BCR1AM-12A

600V-1A-Triac
Low Power Use

R07DS0177EJ0400
Rev.4.00
Jul 31, 2014

Features

- $I_{T\ (RMS)}$: 1 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI}, $I_{RGT\ III}$: 7 mA
- Non-Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PRSS0003EA-A
(Package name: TO-92*)

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

Applications

Washing machine, electric fan, air purifier, electric pot, rice-cooker, electric blanket, refrigerator, Solid State Relay, and other general purpose AC 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

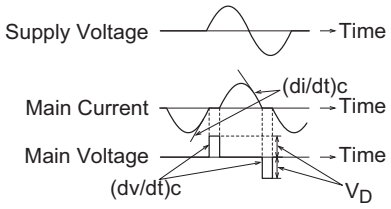
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	1.0	A	Commercial frequency, sine full wave 360° conduction, Tc = 56°C[Note3]
Surge on-state current	I_{TSM}	10	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	0.41	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	1	W	
Average gate power dissipation	$P_{G\ (AV)}$	0.1	W	
Peak gate voltage	V_{GM}	6	V	
Peak gate current	I_{GM}	0.5	A	
Junction temperature	Tj	– 40 to +125	°C	
Storage temperature	Tstg	– 40 to +125	°C	
Mass	—	0.23	g	Typical value

Notes: 1. Gate open.

Electrical Characteristics

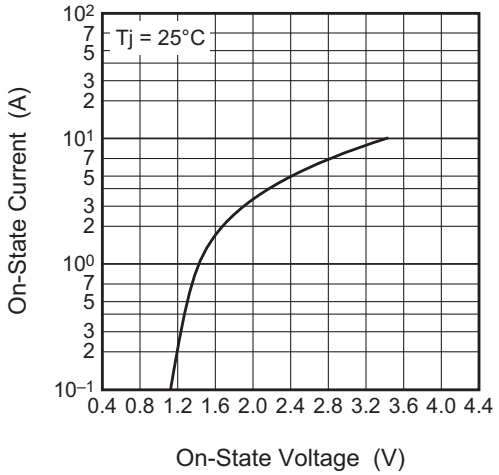
Parameter		Symbol	Rated value			Unit	Test conditions
			Min.	Typ.	Max.		
Repetitive peak off-state current		I_{DRM}	—	—	0.5	mA	Tj = 125°C, V_{DRM} applied
On-state voltage		V_{TM}	—	—	1.6	V	Tc = 25°C, I_{TM} = 1.5 A, Instantaneous measurement
Gate trigger voltage[Note2]	I	V_{FGTI}	—	—	2.0	V	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	V_{RGTI}	—	—	2.0	V	
	III	V_{RGTIII}	—	—	2.0	V	
Gate trigger current[Note2]	I	I_{FGTI}	—	—	7	mA	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	I_{RGTI}	—	—	7	mA	
	III	I_{RGTIII}	—	—	7	mA	
Gate non-trigger voltage		V_{GD}	0.1	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM}
Thermal resistance		$R_{th\ (j-c)}$	—	—	50	°C/W	Junction to case[Note3]
Critical-rate of rise of off-state commutating voltage[Note4]		(dv/dt)c	2	—	—	V/µs	Tj = 125°C

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.
3. Case temperature is measured at the T_2 terminal 1.5 mm away from the molded case.
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

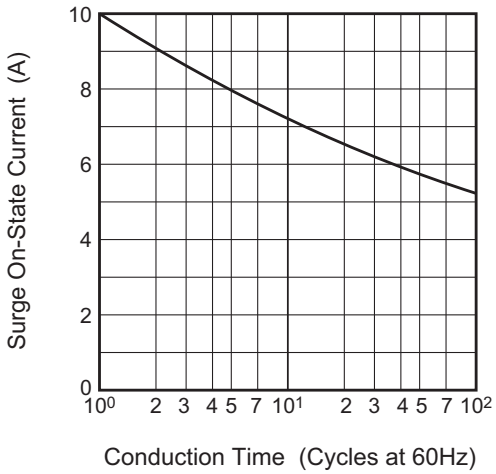
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature Tj = 125°C 2. Rate of decay of on-state commutating current (di/dt)c = – 0.5 A/ms 3. Peak off-state voltage V_D = 400 V	

Performance Curves

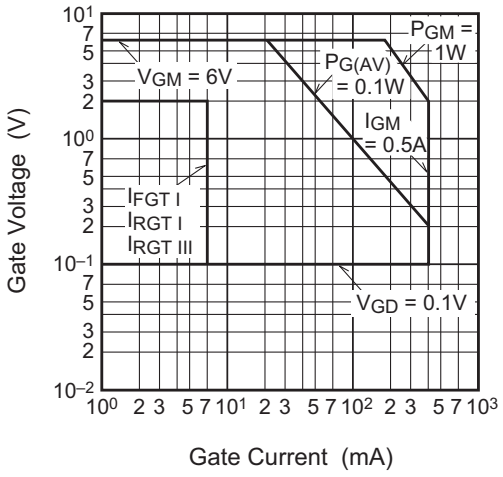
Maximum On-State Characteristics



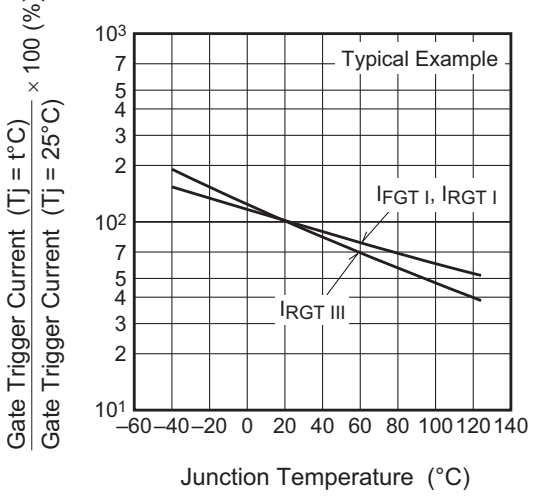
Rated Surge On-State Current



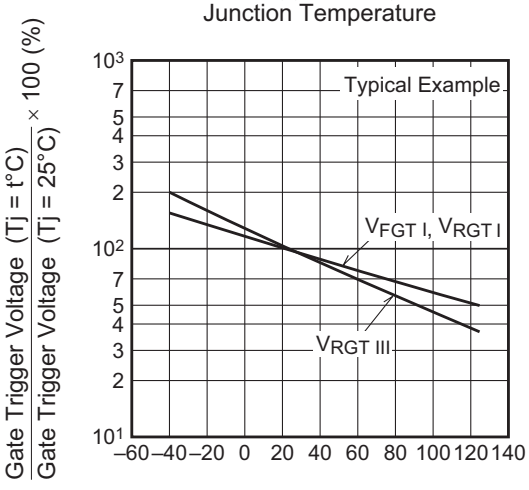
Gate Characteristics



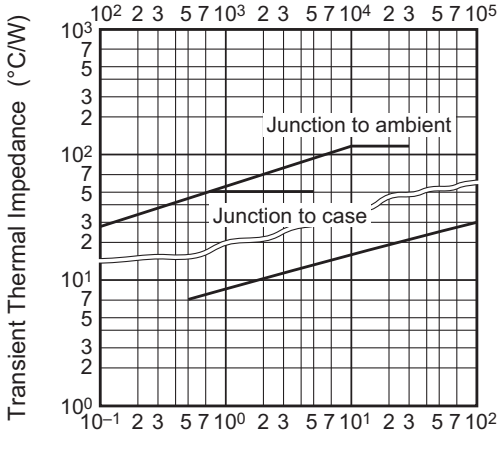
Gate Trigger Current vs. Junction Temperature



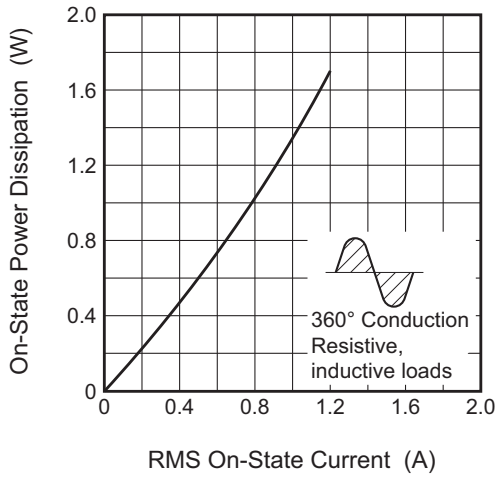
Gate Trigger Voltage vs. Junction Temperature



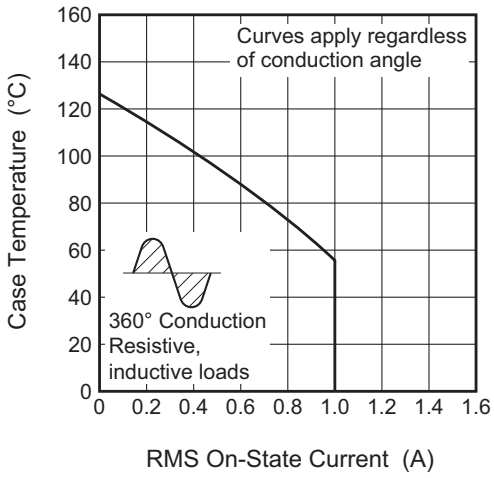
Maximum Transient Thermal Impedance Characteristics (Junction to case, Junction to ambient)



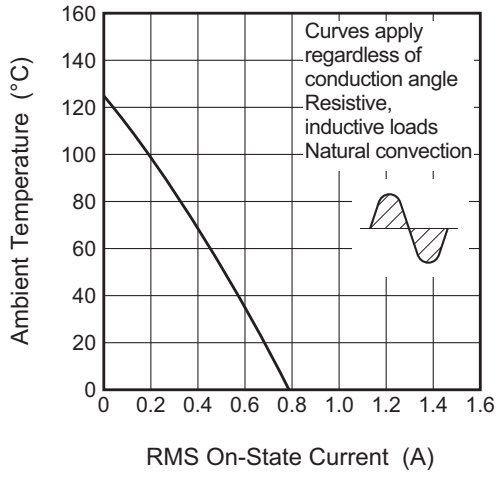
Maximum On-State Power Dissipation



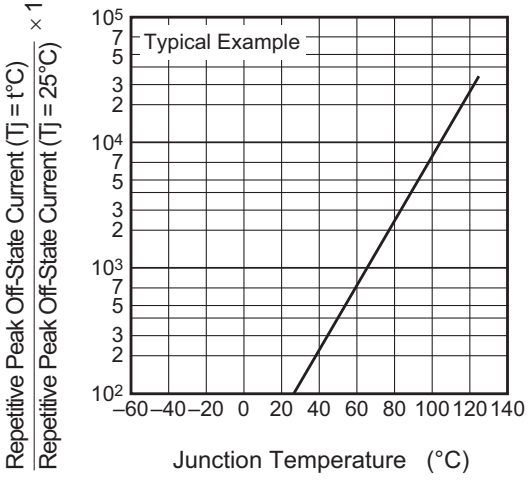
Allowable Case Temperature vs.
RMS On-State Current



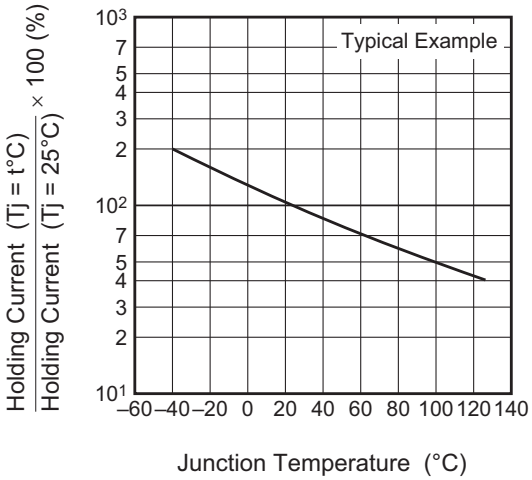
Allowable Ambient Temperature vs.
RMS On-State Current



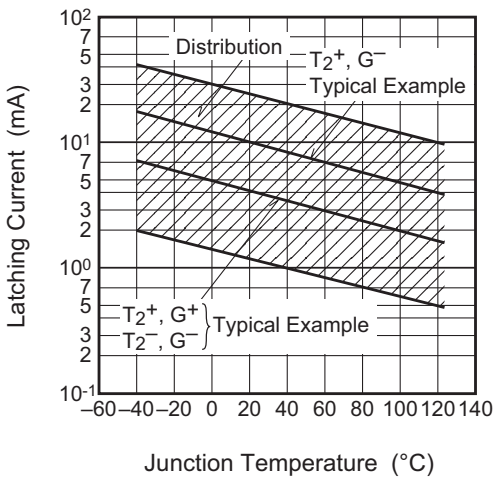
Repetitive Peak Off-State Current vs.
Junction Temperature



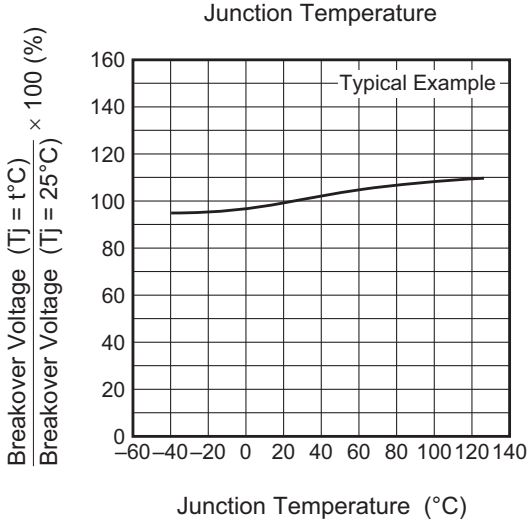
Holding Current vs.
Junction Temperature



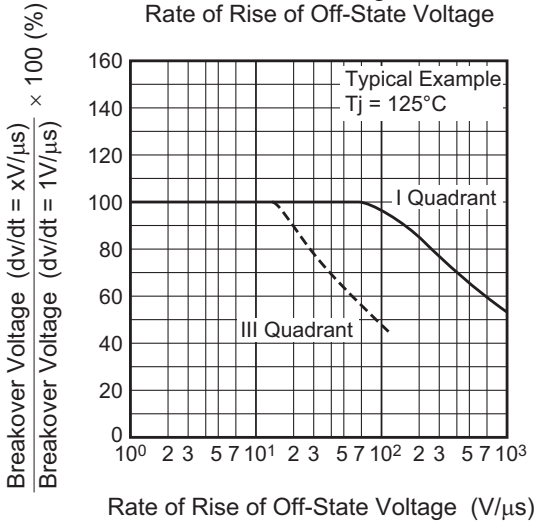
Latching Current vs.
Junction Temperature



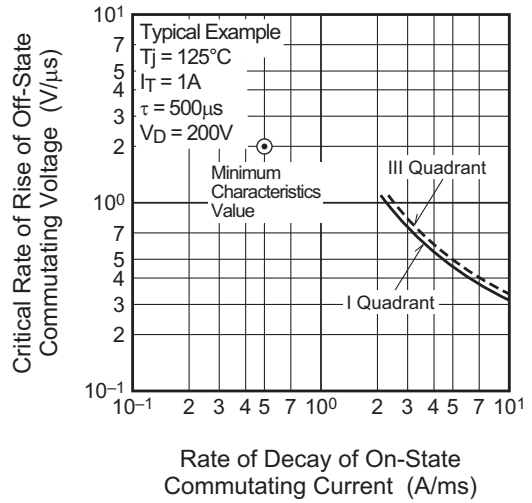
Breakover Voltage vs.
Junction Temperature



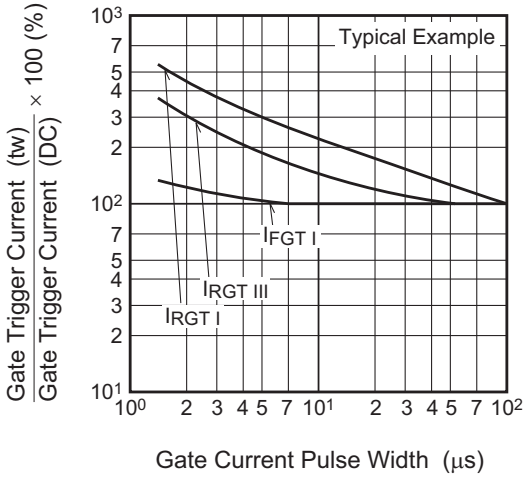
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



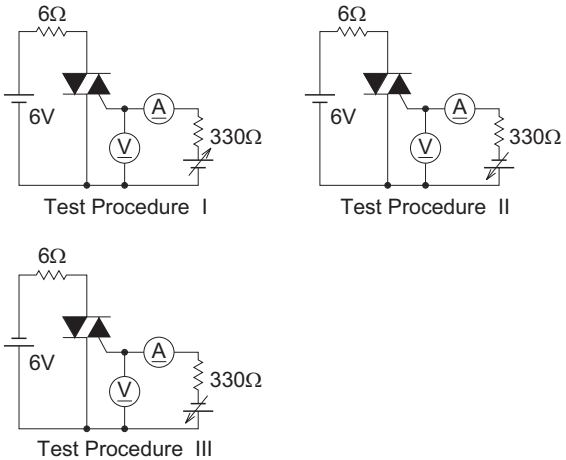
Commutation Characteristics



Gate Trigger Current vs.
Gate Current Pulse Width



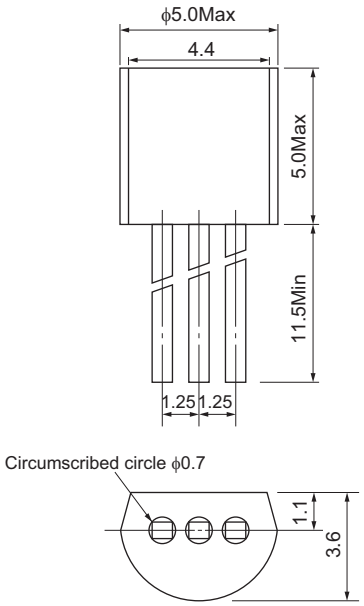
Gate Trigger Characteristics Test Circuits



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-92*	SC-43A	PRSS0003EA-A	T920	0.23g

Unit: mm



Ordering Information

Orderable Part Number	Packing Note5	Quantity	Remark	Quality Grade Note7
BCR1AM-12A#C01	Plastic Bag	500 pcs.	Straight type	General Industrial & Consumer Use
BCR1AM-12A-A6#C01	Plastic Bag	500 pcs.	A6 Lead form	General Industrial & Consumer Use
BCR1AM-12A-TB#C01	Adhesive Tape	2000 pcs.	A8 Lead form	General Industrial & Consumer Use
BCR1AM-12A#FD0	Plastic Bag	1000 pcs.	Straight type	Special Consumer Use Note6
BCR1AM-12A-A6#FD0	Plastic Bag	1000 pcs.	A6 Lead form	Special Consumer Use Note6

Notes: 5. Please confirm the specification about the shipping in detail.

6. “Special Consumer Use” grade product is not tested for the “Temperature Humidity Bias” reliability in the condition of rated V_{DRM}. Please be sure to implement qualification tests and judge whether the product meets your criteria. If necessary, please apply moisture-proof measures according to user’s conditions.
7. For further details about the classification in the Standard quality grade, please refer to the application note.

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