

BCR3AS-12A

Triac

Low Power Use

REJ03G0288-0400

Rev.4.00

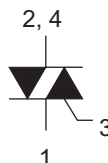
Dec 19, 2008

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. T₁ Terminal
2. T₂ Terminal
3. Gate Terminal
4. T₂ 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 ^{Note1}	V_{DRM}	600	V
Non-repetitive peak off-state voltage ^{Note1}	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, $T_c = 108^{\circ}\text{C}$ ^{Note3}
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^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}	6	V	
Peak gate current	I_{GM}	0.3	A	
Junction temperature	T_j	- 40 to +125	$^{\circ}\text{C}$	
Storage temperature	T_{stg}	- 40 to +125	$^{\circ}\text{C}$	
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_{DRM}	—	—	2.0	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.7	V	$T_c = 25^\circ\text{C}$, $I_{\text{TM}} = 4.5\text{ A}$, Instantaneous measurement
Gate trigger voltage ^{Note2}	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 ^{Note2}	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_{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 ^{Note3}
Critical-rate of rise of off-state commutating voltage ^{Note4}	$(dv/dt)_c$	5	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$

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

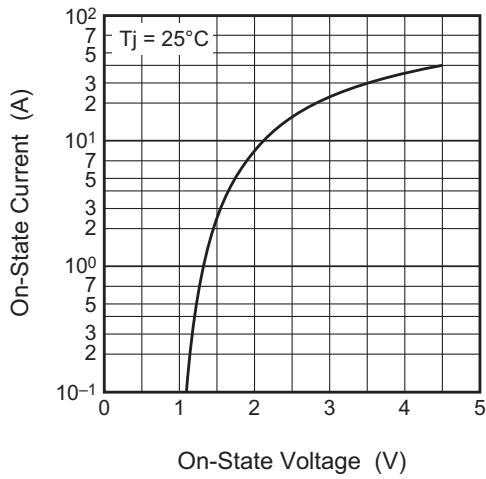
3. Case temperature is measured on the T_2 tab.

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

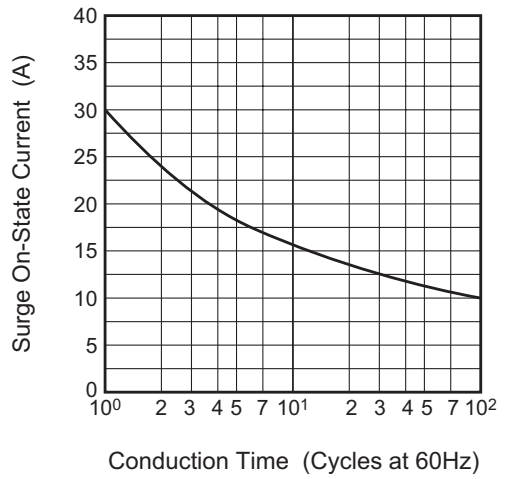
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -1.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

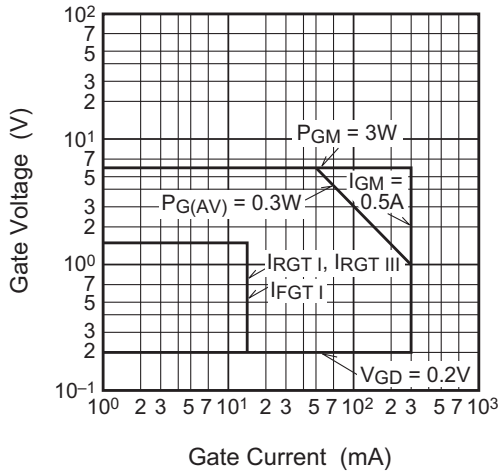
Maximum On-State Characteristics



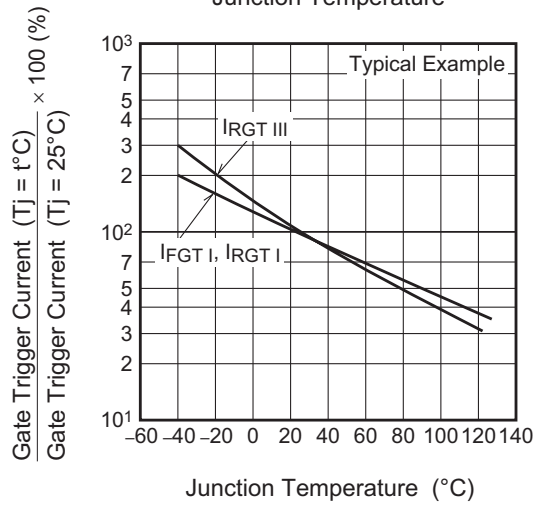
Rated Surge On-State Current



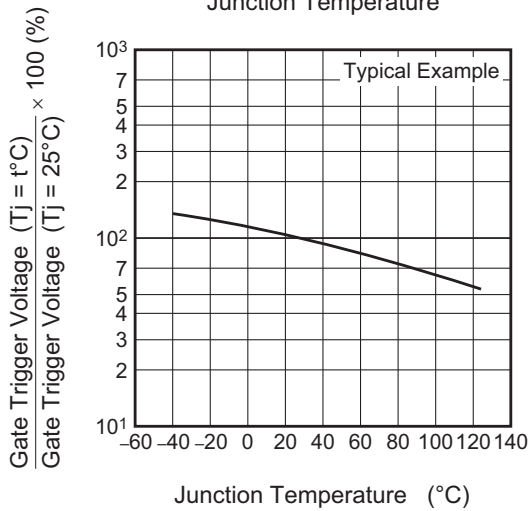
Gate Characteristics (I, II and III)



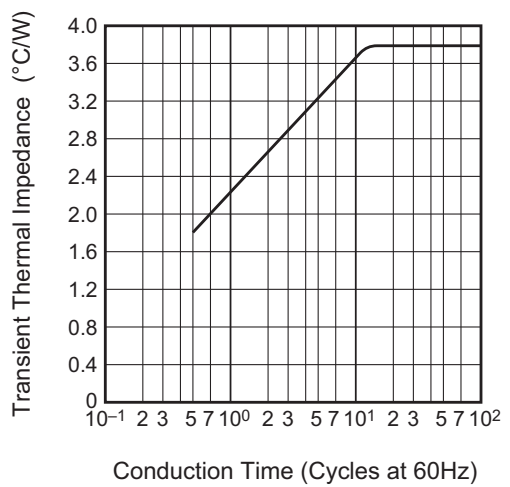
Gate Trigger Current vs. Junction Temperature



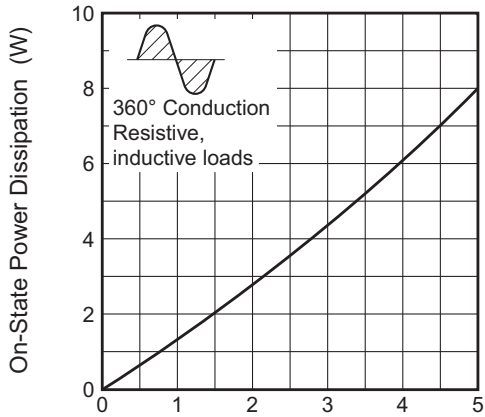
Gate Trigger Voltage vs. Junction Temperature



Maximum Transient Thermal Impedance Characteristics (Junction to case)

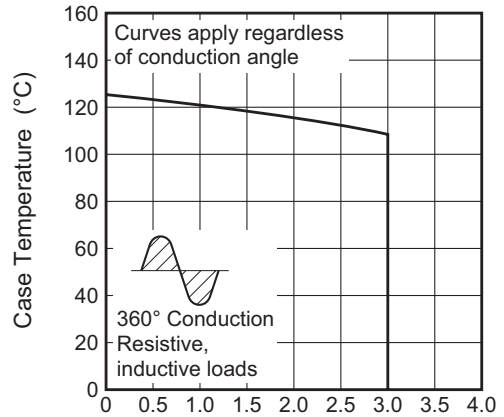


Maximum On-State Power Dissipation



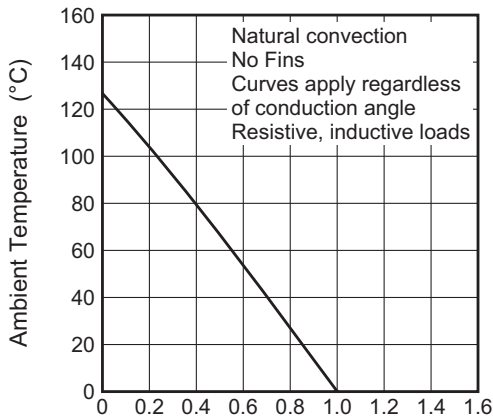
RMS On-State Current (A)

Allowable Case Temperature vs. RMS On-State Current



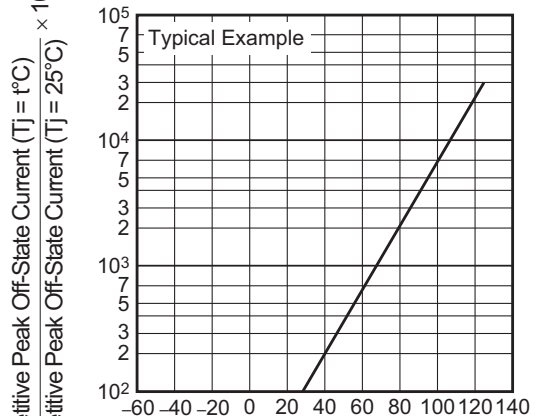
RMS On-State Current (A)

Allowable Ambient Temperature vs. RMS On-State Current



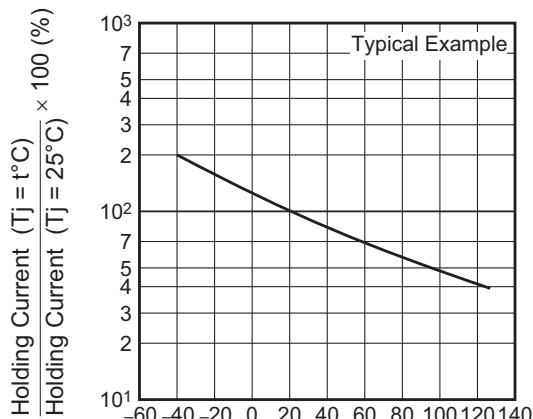
RMS On-State Current (A)

Repetitive Peak Off-State Current vs. Junction Temperature



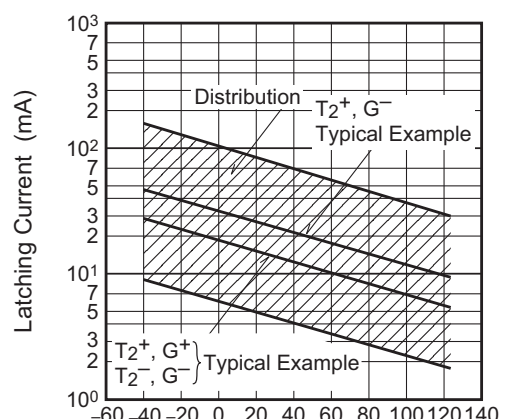
Junction Temperature (°C)

Holding Current vs. Junction Temperature



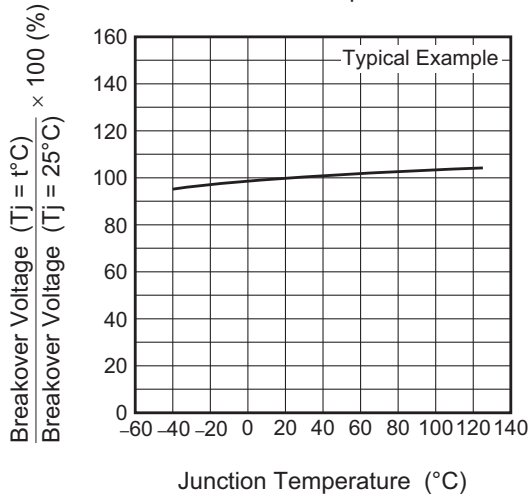
Junction Temperature (°C)

Latching Current vs. Junction Temperature

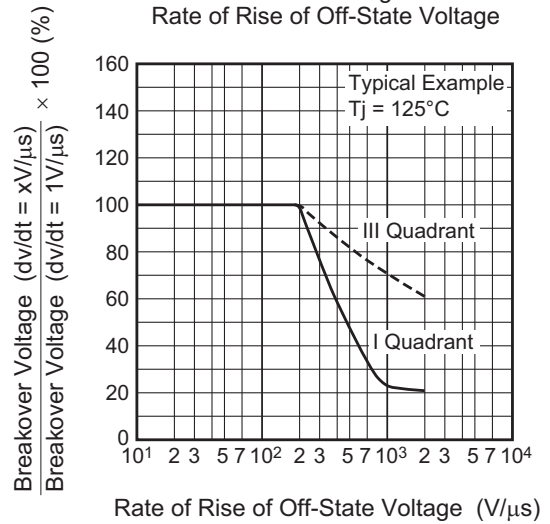


Junction Temperature (°C)

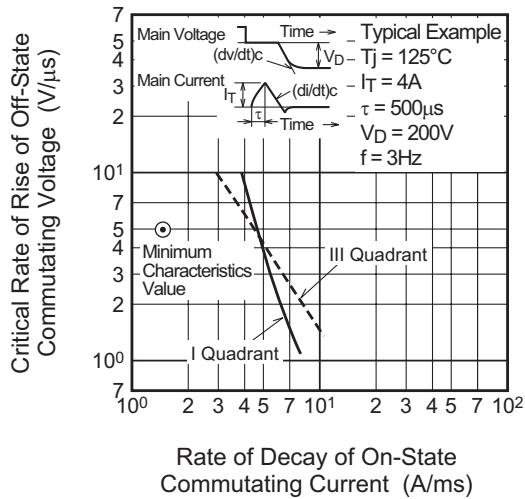
Breakover Voltage vs. Junction Temperature



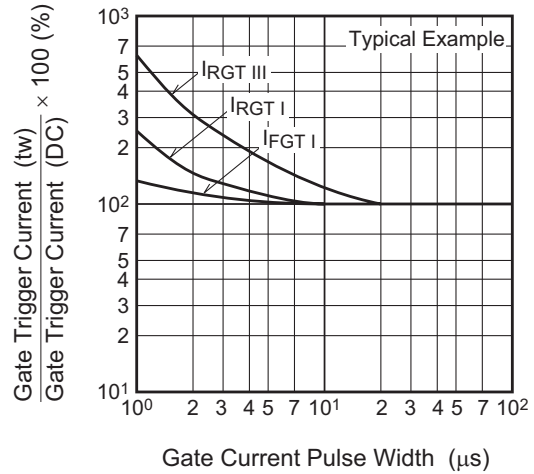
Breakover Voltage vs. Rate of Rise of Off-State Voltage



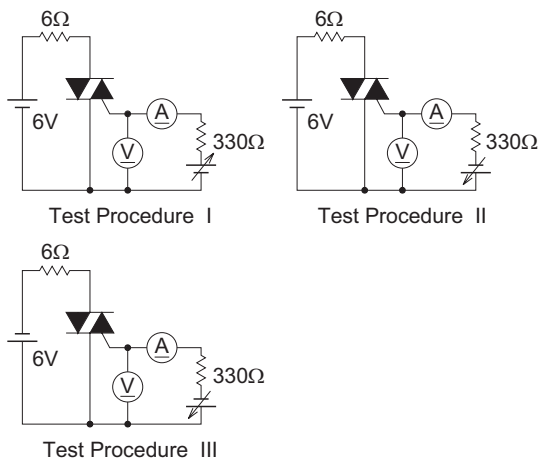
Commutation Characteristics



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 drawing shows three views of the package:

- Top View:** Overall width is 6.6 mm. The distance between the two leads is 5.3 ± 0.2 mm. The lead width is 0.76 ± 0.2 mm. The lead pitch is 2.3 mm. The lead length is 1 ± 0.2 mm. The total height of the package is 10.4Max mm. The distance from the top of the package to the top of the leads is 6.1 ± 0.2 mm. The distance from the top of the package to the bottom of the leads is 2.5Min mm. The distance from the top of the package to the top of the lead pads is 1Max mm.
- Side View:** The package height is 2.3 mm. The distance from the top of the package to the top of the lead pads is 0.5 ± 0.2 mm. The distance from the top of the package to the bottom of the lead pads is 0.1 ± 0.1 mm. The distance from the top of the package to the bottom of the leads is 1.4 ± 0.2 mm. The distance from the top of the package to the bottom of the lead pads is 0.5 ± 0.2 mm.
- Bottom View:** The package width is 2.3 mm. The distance between the two leads is 2.3 ± 0.2 mm. The lead width is 0.76 mm. The lead pitch is 2.3 mm. The lead length is 1 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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