CR12CS-16B

800V-12A-Thyristor
Medium Power Use

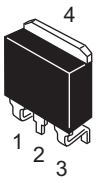
R07DS0414EJ0200
Rev.2.00
Oct 19, 2015

Features

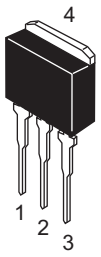
- $I_{T(AV)}$: 12 A
- V_{DRM} : 800 V
- I_{GT}: 30 mA
- Non-Insulated Type
- Planar Type

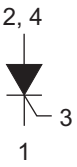
Outline

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



: PRSS0004AE-A
(Package name: LDPAK (L))

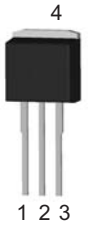




1. Cathode
2. Anode
3. Gate
4. Anode

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

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



Applications

Switching mode power supply, motor control, heater control, and other general purpose control applications

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		16	
Repetitive peak reverse voltage	V_{RRM}	800	V
Non-repetitive peak reverse voltage	V_{RSM}	960	V
DC reverse voltage	$V_{R(DC)}$	640	V
Repetitive peak off-state voltage	V_{DRM}	800	V
DC off-state voltage	$V_{D(DC)}$	640	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	18.8	A	
Average on-state current	$I_{T(AV)}$	12	A	Commercial frequency, sine half wave 180° conduction, Tc = 116°C Note1
Surge on-state current	I_{TSM}	360	A	60Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	544	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 forward voltage	V_{FGM}	6	V	
Peak gate reverse voltage	V_{RGM}	10	V	
Peak gate forward current	I_{FGM}	2	A	
Junction temperature	Tj	– 40 to +150	°C	
Storage temperature	Tstg	– 40 to +150	°C	
Mass	—	1.3	g	LDPAK(S)-(1) , Typical value
		1.4	g	LDPAK(L) , Typical value

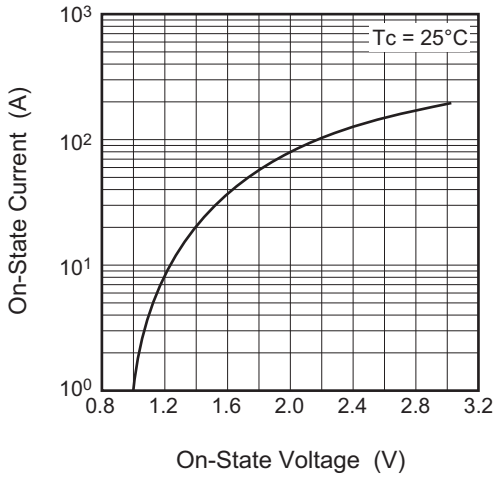
Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	2.0	mA	Tj = 125°C, V_{RRM} applied,
		—	—	5.0	mA	Tj = 150°C, V_{RRM} applied,
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	Tj = 125°C, V_{DRM} applied,
		—	—	5.0	mA	Tj = 150°C, V_{DRM} applied,
On-state voltage	V_{TM}	—	—	1.6	V	Tc = 25°C, I_{TM} = 40 A, Instantaneous value
Gate trigger voltage	V_{GT}	—	—	1.5	V	Tj = 25°C, V_D = 6 V, I_T = 1 A,
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM},
		0.1	—	—	V	Tj = 150°C, V_D = 1/2 V_{DRM},
Gate trigger current	I_{GT}	—	—	30	mA	Tj = 25°C, V_D = 6 V, I_T = 1 A,
Thermal resistance	$R_{th\ (j-c)}$	—	—	1.2	°C/W	Junction to case Note1

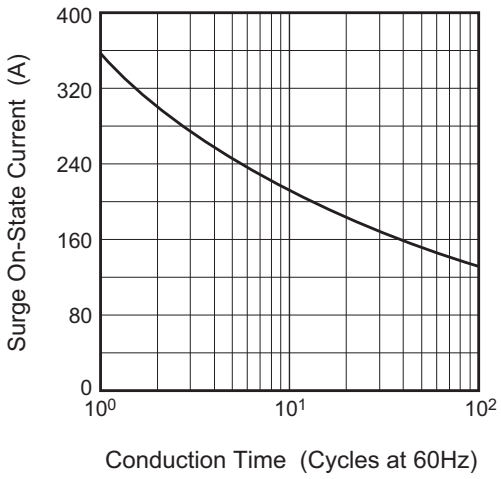
Notes: 1. Case temperature is measured on the anode tab

Performance Curves

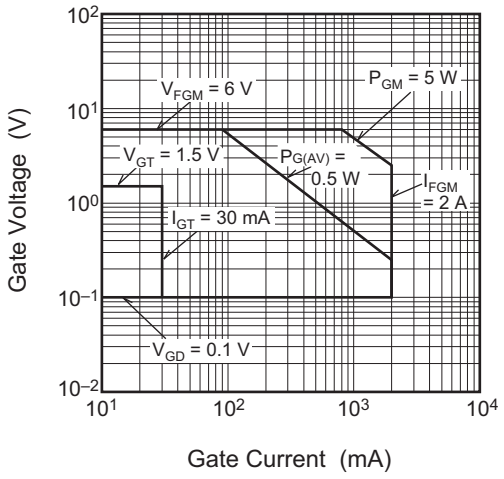
Maximum On-State Characteristics



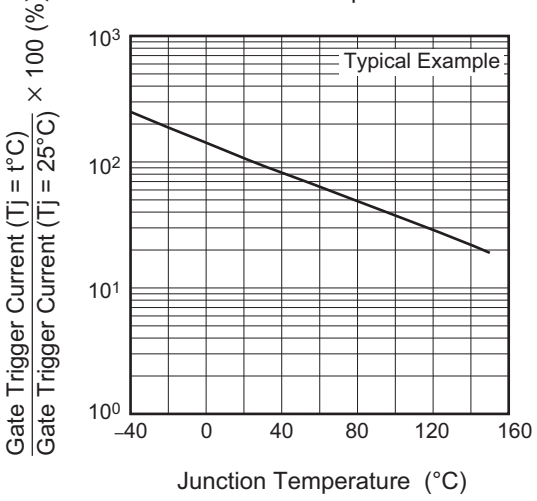
Rated Surge On-State Current



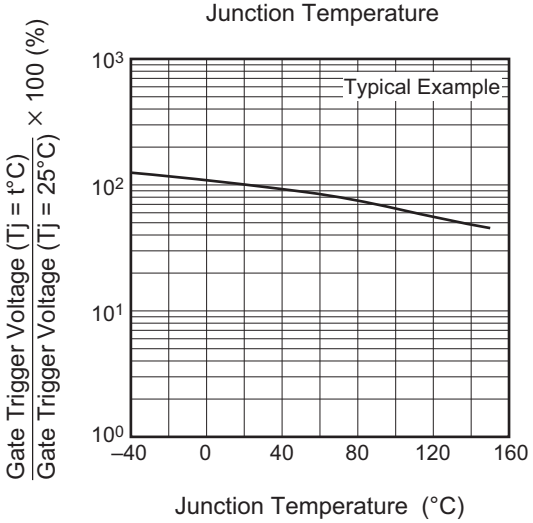
Gate Characteristics



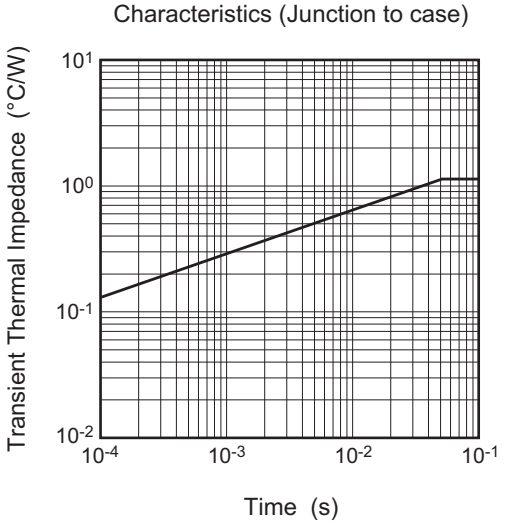
Gate Trigger Current vs. Junction Temperature



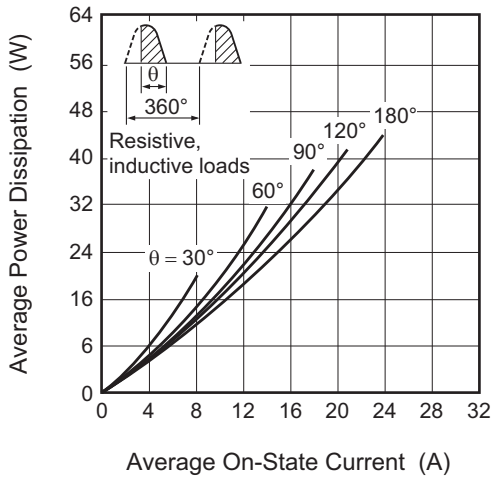
Gate Trigger Voltage vs. Junction Temperature



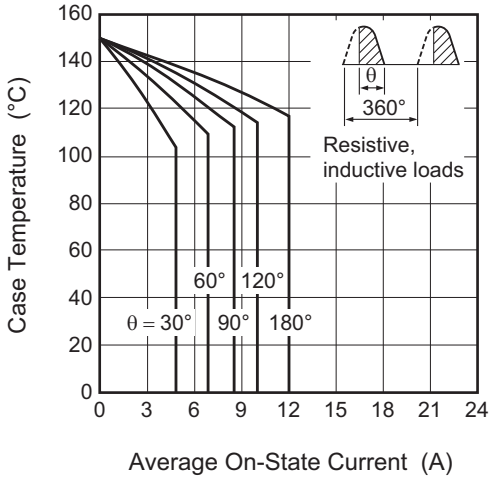
Maximum Transient Thermal Impedance Characteristics (Junction to case)



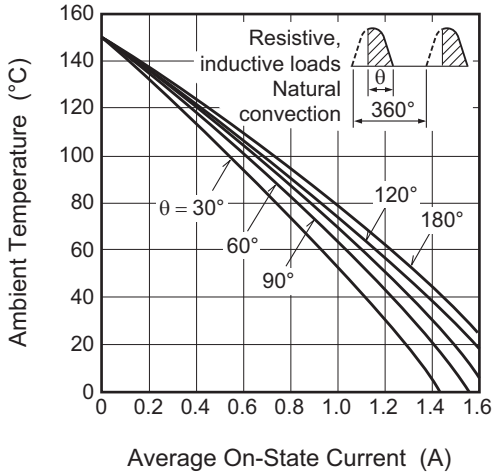
Maximum Average Power Dissipation
(Single-Phase Half Wave)



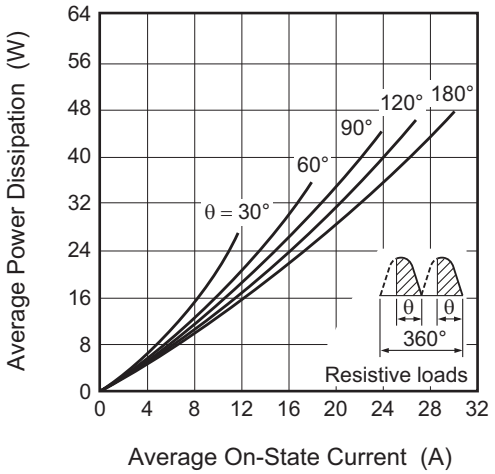
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



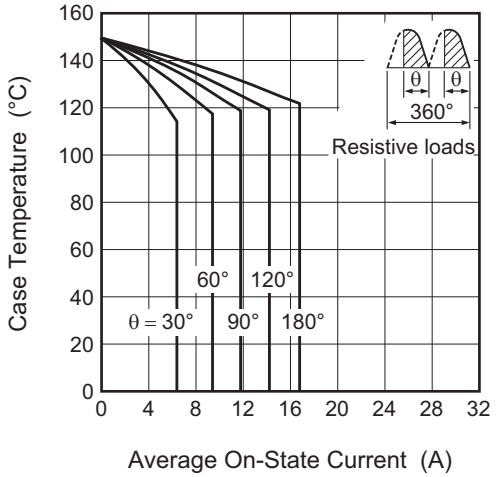
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



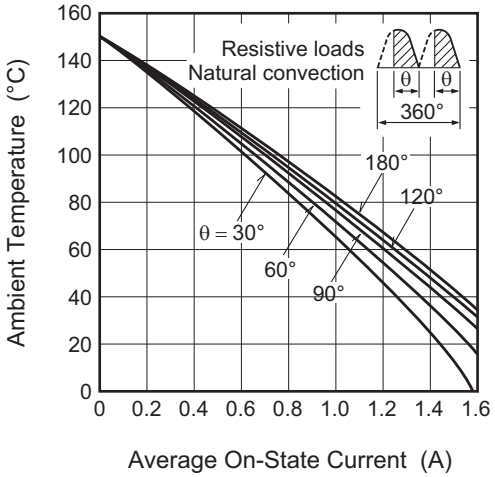
Maximum Average Power Dissipation
(Single-Phase Full Wave)



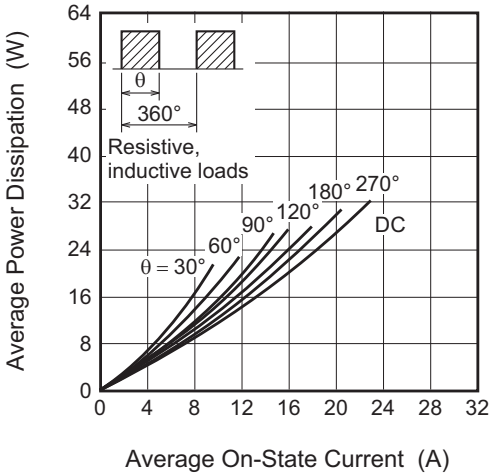
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



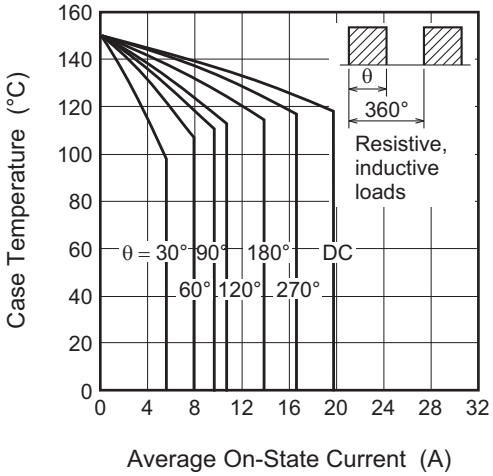
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



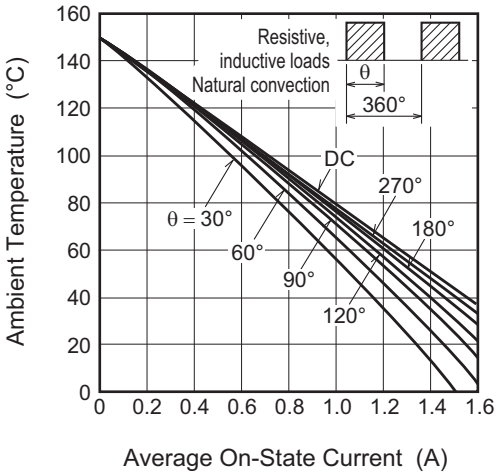
Maximum Average Power Dissipation
(Rectangular Wave)



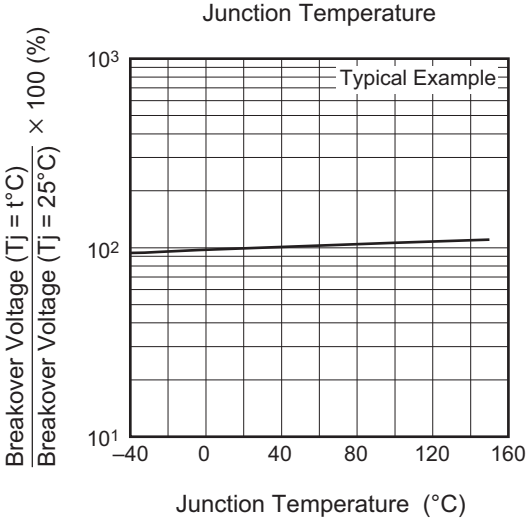
Allowable Case Temperature vs.
Average On-State Current
(Rectangular Wave)



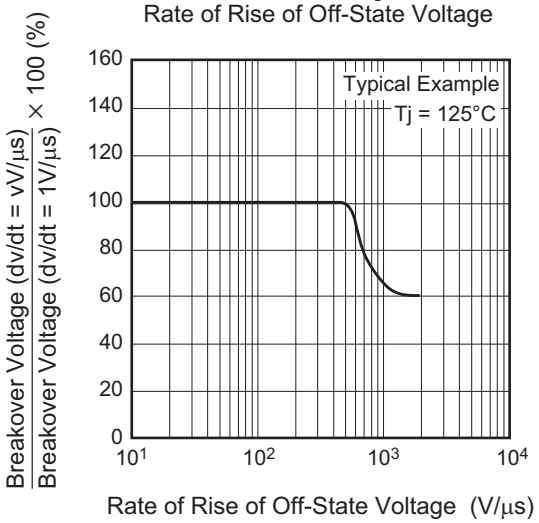
Allowable Ambient Temperature vs.
Average On-State Current
(Rectangular Wave)



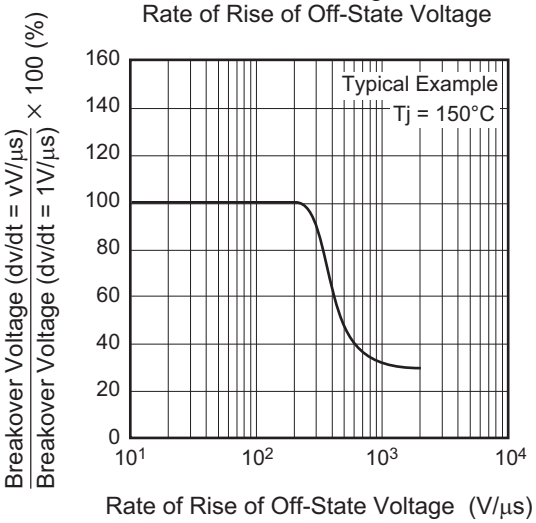
Breakover Voltage vs.
Junction Temperature



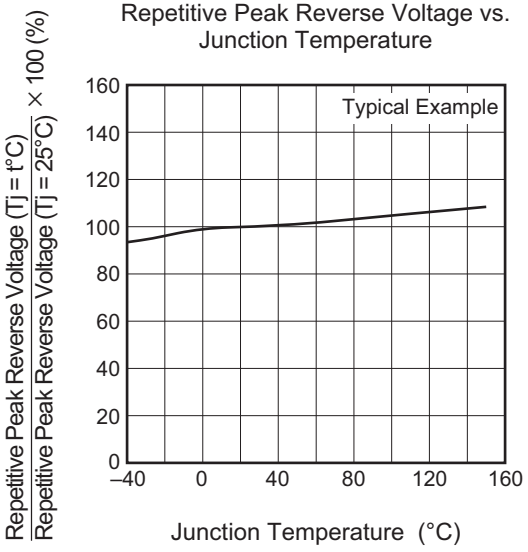
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



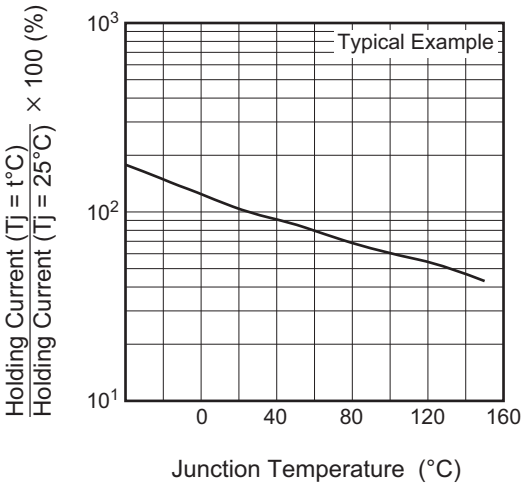
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



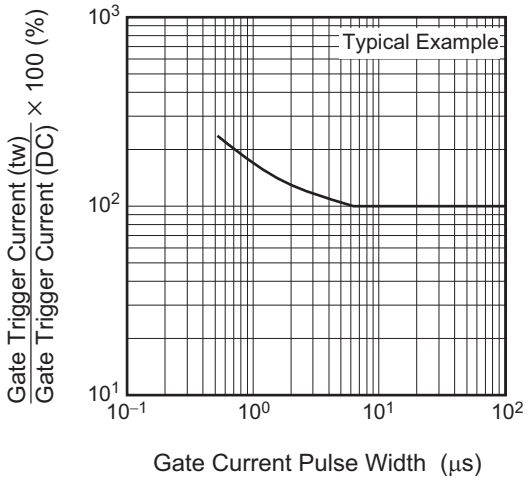
Repetitive Peak Reverse Voltage vs.
Junction Temperature



Holding Current vs.
Junction Temperature



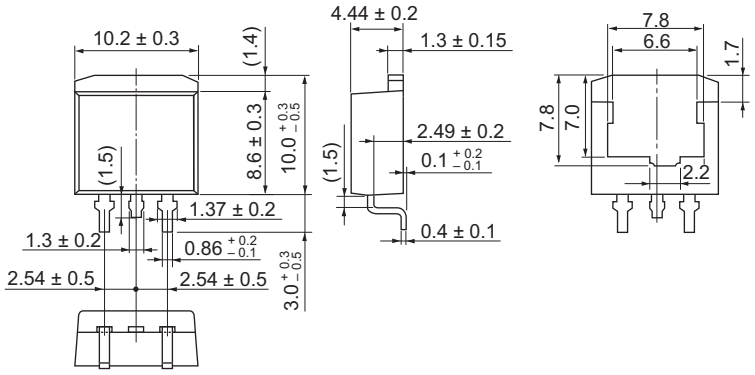
Gate Trigger Current vs.
Gate Current Pulse Width



Package Dimensions

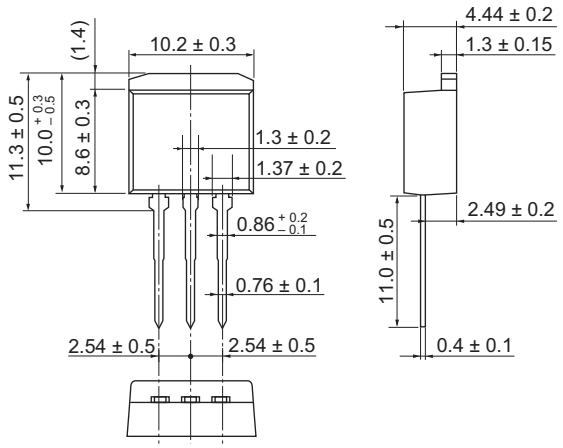
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDPAK(S)-(1)	SC-83	PRSS0004AE-B	LDPAK(S)-(1) / LDPAK(S)-(1)V	1.30g

Unit: mm



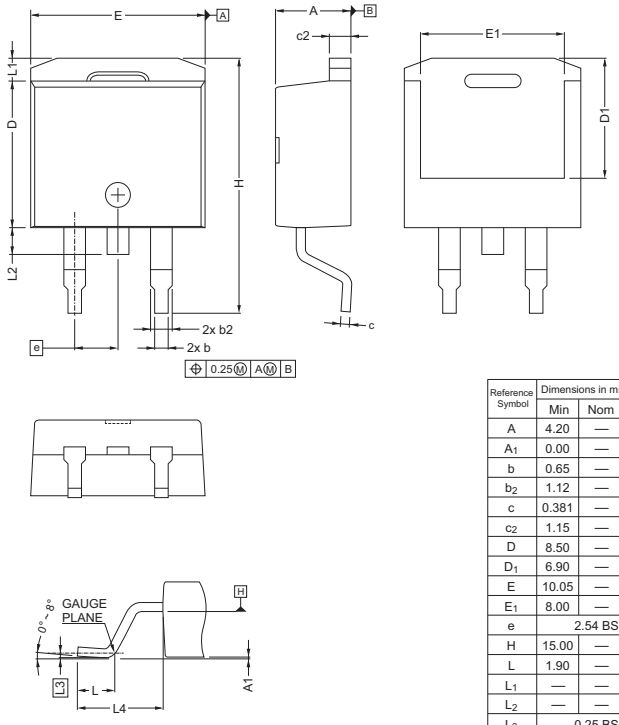
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDPAK(L)	—	PRSS0004AE-A	LDPAK(L) / LDPAK(L)V	1.40g

Unit: mm



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

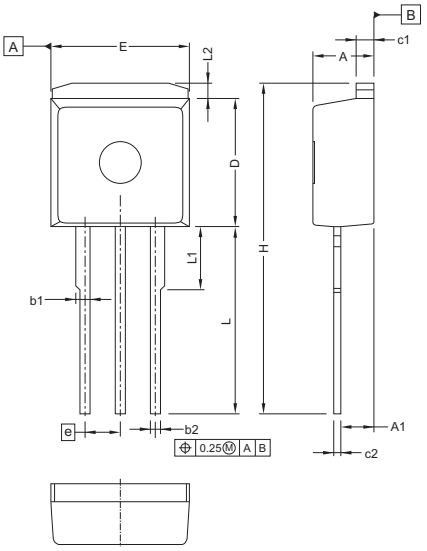
Unit: mm



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
CR12CS-16B#BH0	TO-263	Tube	50 pcs.	
CR12CS-16B-T1#BH0	TO-263	Embossed Tape	800 pcs.	Taping direction “T1”
CR12CS-16B-T2#BH0	TO-263	Embossed Tape	800 pcs.	Taping direction “T2”
CR12CS-16B-A1#BH0	TO-262	Tube	50 pcs.	
CR12CS-16B#B00	LDPAK(S)-(1)	Tube	50 pcs.	Not Recommend for New Design
CR12CS-16B-T11#B00	LDPAK(S)-(1)	Embossed Tape	1000 pcs.	Not Recommend for New Design
CR12CS-16B-T21#B00	LDPAK(S)-(1)	Embossed Tape	1000 pcs.	Not Recommend for New Design
CR12CS-16B-A1#B00	LDPAK(L)	Tube	50 pcs.	Not Recommend for New Design

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

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RENESAS

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