# BCR3AS-12A

## Triac

Low Power Use

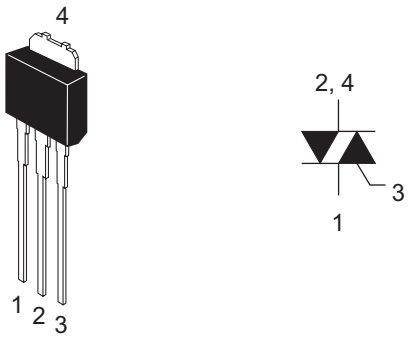
REJ03G0290-0200
Rev.2.00
Nov 30, 2007

### Features

- $I_{T\,(RMS)}$ : 3 A
- $V_{DRM}$ : 600 V
- $I_{FGTI}$, $I_{RGTI}$, $I_{RGT\,III}$ : 15 mA (10 mA)[Note5]
- Non-Insulated Type
- Planar Passivation Type
- Lead Mounted Type

### Outline

RENESAS Package code: PRSS0004ZD-D
(Package name: DPAK(L)-3)




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

### Applications

Hybrid IC, solid state relay, switching mode power supply, light dimmer, electric fan, electric blanket, washing machine, 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 |

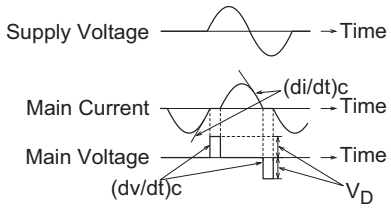
| Parameter | Symbol | RATINGS | Unit | Conditions |
|---|---|---|---|---|
| RMS on-state current | $I_{T\ (RMS)}$ | 3 | A | Commercial frequency, sine full wave 360° conduction, Tc = 108°C[Note3] |
| Surge on-state current | $I_{TSM}$ | 30 | A | 60Hz sinewave 1 full cycle, peak value, non-repetitive |
| $I^2t$ for fusing | $I^2t$ | 3.7 | $A^2s$ | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current |
| Peak gate power dissipation | $P_{GM}$ | 3 | W | |
| Average gate power dissipation | $P_{G\ (AV)}$ | 0.3 | W | |
| Peak gate voltage | $V_{GM}$ | 6 | V | |
| Peak gate current | $I_{GM}$ | 0.3 | A | |
| Junction temperature | Tj | – 40 to +125 | °C | |
| Storage temperature | Tstg | – 40 to +125 | °C | |
| Mass | — | 0.26 | g | Typical value |

Notes: 1. Gate open.

## Electrical Characteristics

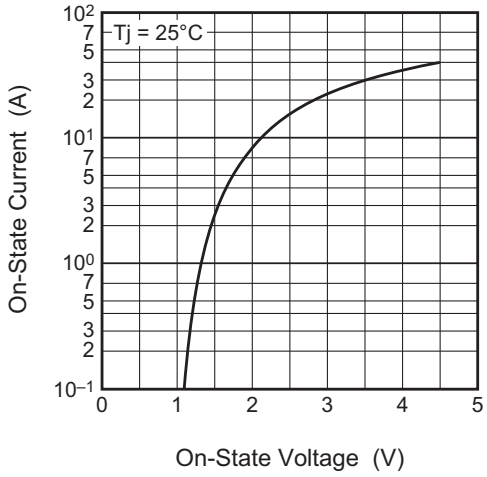
| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|---|---|---|---|---|---|---|---|
| Repetitive peak off-state current | | $I_{DRM}$ | — | — | 2.0 | mA | Tj = 125°C, $V_{DRM}$ applied |
| On-state voltage | | $V_{TM}$ | — | — | 1.7 | V | Tc = 25°C, $I_{TM}$ = 4.5 A, Instantaneous 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 | $I_{FGTI}$ | — | — | 15[Note5] | mA | Tj = 125°C, $V_D$ = 6 V, $R_L$ = 6 Ω, $R_G$ = 330 Ω |
| | II | $I_{RGTI}$ | — | — | 15[Note5] | mA | |
| | III | $I_{RGTIII}$ | — | — | 15[Note5] | mA | |
| Gate non-trigger voltage | | $V_{GD}$ | 0.2 | — | — | V | Tj = 25°C, $V_D$ = 1/2 $V_{DRM}$ |
| Thermal resistance | | $R_{th\ (j-c)}$ | — | — | 3.8 | °C/W | Junction to case[Note3] |
| Critical-rate of rise of off-state commutating voltage[Note4] | | (dv/dt)c | 5 | — | — | V/µs | Tj = 125°C |

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.
3. Case temperature is measured on the $T_2$ tab.
4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.
5. High sensitivity ($I_{GT} \leq 10$ mA) is also available. ($I_{GT}$ item: 1)

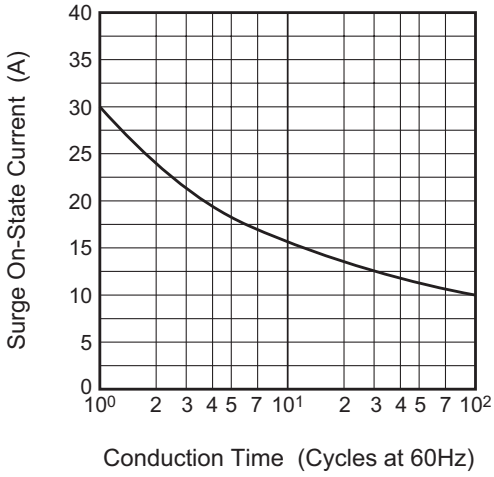
| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|---|
| 1. Junction temperature<br>Tj = 125°C<br>2. Rate of decay of on-state commutating current<br>(di/dt)c = –1.5 A/ms<br>3. Peak off-state voltage<br>$V_D$ = 400 V |  |

## Performance Curves

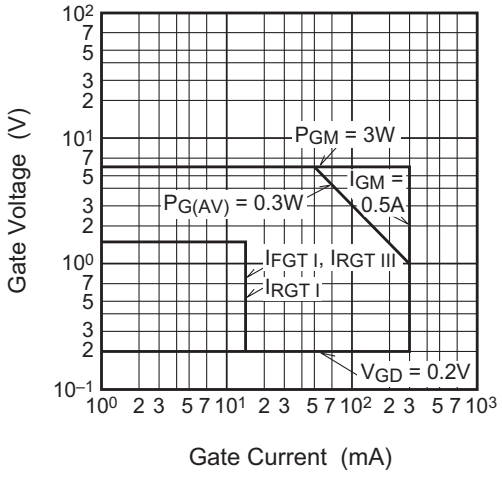
Maximum On-State Characteristics



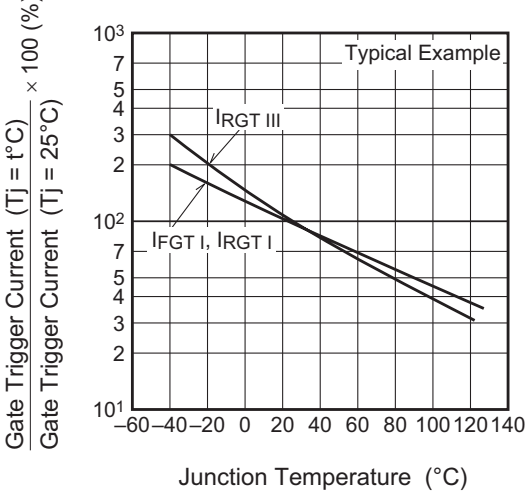

Rated Surge On-State Current



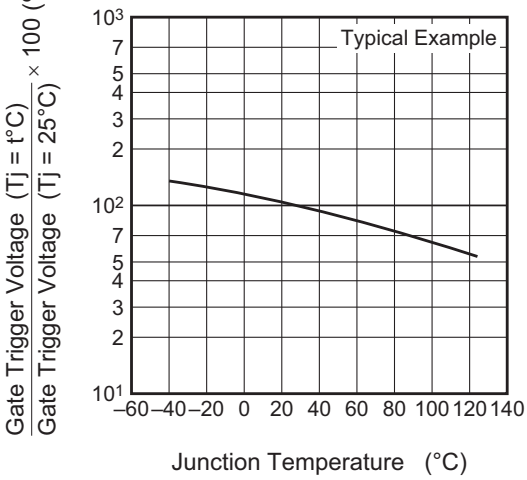

Gate Characteristics (I, II and III)



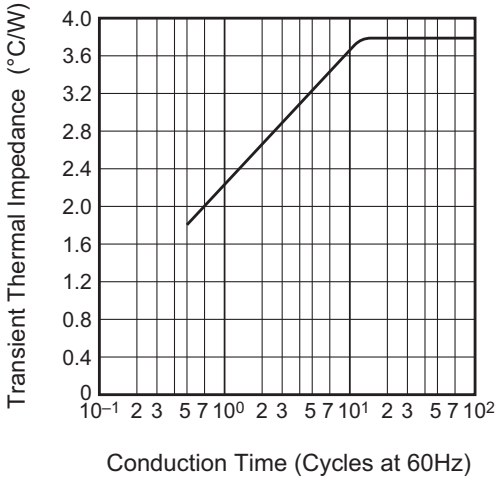

Gate Trigger Current vs. Junction Temperature



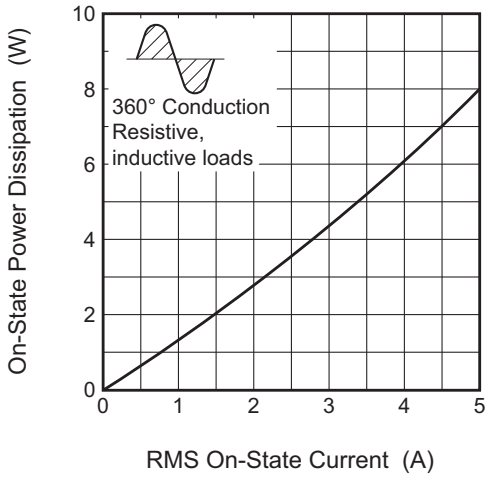

Gate Trigger Voltage vs. Junction Temperature



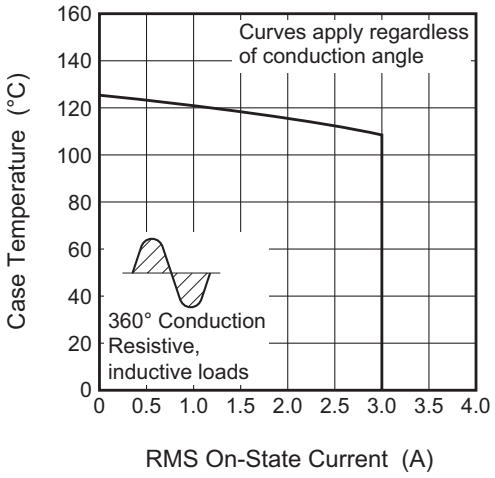

Maximum Transient Thermal Impedance Characteristics (Junction to case)



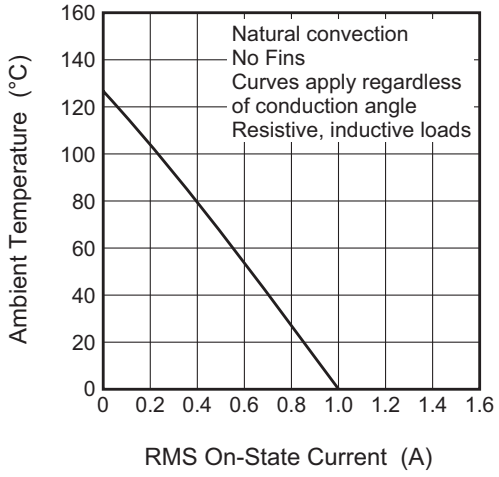
Maximum On-State Power Dissipation



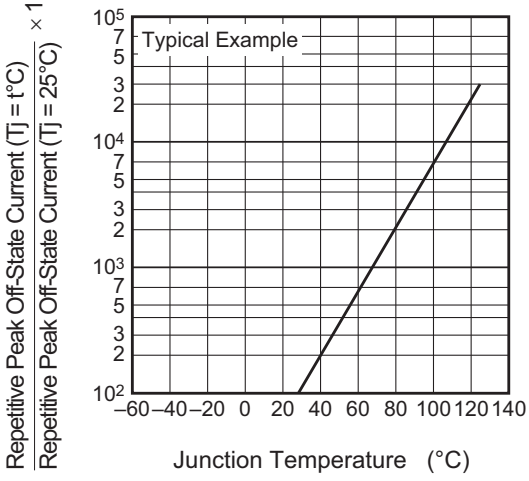

Allowable Case Temperature vs.
RMS On-State Current



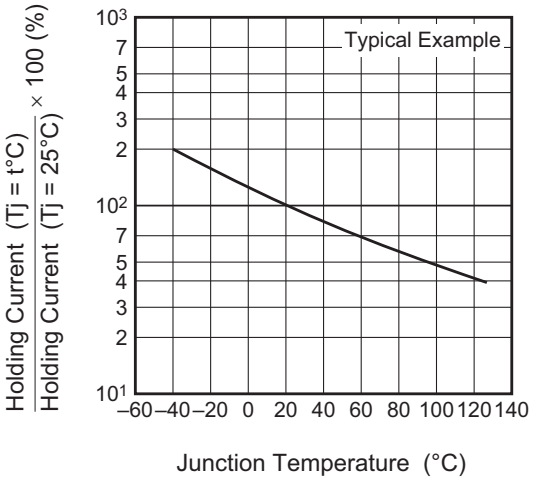

Allowable Ambient Temperature vs.
RMS On-State Current



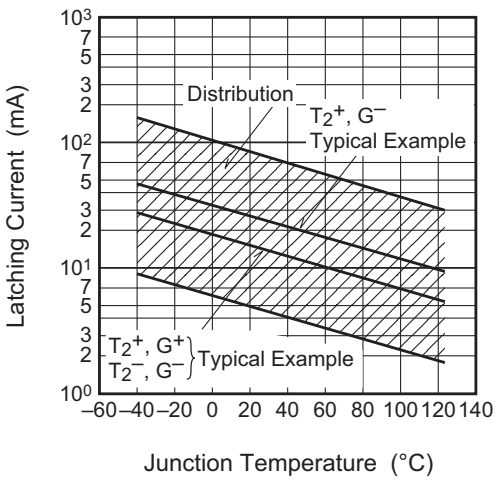

Repetitive Peak Off-State Current vs.
Junction Temperature



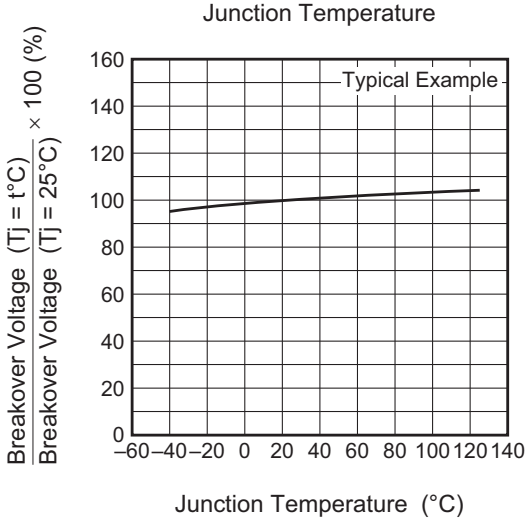

Holding Current vs.
Junction Temperature



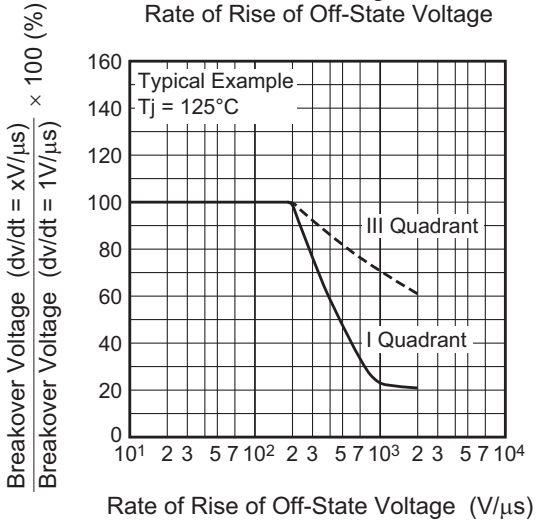

Latching Current vs.
Junction Temperature



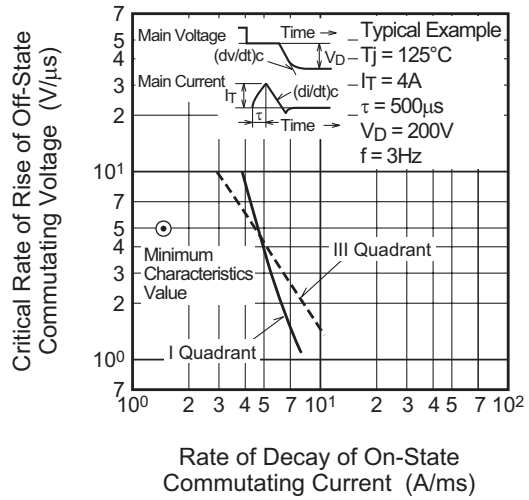
Breakover Voltage vs.
Junction Temperature



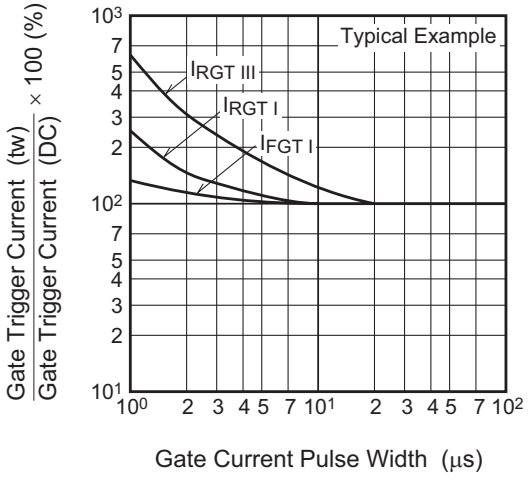

Breakover Voltage vs.
Rate of Rise of Off-State Voltage



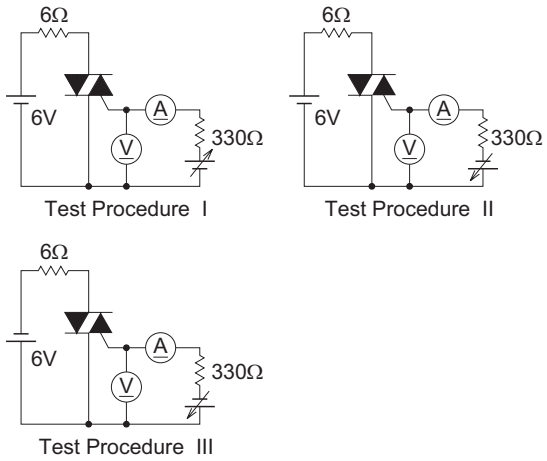

Commutation Characteristics




Gate Trigger Current vs.
Gate Current Pulse Width



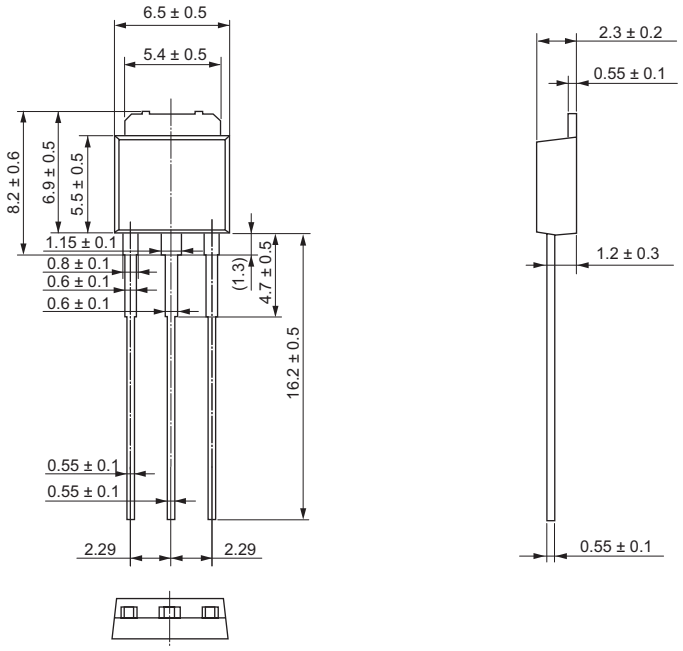

Gate Trigger Characteristics Test Circuits



## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|---|---|---|---|---|
| DPAK(L)-(3) | — | PRSS0004ZD-D | DPAK(L)-(3)/DPAK(L)-(3)V | 0.36g |

Unit: mm




## Order Code

| Lead form | Standard packing | Quantity | Standard order code | Standard order code example |
|---|---|---|---|---|
| Straight type | Vinyl sack | 100 | Type name – A1 | BCR3AS-12A-A1 |

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

Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan



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**Renesas Technology America, Inc.**
450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology (Shanghai) Co., Ltd.**
Unit 204, 205, AZIACenter, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7858/7898

**Renesas Technology Hong Kong Ltd.**
7th Floor, North Tower, World Finance Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2377-3473

**Renesas Technology Taiwan Co., Ltd.**
10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 3518-3399

**Renesas Technology Singapore Pte. Ltd.**
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

**Renesas Technology Korea Co., Ltd.**
Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510



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