

BCR12CS-12LB

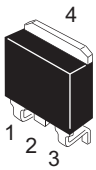

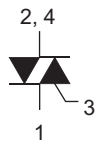

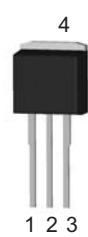
600V-12A-Triac
Medium Power Use

R07DS0225EJ0500
Rev.5.00
Oct 19, 2015

Features

- $I_T (RMS)$: 12 A
- V_{DRM} : 600 V
- $I_{FGTI}, I_{RGTI}, I_{RGT III}$: 30 mA (20 mA)^{Note6}
- The product guaranteed maximum junction temperature of 150°C
- Non-Insulated Type
- Planar Passivation Type

Outline

<p>RENESAS Package code: PRSS0004AE-B (Package name: LDK(S)-(1))</p> 	<p>RENESAS Package code: PRSS0004AB-A (Package name: TO-220S)</p> 	 <p>1. T₁ Terminal 2. T₂ Terminal 3. Gate Terminal 4. T₂ Terminal</p>
<p>RENESAS Package code: PRSS0004AS-A (Package name: TO-263)</p> 	<p>RENESAS Package code: PRSS0004AR-A (Package name: TO-262)</p> 	

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, $T_c = 123^{\circ}\text{C}$ ^{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 +150	$^{\circ}\text{C}$	
Storage temperature	T_{stg}	- 40 to +150	$^{\circ}\text{C}$	
Mass	—	1.3	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	$T_j = 150^{\circ}\text{C}$, 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}	0.2/0.1	—	—	V	$T_j = 125^{\circ}\text{C}/150^{\circ}\text{C}$, $V_D = 1/2 V_{DRM}$	
Thermal resistance	$R_{th(j-c)}$	—	—	1.8	$^{\circ}\text{C}/\text{W}$	Junction to case ^{Note3 Note4}	
Critical-rate of rise of off-state commutating voltage ^{Note5}	$(dv/dt)_c$	10/1	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^{\circ}\text{C}/150^{\circ}\text{C}$	

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 $1.0^{\circ}\text{C}/\text{W}$.

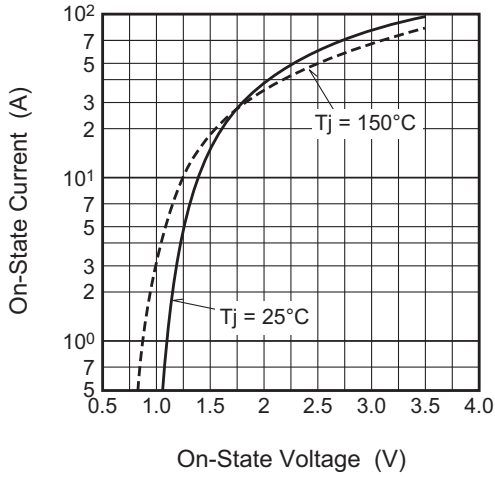
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

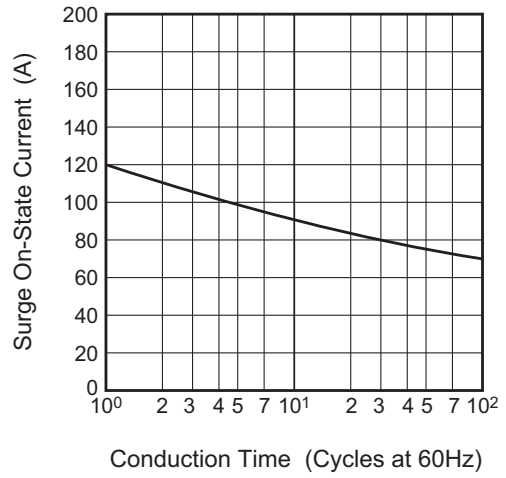
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^{\circ}\text{C}/150^{\circ}\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -6.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

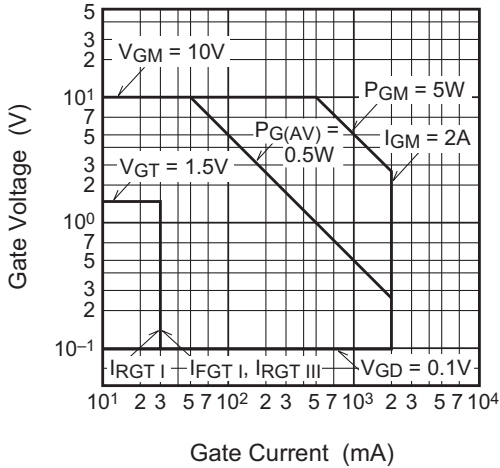
Maximum On-State Characteristics



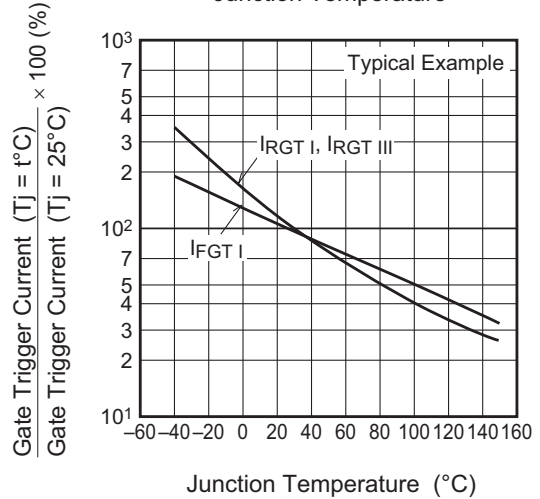
Rated Surge On-State Current



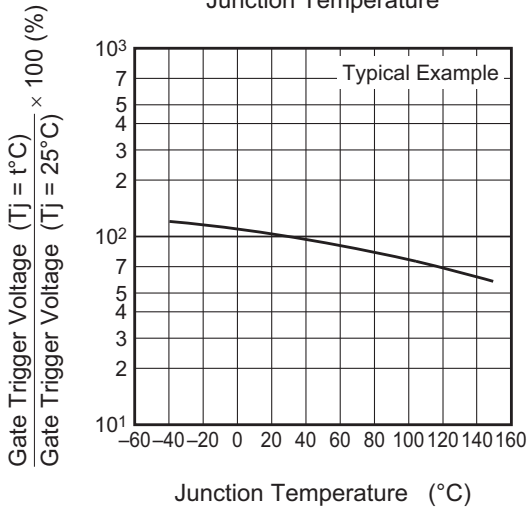
Gate Characteristics (I, II and III)



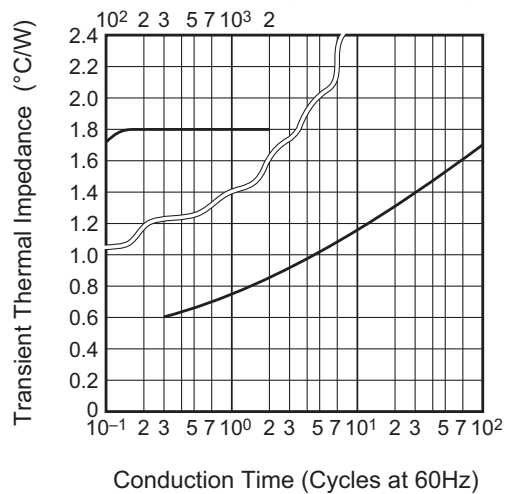
Gate Trigger Current vs. Junction Temperature



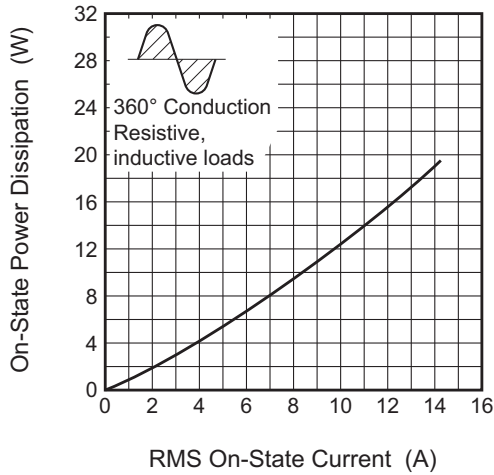
Gate Trigger Voltage vs. Junction Temperature



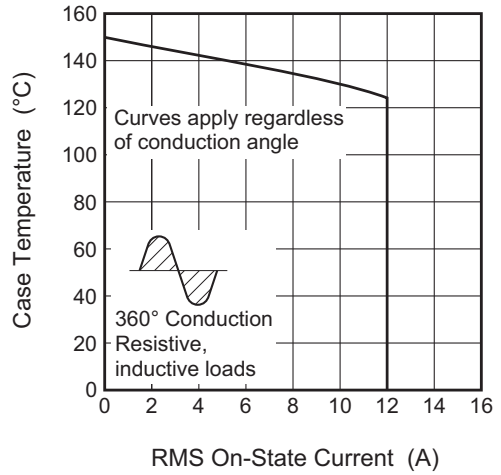
Maximum Transient Thermal Impedance Characteristics (Junction to case)



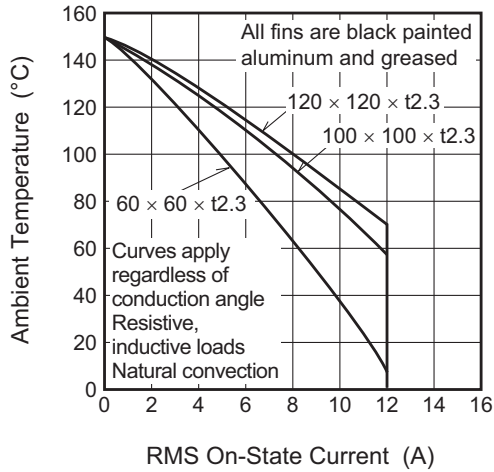
Maximum On-State Power Dissipation



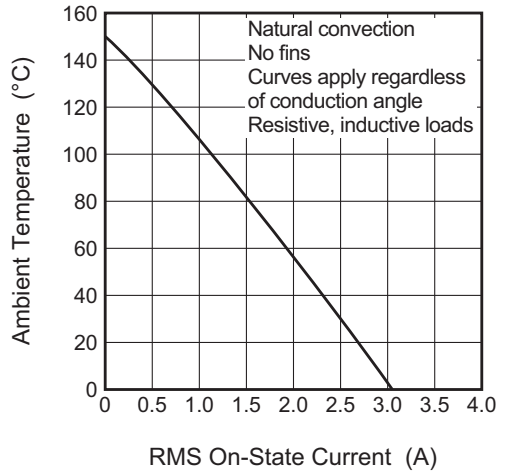
Allowable Case Temperature vs. RMS On-State Current



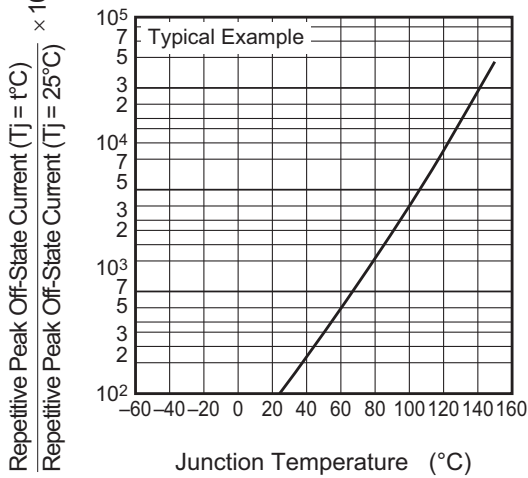
Allowable Ambient Temperature vs. RMS On-State Current



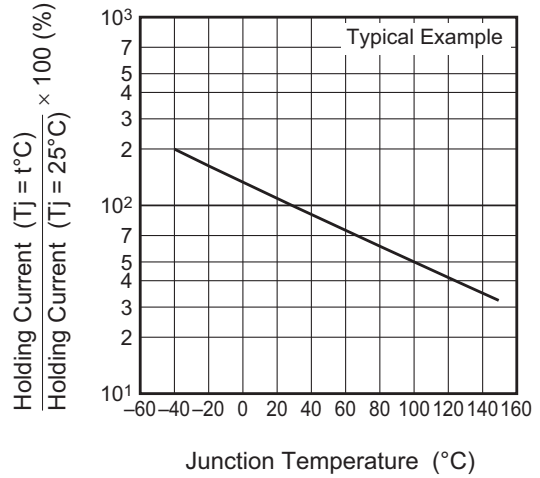
Allowable Ambient Temperature vs. RMS On-State Current



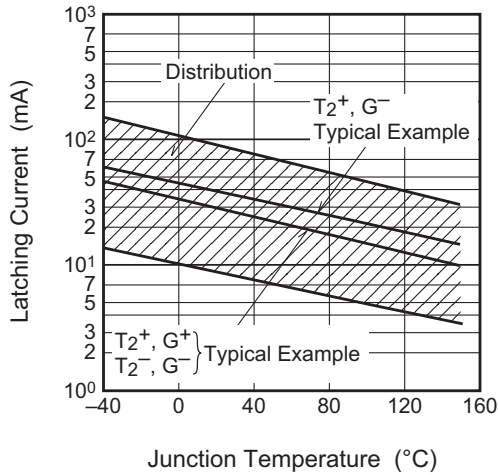
Repetitive Peak Off-State Current vs. Junction Temperature



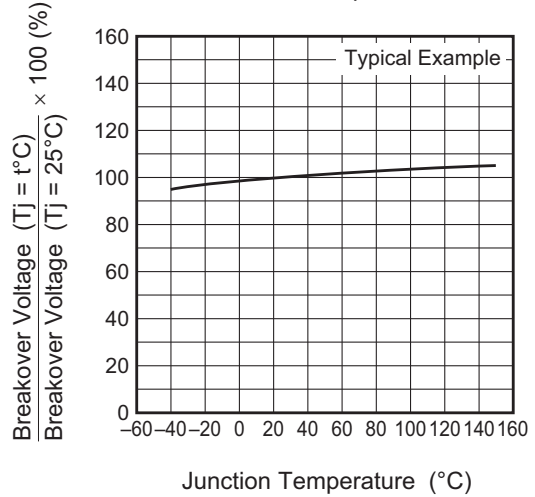
Holding Current vs. Junction Temperature



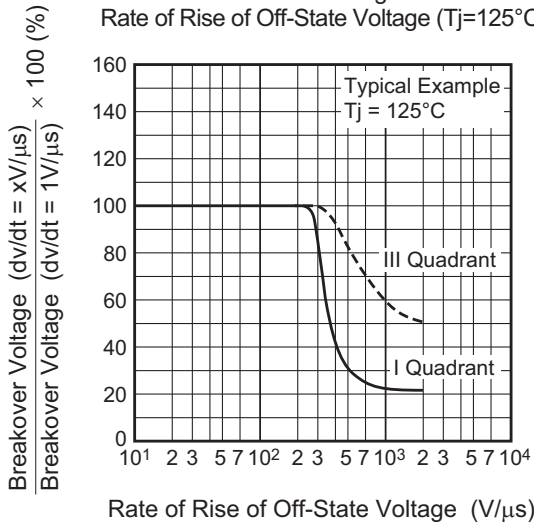
Latching Current vs. Junction Temperature



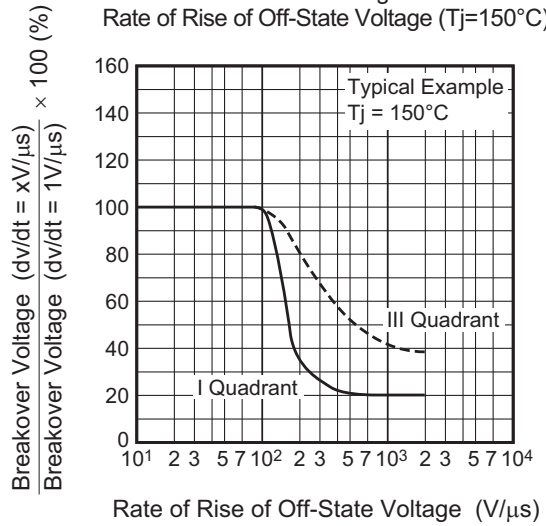
Breakover Voltage vs. Junction Temperature



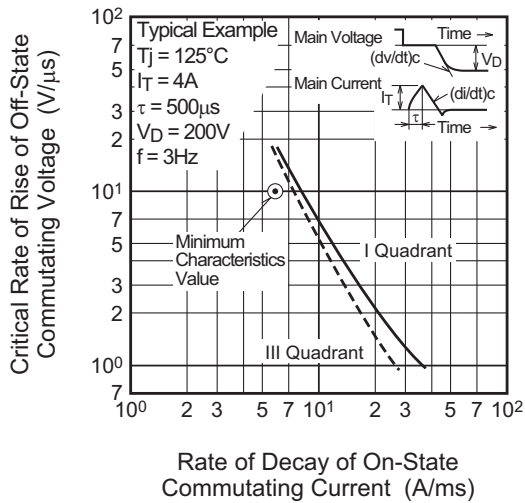
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



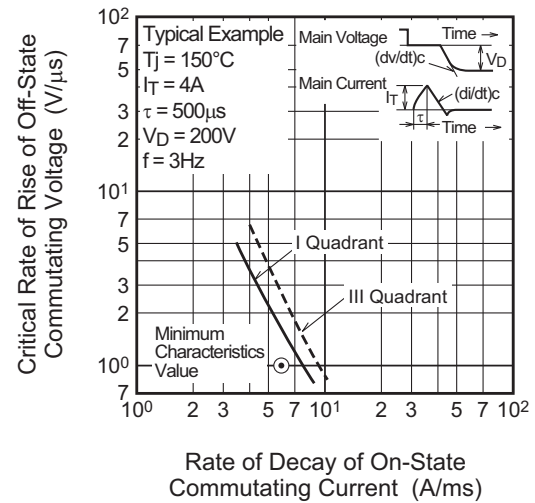
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



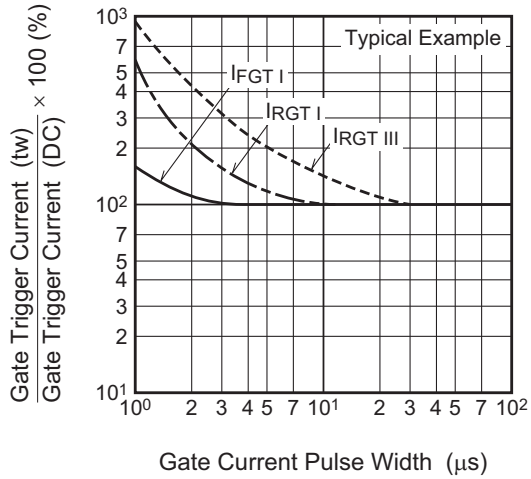
Commutation Characteristics (Tj=125°C)



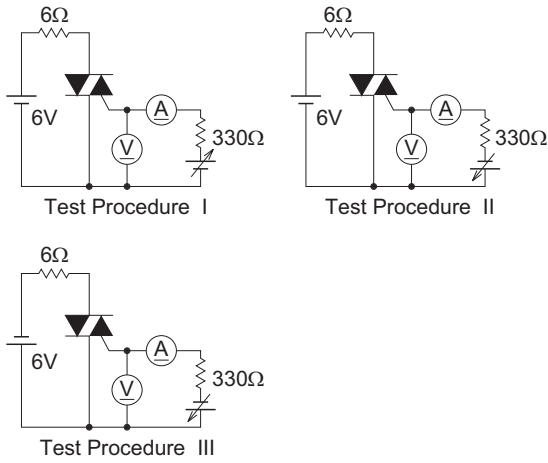
Commutation Characteristics (Tj=150°C)



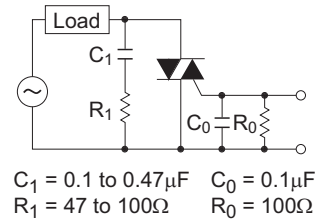
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits

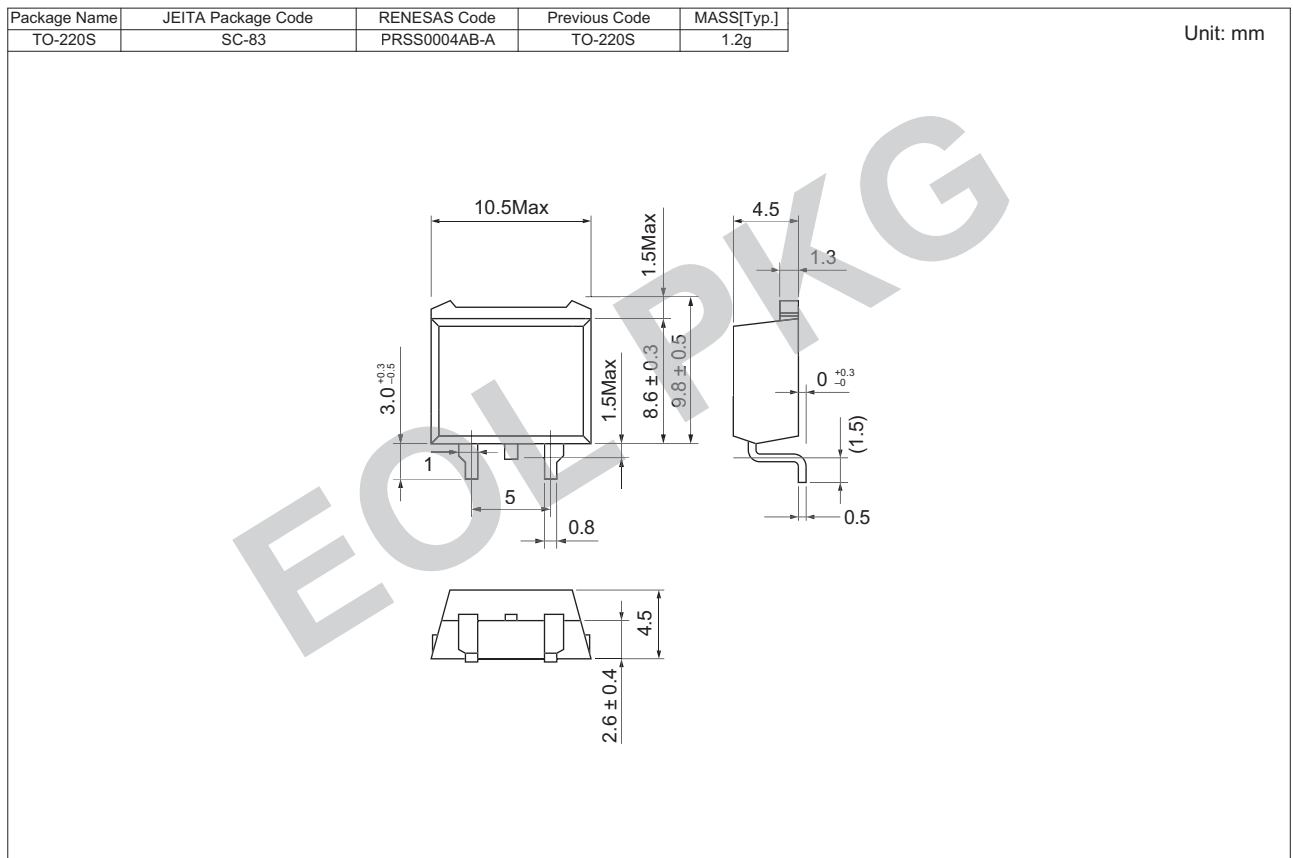
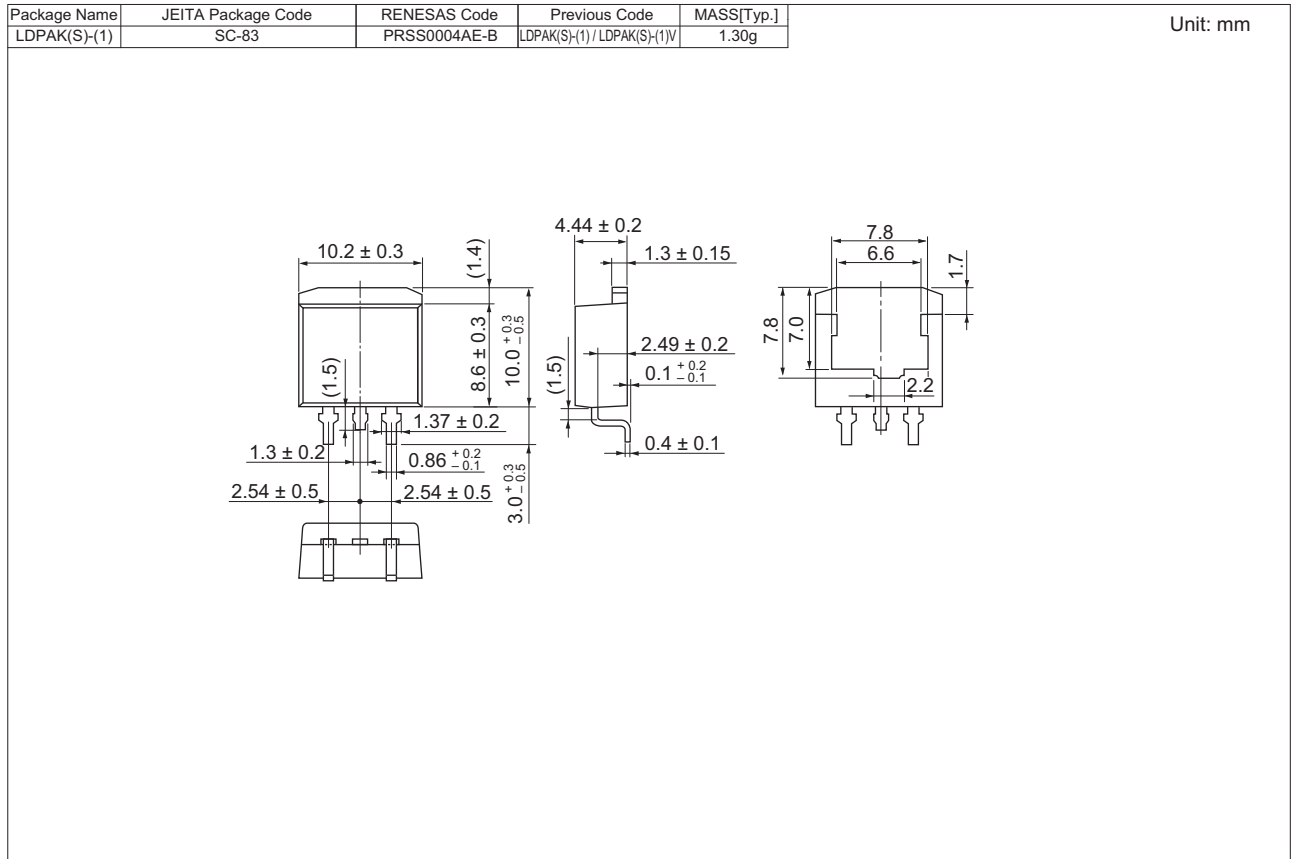


Recommended Circuit Values Around The Triac



$C_1 = 0.1 \text{ to } 0.47 \mu\text{F}$ $C_0 = 0.1 \mu\text{F}$
 $R_1 = 47 \text{ to } 100 \Omega$ $R_0 = 100 \Omega$

Package Dimensions



Ordering Information

Orderable Part Number	Package	Packing	Quantity	Remark
BCR12CS-12LB#BH0	TO-263	Tube	50 pcs.	
BCR12CS-12LBT1#BH0	TO-263	Embossed Tape	800 pcs.	Taping direction "T1"
BCR12CS-12LBT2#BH0	TO-263	Embossed Tape	800 pcs.	Taping direction "T2"
BCR12CS-12LBA1#BH0	TO-262	Tube	50 pcs.	
BCR12CS-12LB#B00	LDBAK(S)-(1)	Tube	50 pcs.	Not Recommend for New Design
BCR12CS12LBT11#B00	LDBAK(S)-(1)	Embossed Tape	1000 pcs.	Not Recommend for New Design
BCR12CS12LBT21#B00	LDBAK(S)-(1)	Embossed Tape	1000 pcs.	Not Recommend for New Design
BCR12CS-12LB#B01	TO-220S	Tube	50 pcs.	EOL

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

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