

# BCR3AS-12A

Triac

Low Power Use

REJ03G0288-0400

Rev.4.00

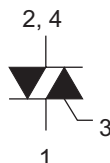
Dec 19, 2008

## Features

- $I_{T(RMS)}$  : 3 A
- $V_{DRM}$  : 600 V
- $I_{FGT I}$ ,  $I_{RGT I}$ ,  $I_{RGT III}$  : 15 mA
- Non-Insulated Type
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0004ZG-A  
(Package name: MP-3A)



1. T<sub>1</sub> Terminal
2. T<sub>2</sub> Terminal
3. Gate Terminal
4. T<sub>2</sub> Terminal

## Applications

Hybrid IC, solid state relay, switching mode power supply, light dimmer, electric fan, electric blanket, control of household equipment such as washing machine, 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	$I_{T(RMS)}$	3	A	Commercial frequency, sine full wave 360° conduction, $T_c = 108^{\circ}\text{C}$ <sup>Note3</sup>
Surge on-state current	$I_{TSM}$	30	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	3.7	A <sup>2</sup> s	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	$V_{GM}$	6	V	
Peak gate current	$I_{GM}$	0.3	A	
Junction temperature	$T_j$	- 40 to +125	°C	
Storage temperature	$T_{stg}$	- 40 to +125	°C	
Mass	—	0.26	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	$T_c = 25^\circ\text{C}$ , $I_{\text{TM}} = 4.5\text{ A}$ , Instantaneous measurement
Gate trigger voltage <sup>Note2</sup>	I	$V_{\text{FGT I}}$	—	—	1.5	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$V_{\text{RGT I}}$	—	—	1.5	
	III	$V_{\text{RGT III}}$	—	—	1.5	
Gate trigger current <sup>Note2</sup>	I	$I_{\text{FGT I}}$	—	—	15	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $R_L = 6\ \Omega$ , $R_G = 330\ \Omega$
	II	$I_{\text{RGT I}}$	—	—	15	
	III	$I_{\text{RGT III}}$	—	—	15	
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	$R_{\text{th(j-c)}}$	—	—	3.8	$^\circ\text{C/W}$	Junction to case <sup>Note3</sup>
Critical-rate of rise of off-state commutating voltage <sup>Note4</sup>	$(dv/dt)_c$	5	—	—	V/ $\mu\text{s}$	$T_j = 125^\circ\text{C}$

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

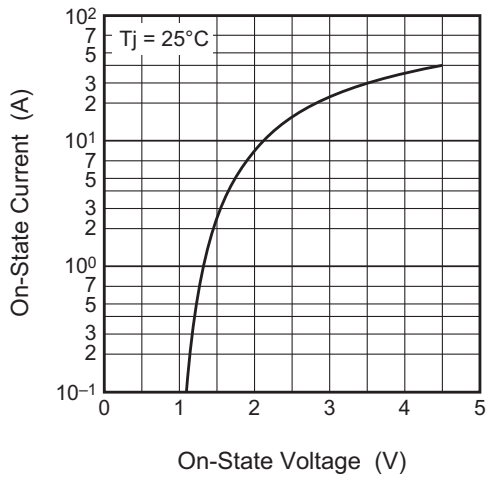
3. Case temperature is measured on the  $T_2$  tab.

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

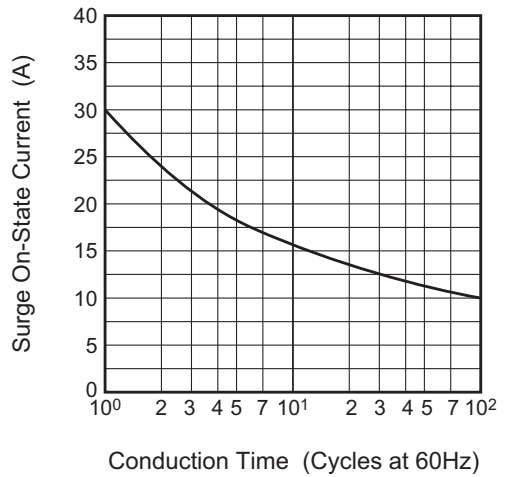
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -1.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

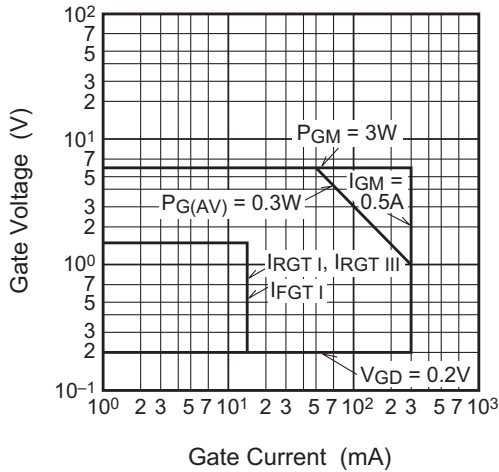
Maximum On-State Characteristics



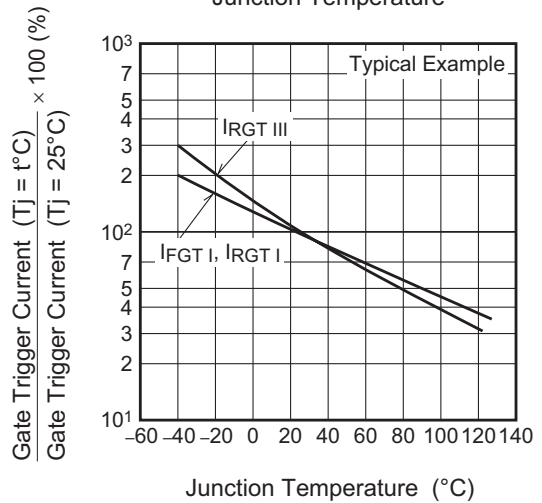
Rated Surge On-State Current



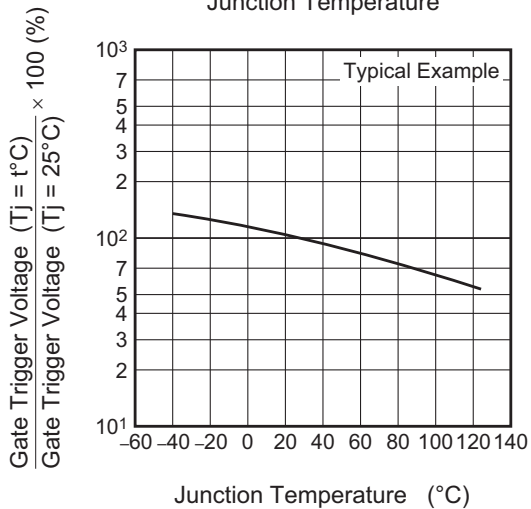
Gate Characteristics (I, II and III)



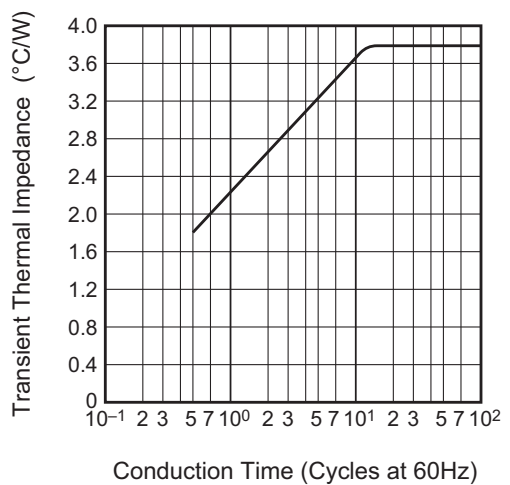
Gate Trigger Current vs. Junction Temperature



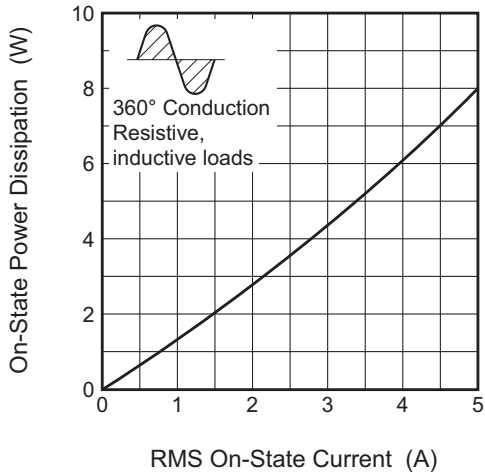
Gate Trigger Voltage vs. Junction Temperature



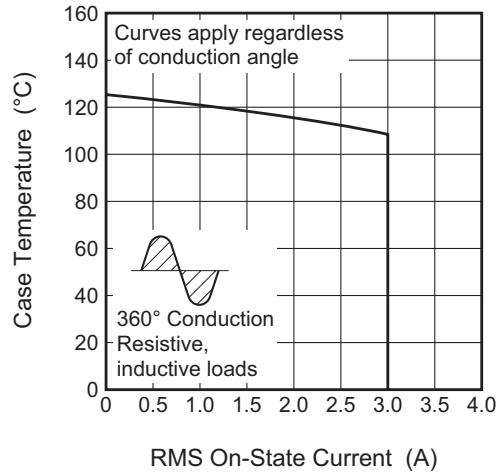
Maximum Transient Thermal Impedance Characteristics (Junction to case)



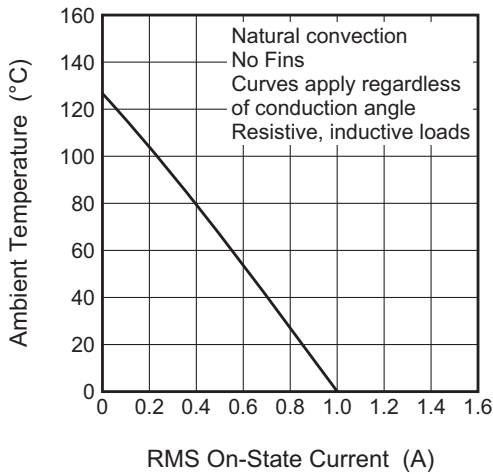
Maximum On-State Power Dissipation



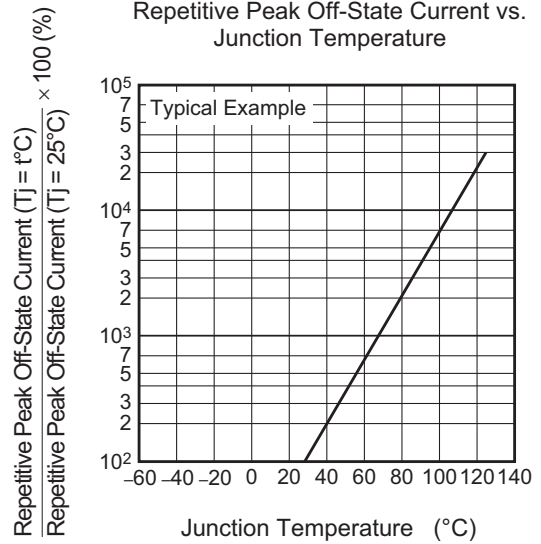
Allowable Case Temperature vs. RMS On-State Current



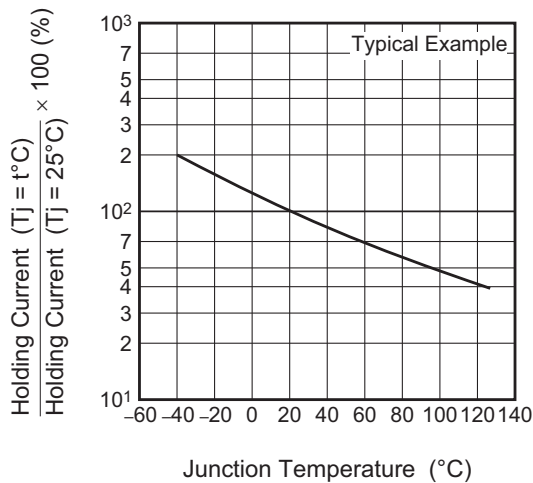
Allowable Ambient Temperature vs. RMS On-State Current



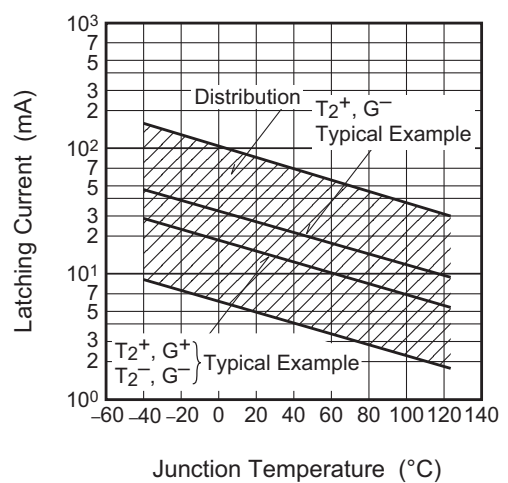
Repetitive Peak Off-State Current vs. Junction Temperature



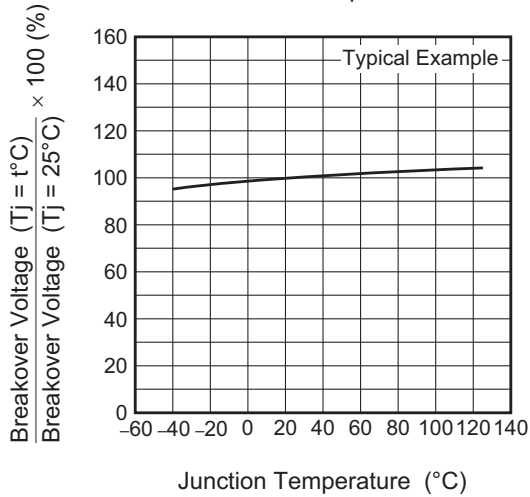
Holding Current vs. Junction Temperature



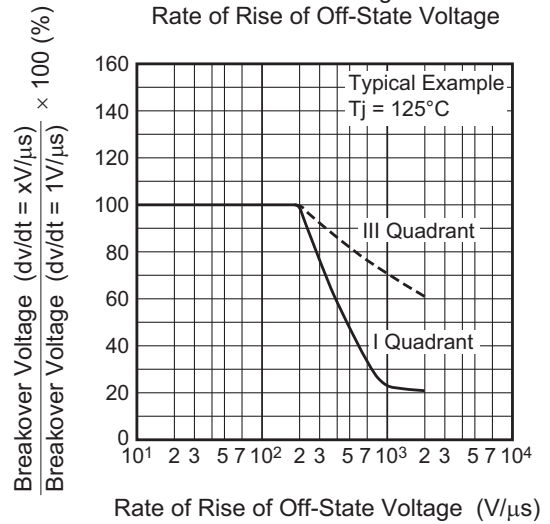
Latching Current vs. Junction Temperature



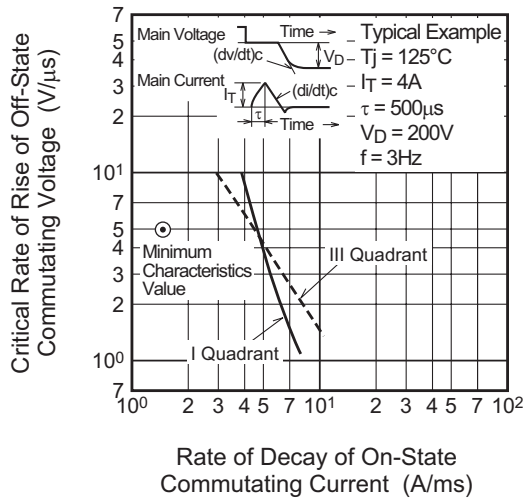
Breakover Voltage vs. Junction Temperature



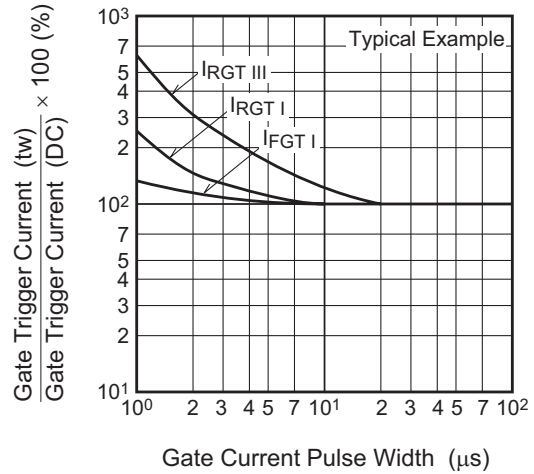
Breakover Voltage vs. Rate of Rise of Off-State Voltage



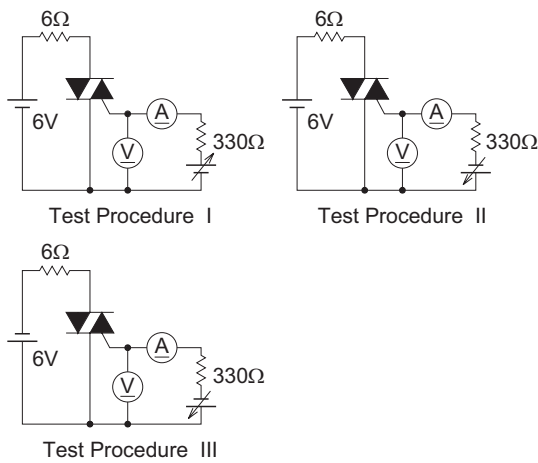
Commutation Characteristics



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.]	Unit: mm
MP-3A	SC-63	PRSS0004ZG-A	—	0.32g	

The technical drawing shows three views of the BCR3AS-12A package:

- Top View:** Shows a square body with a width of 6.6 mm and a height of 1.0 ± 0.2 mm. The inner width is 5.3 ± 0.2 mm. The distance from the center to the lead edge is 0.76 mm. The lead width is 2.3 ± 0.2 mm. The lead height is 1.0 mm. The distance between the leads is 2.3 ± 0.2 mm. The lead thickness is 0.76 ± 0.2 mm. The lead length is 1.0 mm. The lead pitch is 1.0 mm. The lead width is 2.3 ± 0.2 mm. The lead height is 1.0 mm. The lead thickness is 0.76 ± 0.2 mm. The lead length is 1.0 mm. The lead pitch is 1.0 mm.
- Side View:** Shows the package height of 10.4 mm (Max) and 6.1 mm (± 0.2). The lead height is 2.5 mm (Min). The lead width is 2.3 mm. The lead thickness is 0.5 ± 0.2 mm. The lead length is 1.4 ± 0.2 mm. The lead pitch is 0.5 ± 0.2 mm. The lead height is 1.4 ± 0.2 mm. The lead pitch is 0.5 ± 0.2 mm.
- Bottom View:** Shows the package width of 2.3 mm and the lead width of 2.3 ± 0.2 mm. The lead height is 1.0 mm.

## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	3000	Type name – T +Direction (1 or 2) +3	BCR3AS-12A-T13
Surface-mounted type	Plastic Magazine (Tube)	75	Type name	BCR3AS-12A

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

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