

# BCR6AM-12L

Triac

Medium Power Use

REJ03G0294-0200

Rev.2.00

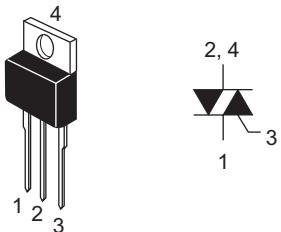
Nov.08.2004

## Features

- $I_{T(RMS)}$  : 6 A
- $V_{DRM}$  : 600 V
- $I_{FGTI}, I_{RGTI}, I_{RGT}$  : 30 mA (20 mA)<sup>Note6</sup>
- Non-Insulated Type
- Planar Passivation Type

## Outline

TO-220



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

## Applications

Contactless AC switch, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, washing machine, infrared kotatsu, carpet, electric fan, solenoid driver, small motor control, solid state relay, copying machine, electric heater control, and other general purpose control applications

## Maximum Ratings

Parameter	Symbol	Voltage class		Unit
		12		
Repetitive peak off-state voltage <sup>Note1</sup>	$V_{DRM}$	600		V
Non-repetitive peak off-state voltage <sup>Note1</sup>	$V_{DSM}$	720		V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{\text{TRMS}}$	6	A	Commercial frequency, sine full wave 360° conduction, $T_c = 103^\circ\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{\text{TSM}}$	60	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	15	$\text{A}^2\text{s}$	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	$P_{\text{GM}}$	5	W	
Average gate power dissipation	$P_{\text{G(AV)}}$	0.5	W	
Peak gate voltage	$V_{\text{GM}}$	10	V	
Peak gate current	$I_{\text{GM}}$	2	A	
Junction temperature	$T_j$	-40 to +125	$^\circ\text{C}$	
Storage temperature	$T_{\text{STG}}$	-40 to +125	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value

Notes: 1. Gate open.

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	$I_{\text{DRM}}$	—	—	2.0	mA	$T_j = 125^\circ\text{C}$ , $V_{\text{DRM}}$ applied
On-state voltage	$V_{\text{TM}}$	—	—	1.7	V	$T_c = 25^\circ\text{C}$ , $I_{\text{TM}} = 9 \text{ A}$ , Instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	$V_{\text{FGTI}}$	—	—	V	$T_j = 25^\circ\text{C}$ , $V_D = 6 \text{ V}$ , $R_L = 6 \Omega$ , $R_G = 330 \Omega$
	II	$V_{\text{RGTI}}$	—	—	V	
	III	$V_{\text{RGTH}}$	—	—	V	
Gate trigger current <sup>Note2</sup>	I	$I_{\text{FGTI}}$	—	—	30 <sup>Note6</sup> mA	$T_j = 25^\circ\text{C}$ , $V_D = 6 \text{ V}$ , $R_L = 6 \Omega$ , $R_G = 330 \Omega$
	II	$I_{\text{RGTI}}$	—	—	30 <sup>Note6</sup> mA	
	III	$I_{\text{RGTH}}$	—	—	30 <sup>Note6</sup> mA	
Gate non-trigger voltage	$V_{\text{GD}}$	0.2	—	—	V	$T_j = 125^\circ\text{C}$ , $V_D = 1/2 V_{\text{DRM}}$
Thermal resistance	$R_{\text{th(j-c)}}$	—	—	2.5	$^\circ\text{C/W}$	Junction to case <sup>Note3 Note4</sup>
Critical-rate of rise of off-state commutating voltage <sup>Note5</sup>	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$

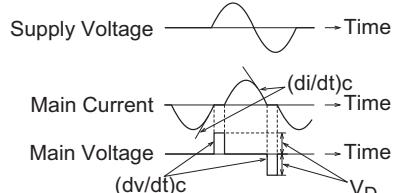
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

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

4. The contact thermal resistance  $R_{\text{th(c-f)}}$  in case of greasing is  $1.0^\circ\text{C/W}$ .

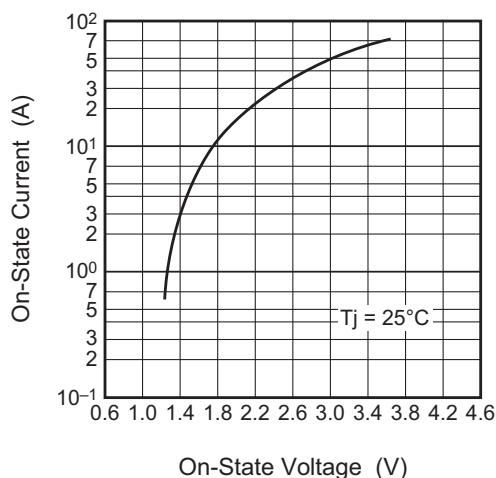
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

6. High sensitivity ( $I_{\text{GT}} \leq 20 \text{ mA}$ ) is also available. ( $I_{\text{GT}}$  item: 1)

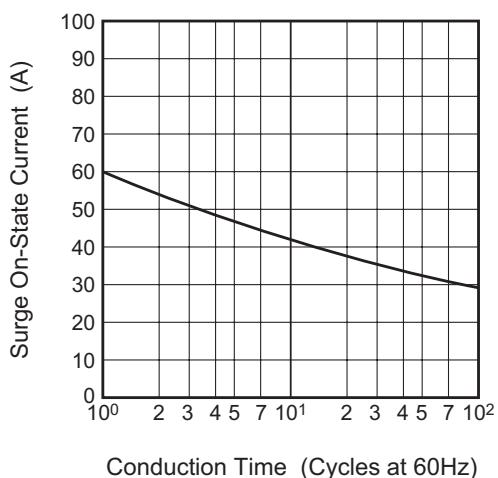
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -3.0 \text{ A/ms}$ 3. Peak off-state voltage $V_D = 400 \text{ V}$	

## Performance Curves

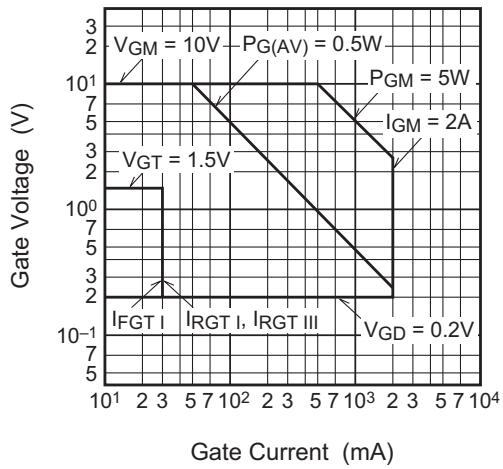
Maximum On-State Characteristics



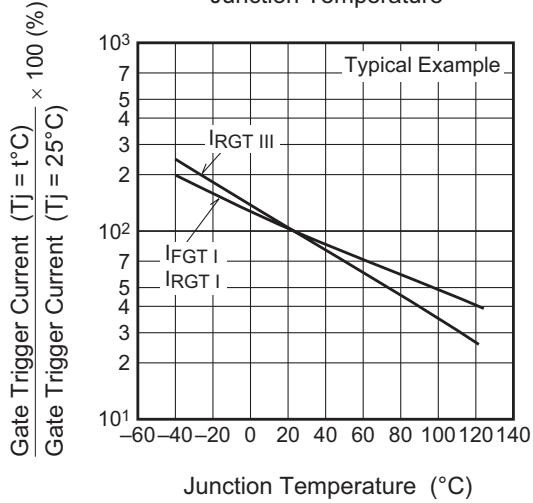
Rated Surge On-State Current



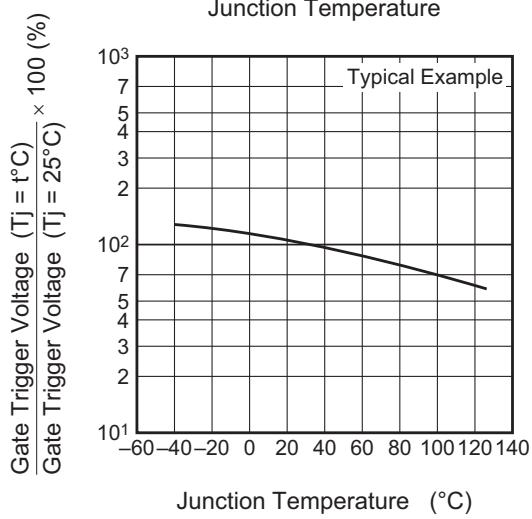
Gate Characteristics (I, II and III)



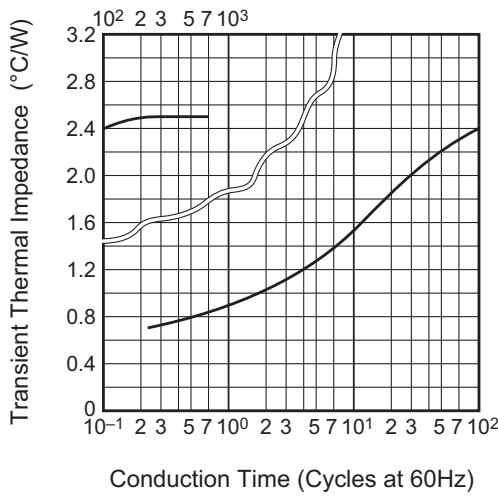
Gate Trigger Current vs. Junction Temperature

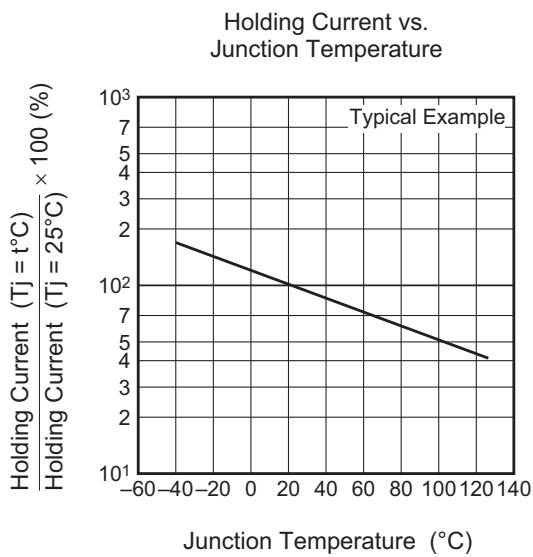
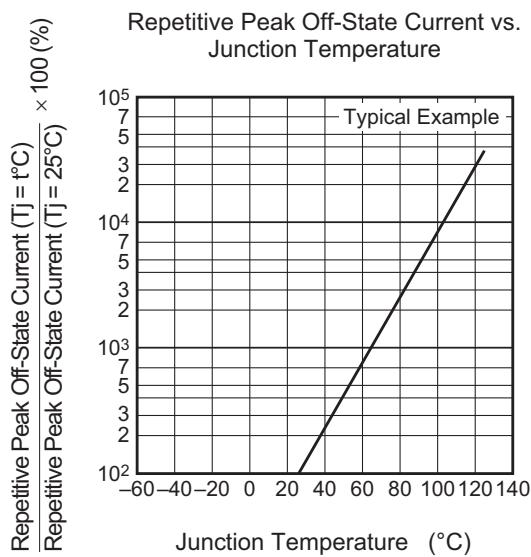
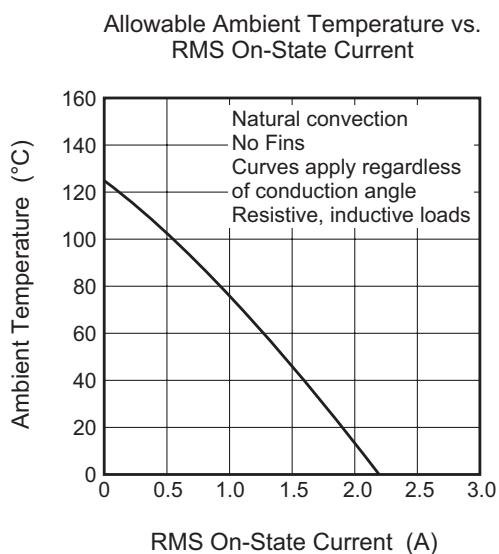
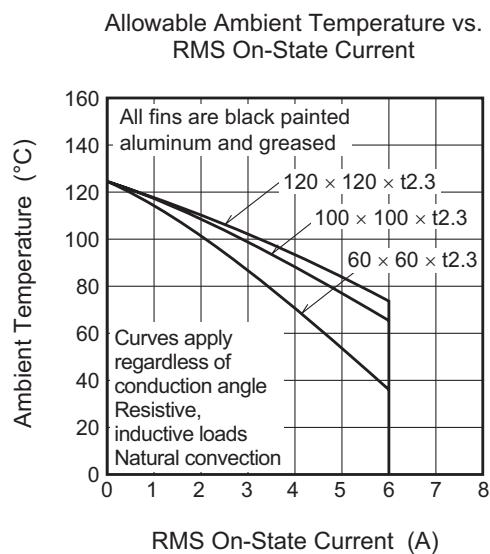
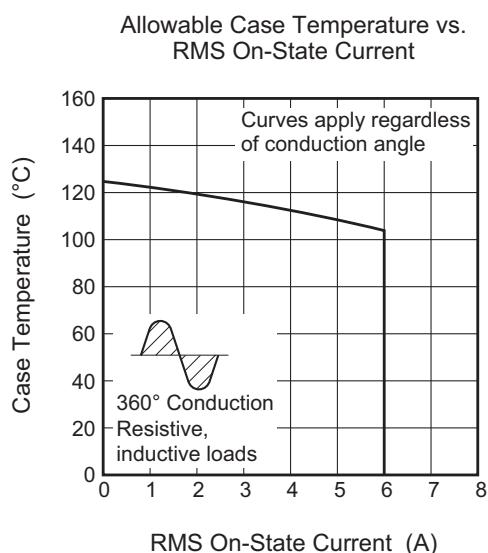
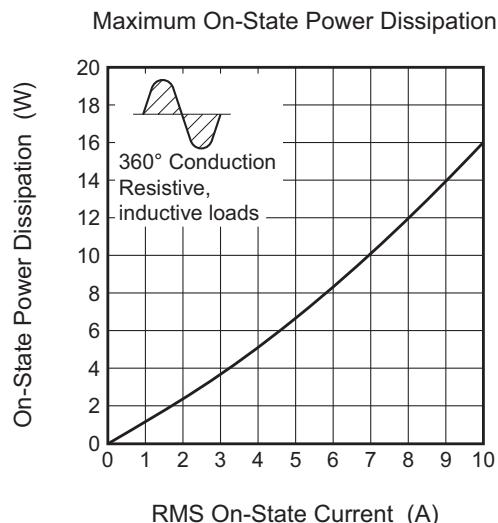


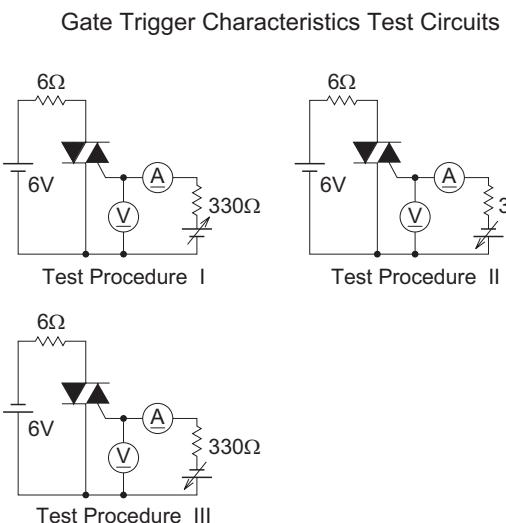
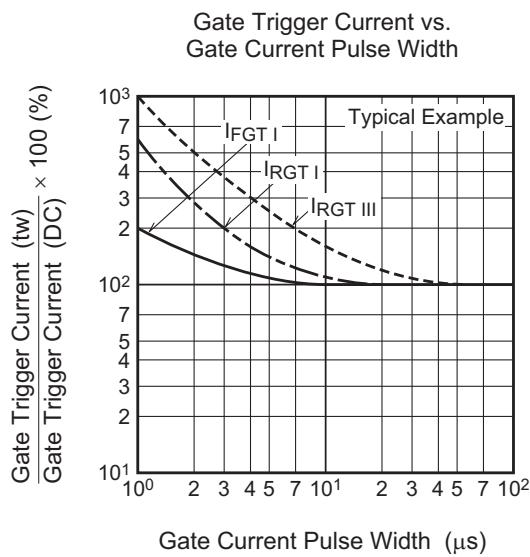
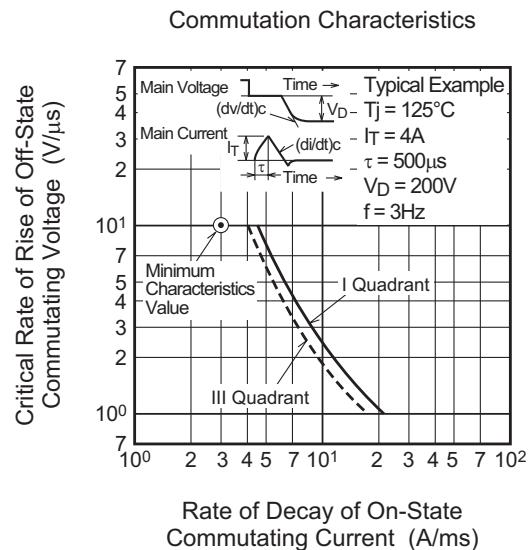
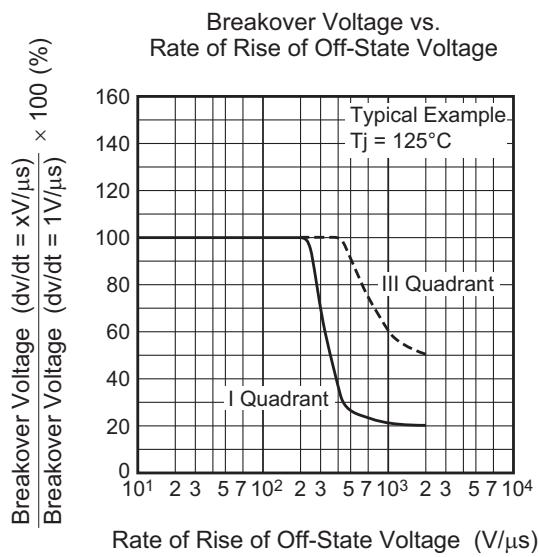
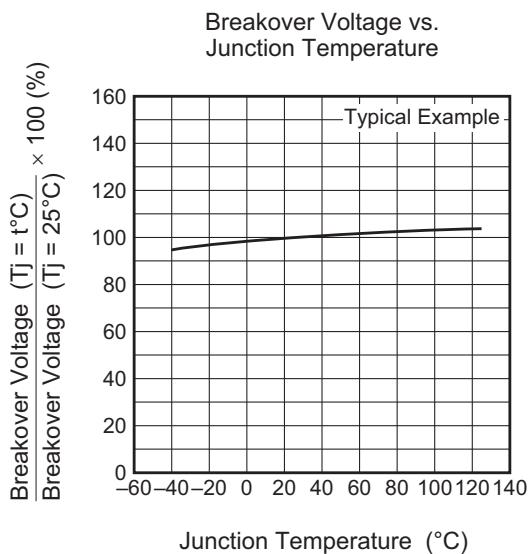
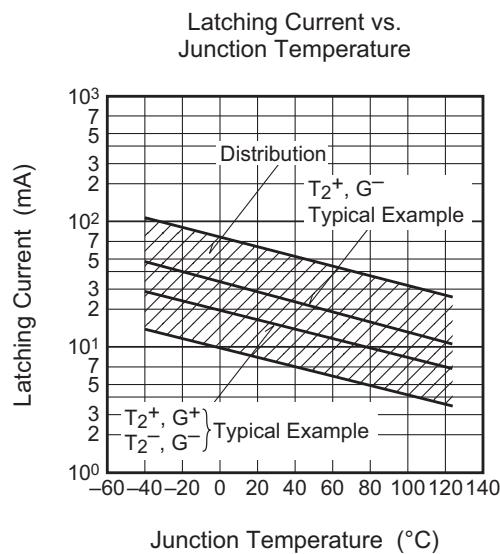
Gate Trigger Voltage vs. Junction Temperature



Maximum Transient Thermal Impedance Characteristics (Junction to case)

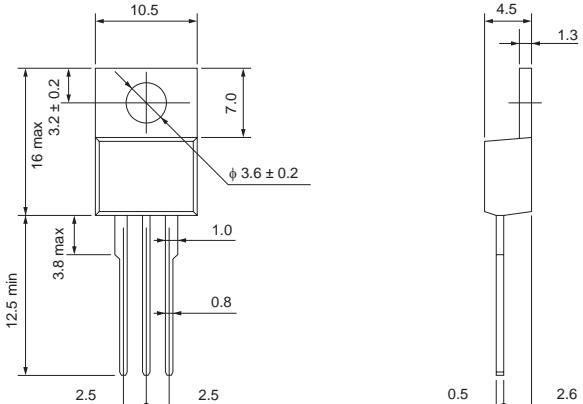




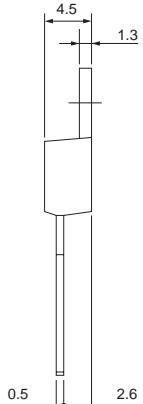


## Package Dimensions

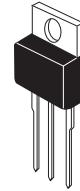
TO-220			
EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
Conforms	Conforms	2.0	Cu alloy



Front view diagram of the TO-220 package showing top and side dimensions. The top view shows a rectangular body with a lead pitch of 10.5 mm, a lead height of 3.2 ± 0.2 mm, a lead thickness of 1.0 mm, and a lead width of 0.8 mm. The side view shows a height of 16 max, a lead spacing of 2.5 mm, and a total height of 12.5 min. The lead pitch is 10.5 mm, and the lead thickness is 1.0 mm. The lead width is 0.8 mm. The lead height is 3.2 ± 0.2 mm. The lead spacing is 2.5 mm. The total height is 12.5 min. The lead pitch is 10.5 mm. The lead thickness is 1.0 mm. The lead width is 0.8 mm. The lead height is 3.2 ± 0.2 mm. The lead spacing is 2.5 mm. The total height is 12.5 min.



Side view diagram of the TO-220 package showing side dimensions. The side view shows a height of 4.5 mm, a lead thickness of 1.3 mm, and a lead spacing of 2.6 mm. The lead pitch is 10.5 mm, and the lead thickness is 1.3 mm. The lead spacing is 2.6 mm. The lead pitch is 10.5 mm. The lead thickness is 1.3 mm. The lead spacing is 2.6 mm.



3D perspective view of the TO-220 package.



Bottom view diagram of the TO-220 package showing lead spacing. The lead pitch is 10.5 mm.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A			
A <sub>1</sub>			
A <sub>2</sub>			
b			
D			
E			
e			
x			
y			
y <sub>1</sub>			
ZD			
ZE			

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name +A	BCR6AM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name +A – Lead forming code	BCR6AM-12LA-A8

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

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