

BCR12CS-12LA

Triac

Medium Power Use

REJ03G0340-0300

Rev.3.00

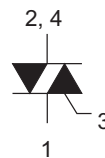
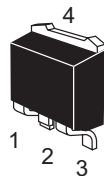
Nov 30, 2007

Features

- $I_T(RMS)$: 12 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , $I_{RGT III}$: 30 mA (20 mA)^{Note6}
- Non-Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PRSS0004AB-A
(Package name: TO-220S)



1. T₁ Terminal
2. T₂ Terminal
3. Gate Terminal
4. T₂ Terminal

Applications

Contactless AC switch, light dimmer, electronic flasher unit, control of household equipment such as TV sets, stereo systems, refrigerator, washing machine, infrared kotatsu, carpet, electric fan, solenoid driver, small motor control, solid state relay, copying machine, electric tool, electric heater control, 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	$I_{T(RMS)}$	12	A	Commercial frequency, sine full wave 360° conduction, $T_c = 98^{\circ}\text{C}$ ^{Note3}
Surge on-state current	I_{TSM}	120	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	60	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	5	W	
Average gate power dissipation	$P_{G(AV)}$	0.5	W	
Peak gate voltage	V_{GM}	10	V	
Peak gate current	I_{GM}	2	A	
Junction temperature	T_j	- 40 to +125	$^{\circ}\text{C}$	
Storage temperature	T_{stg}	- 40 to +125	$^{\circ}\text{C}$	
Mass	—	1.2	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}	—	—	1.6	V	$T_c = 25^{\circ}\text{C}$, $I_{TM} = 20\text{ A}$, 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}	—	—	30 ^{Note6}	mA	$T_j = 25^{\circ}\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II I_{RGTI}	—	—	30 ^{Note6}	mA	
	III I_{RGTIII}	—	—	30 ^{Note6}	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^{\circ}\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	1.8	$^{\circ}\text{C/W}$	Junction to case ^{Note3 Note4}
Critical-rate of rise of off-state commutating voltage ^{Note5}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}$

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

3. Case temperature is measured on the T_2 tab.

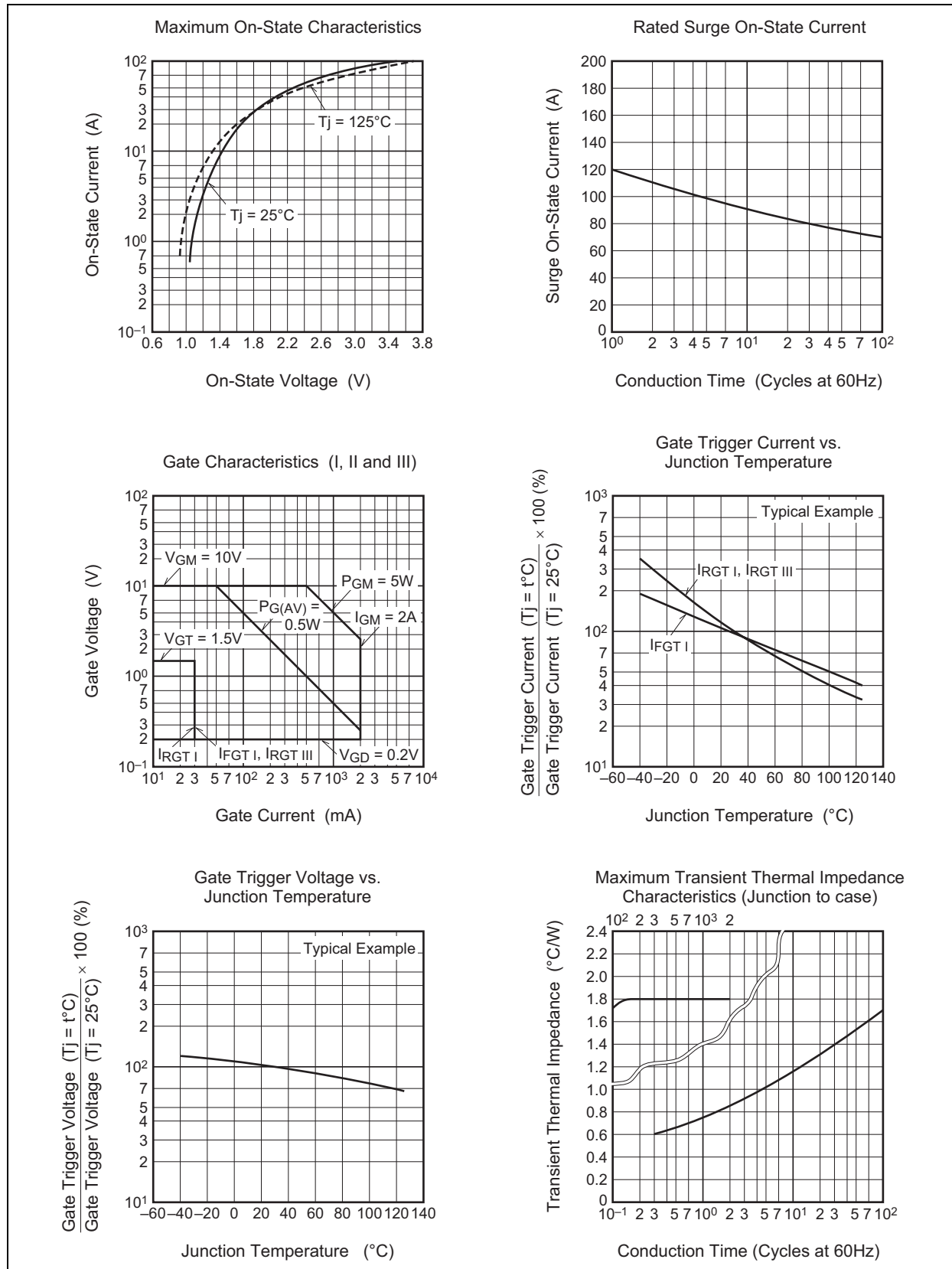
4. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 1.0°C/W .

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

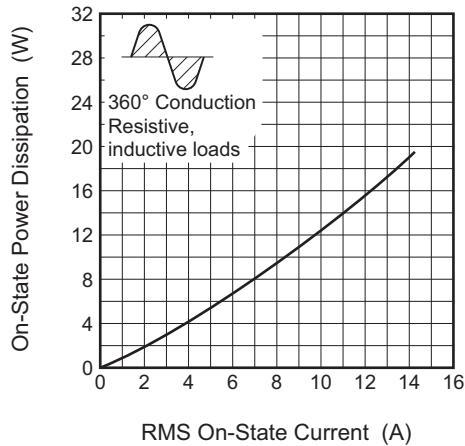
6. High sensitivity ($I_{GT} \leq 20\text{ mA}$) is also available. (I_{GT} item: 1)

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 $(di/dt)_c = -6.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

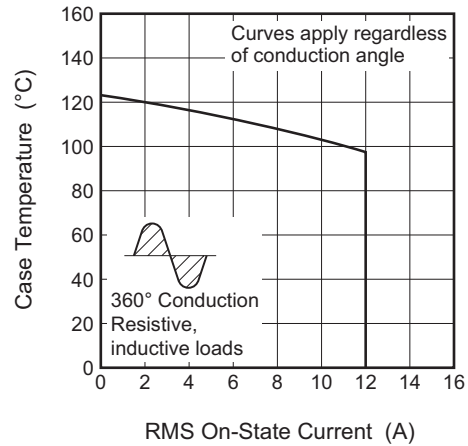
Performance Curves



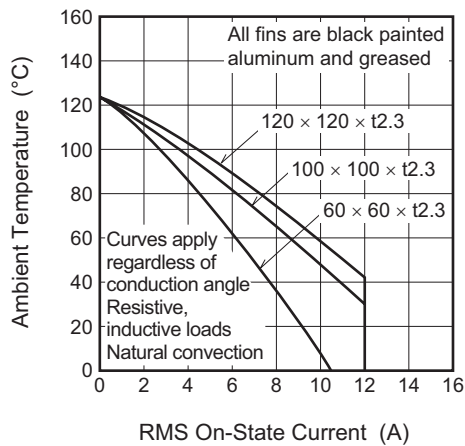
Maximum On-State Power Dissipation



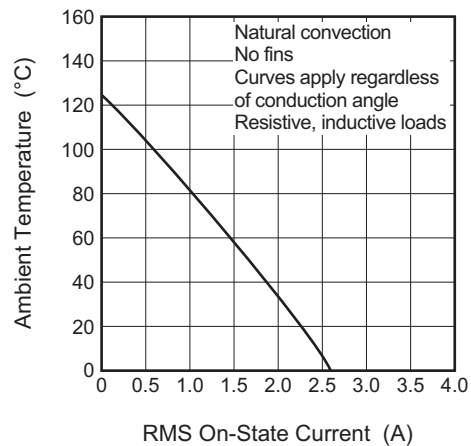
Allowable Case Temperature vs. RMS On-State Current



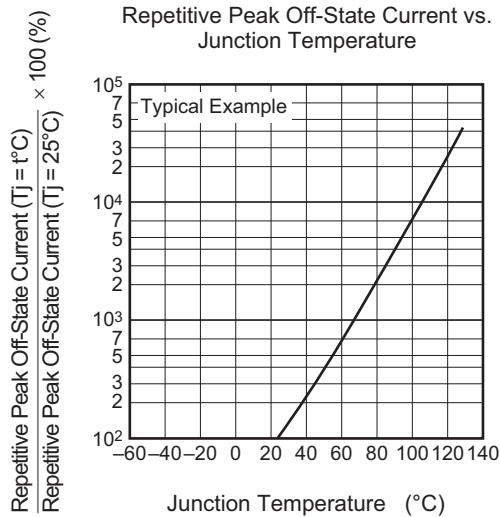
Allowable Ambient Temperature vs. RMS On-State Current



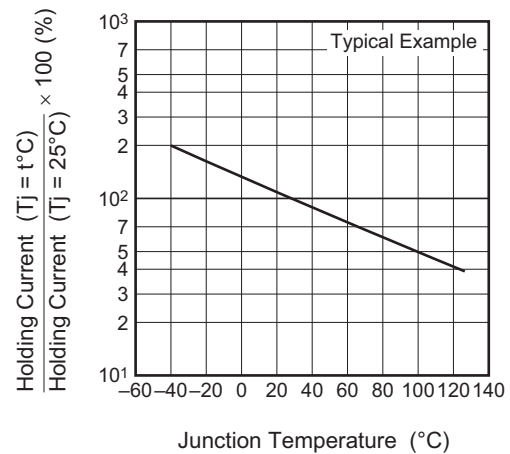
Allowable Ambient Temperature vs. RMS On-State Current

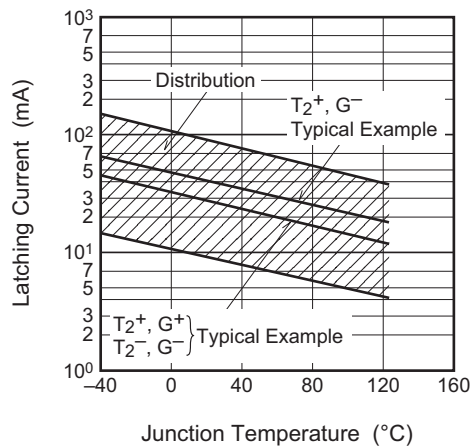
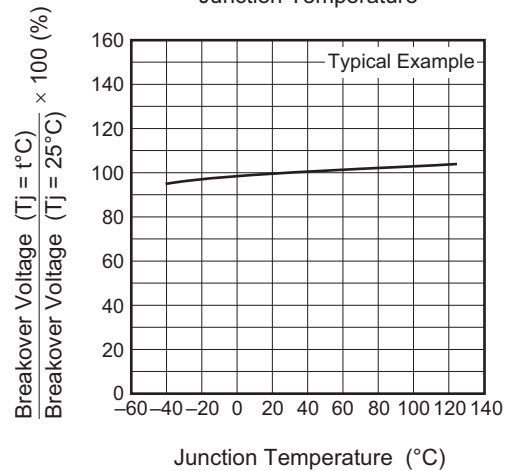
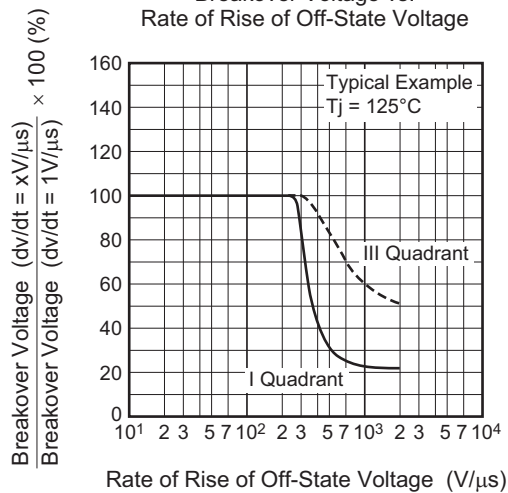


Repetitive Peak Off-State Current vs. Junction Temperature

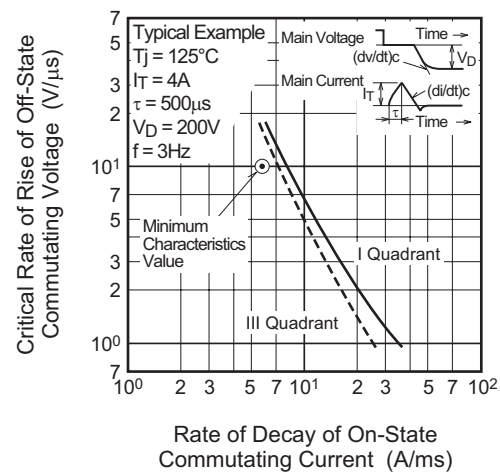
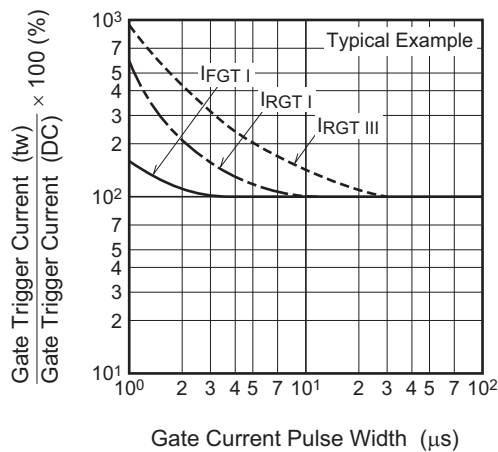


Holding Current vs. Junction Temperature

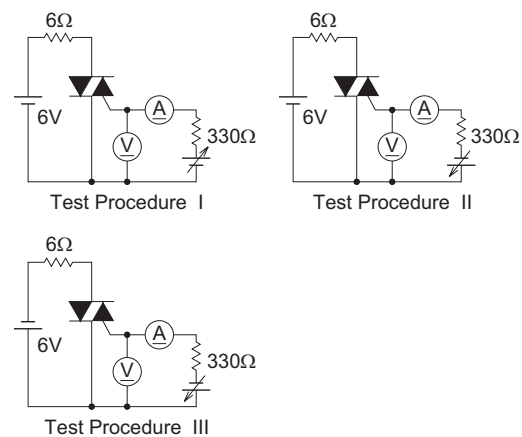


Latching Current vs.
Junction TemperatureBreakover Voltage vs.
Junction TemperatureBreakover Voltage vs.
Rate of Rise of Off-State Voltage

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
TO-220S	SC-83	PRSS0004AB-A	TO-220S	1.2g	

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	1000	Type name – T +Direction (1 or 2) +1	BCR12CS-12LA-T11
Surface-mounted type	Plastic Magazine (Tube)	50	Type name	BCR12CS-12LA

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

Notes:

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