

CRD5AS-12B

Reverse Conducting Thyristor

Medium Power Use

R07DS0503EJ0101

Rev.1.01

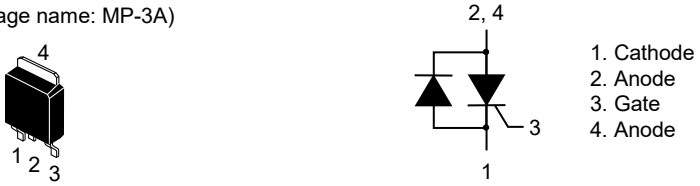
May. 10, 2019

Features

- $I_{T(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- T_j : 150°C
- Built-in reverse conducting diode
- Planar Passivation Type
- RoHS Compliant

Outline

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



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

Application

Switching mode power supply, etc.

Maximum Ratings

| Parameter | Symbol | Voltage class | |
|--|-----------|---------------|-----|
| | | 12 | 600 |
| Repetitive peak off-state voltage ^{Note1} | V_{DRM} | 600 | V |

Notes: 1. With gate to cathode resistance $R_{GK} = 220 \Omega$

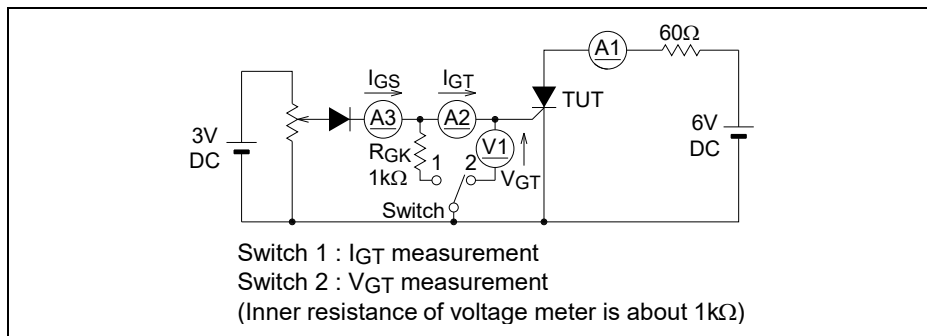
| Parameter | Symbol | Ratings | Unit | Conditions |
|----------------------------------|--------------|-------------|----------------------|---|
| RMS on-state current | $I_{T(RMS)}$ | 7.8 | A | |
| Average on-state current | $I_{T(AV)}$ | 5 | A | Commercial frequency, sine half wave 180°conduction, $T_c = 113^\circ\text{C}$ ^{Note2} |
| Surge on-state current | I_{TSM} | 90 | A | 60 Hz sine half wave 1 full cycle, peak value, non-repetitive |
| I^2t for fusing | I^2t | 33 | A^2s | Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current |
| Surge reverse-conducting current | I_{RCSM} | 3 | A | Sine half wave, pulse width 10 ms, peak value, non-repetitive, $R_{GK} = 0 \Omega$ |
| Peak gate power dissipation | P_{GM} | 0.5 | W | |
| Average gate power dissipation | $P_{G(AV)}$ | 0.1 | W | |
| Peak gate forward voltage | V_{FGM} | 6 | V | |
| Peak gate reverse voltage | V_{RGM} | 6 | V | |
| Peak gate forward current | I_{FGM} | 0.3 | A | |
| Junction temperature | T_j | -40 to +150 | °C | |
| Storage temperature | T_{stg} | -40 to +150 | °C | |

Electrical Characteristics

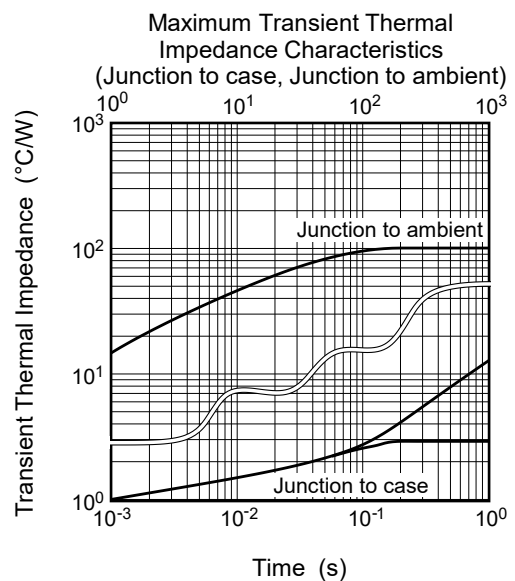
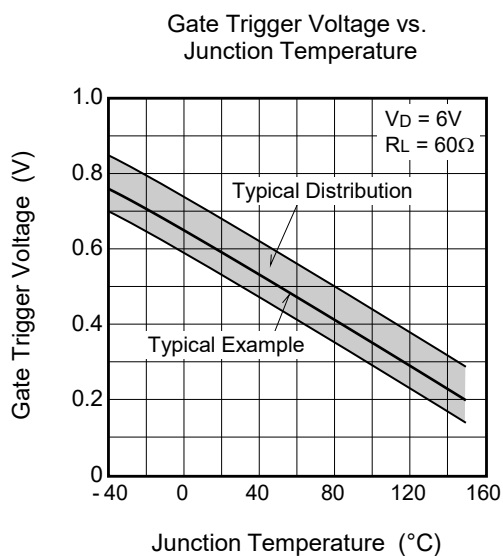
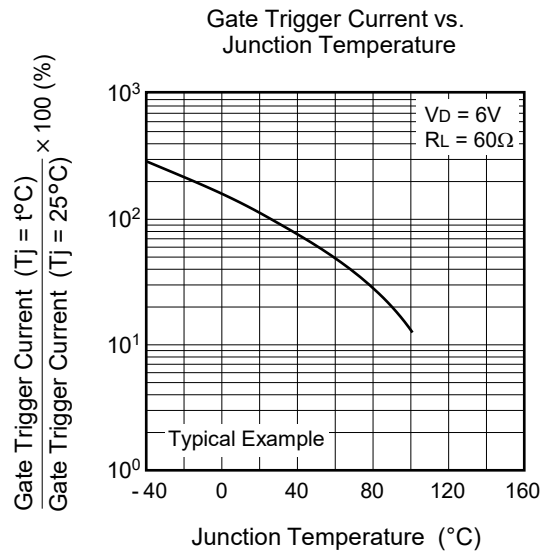
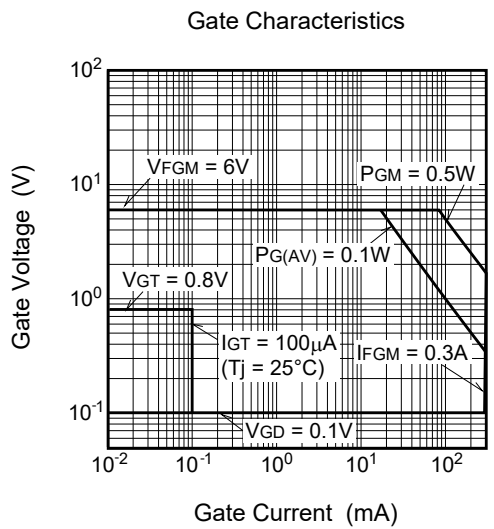
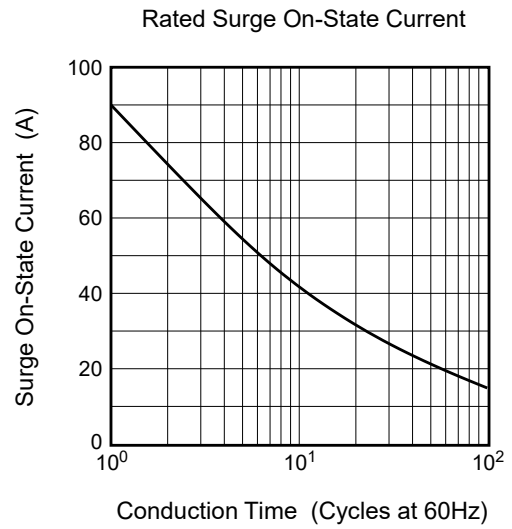
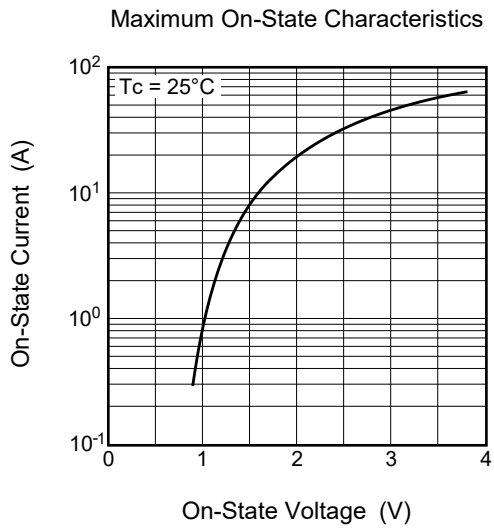
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|-----------------------------------|---------------|------|------|------|--------------------|---|
| Repetitive peak off-state current | I_{DRM} | — | — | 2.0 | mA | $T_j = 150^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 220\ \Omega$ |
| On-state voltage | V_{TM} | — | — | 1.8 | V | $T_c = 25^\circ\text{C}$, $I_{TM} = 15\ \text{A}$, instantaneous value |
| Gate trigger voltage | V_{GT} | — | — | 0.8 | V | $T_j = 25^\circ\text{C}$, $V_D = 6\ \text{V}$, $I_T = 0.1\ \text{A}$ ^{Note3} |
| Gate non-trigger voltage | V_{GD} | 0.1 | — | — | V | $T_j = 150^\circ\text{C}$, $V_D = 1/2\ V_{DRM}$, $R_{GK} = 220\ \Omega$ |
| Gate trigger current | I_{GT} | 1 | — | 100 | μA | $T_j = 25^\circ\text{C}$, $V_D = 6\ \text{V}$, $I_T = 0.1\ \text{A}$ ^{Note3} |
| Holding current | I_H | — | 3 | — | mA | $T_j = 25^\circ\text{C}$, $V_D = 12\ \text{V}$, $R_{GK} = 220\ \Omega$ |
| Thermal resistance | $R_{th(j-c)}$ | — | — | 3.0 | $^\circ\text{C/W}$ | Junction to case ^{Note2} |

Notes: 2. The measurement point for case temperature is at anode tab.

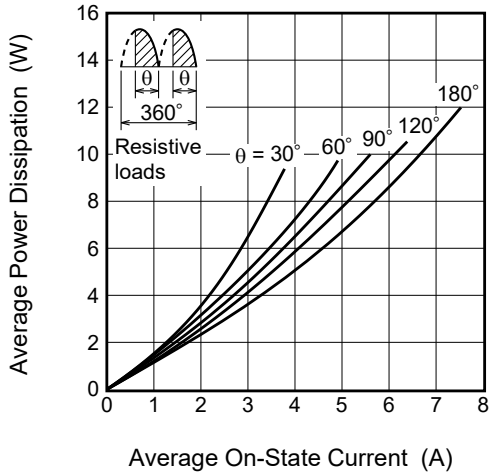
3. I_{GT} , V_{GT} measurement circuit.



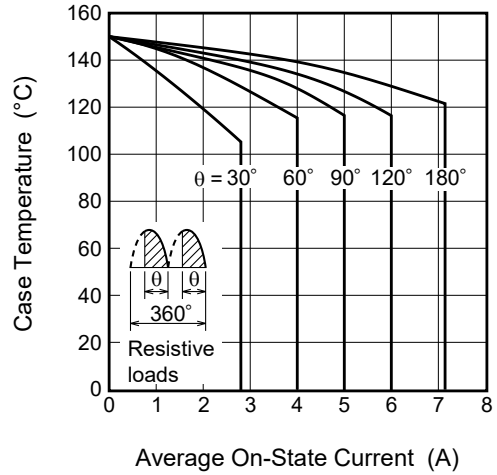
Performance Curves



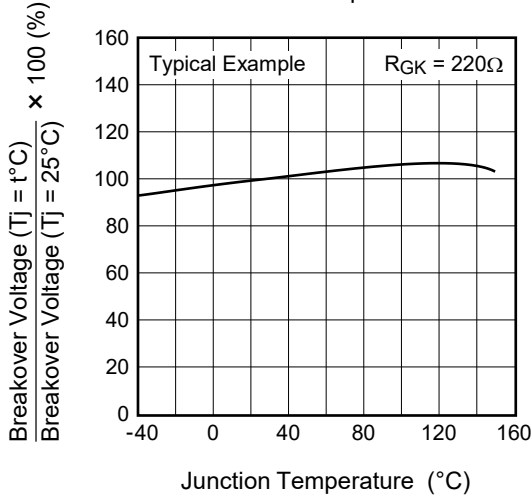
Maximum Average Power Dissipation (Single-Phase Full Wave)



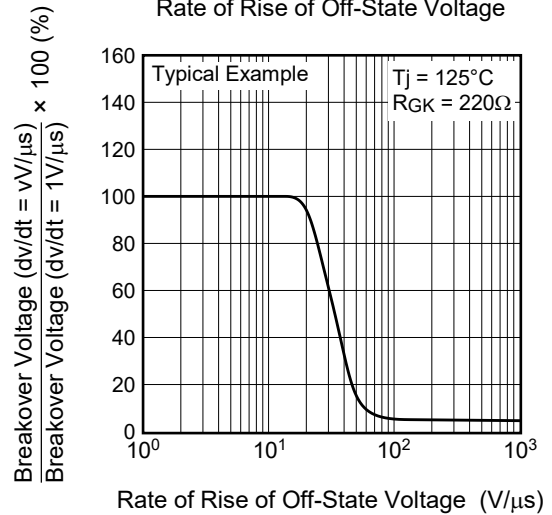
Allowable Case Temperature vs. Average On-State Current (Single-Phase Full Wave)



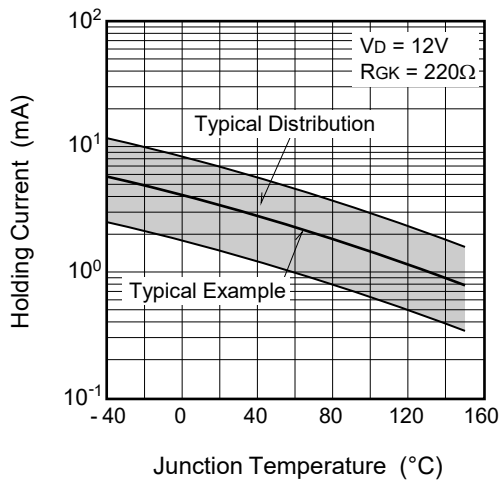
Breakover Voltage vs. Junction Temperature



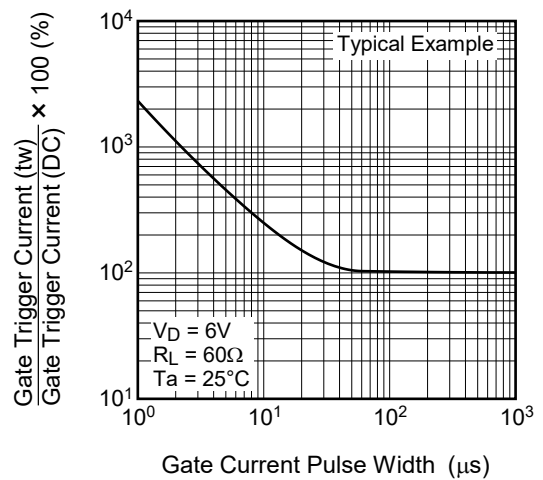
Breakover Voltage vs. Rate of Rise of Off-State Voltage



Holding Current vs. Junction Temperature

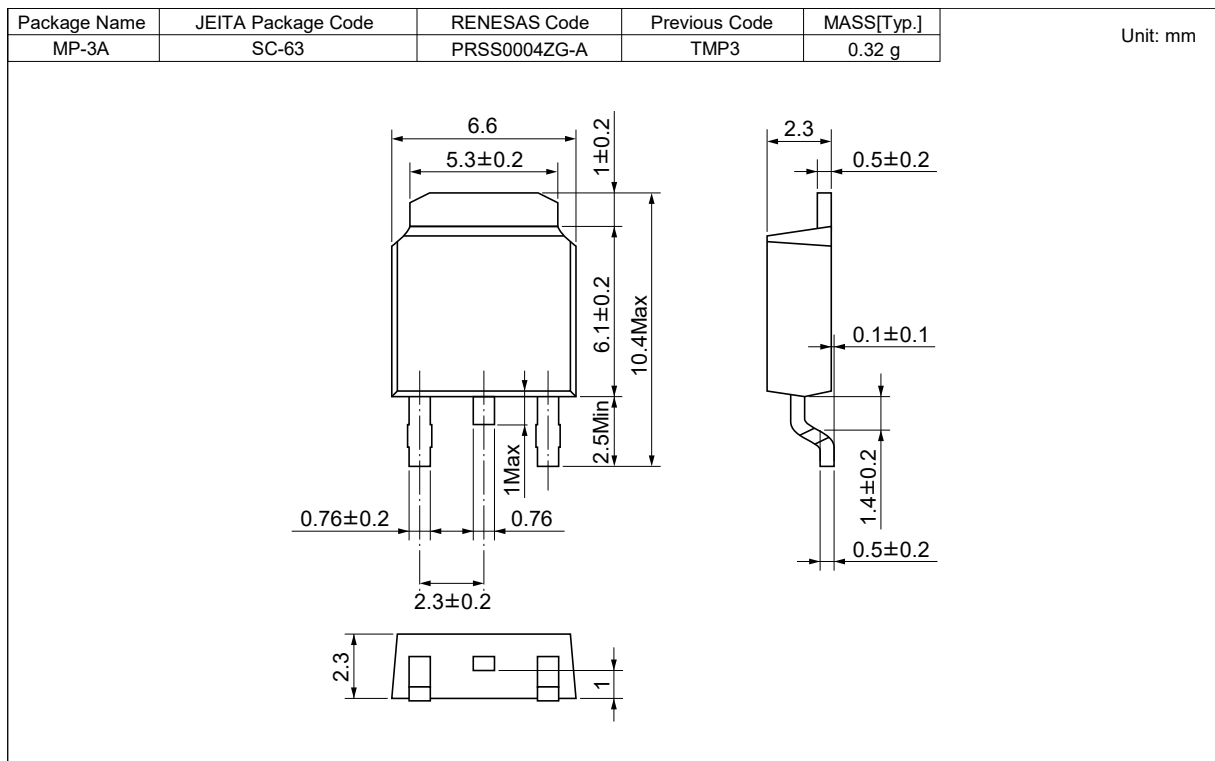


Gate Trigger Current vs. Gate Current Pulse Width



Package Dimensions

Package Name: MP-3A



Ordering Information

| Orderable Part Number | Package | Packing ^{Note4} | Quantity | Remark |
|-----------------------|---------|--------------------------|-----------|----------------------------------|
| CRD5AS-12B-T13#B00 | MP-3A | Embossed tape | 3000 pcs. | |
| CRD5AS-12B#B00 | MP-3A | Tube | 75 pcs. | Tube packing is to be abolished. |

Note: 4. Please confirm the specification about the shipping in detail.

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(Rev.4.0-1 November 2017)



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