

CR5AS-12A

600V - 5A - Thyristor

Medium Power Use

R07DS0332EJ0301

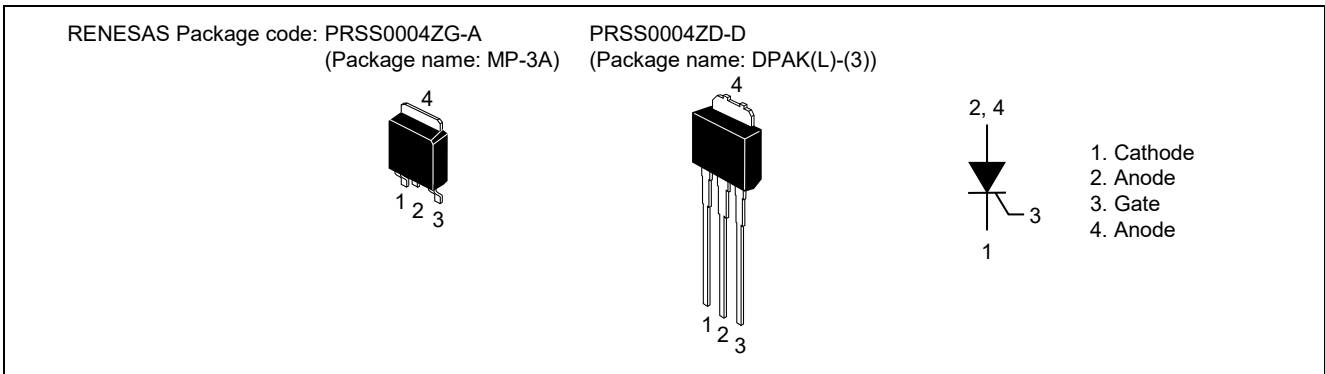
Rev.3.01

May. 10, 2019

Features

- $I_T(AV)$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- Planar Passivation Type
- RoHS Compliant

Outline



Application

Switching mode power supply, igniter, pulse generator, electric tools, etc.

Maximum Ratings

| Parameter | Symbol | Voltage class | Unit |
|--|-------------|---------------|------|
| | | 12 | |
| Repetitive peak reverse voltage | V_{RRM} | 600 | V |
| Non-repetitive peak reverse voltage | V_{RSM} | 720 | V |
| DC reverse voltage | $V_{R(DC)}$ | 480 | V |
| Repetitive peak off-state voltage ^{Note1} | V_{DRM} | 600 | V |
| DC off-state voltage ^{Note1} | $V_{D(DC)}$ | 480 | 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, $T_a = 88^\circ\text{C}$ |
| 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 |
| 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 +125 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | -40 to +125 | $^\circ\text{C}$ | |

Electrical Characteristics

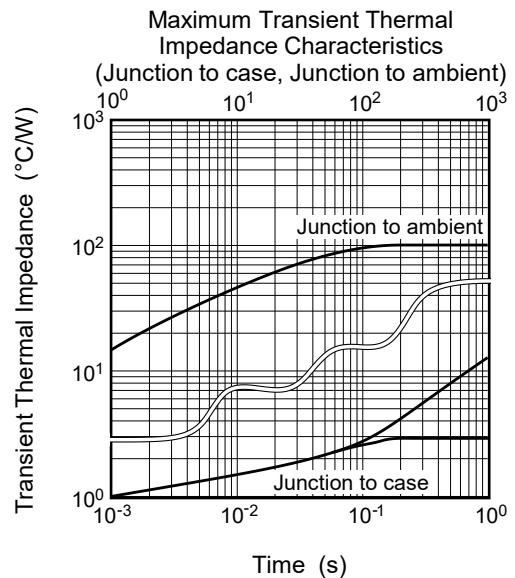
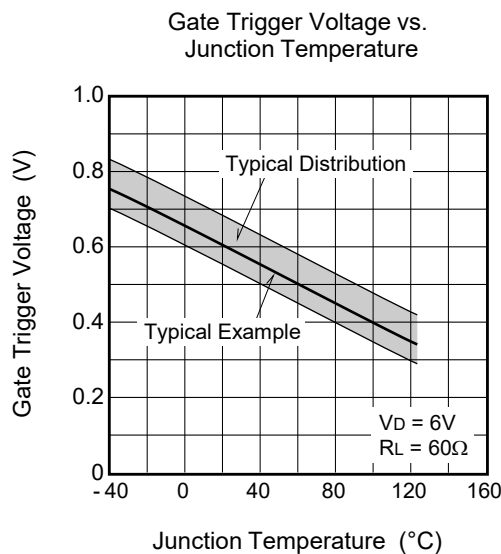
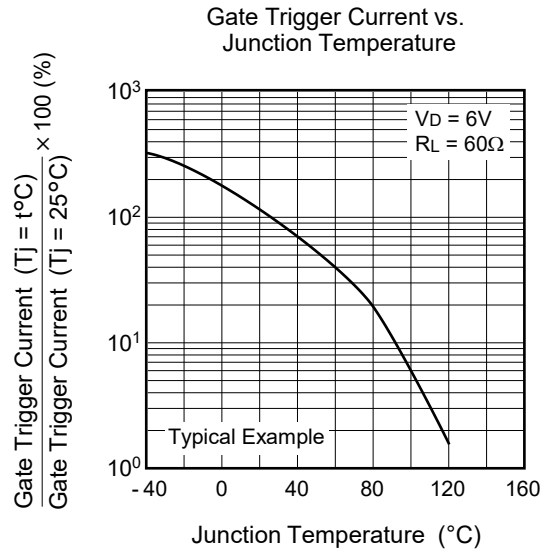
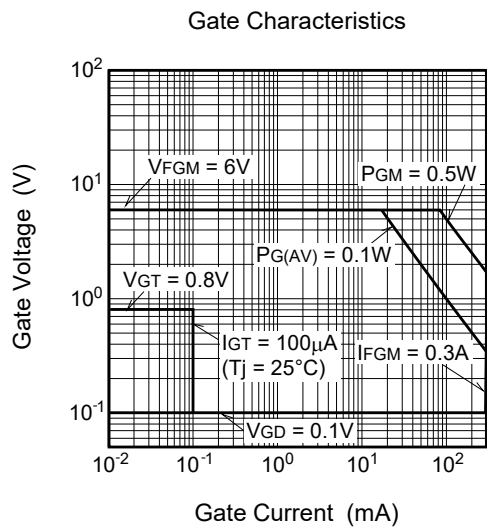
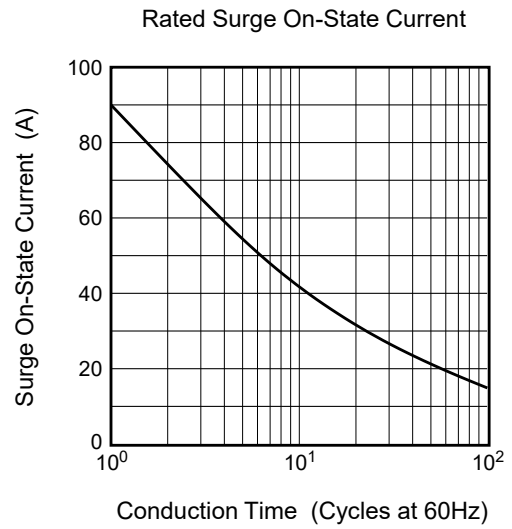
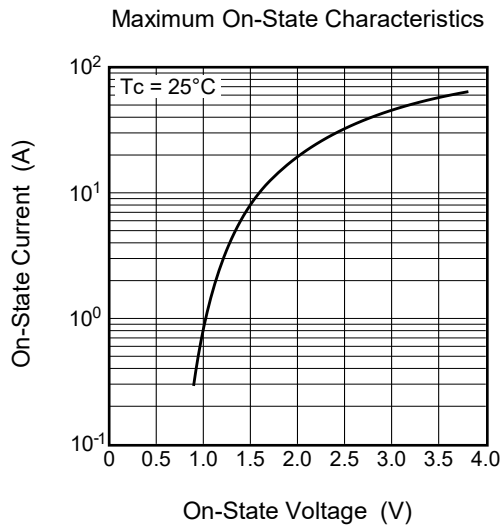
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test conditions |
|-----------------------------------|---------------|--------------------|------|----------------------|---------------------------|---|
| Repetitive peak reverse current | I_{RRM} | — | — | 1.0 | mA | $T_j = 125^\circ\text{C}$, V_{RRM} applied, $R_{GK} = 220\ \Omega$ |
| Repetitive peak off-state current | I_{DRM} | — | — | 1.0 | mA | $T_j = 125^\circ\text{C}$, 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 | $T_j = 25^\circ\text{C}$, $V_D = 6\ \text{V}$, $I_T = 0.1\ \text{A}$ |
| Gate non-trigger voltage | V_{GD} | 0.1 | — | — | V | $T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$, $R_{GK} = 220\ \Omega$ |
| Gate trigger current | I_{GT} | 1 ^{Note3} | — | 100 ^{Note3} | μA | $T_j = 25^\circ\text{C}$, $V_D = 6\ \text{V}$, $I_T = 0.1\ \text{A}$ |
| Holding current | I_H | — | 3.5 | — | mA | $T_j = 25^\circ\text{C}$, $V_D = 12\ \text{V}$, $R_{GK} = 220\ \Omega$ |
| Thermal resistance | $R_{th(j-c)}$ | — | — | 3.0 | $^\circ\text{C}/\text{W}$ | Junction to case ^{Note2} |

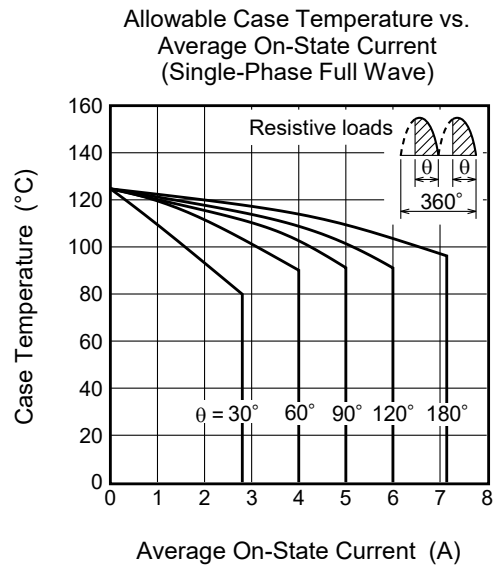
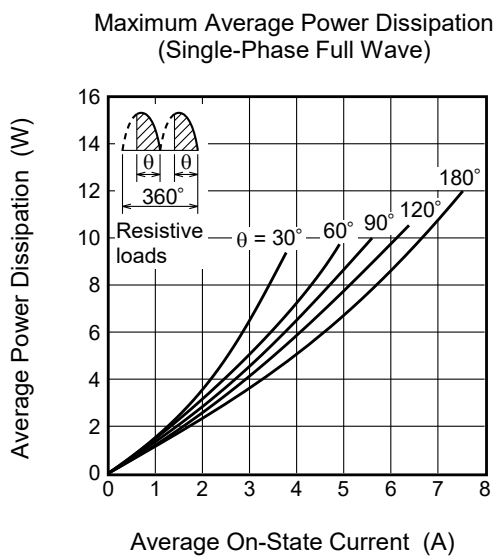
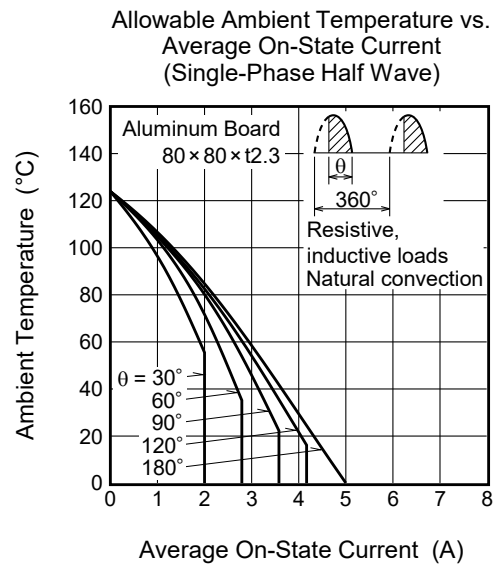
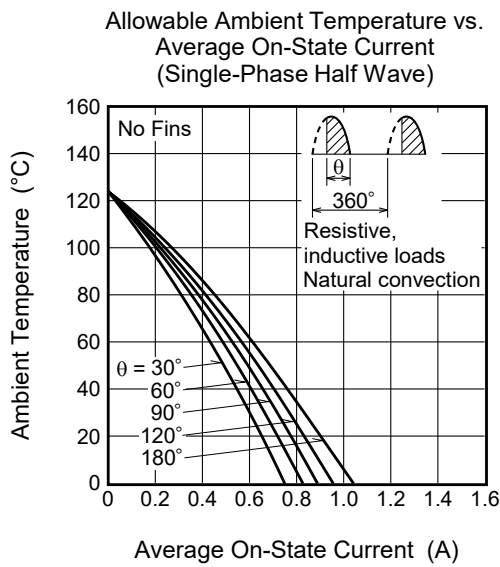
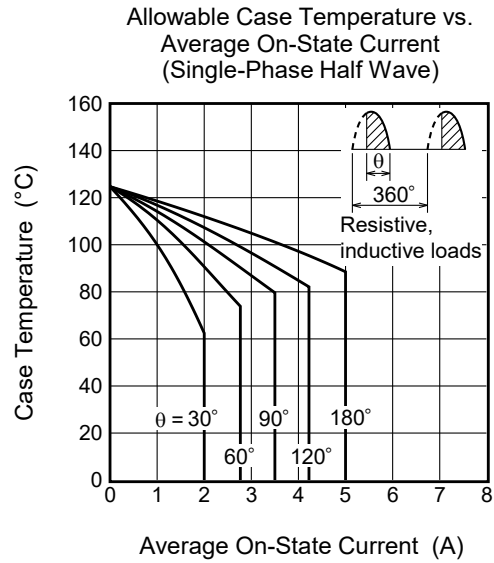
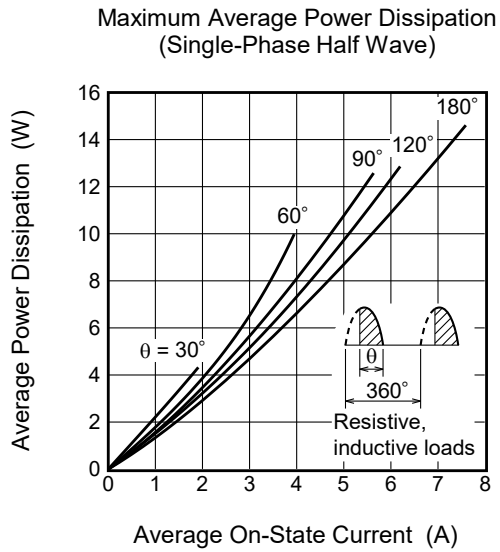
Notes: 2. The measurement point for case temperature is at anode tab.

3. If special values of I_{GT} are required, please refer to the ordering information.

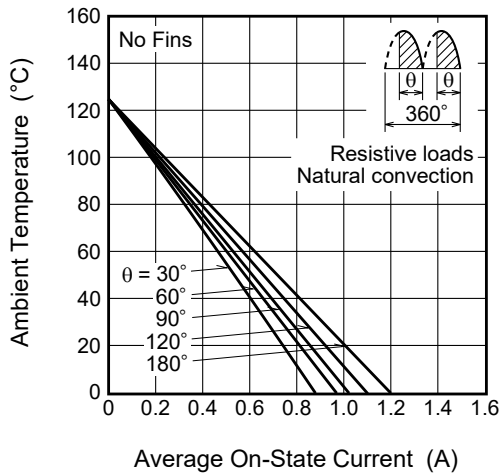
The above values do not include the current flowing through the $220\ \Omega$ resistance between the gate and cathode.

Performance Curves

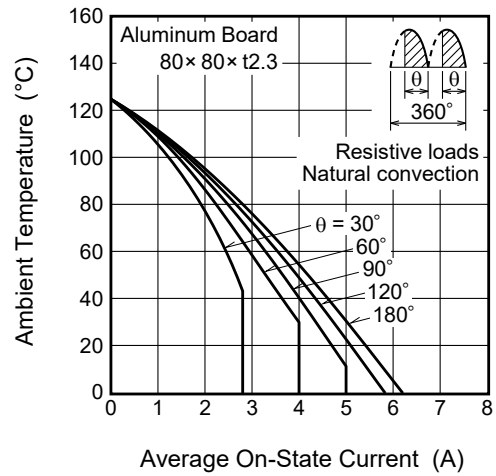




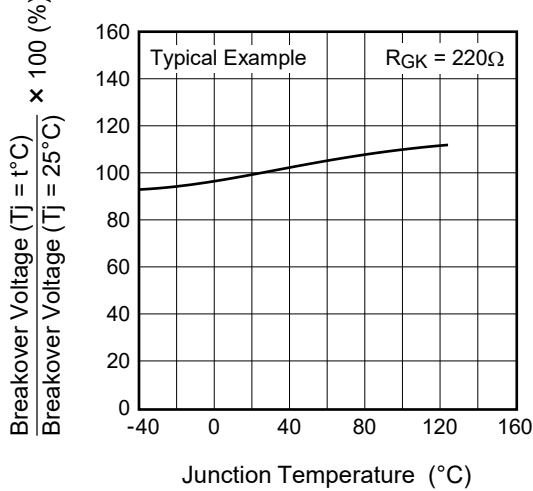
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



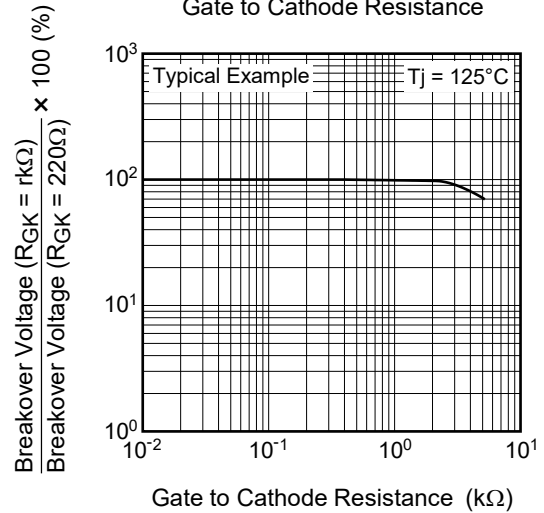
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



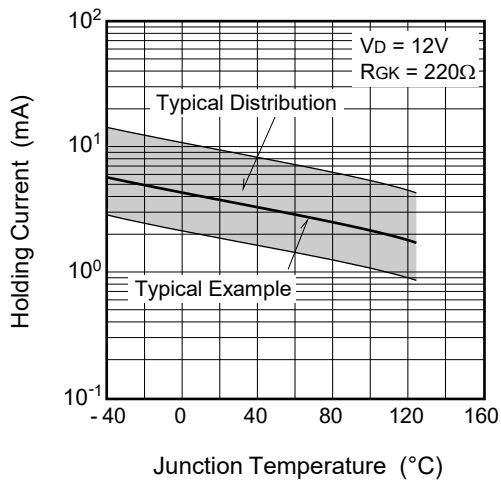
Breakover Voltage vs. Junction Temperature



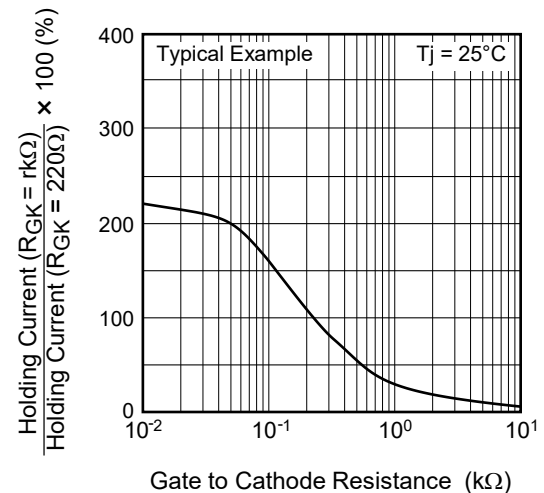
Breakover Voltage vs. Gate to Cathode Resistance

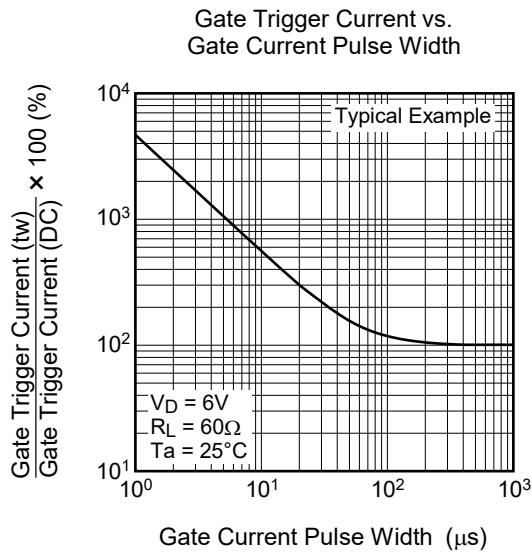
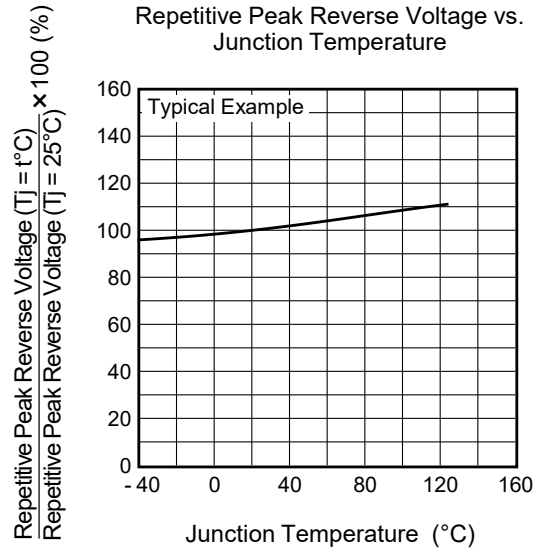
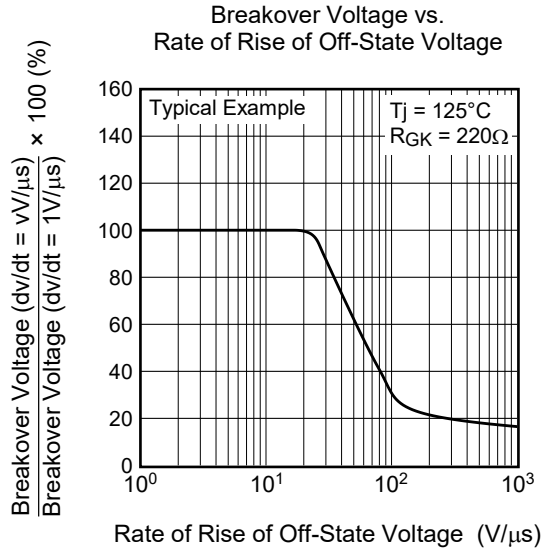


Holding Current vs. Junction Temperature



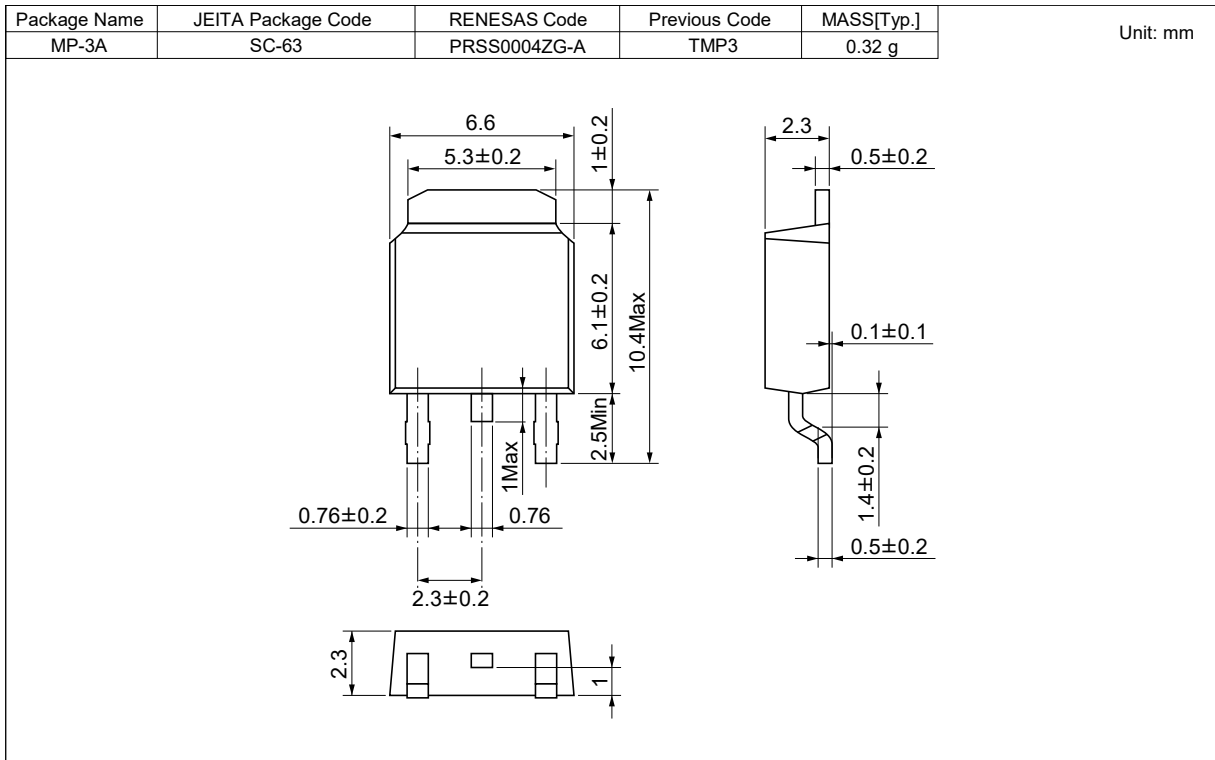
Holding Current vs. Gate to Cathode Resistance



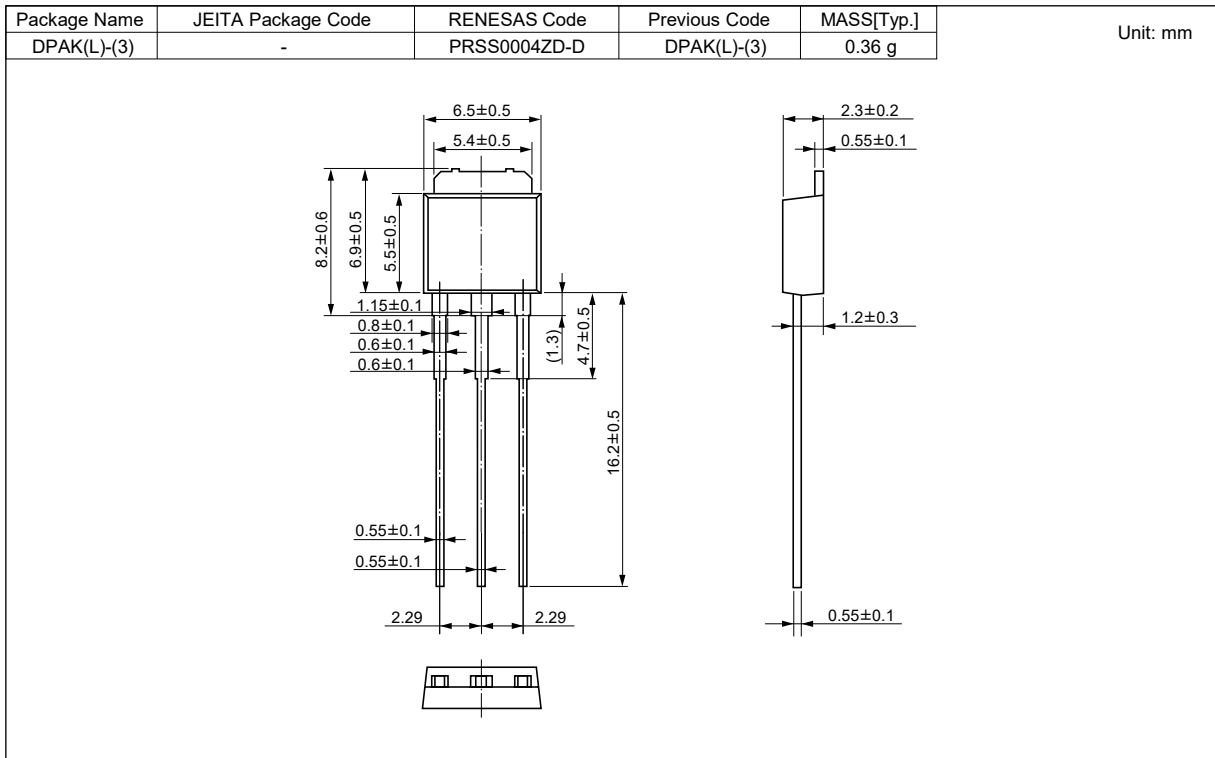


Package Dimensions

Package Name: MP-3A



Package Name: DPAK(L)-(3)



Ordering Information

| Orderable Part Number | Package | Packing ^{Note4} | Quantity | Remark | I _{GT} ^{Note3} |
|-----------------------|-------------|--------------------------|-----------|----------------------------------|----------------------------------|
| CR5AS-12A-T13#B01 | MP-3A | Embossed tape | 3000 pcs. | | 1-100 μ A |
| CR5AS-12A-T13#C04 | MP-3A | Embossed tape | 3000 pcs. | | 20-50 μ A |
| CR5AS-12A-T13#C05 | MP-3A | Embossed tape | 3000 pcs. | | 20-100 μ A |
| CR5AS-12A#B01 | MP-3A | Tube | 75 pcs. | Tube packing is to be abolished. | 1-100 μ A |
| CR5AS-12A#C04 | MP-3A | Tube | 75 pcs. | Tube packing is to be abolished. | 20-50 μ A |
| CR5AS-12A#C05 | MP-3A | Tube | 75 pcs. | Tube packing is to be abolished. | 20-100 μ A |
| CR5AS-12A-A1#B00 | DPAK(L)-(3) | Tube | 80 pcs. | | 1-100 μ A |
| CR5AS-12A-BA1#B00 | DPAK(L)-(3) | Tube | 80 pcs. | | 20-50 μ A |
| CR5AS-12A-EA1#B00 | DPAK(L)-(3) | Tube | 80 pcs. | | 20-100 μ A |

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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