

BCR5PM-12L

Triac

Medium Power Use

(The product guaranteed maximum junction temperature of 150°C)

REJ03G0460-0300

Rev.3.00

Mar 06, 2007

Features

- $I_T(RMS)$: 5 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , I_{RGTHI} : 20 mA (10 mA)^{Note5}
- Viso : 2000 V
- Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PRSS0003AA-A
(Package name: TO-220F)



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

Applications

Switching mode power supply, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, refrigerator, washing machine, infrared kotatsu, carpet, solenoid driver, small motor control, copying machine, electric tool, electric heater control, and other general controlling device

Warning

1. Refer to the recommended circuit values around the triac before using.
2. Be sure to exchange the specification before using. Otherwise, general triacs with the maximum junction temperature of 125°C will be supplied.

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

BCR5PM-12L (The product guaranteed maximum junction temperature of 150°C)

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	I_T (RMS)	5	A	Commercial frequency, sine full wave 360° conduction, $T_c = 120^\circ\text{C}$
Surge on-state current	I_{TSM}	50	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	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}	3	W	
Average gate power dissipation	$P_{G(AV)}$	0.3	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	—	2.0	g	Typical value
Isolation voltage	Viso	2000	V	$T_a = 25^\circ\text{C}$, AC 1 minute, $T_1 \cdot T_2 \cdot G$ terminal to case

Notes: 1. Gate open.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
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}	—	—	20 ^{Note5}	mA	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II I_{RGTI}	—	—	20 ^{Note5}	mA	
	III I_{RGTIII}	—	—	20 ^{Note5}	mA	
Gate non-trigger voltage	V_{GD}	0.2/0.1	—	—	V	$T_j = 125^\circ\text{C}/150^\circ\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	4.0	$^\circ\text{C}/\text{W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutating voltage ^{Note4}	$(dv/dt)_c$	5/1	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}/150^\circ\text{C}$

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

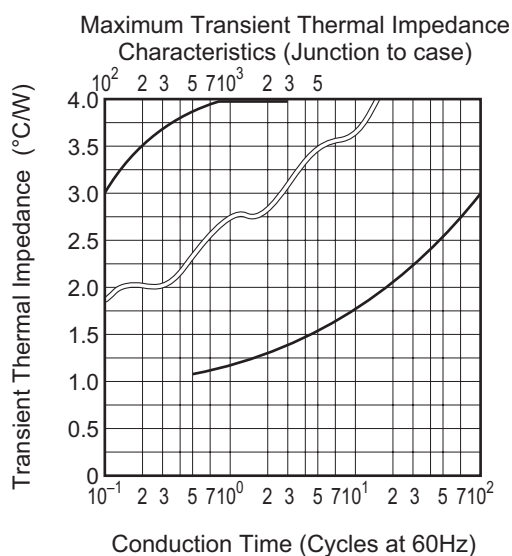
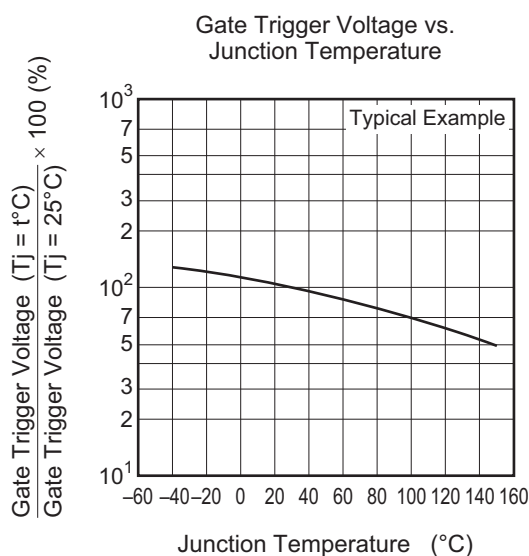
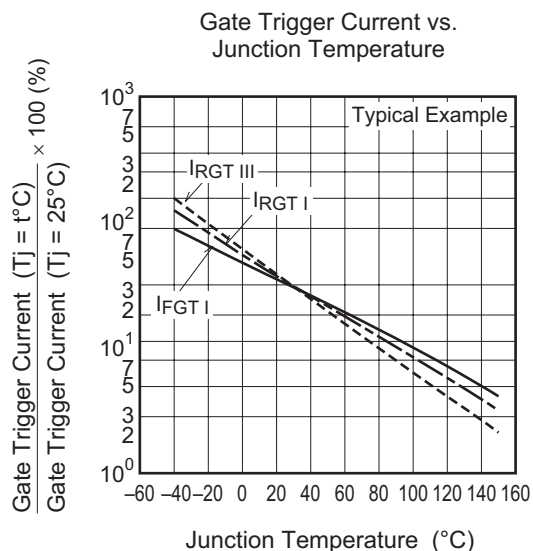
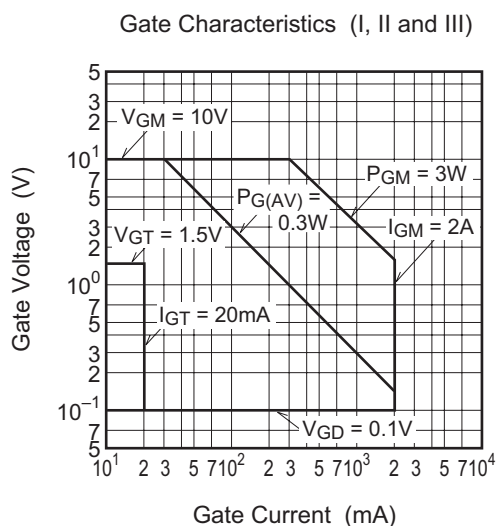
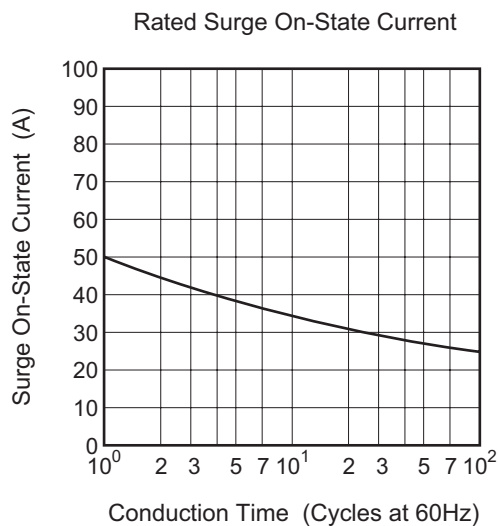
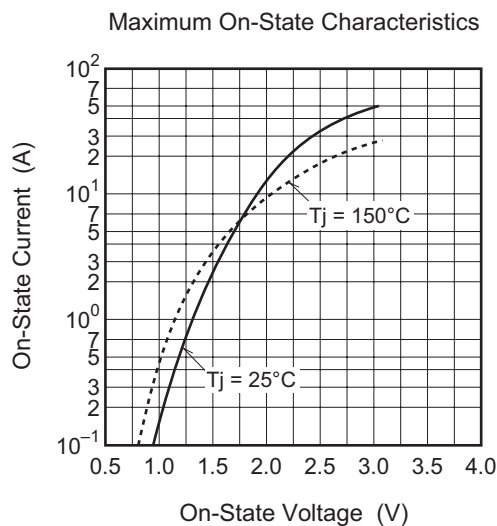
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is $0.5^\circ\text{C}/\text{W}$.

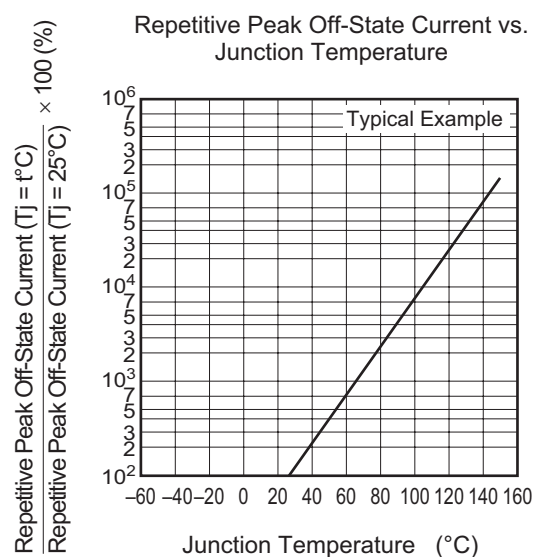
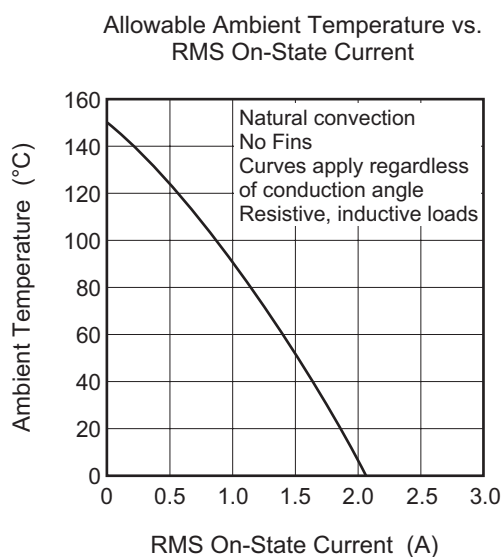
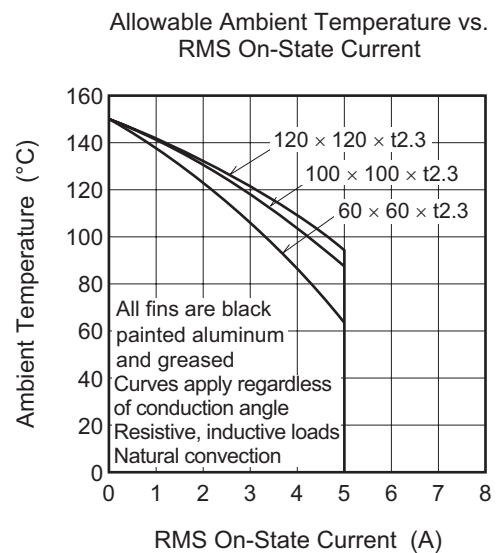
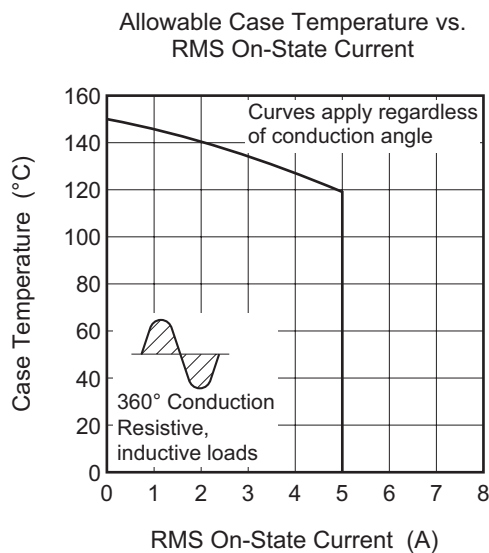
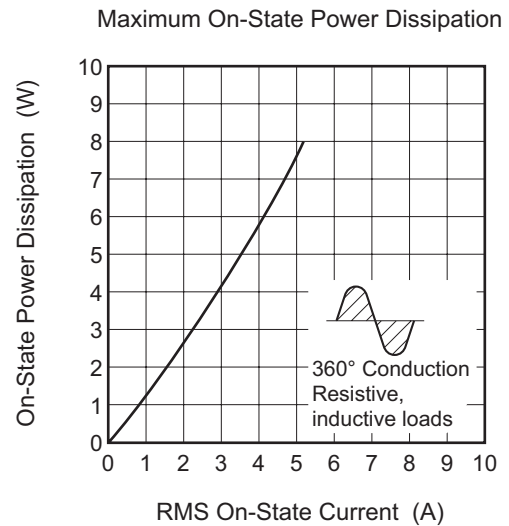
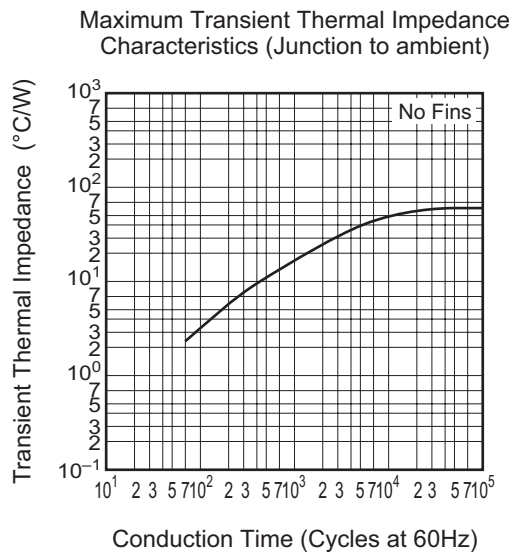
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

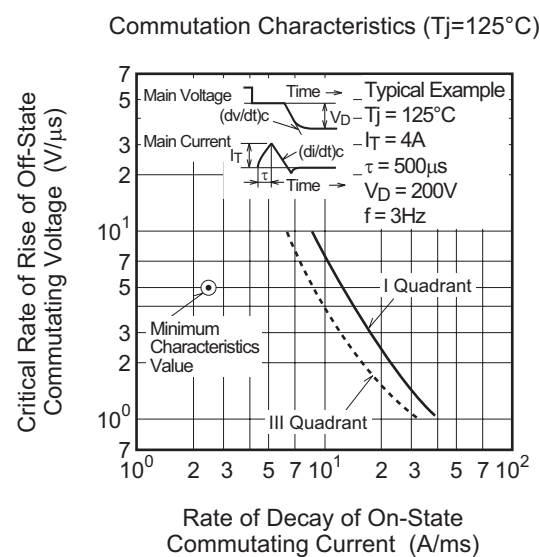
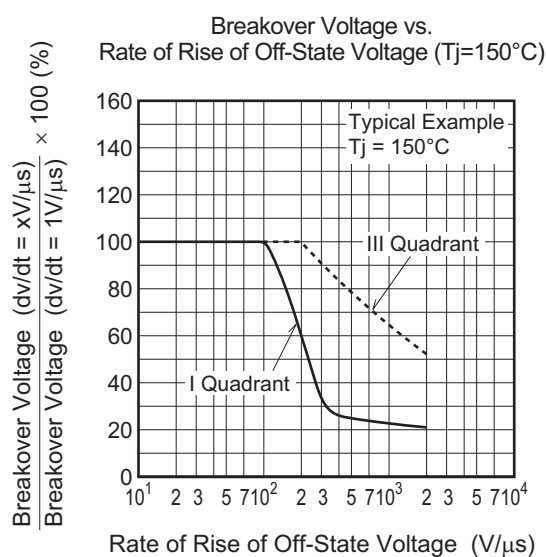
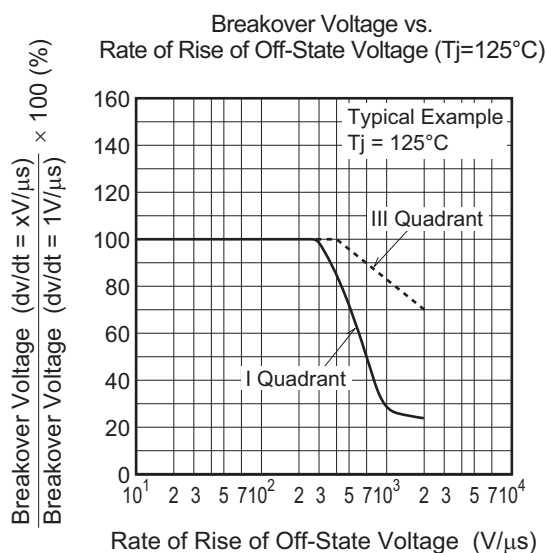
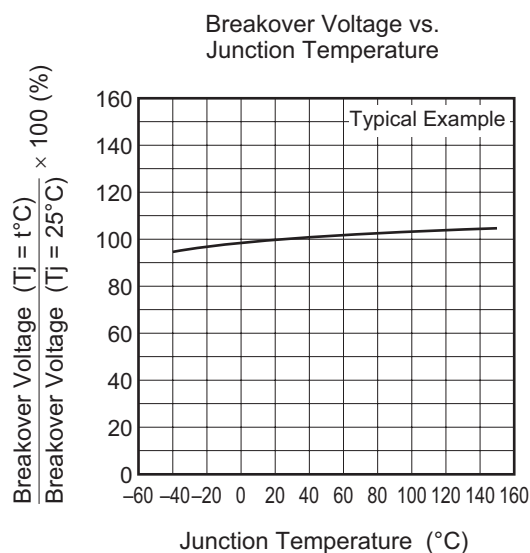
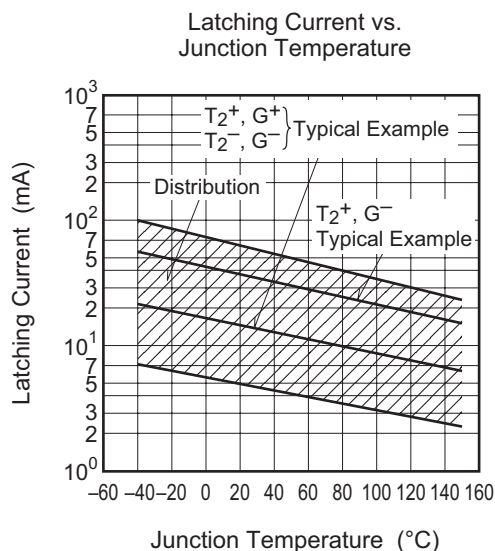
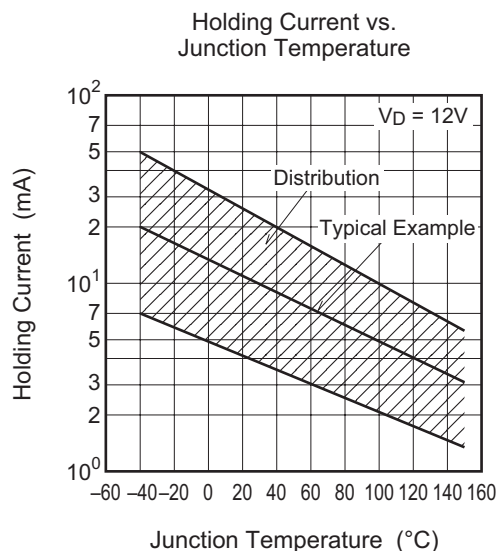
5. High sensitivity ($I_{GT} \leq 10\text{ mA}$) is also available. (I_{GT} item: 1)

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 $(di/dt)_c = -2.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

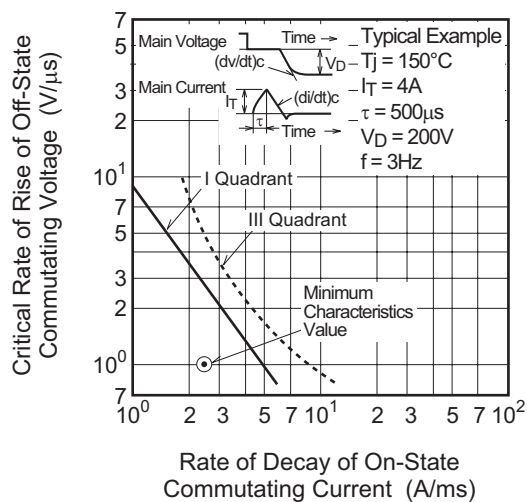
Performance Curves



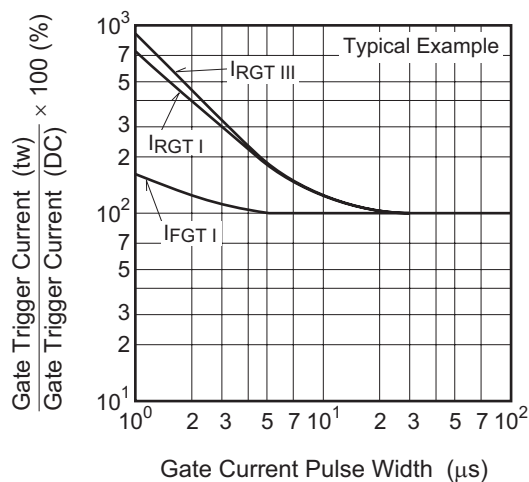




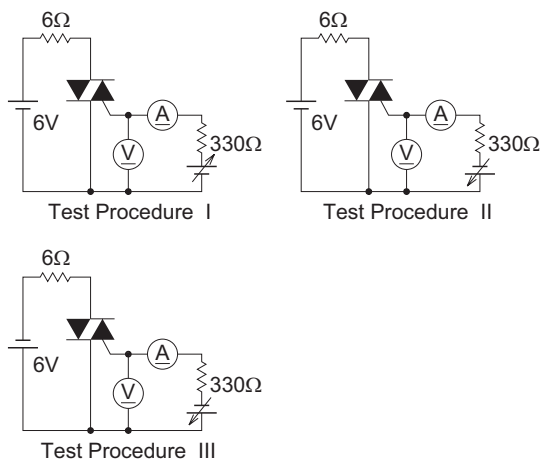
Commutation Characteristics ($T_j=150^\circ\text{C}$)



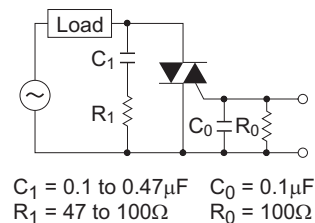
Gate Trigger Current vs. Gate Current Pulse Width



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-220F	SC-67	PRSS0003AA-A	—	2.0g	

Technical drawing of the BCR5PM-12L package showing dimensions in mm:

- Top View:** Overall width 10.5Max, mounting hole diameter $\phi 3.2 \pm 0.2$, hole offset 5.2, lead spacing 2.54, lead width 1.3Max, lead thickness 0.8.
- Side View:** Total height 17, mounting hole diameter 5.0, hole offset 1.2, lead length 13.5Min, lead thickness 0.5, lead width 2.6.
- Bottom View:** Lead width 4.5.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name +B	BCR5PM-12LB
Lead form	Plastic Magazine (Tube)	50	Type name +B – Lead forming code	BCR5PM-12LB-A8

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

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