

BCR8CS-12LB

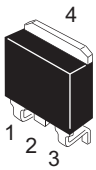

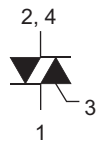

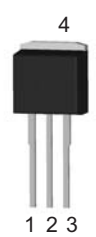
600V-8A-Triac
Medium Power Use

R07DS0223EJ0500
Rev.5.00
Oct 19, 2015

Features

- $I_{T(RMS)}$: 8 A
- V_{DRM} : 600 V
- $I_{FGTI}, I_{RGTI}, I_{RGTIII}$: 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

Solid state relay, hybrid IC

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 | $I_T (RMS)$ | 8 | A | Commercial frequency, sine full wave 360° conduction, $T_c = 130^\circ\text{C}$ ^{Note3} |
| Surge on-state current | I_{TSM} | 80 | A | 60Hz sinewave 1 full cycle, peak value, non-repetitive |
| I^2t for fusing | I^2t | 26 | A ² s | 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 | °C | |
| Storage temperature | T_{stg} | - 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 | $T_j = 150^\circ\text{C}$, V_{DRM} applied |
| On-state voltage | V_{TM} | — | — | 1.5 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 12\text{ A}$, Instantaneous measurement |
| Gate trigger voltage ^{Note2} | I | V_{FGTI} | — | — | 1.5 | $T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$ |
| | II | V_{RGTI} | — | — | 1.5 | |
| | III | V_{RGTIII} | — | — | 1.5 | |
| Gate trigger current ^{Note2} | I | I_{FGTI} | — | — | 30 ^{Note6} | $T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$ |
| | II | I_{RGTI} | — | — | 30 ^{Note6} | |
| | III | I_{RGTIII} | — | — | 30 ^{Note6} | |
| 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 | $R_{th(j-c)}$ | — | — | 2.0 | °C/W | Junction to case ^{Note3 Note4} |
| Critical-rate of rise of off-state commutating voltage ^{Note5} | $(dv/dt)_c$ | 10/1 | — | — | V/ μs | $T_j = 125^\circ\text{C}/150^\circ\text{C}$ |

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°C/W.

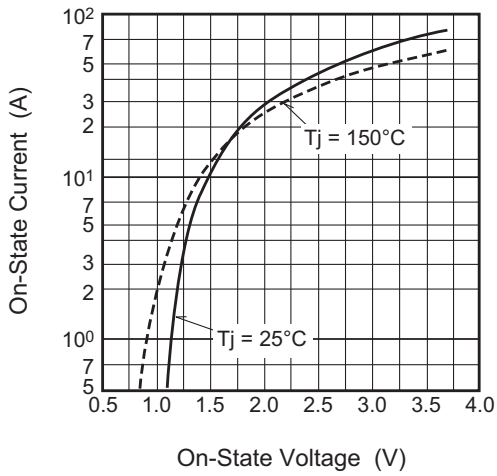
5. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

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

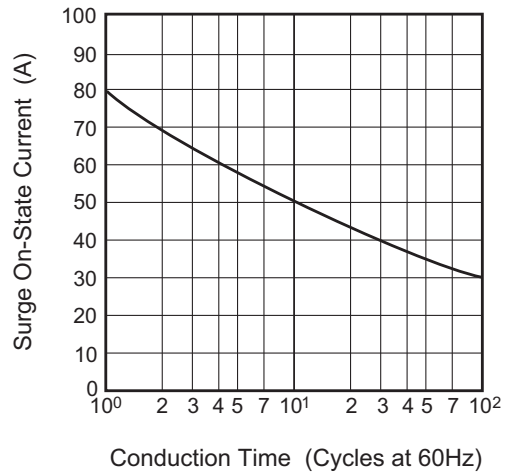
| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|--|
| 1. Junction temperature $T_j = 125^\circ\text{C}/150^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -4.0\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$ | |

Performance Curves

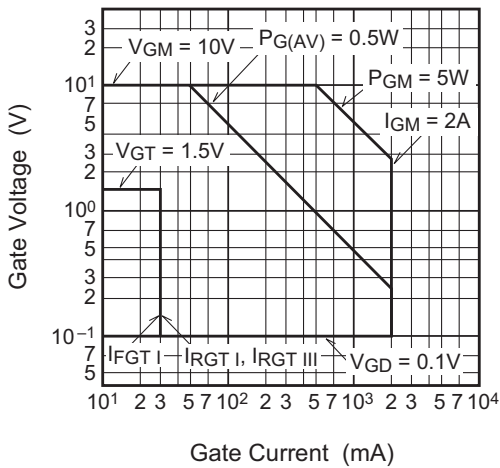
Maximum On-State Characteristics



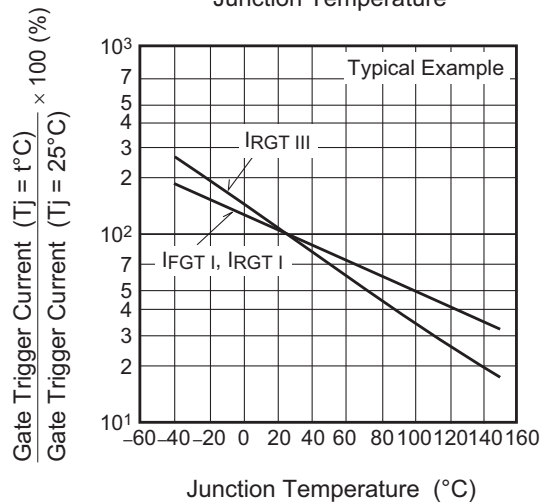
Rated Surge On-State Current



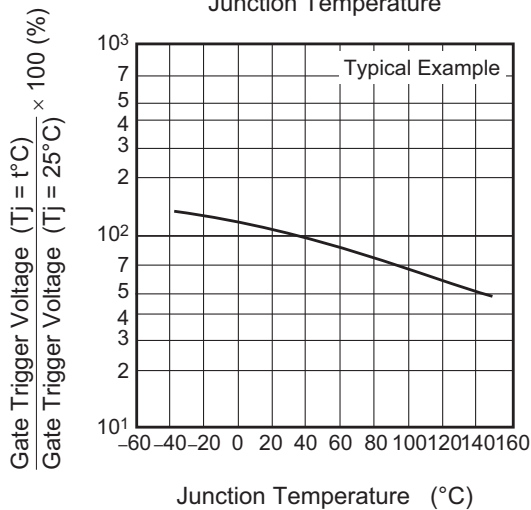
Gate Characteristics (I, II and III)



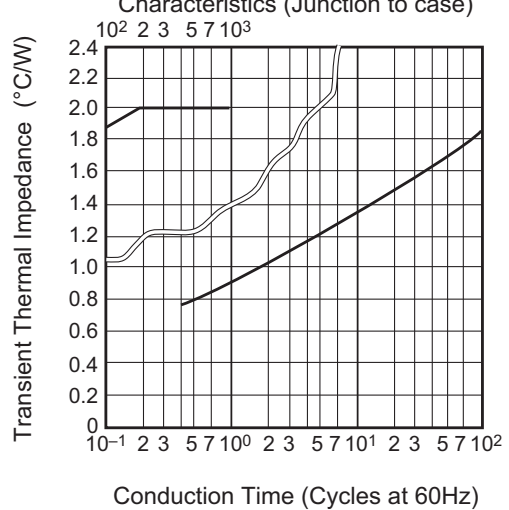
Gate Trigger Current vs. Junction Temperature



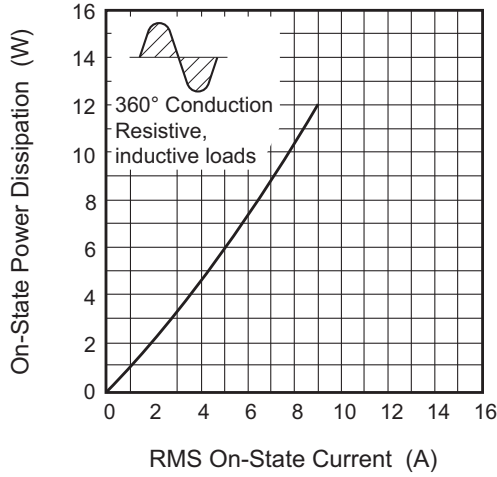
Gate Trigger Voltage vs. Junction Temperature



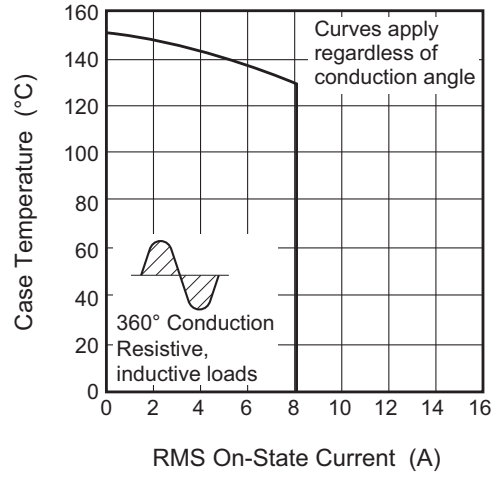
Maximum Transient Thermal Impedance Characteristics (Junction to case)



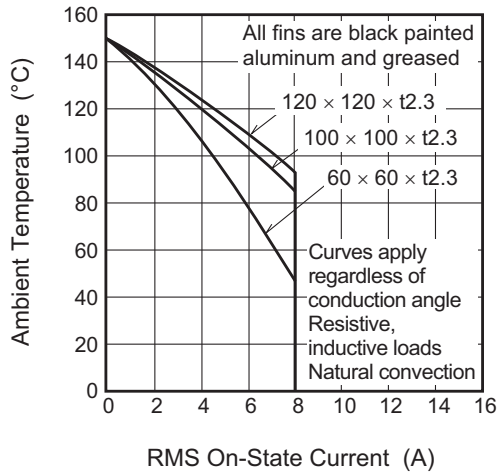
Maximum On-State Power Dissipation



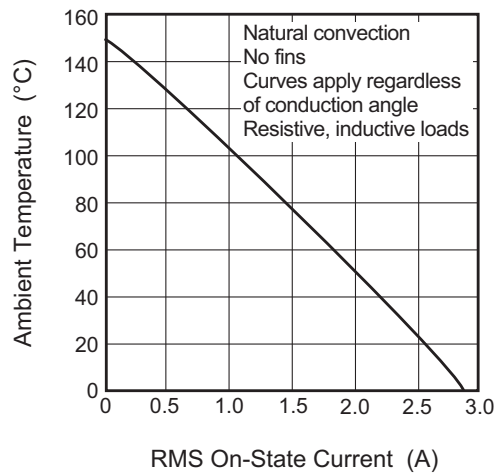
Allowable Case Temperature vs. RMS On-State Current



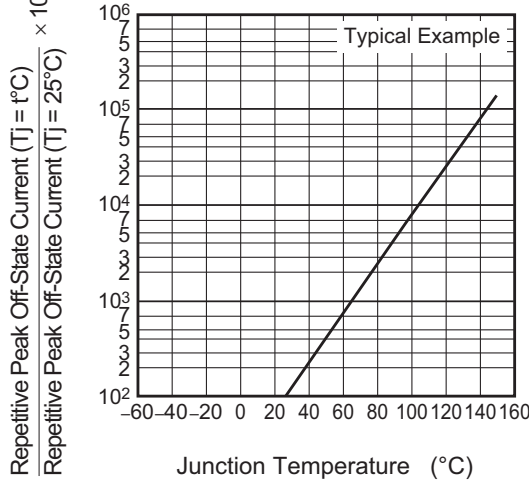
Allowable Ambient Temperature vs. RMS On-State Current



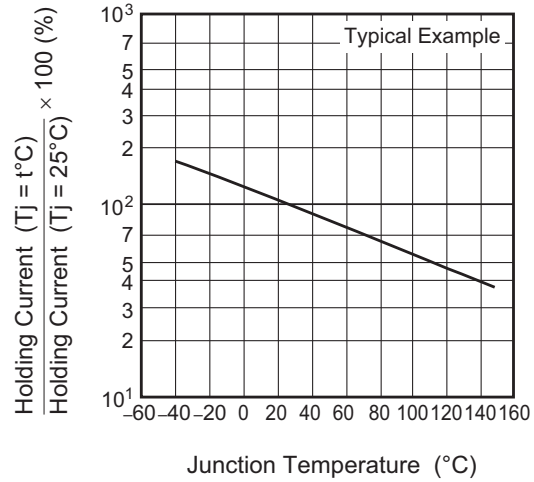
Allowable Ambient Temperature vs. RMS On-State Current



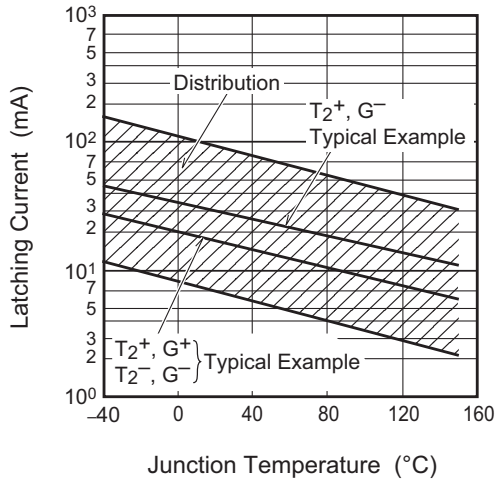
Repetitive Peak Off-State Current vs. Junction Temperature



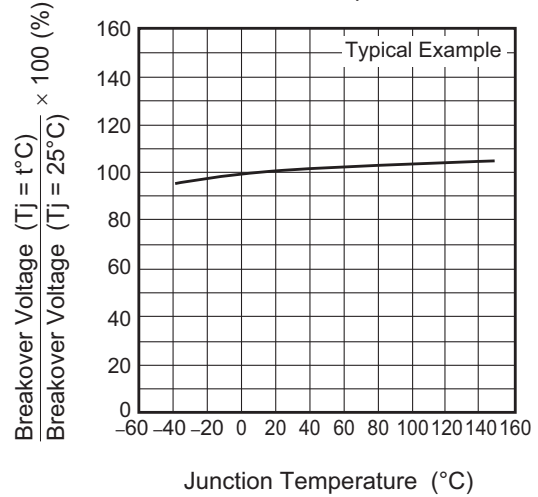
Holding Current vs. Junction Temperature



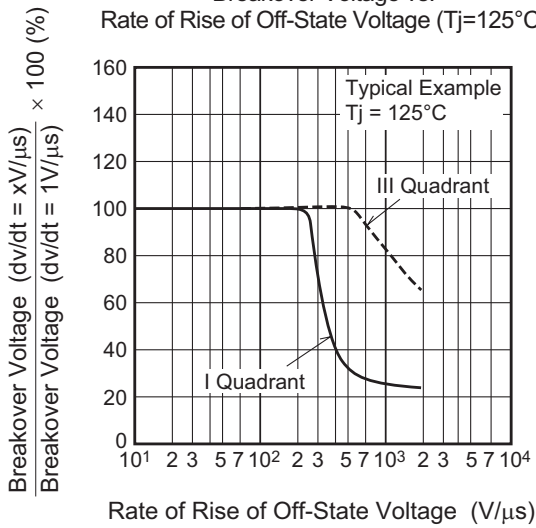
Latching Current vs. Junction Temperature



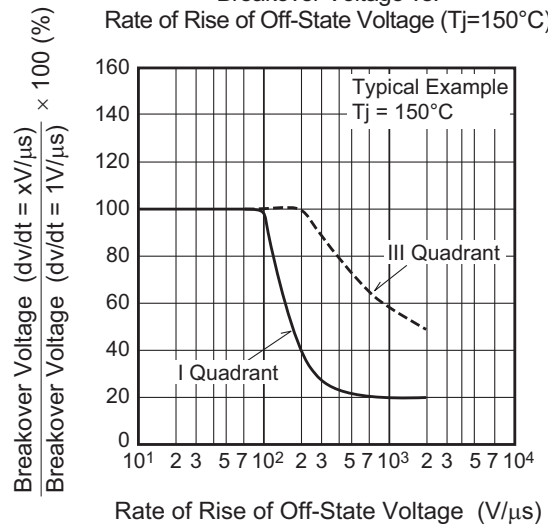
Breakover Voltage vs. Junction Temperature



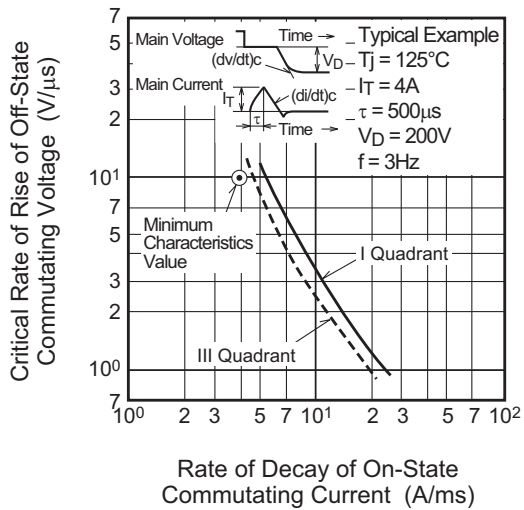
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=125°C)



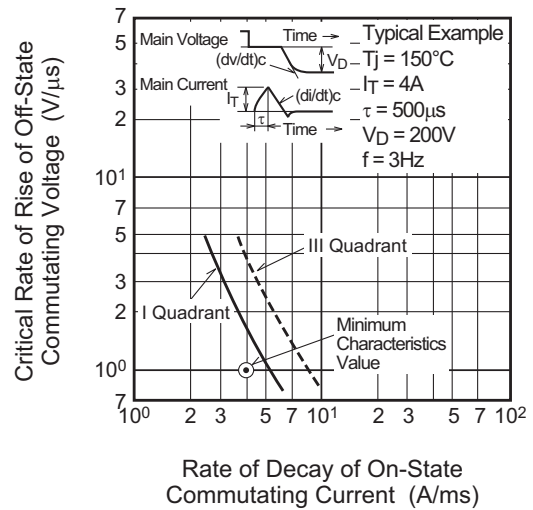
Breakover Voltage vs. Rate of Rise of Off-State Voltage (Tj=150°C)



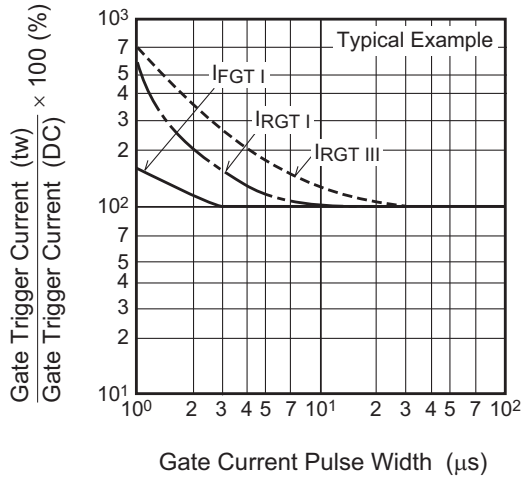
Commutation Characteristics (Tj=125°C)



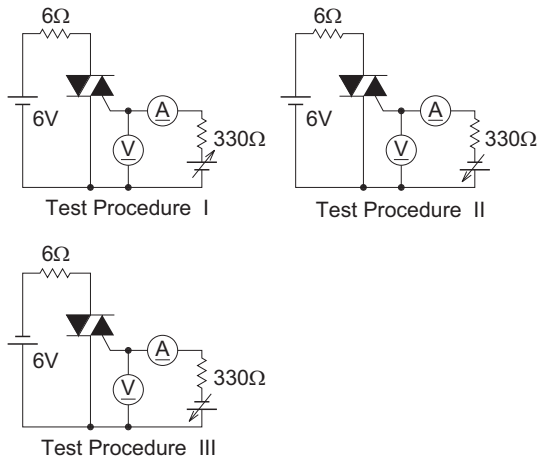
Commutation Characteristics (Tj=150°C)



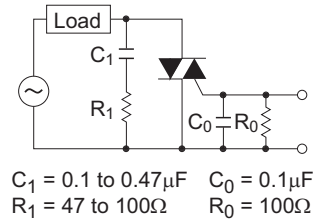
Gate Trigger Current vs. Gate Current Pulse Width



Gate Trigger Characteristics Test Circuits



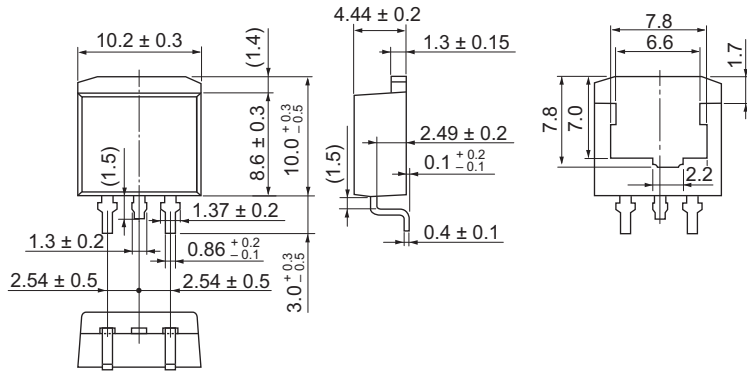
Recommended Circuit Values Around The Triac



Package Dimensions

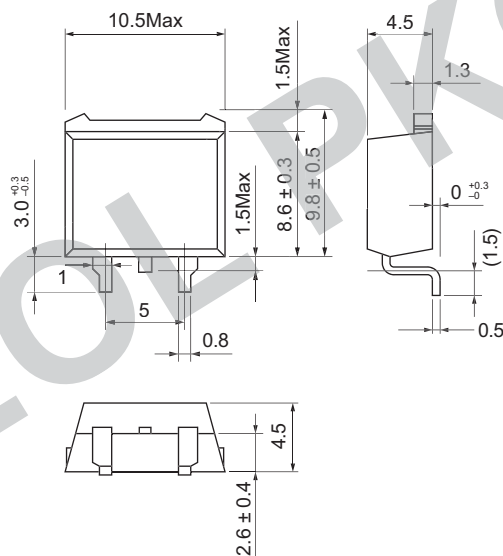
| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|---------------|--------------------|--------------|--------------------------------|------------|
| LDBPAK(S)-(1) | SC-83 | PRSS0004AE-B | LDBPAK(S)-(1) / LDBPAK(S)-(1)V | 1.30g |

Unit: mm



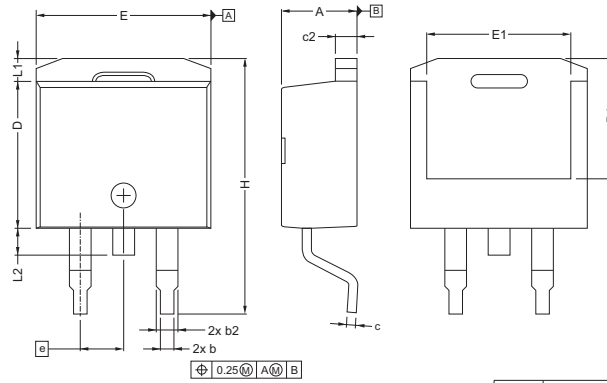
| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|--------------|--------------------|--------------|---------------|------------|
| TO-220S | SC-83 | PRSS0004AB-A | TO-220S | 1.2g |

Unit: mm



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

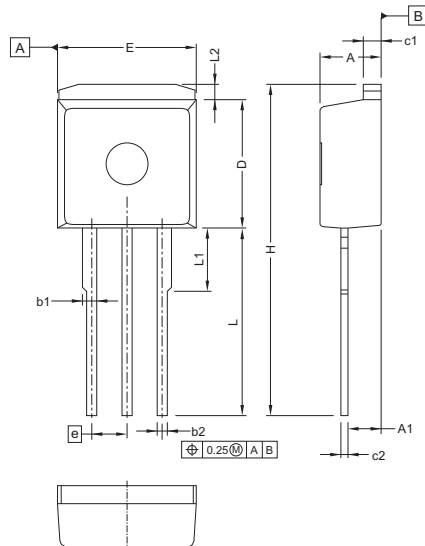
Unit: mm



| 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 |
|------------------------------|----------------|----------------|-----------------|------------------------------|
| BCR8CS-12LB#BH0 | TO-263 | Tube | 50 pcs. | |
| BCR8CS-12LB-T1#BH0 | TO-263 | Embossed Tape | 800 pcs. | Taping direction "T1" |
| BCR8CS-12LB-A1#BH0 | TO-262 | Tube | 50 pcs. | |
| BCR8CS-12LB#B00 | LDBAK(S)-(1) | Tube | 50 pcs. | Not Recommend for New Design |
| BCR8CS-12LBT11#B00 | LDBAK(S)-(1) | Embossed Tape | 1000 pcs. | Not Recommend for New Design |
| BCR8CS-12LB#B01 | TO-220S | Tube | 50 pcs. | EOL |
| BCR8CS-12LBT11#B01 | TO-220S | Embossed Tape | 1000 pcs. | EOL |

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

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