BCR10CS-12LB

600V-10A-Triac
Medium Power Use

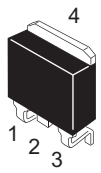
R07DS0224EJ0500
Rev.5.00
Oct 19, 2015

Features

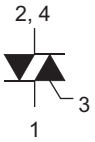
- $I_{T\,(RMS)}$: 10 A
- V_{DRM} : 600 V
- I_{FGTI}, I_{RGTI}, $I_{RGT\,III}$: 30 mA (20 mA)[Note6]
- The product guaranteed maximum junction temperature of 150°C
- Non-Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDPAK(S)-(1))



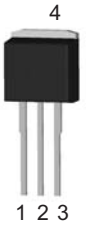
RENESAS Package code: PRSS0004AB-A
(Package name: TO-220S)



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

RENESAS Package code: PRSS0004AS-A
(Package name: TO-263)

RENESAS Package code: PRSS0004AR-A
(Package name: TO-262)



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

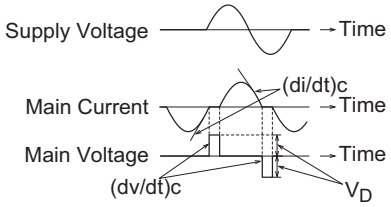
Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	10	A	Commercial frequency, sine full wave 360° conduction, Tc = 128°C[Note3]
Surge on-state current	I_{TSM}	100	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	41.6	A^2s	Value corresponding to 1 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	Tj	– 40 to +150	°C	
Storage temperature	Tstg	– 40 to +150	°C	
Mass	—	1.3	g	Typical value

Notes: 1. Gate open.

Electrical Characteristics

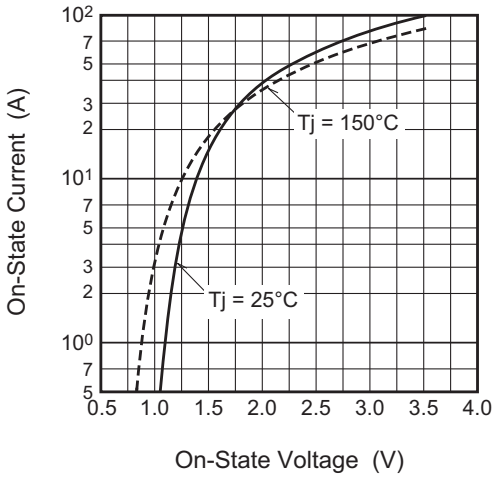
Parameter		Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current		I_{DRM}	—	—	2.0	mA	Tj = 150°C, V_{DRM} applied
On-state voltage		V_{TM}	—	—	1.5	V	Tc = 25°C, I_{TM} = 15 A, Instantaneous measurement
Gate trigger voltage[Note2]	I	V_{FGTI}	—	—	1.5	V	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	V_{RGTI}	—	—	1.5	V	
	III	V_{RGTIII}	—	—	1.5	V	
Gate trigger current[Note2]	I	I_{FGTI}	—	—	30[Note6]	mA	Tj = 25°C, V_D = 6 V, R_L = 6 Ω, R_G = 330 Ω
	II	I_{RGTI}	—	—	30[Note6]	mA	
	III	I_{RGTIII}	—	—	30[Note6]	mA	
Gate non-trigger voltage		V_{GD}	0.2/0.1	—	—	V	Tj = 125°C/150°C, V_D = 1/2 V_{DRM}
Thermal resistance		$R_{th\ (j-c)}$	—	—	1.8	°C/W	Junction to case[Note3 Note4]
Critical-rate of rise of off-state commutating voltage[Note5]		(dv/dt)c	10/1	—	—	V/μs	Tj = 125°C/150°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 ($I_{GT} \leq 20$ mA) is also available. (I_{GT} item: 1)

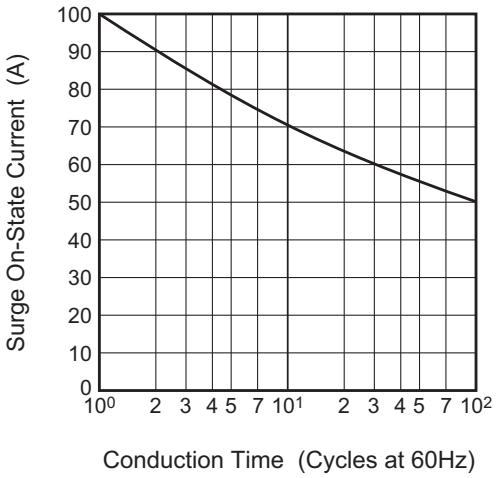
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature Tj = 125°C/150°C 2. Rate of decay of on-state commutating current (di/dt)c = – 5.0 A/ms 3. Peak off-state voltage V_D = 400 V	

Performance Curves

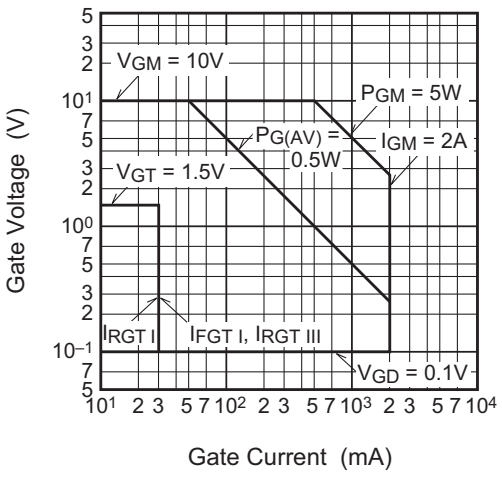
Maximum On-State Characteristics



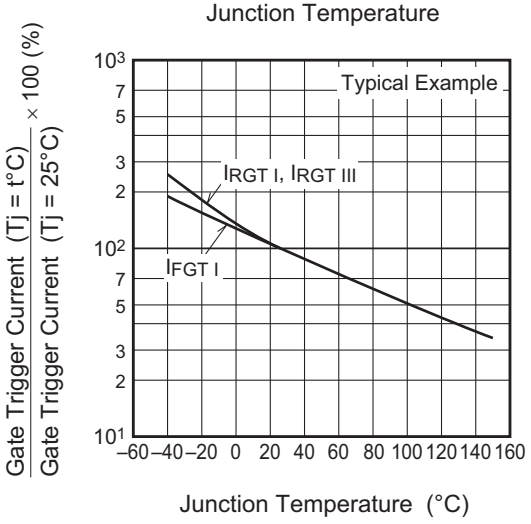
Rated Surge On-State Current



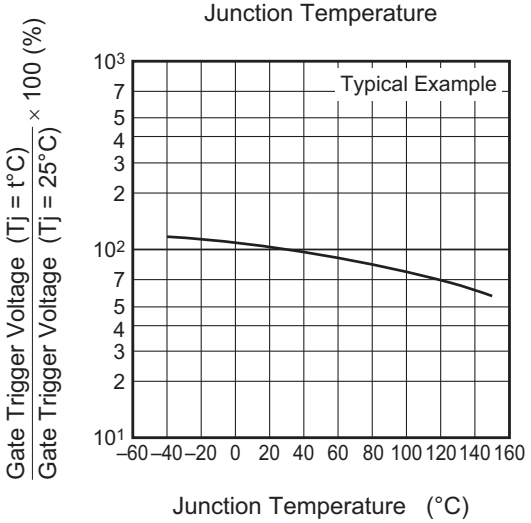
Gate Characteristics (I, II and III)



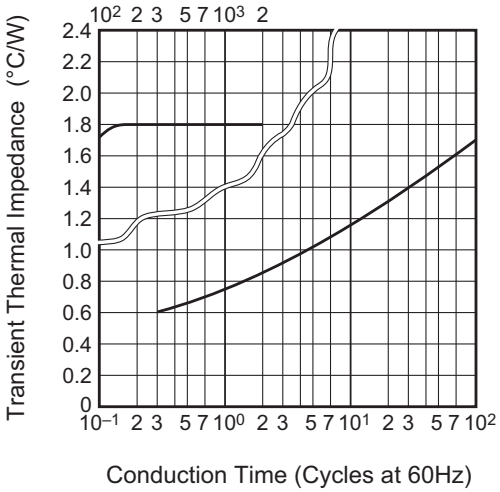
Gate Trigger Current vs. Junction Temperature



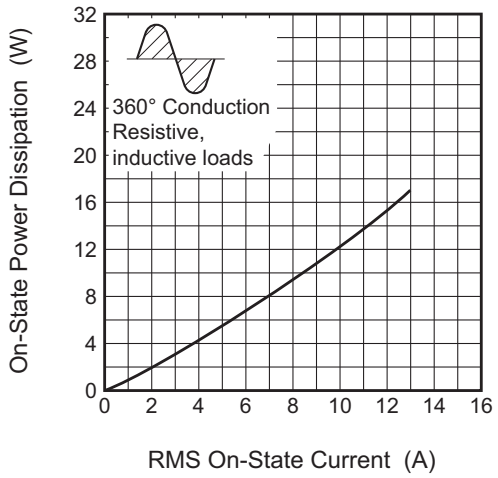
Gate Trigger Voltage vs. Junction Temperature



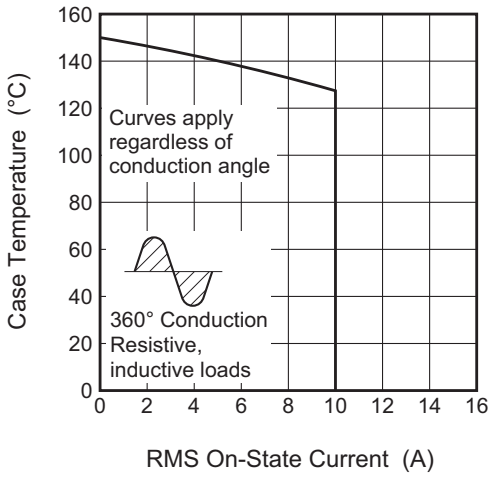
Maximum Transient Thermal Impedance Characteristics (Junction to case)



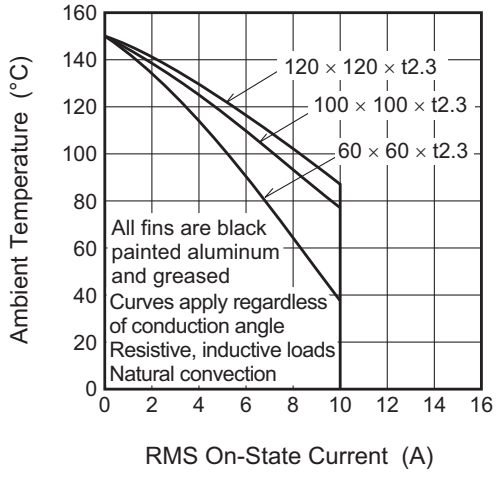
Maximum On-State Power Dissipation



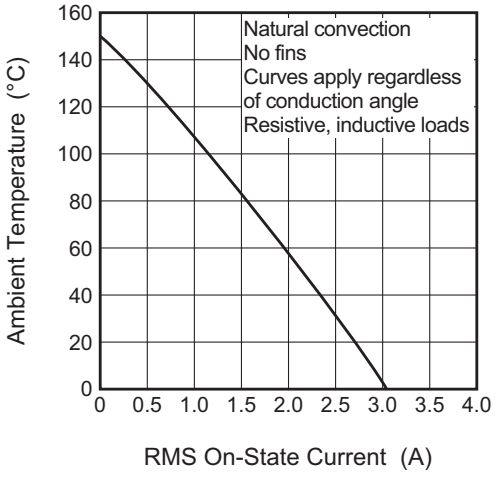
Allowable Case Temperature vs.
RMS On-State Current



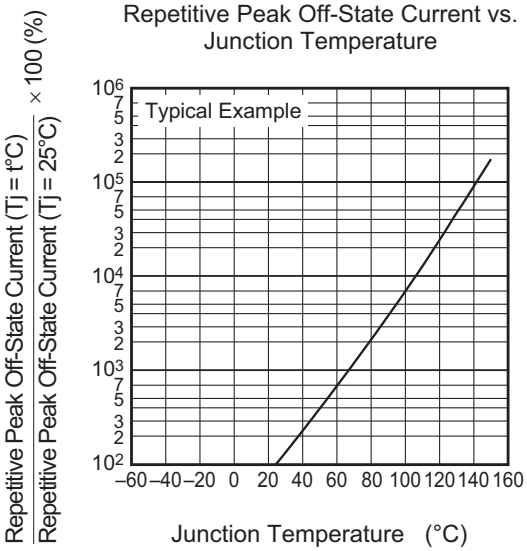
Allowable Ambient Temperature vs.
RMS On-State Current



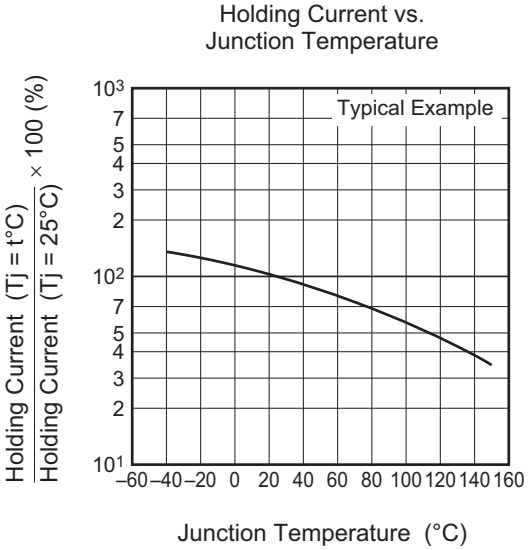
Allowable Ambient Temperature vs.
RMS On-State Current



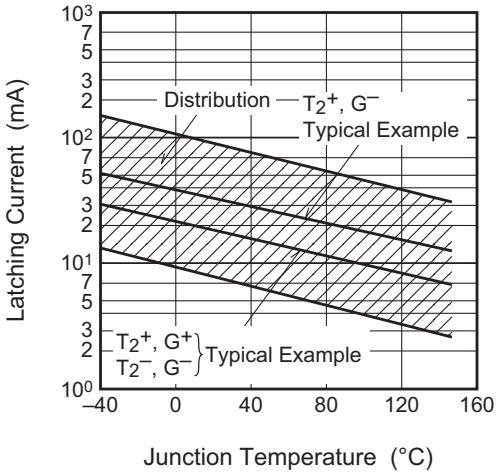
Repetitive Peak Off-State Current vs.
Junction Temperature



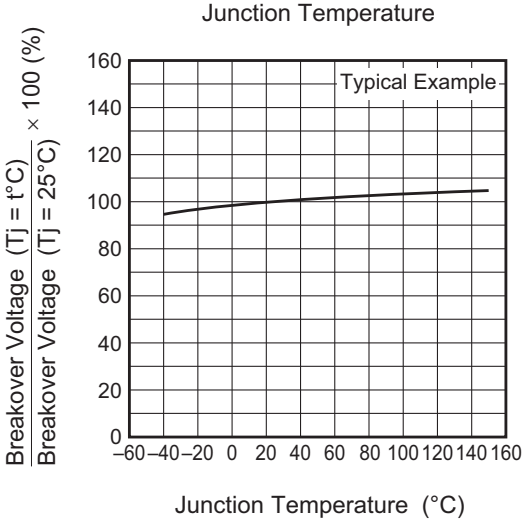
Holding Current vs.
Junction Temperature



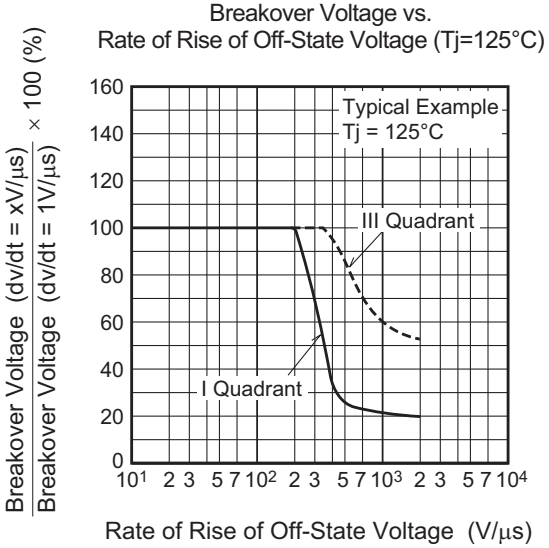
Latching Current vs.
Junction Temperature



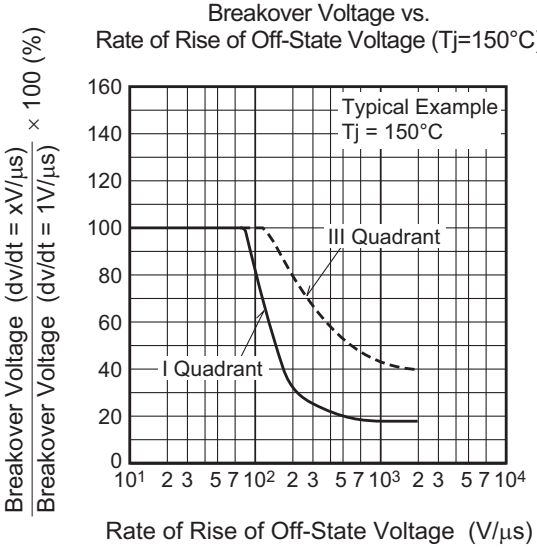
Breakover Voltage vs.
Junction Temperature



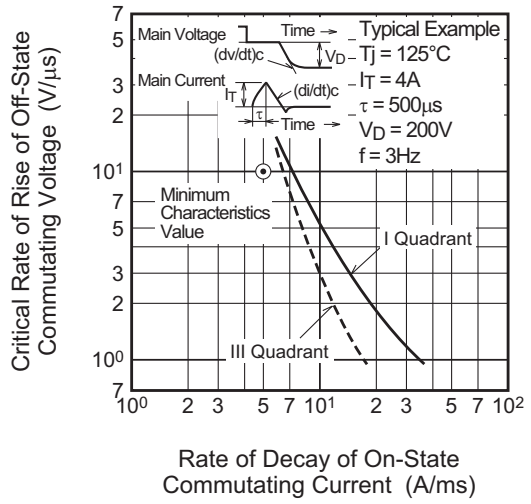
Breakover Voltage vs.
Rate of Rise of Off-State Voltage (Tj=125°C)



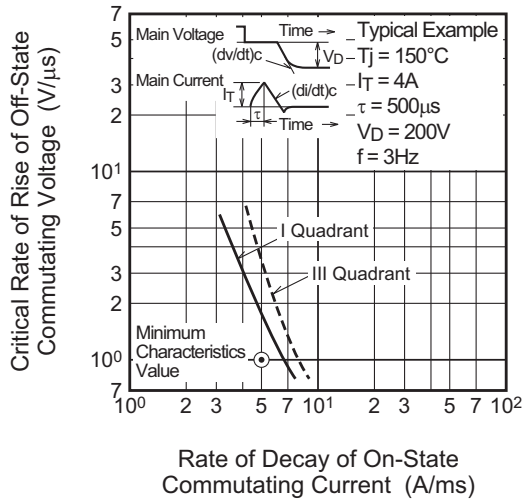
Breakover Voltage vs.
Rate of Rise of Off-State Voltage (Tj=150°C)



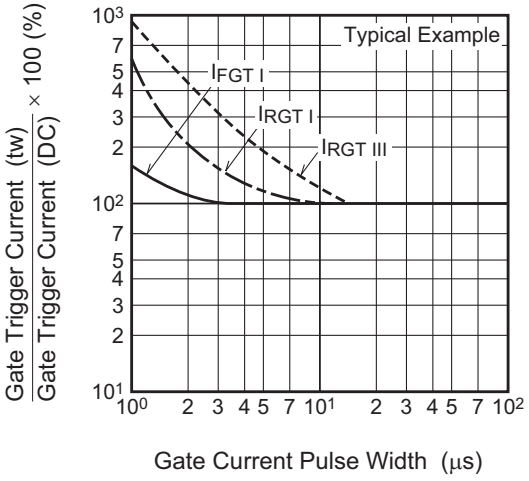
Commutation Characteristics (Tj=125°C)



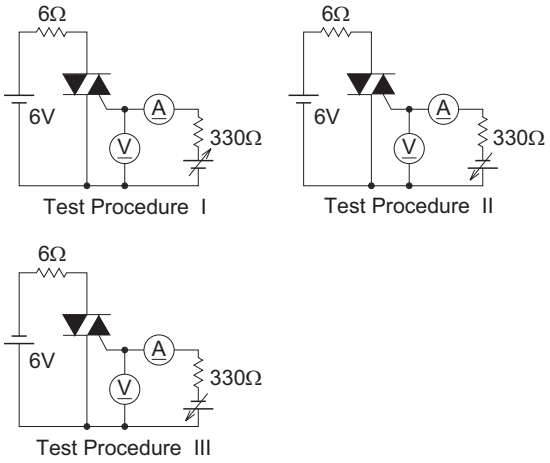
Commutation Characteristics (Tj=150°C)



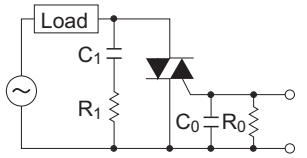
Gate Trigger Current vs.
Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



Recommended Circuit Values Around The Triac

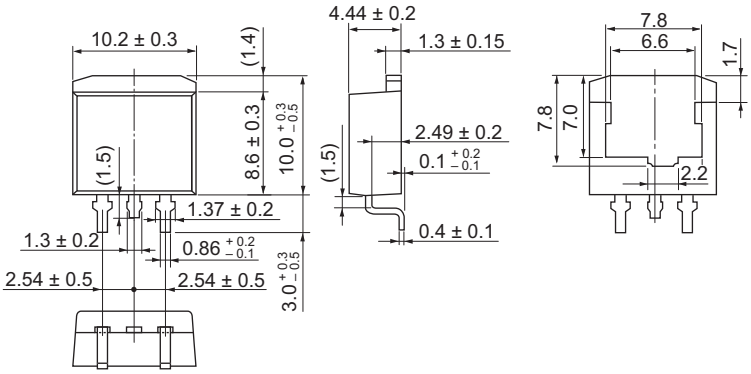


C_1 = 0.1 to 0.47μF C_0 = 0.1μF
R_1 = 47 to 100Ω R_0 = 100Ω

Package Dimensions

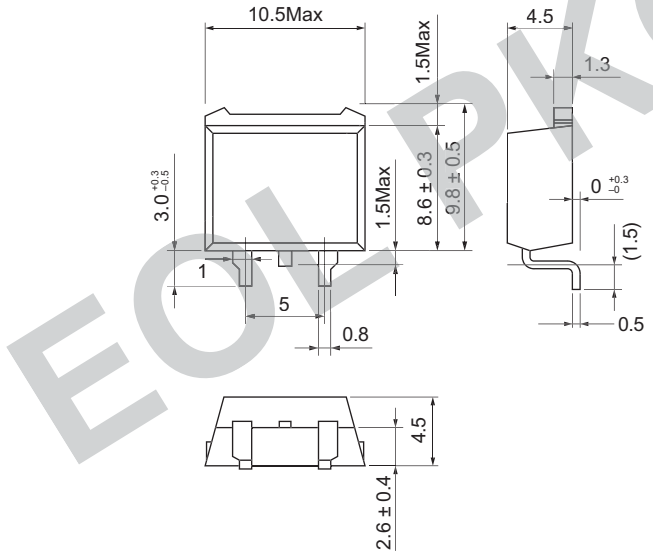
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDPAK(S)-(1)	SC-83	PRSS0004AE-B	LDPAK(S)-(1) / LDPAK(S)-(1)V	1.30g

Unit: mm



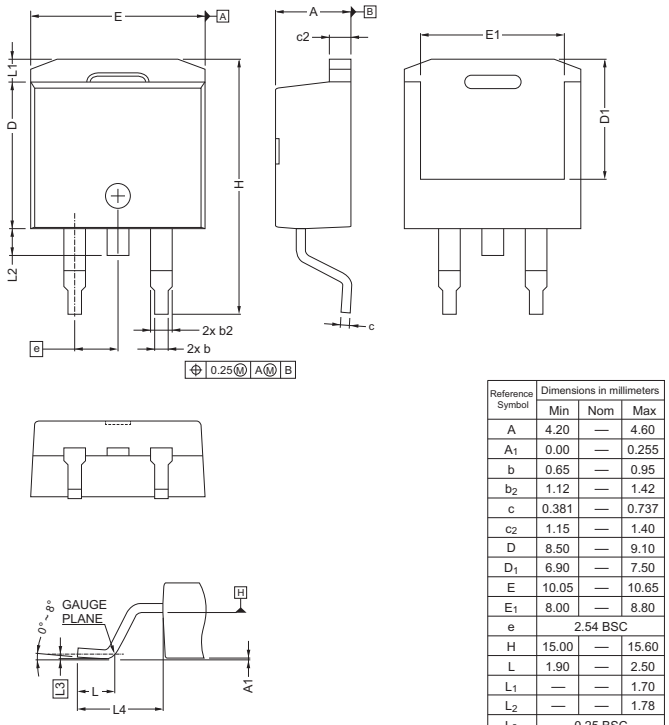
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220S	SC-83	PRSS0004AB-A	TO-220S	1.2g

Unit: mm



Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
TO-263	—	PRSS0004AS-A	TO-263A	1.4

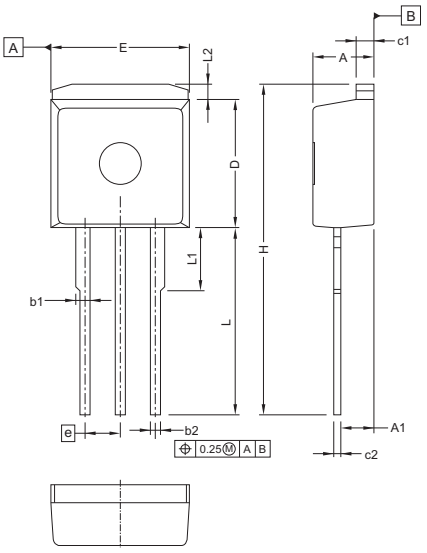
Unit: mm



Reference Symbol	Dimensions in millimeters		
	Min	Nom	Max
A	4.20	—	4.60
A_1	0.00	—	0.255
b	0.65	—	0.95
b_2	1.12	—	1.42
c	0.381	—	0.737
c_2	1.15	—	1.40
D	8.50	—	9.10
D_1	6.90	—	7.50
E	10.05	—	10.65
E_1	8.00	—	8.80
e	2.54 BSC		
H	15.00	—	15.60
L	1.90	—	2.50
L_1	—	—	1.70
L_2	—	—	1.78
L_3	0.25 BSC		
L_4	4.78	—	5.28

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
TO-262	—	PRSS0004AR-A	TO-262A	1.4

Unit: mm



Reference Symbol	Dimensions in millimeters		
	Min	Nom	Max
A	4.200	4.400	4.600
A_1	2.050	2.400	2.750
b_1	0.635	1.050	1.400
b_2	0.640	0.750	0.880
c_1	1.140	1.300	1.400
c_2	0.330	0.500	0.600
D	8.500	9.250	9.650
E	9.650	10.000	10.370
e	2.54 BSC		
H	—	23.850	—
L	12.900	13.500	14.100
L_1	—	4.550	4.800
L_2	—	1.100	1.727

Ordering Information

Orderable Part Number	Package	Packing	Quantity	Remark
BCR10CS-12LB#BH0	TO-263	Tube	50 pcs.	
BCR10CS-12LBT1#BH0	TO-263	Embossed Tape	800 pcs.	Taping direction “T1”
BCR10CS-12LBA1#BH0	TO-262	Tube	50 pcs.	
BCR10CS-12LB#B00	LDPAK(S)-(1)	Tube	50 pcs.	Not Recommend for New Design
BCR10CS12LBT11#B00	LDPAK(S)-(1)	Embossed Tape	1000 pcs.	Not Recommend for New Design
BCR10CS-12LB#B01	TO-220S	Tube	50 pcs.	EOL
BCR10CS12LBT11#B01	TO-220S	Embossed Tape	1000 pcs.	EOL

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

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