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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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BCR3AS-12A

Triac

Low Power Use

REJ03G0290-0200

Rev.2.00

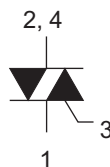
Nov 30, 2007

Features

- $I_{T(RMS)}$: 3 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , $I_{RGT III}$: 15 mA (10 mA)^{Note5}
- Non-Insulated Type
- Planar Passivation Type
- Lead Mounted Type

Outline

RENESAS Package code: PRSS0004ZD-D
(Package name: DPAK(L)-3)



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, 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	$T_c = 25^\circ\text{C}$, $I_{TM} = 4.5\text{ A}$, 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}	—	—	15 ^{Note5}	mA	$T_j = 125^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II	I_{RGTI}	—	—	15 ^{Note5}	mA	
	III	I_{RGTIII}	—	—	15 ^{Note5}	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 25^\circ\text{C}$, $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	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 measurement circuit.

3. Case temperature is measured on the T_2 tab.

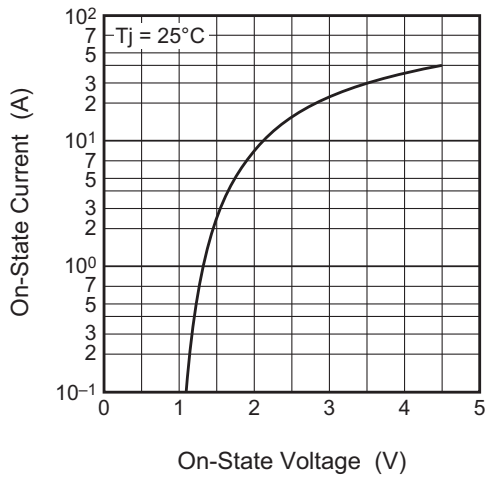
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

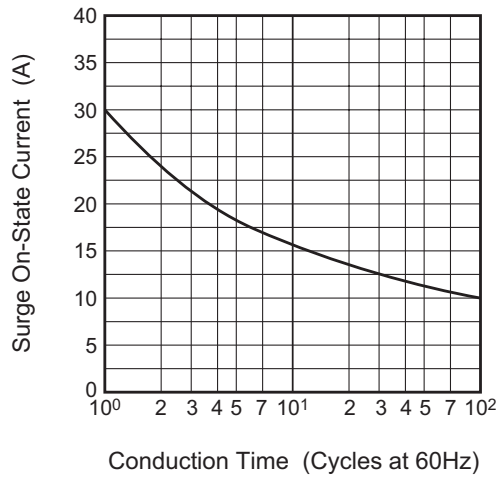
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -1.5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

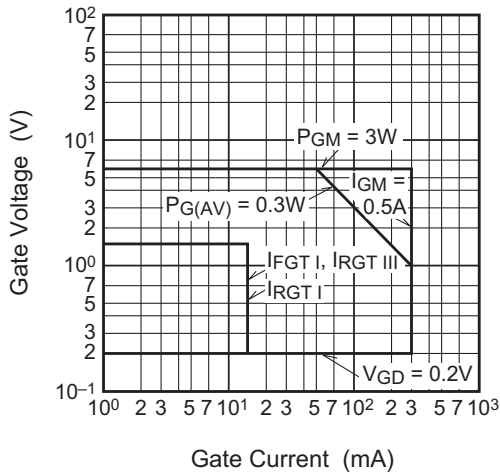
Maximum On-State Characteristics



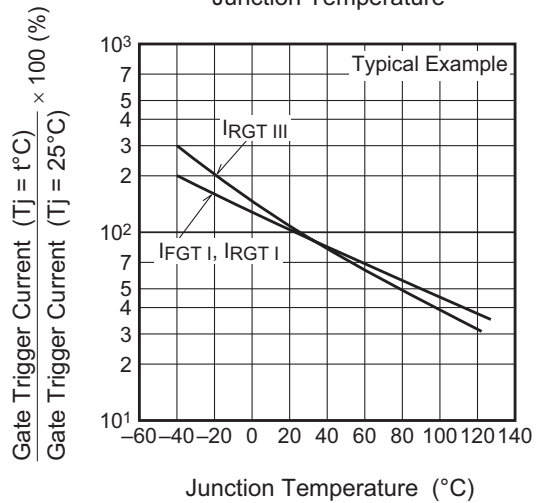
Rated Surge On-State Current



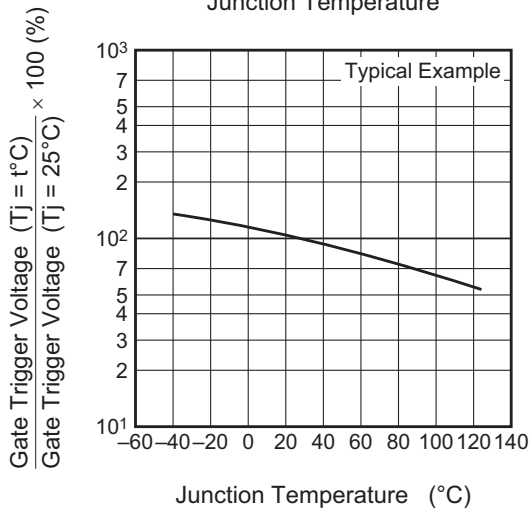
Gate Characteristics (I, II and III)



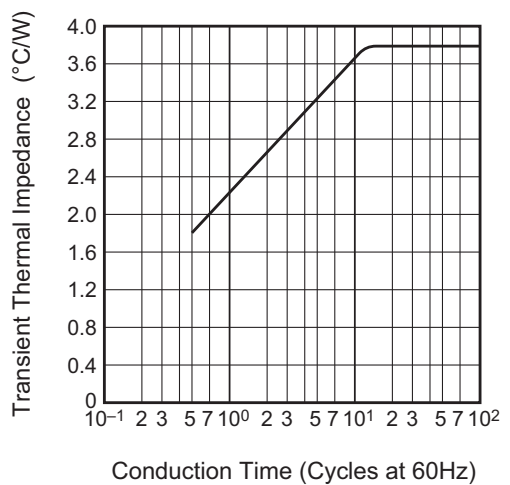
Gate Trigger Current vs. Junction Temperature

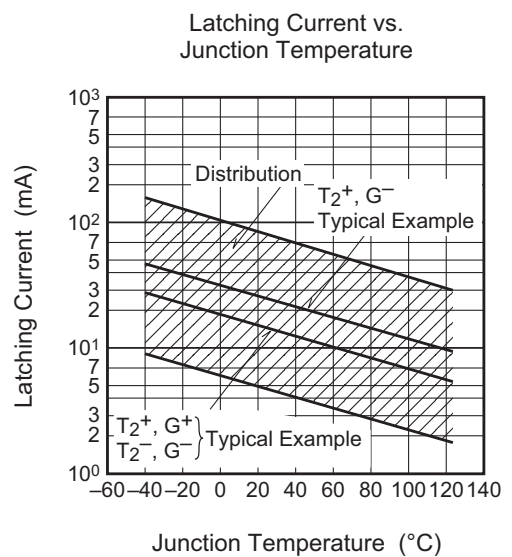
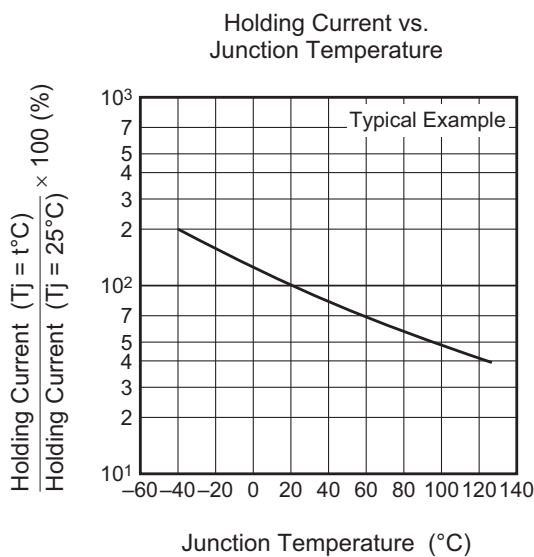
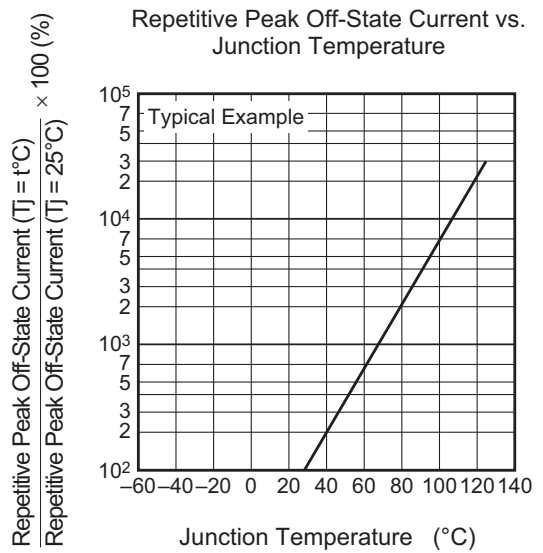
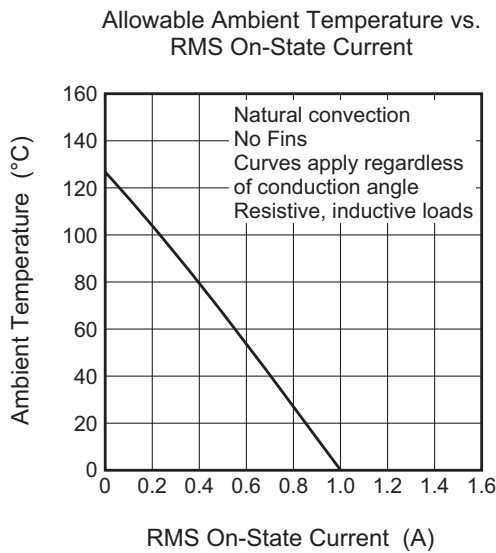
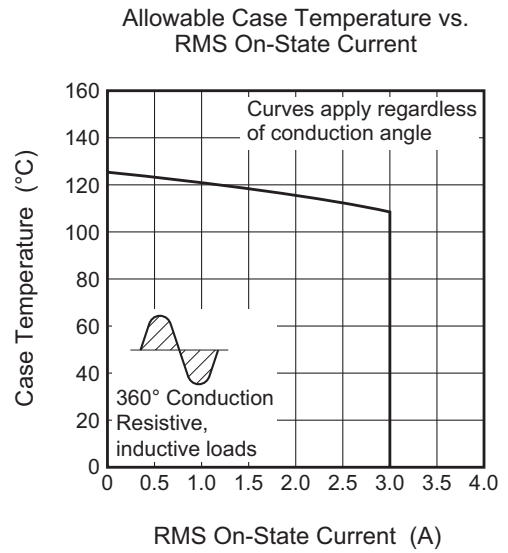
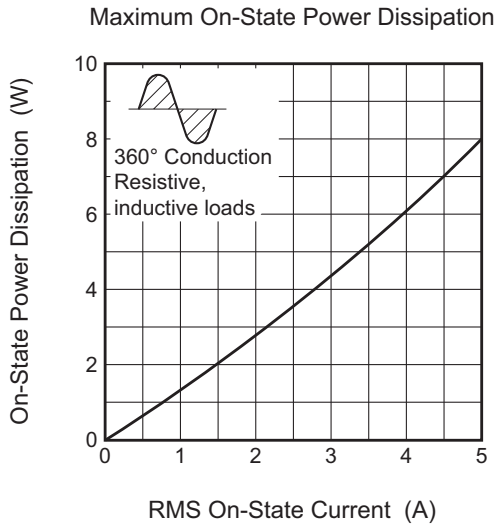


Gate Trigger Voltage vs. Junction Temperature

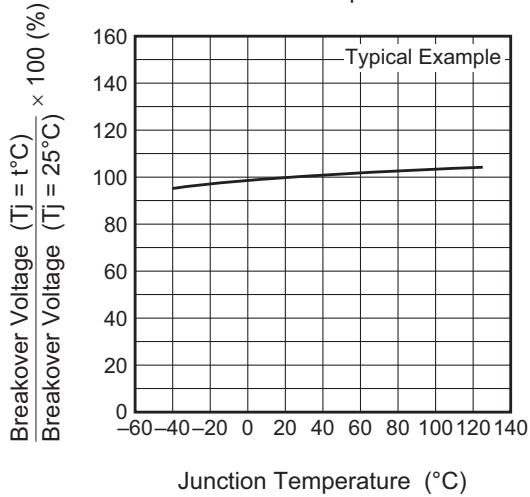


Maximum Transient Thermal Impedance Characteristics (Junction to case)

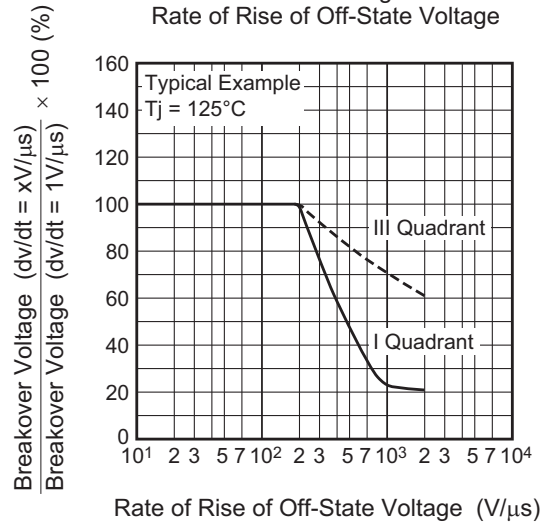




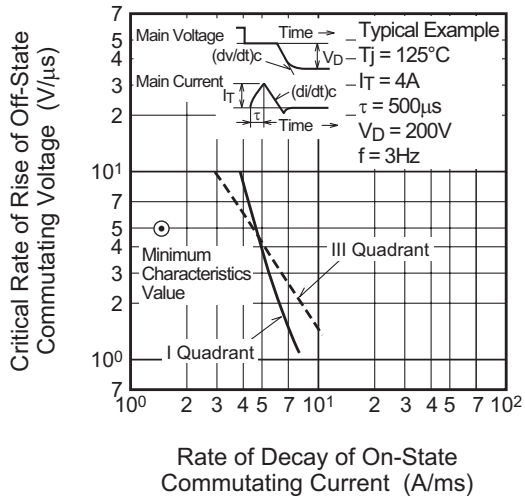
Breakover Voltage vs. Junction Temperature



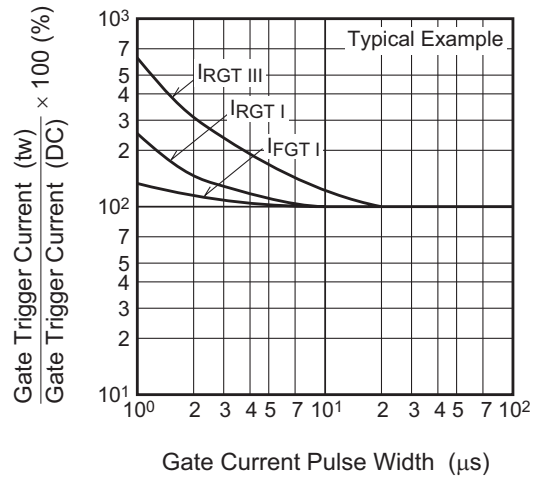
Breakover Voltage vs. Rate of Rise of Off-State Voltage



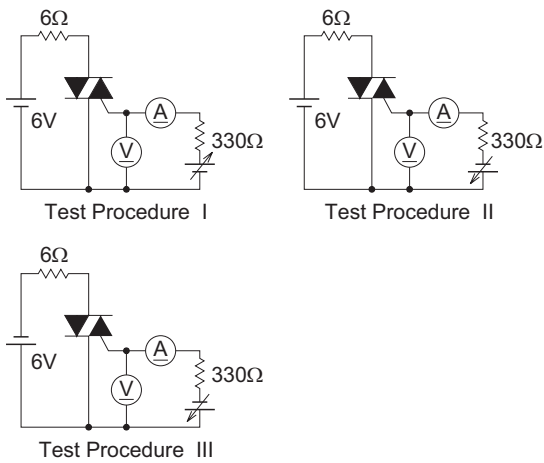
Commutation Characteristics



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
DPAK(L)-(3)	—	PRSS0004ZD-D	DPAK(L)-(3)/DPAK(L)-(3)V	0.36g	

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name – A1	BCR3AS-12A-A1

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

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