# BCR3AS-12B

## 600V - 3A - Triac

Low Power Use

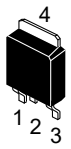
R07DS1439EJ0500
(Previous: REJ03G0450-0400)
Rev.5.00
May. 10, 2019

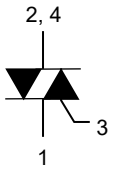
## Features

- $I_{T\,(RMS)}$ : 3 A
- $V_{DRM}$ : 600 V
- $I_{FGTI}$, $I_{RGTI}$, $I_{RGT\,III}$: 15 mA
- Tj: 150 °C
- Planar Passivation Type

## Outline

RENESAS Package code: PRSS0004ZG-A
(Package name: MP-3A)




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

## Application

Small motor control, heater control, and other general purpose AC 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 |

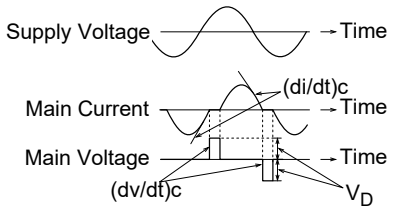
Notes: 1. Gate open.

| Parameter | Symbol | Ratings | Unit | Conditions |
|---|---|---|---|---|
| RMS on-state current | $I_{T\,(RMS)}$ | 3 | A | Commercial frequency, sine full wave 360°conduction, Tc = 133°C[Note3] |
| Surge on-state current | $I_{TSM}$ | 30 | A | 60 Hz 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 60 Hz, 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 +150 | °C | |
| Storage temperature | Tstg | –40 to +150 | °C | |

## 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 | | $V_{TM}$ | — | — | 1.7 | 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 | mA | Tj = 25°C, $V_D$ = 6 V, $R_L$ = 6 Ω, $R_G$ = 330 Ω |
| | II | $I_{RGTI}$ | — | — | 15 | mA | |
| | III | $I_{RGTIII}$ | — | — | 15 | mA | |
| Gate non-trigger voltage | | $V_{GD}$ | 0.2 | — | — | V | Tj = 125°C, $V_D$ = 1/2 $V_{DRM}$ |
| | | | 0.1 | — | — | | Tj = 150°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 |
| | | | 1 | — | — | | Tj = 150°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.

| Test conditions | Commutating voltage and current waveforms (inductive load) |
|---|---|
| 1. Junction temperature<br>Tj = 125°C/150°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 |  |