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RENESAS

Datasheet

BCR5PM-12LA

Triac

Medium Power Use

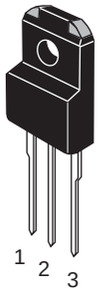
R07DS0100EJ0300
(Previous: REJ03G0302-0200)
Rev.3.00
Sep 13, 2010

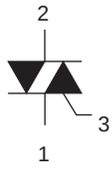
Features

- $I_{T\ (RMS)}$: 5 A
- V_{DRM} : 600 V
- I_{FGTI}, I_{RGTI}, $I_{RGT\ III}$: 20 mA (10 mA)[Note5]
- Viso : 2000 V
- Insulated Type
- Planar Passivation Type
- UL Recognized : Yellow Card No. E223904

Outline

RENESAS Package code: PRSS0003AA-A
(Package name: TO-220F)





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

Applications

Switching mode power supply, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, refrigerator, washing machine, infrared kotatsu, carpet, and solenoid driver, small motor control, copying machine, electric tool, electric heater control, and other general controlling device

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

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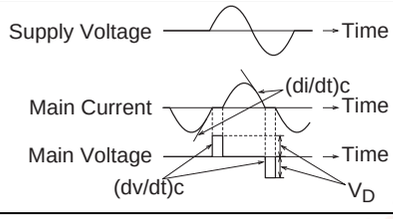
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	5	A	Commercial frequency, sine full wave 360° conduction, Tc = 95°C
Surge on-state current	I_{TSM}	50	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	10.4	A^2s	Value corresponding to 1 cycle of 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}	10	V	
Peak gate current	I_{GM}	2	A	
Junction temperature	Tj	– 40 to +125	°C	
Storage temperature	Tstg	– 40 to +125	°C	
Mass	—	2.0	g	Typical value
Isolation voltage	Viso	2000	V	Ta = 25°C, AC 1 minute, T_1·T_2·G terminal to case

Notes: 1. Gate open.

Electrical Characteristics

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current		I_{DRM}	—	—	2.0	mA	Tj = 125°C, V_{DRM} applied
On-state voltage		V_{TM}	—	—	1.8	V	Tc = 25°C, I_{TM} = 7 A, Instantaneous measurement
Gate trigger voltage[Note2]	I	V_{FGT_I}	—	—	1.5	V	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	V_{RGT_I}	—	—	1.5	V	
	III	$V_{RGT_{III}}$	—	—	1.5	V	
Gate trigger current[Note2]	I	I_{FGT_I}	—	—	20[Note5]	mA	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	I_{RGT_I}	—	—	20[Note5]	mA	
	III	$I_{RGT_{III}}$	—	—	20[Note5]	mA	
Gate non-trigger voltage		V_{GD}	0.2	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM}
Thermal resistance		$R_{th\ (j-c)}$	—	—	4.0	°C/W	Junction to case[Note3]
Critical-rate of rise of off-state commutating voltage[Note4]		(dv/dt)c	5	—	—	V/μs	Tj = 125°C

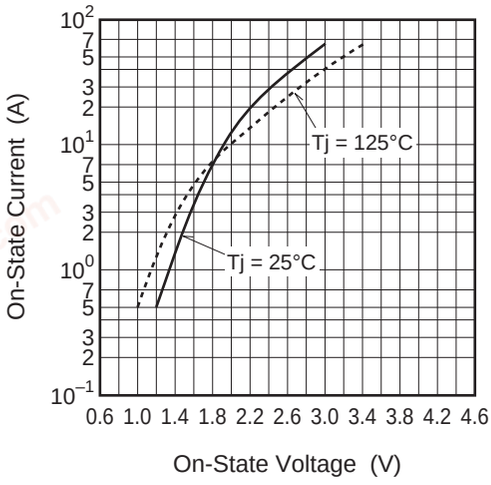
Notes: 2. Measurement using the gate trigger characteristics measurement circuit.
3. The contact thermal resistance $R_{th\ (c-f)}$ in case of greasing is 0.5°C/W.
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.
5. High sensitivity ($I_{GT} \leq 10$ mA) is also available. (I_{GT} item: 1)

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 = – 2.5 A/ms 3. Peak off-state voltage V_D = 400 V	

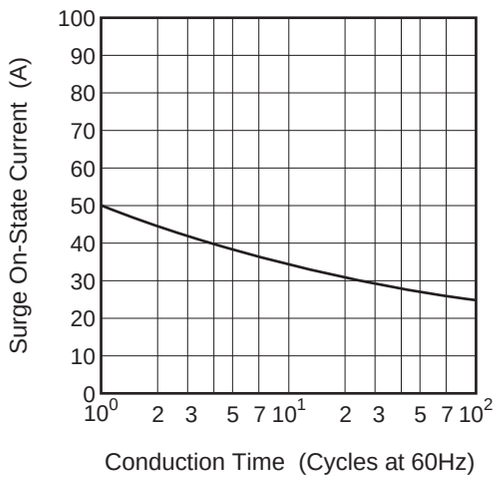
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Performance Curves

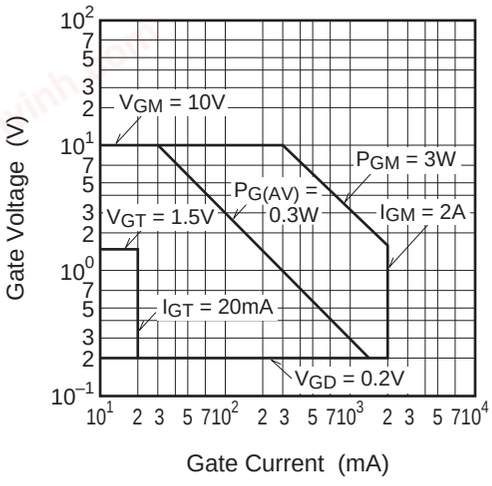
Maximum On-State Characteristics



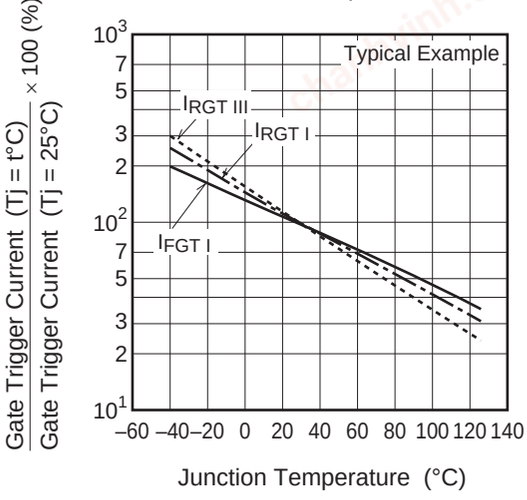
Rated Surge On-State Current



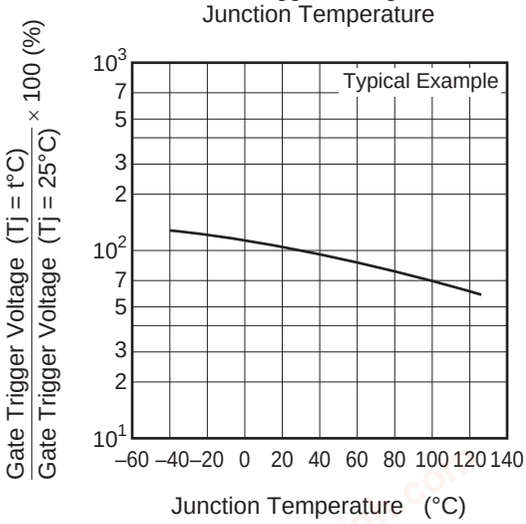
Gate Characteristics (I, II and III)



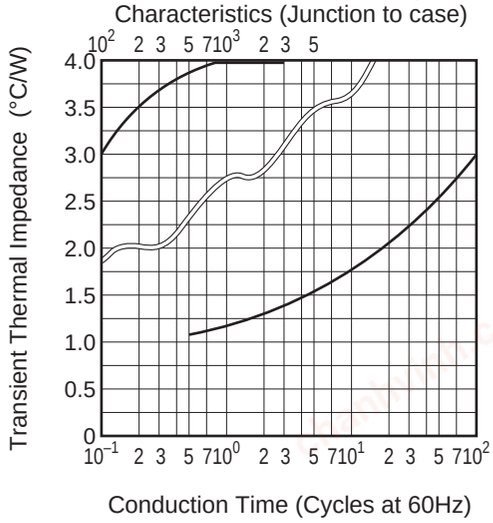
Gate Trigger Current vs. Junction Temperature



Gate Trigger Voltage vs. Junction Temperature

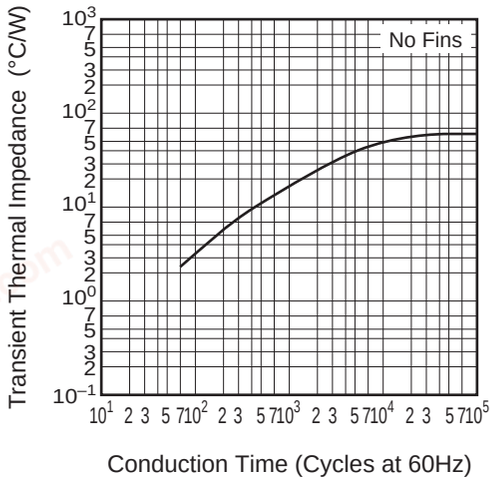


Maximum Transient Thermal Impedance Characteristics (Junction to case)

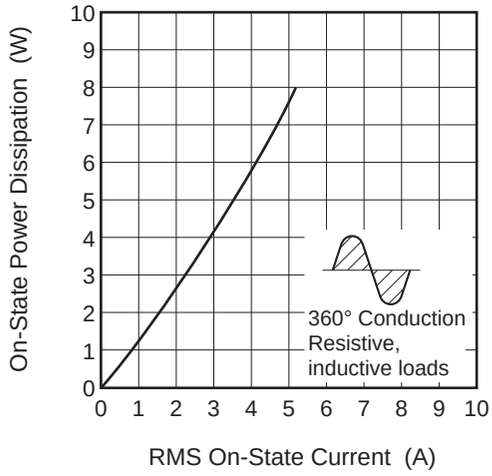


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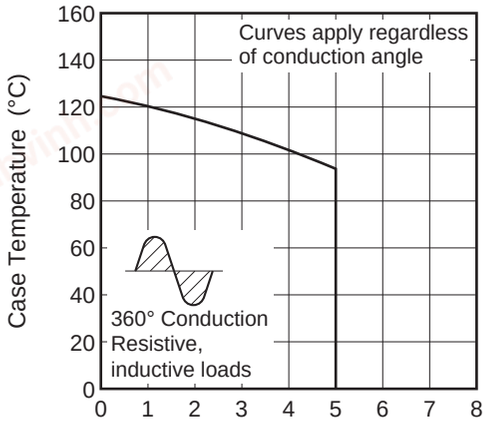
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



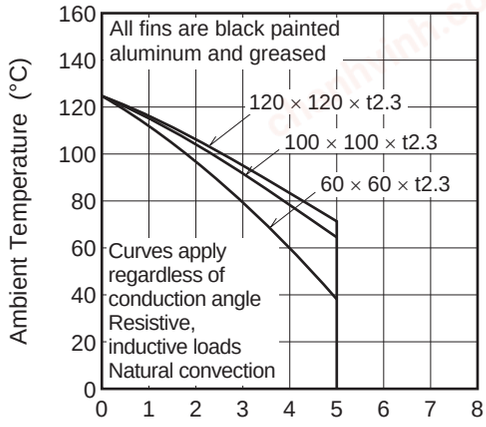
Maximum On-State Power Dissipation



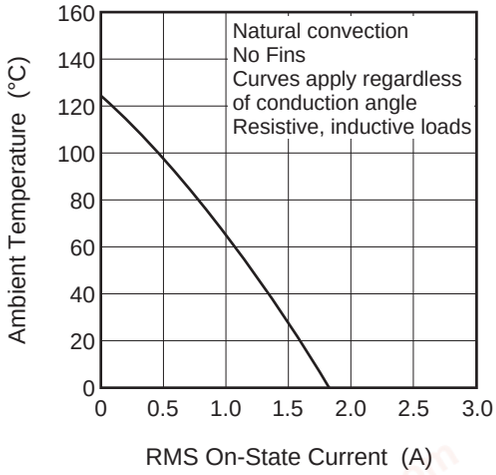
Allowable Case Temperature vs. RMS On-State Current



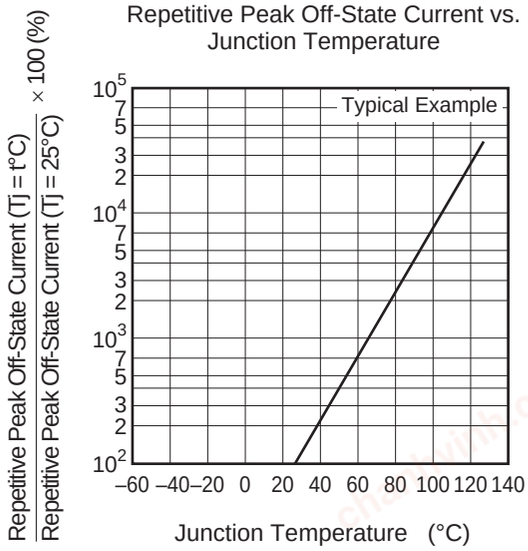
Allowable Ambient Temperature vs. RMS On-State Current



Allowable Ambient Temperature vs. RMS On-State Current

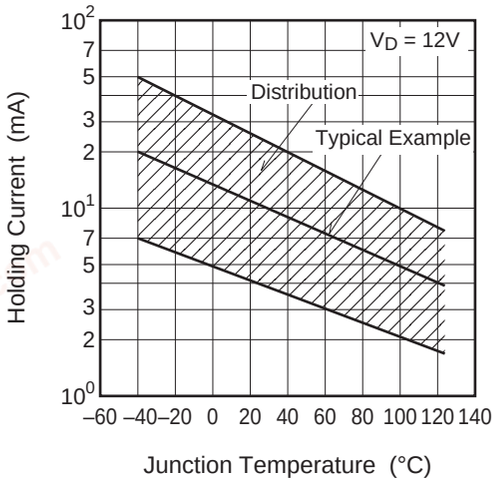


Repetitive Peak Off-State Current vs. Junction Temperature

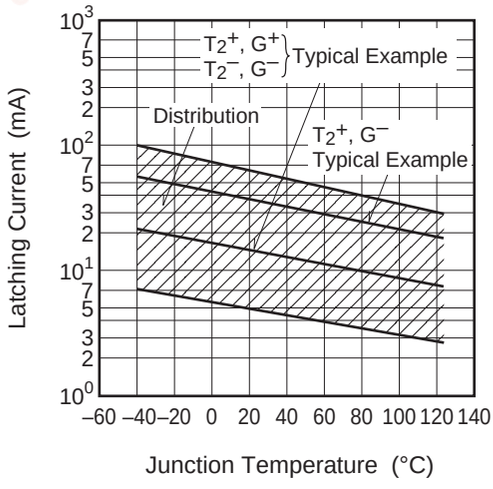


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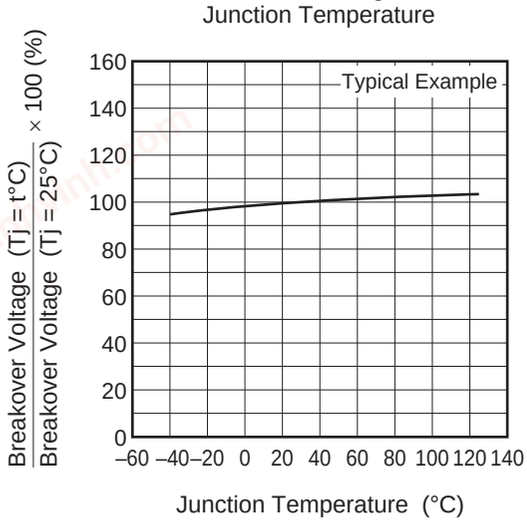
Holding Current vs.
Junction Temperature



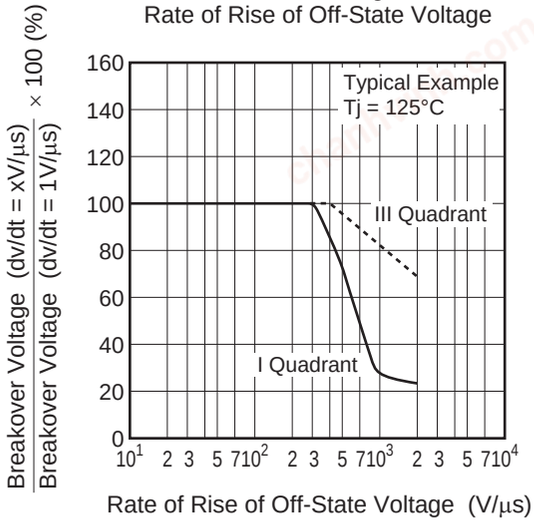
Latching Current vs.
Junction Temperature



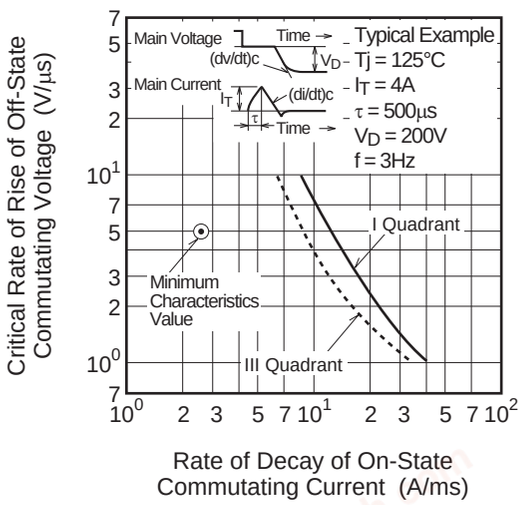
Breakover Voltage vs.
Junction Temperature



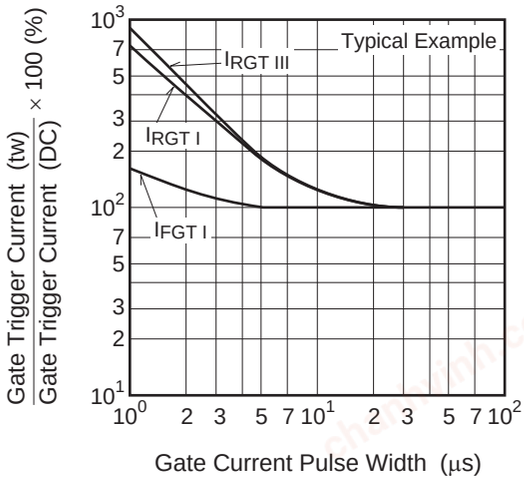
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



Commutation Characteristics

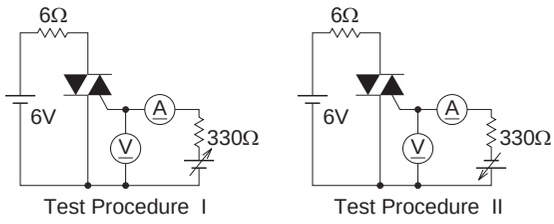


Gate Trigger Current vs.
Gate Current Pulse Width



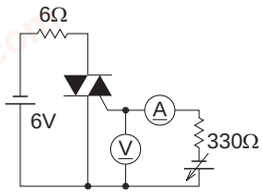
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Gate Trigger Characteristics Test Circuits



Test Procedure I

Test Procedure II



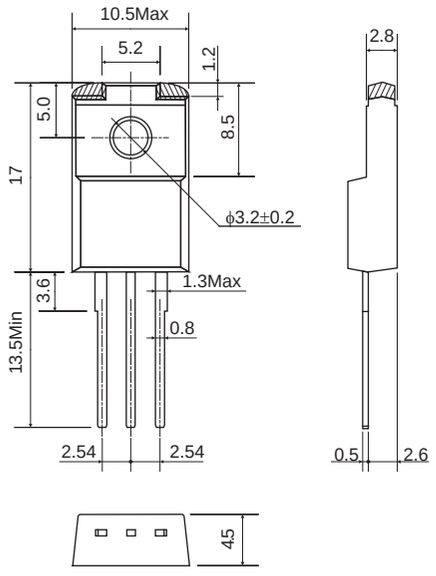
Test Procedure III

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Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220F	SC-67	PRSS0003AA-A	—	2.0g

Unit: mm



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name	BCR5PM-12LA
Lead form	Plastic Magazine (Tube)	50	Type name – Lead forming code	BCR5PM-12LA-A8

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

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