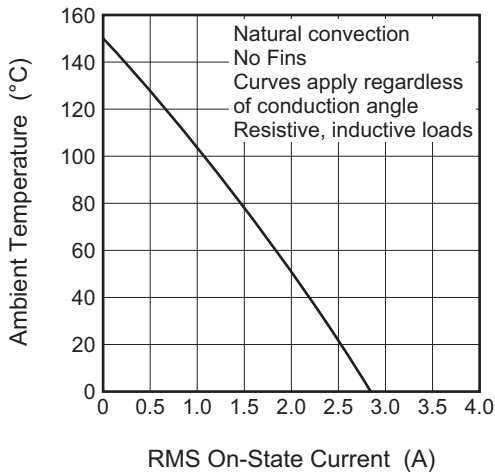
Allowable Case Temperature vs. RMS On-State Current



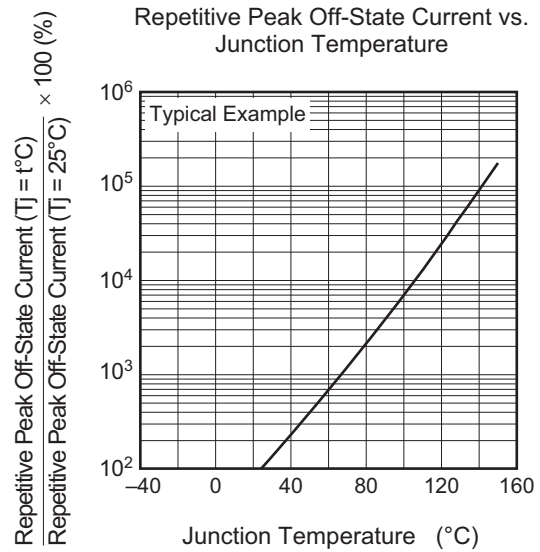
Allowable Ambient Temperature vs. RMS On-State Current



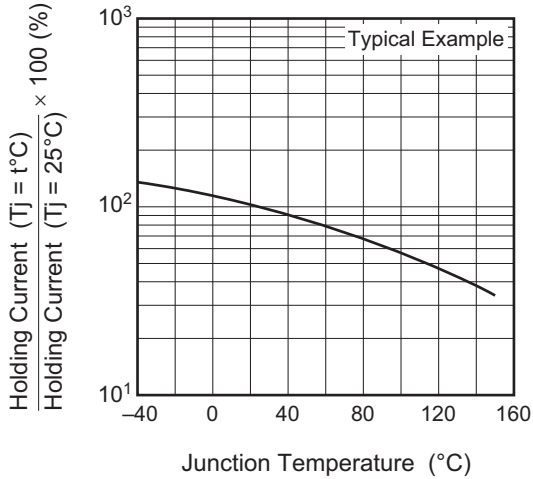
Allowable Ambient Temperature vs. RMS On-State Current



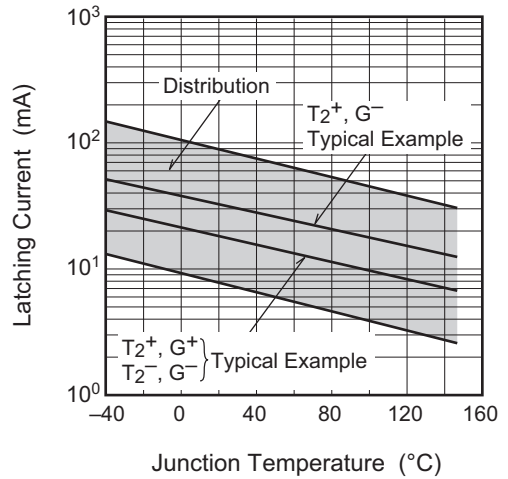
Repetitive Peak Off-State Current vs. Junction Temperature



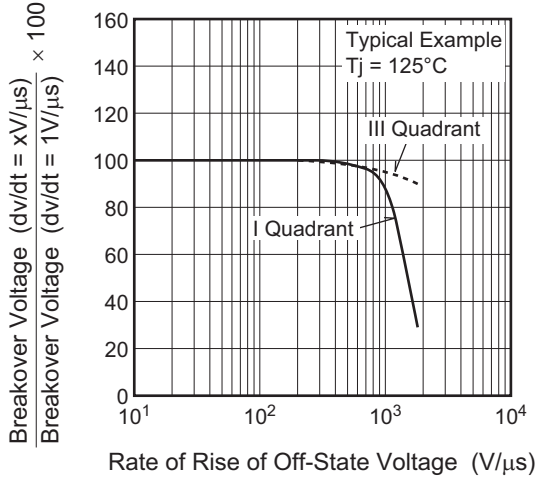
Holding Current vs. Junction Temperature



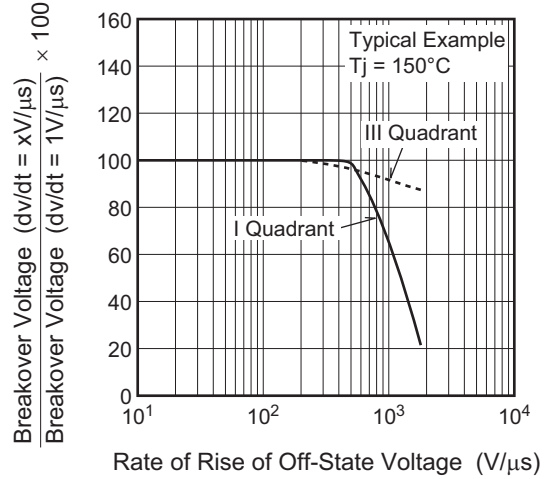
Latching Current vs. Junction Temperature



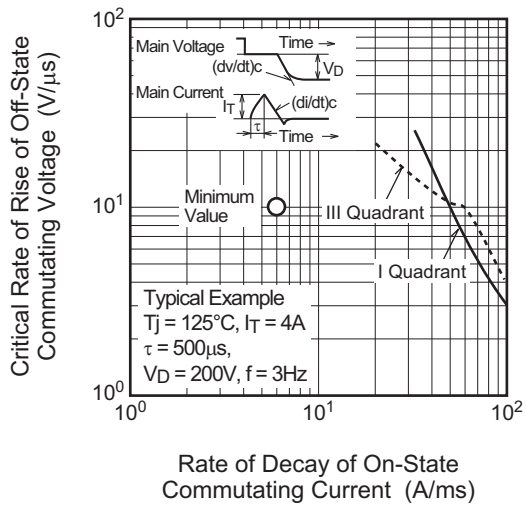
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



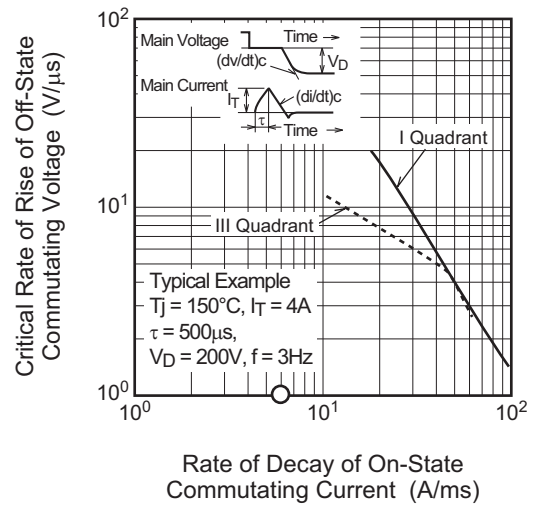
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



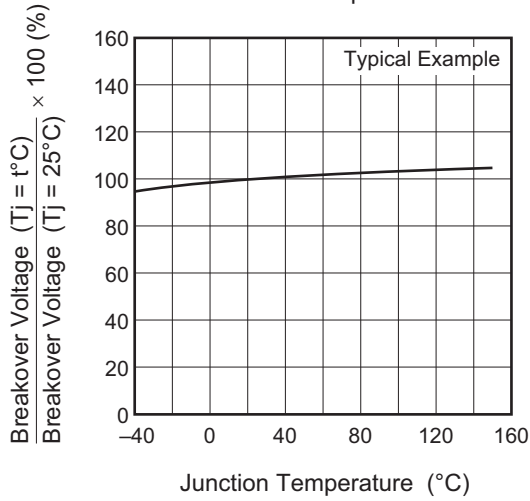
Commutation Characteristics (Tj=125°C)



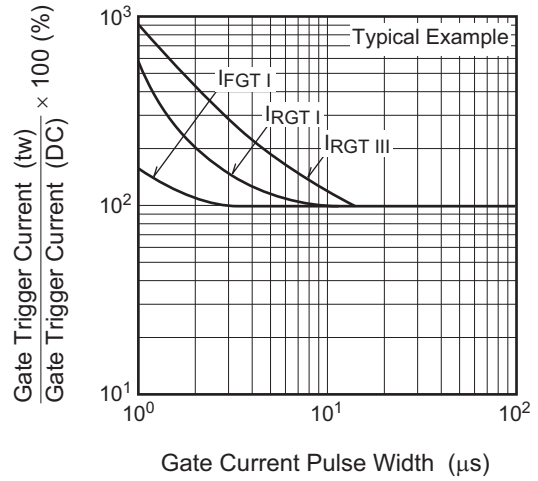
Commutation Characteristics (Tj=150°C)



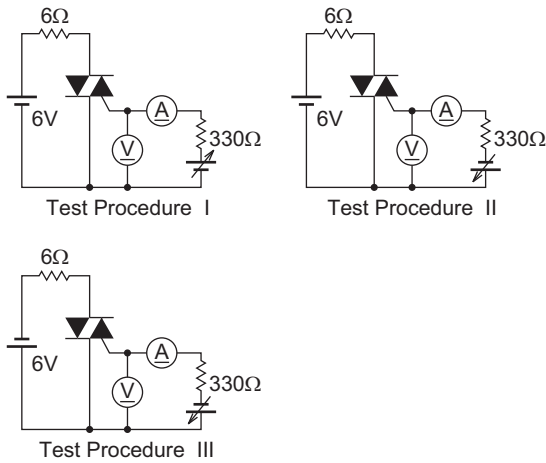
Breakover Voltage vs. Junction Temperature



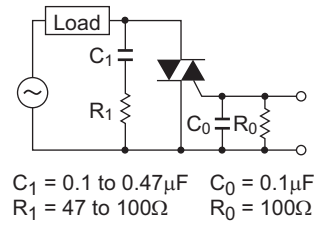
Gate Trigger Current vs. Gate Current Pulse Width



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 dimensions of the BCR12LM-16LB package. The top view shows a square body with a width of 10.0 ± 0.3 mm and a height of 15.0 ± 0.3 mm. The distance between the center of the mounting holes is 3.0 ± 0.3 mm. The distance from the top edge to the center of the mounting holes is 6.5 ± 0.3 mm. The distance from the center of the mounting holes to the top edge of the body is 3.2 ± 0.2 mm. The side view shows a total height of 2.8 ± 0.2 mm. The detail view shows a lead length of 4.5 ± 0.2 mm, a lead thickness of 2.6 ± 0.2 mm, and a lead width of 0.75 ± 0.15 mm. The distance between the leads is 2.54 ± 0.25 mm. The distance from the center of the leads to the center of the mounting holes is 1.15 ± 0.2 mm. The distance from the center of the leads to the bottom edge of the body is 12.5 ± 0.5 mm. The distance from the top edge of the body to the center of the leads is 3.6 ± 0.3 mm. The distance from the bottom edge of the body to the center of the leads is 0.40 ± 0.15 mm.

Ordering Information

Orderable Part Number	Packing	Quantity	Remark
BCR12LM-16LB#B00	Tube	50 pcs.	Straight type
BCR12LM-16LBA8#B00	Tube	50 pcs.	A8 Lead form

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

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