

CR05AS-8

Thyristor

Low Power Use

REJ03G0348-0300

Rev.3.00

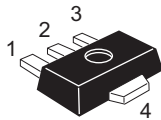
Mar 22, 2007

Features

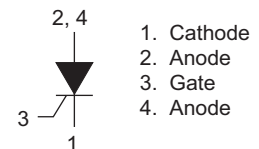
- $I_{T(AV)}$: 0.5 A
- V_{DRM} : 400 V
- I_{GT} : 100 μ A
- Non-Insulated Type
- Planar Passivation Type

Outline

RENESAS Package code: PLZZ0004CA-A
(Package name: UPAK)



RENESAS Package code: PLZZ0004CB-A
(Package name: SOT-89)



Applications

Solid state relay, strobe flasher, igniter, and hybrid IC

Maximum Ratings

| Parameter | Symbol | Voltage class | Unit |
|--|-------------|---------------|------|
| | | 8 (Mark CD) | |
| Repetitive peak reverse voltage | V_{RRM} | 400 | V |
| Non-repetitive peak reverse voltage | V_{RSM} | 500 | V |
| DC reverse voltage | $V_{R(DC)}$ | 320 | V |
| Repetitive peak off-state voltage ^{Note1} | V_{DRM} | 400 | V |
| DC off-state voltage ^{Note1} | $V_{D(DC)}$ | 320 | V |

| Parameter | Symbol | Ratings | Unit | Conditions |
|--------------------------------|--------------|--------------|----------------------|---|
| RMS on-state current | $I_{T(RMS)}$ | 0.79 | A | |
| Average on-state current | $I_{T(AV)}$ | 0.5 | A | Commercial frequency, sine half wave 180° conduction, $T_a = 57^\circ\text{C}$ ^{Note2} |
| Surge on-state current | I_{TSM} | 10 | A | 60Hz sine half wave 1 full cycle, peak value, non-repetitive |
| I^2t for fusing | I^2t | 0.4 | A^2s | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current |
| Peak gate power dissipation | P_{GM} | 0.1 | W | |
| Average gate power dissipation | $P_{G(AV)}$ | 0.01 | W | |
| Peak gate forward voltage | V_{FGM} | 6 | V | |
| Peak gate reverse voltage | V_{RGM} | 6 | V | |
| Peak gate forward current | I_{FGM} | 0.1 | A | |
| Junction temperature | T_j | - 40 to +125 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | - 40 to +125 | $^\circ\text{C}$ | |
| Mass | — | 50 | mg | Typical value |

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

Electrical Characteristics

| Parameter | Symbol | Rated value | | | Unit | Test conditions |
|-----------------------------------|---------------|-------------|------|----------------------|--------------------|---|
| | | Min. | Typ. | Max. | | |
| Repetitive peak reverse current | I_{RRM} | — | — | 0.1 | mA | $T_j = 125^\circ\text{C}$, V_{RRM} applied |
| Repetitive peak off-state current | I_{DRM} | — | — | 0.1 | mA | $T_j = 125^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 1 \text{ k}\Omega$ |
| On-state voltage | V_{TM} | — | — | 1.9 | V | $T_a = 25^\circ\text{C}$, $I_{TM} = 1.5 \text{ A}$, instantaneous value |
| Gate trigger voltage | V_{GT} | — | — | 0.8 | V | $T_j = 25^\circ\text{C}$, $V_D = 6 \text{ V}$, $I_T = 0.1 \text{ A}$ ^{Note4} |
| Gate non-trigger voltage | V_{GD} | 0.2 | — | — | V | $T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$, $R_{GK} = 1 \text{ k}\Omega$ |
| Gate trigger current | I_{GT} | 20 | — | 100 ^{Note3} | μA | $T_j = 25^\circ\text{C}$, $V_D = 6 \text{ V}$, $I_T = 0.1 \text{ A}$ ^{Note4} |
| Holding current | I_H | — | — | 3 | mA | $T_j = 25^\circ\text{C}$, $V_D = 12 \text{ V}$, $R_{GK} = 1 \text{ k}\Omega$ |
| Thermal resistance | $R_{th(j-a)}$ | — | — | 70 | $^\circ\text{C/W}$ | Junction to ambient ^{Note2} |

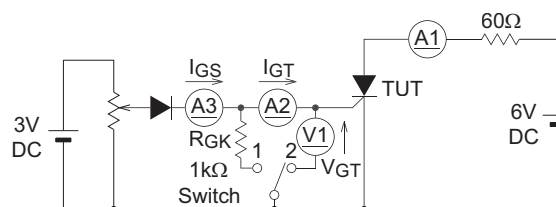
Notes: 2. Soldering with ceramic plate (25 mm × 25 mm × 0.7 mm).

3. If special values of I_{GT} are required, choose item E from those listed in the table below if possible.

| Item | B | E |
|------------------------|----------|-----------|
| $I_{GT} (\mu\text{A})$ | 20 to 50 | 20 to 100 |

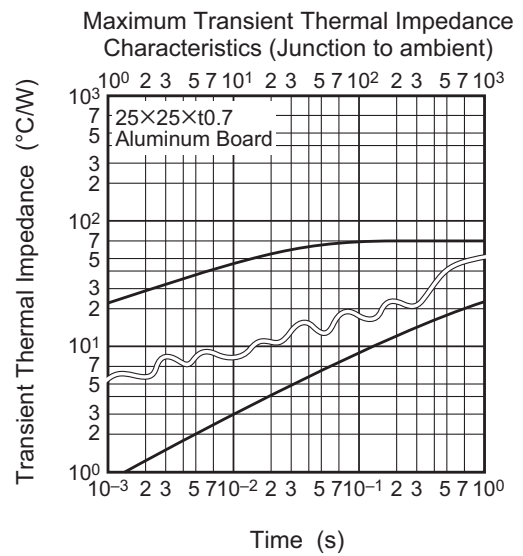
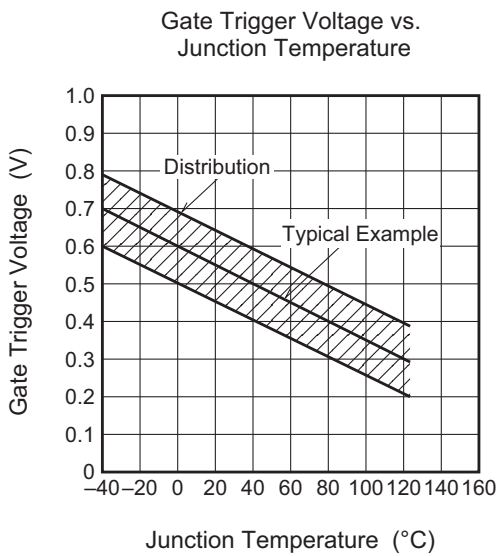
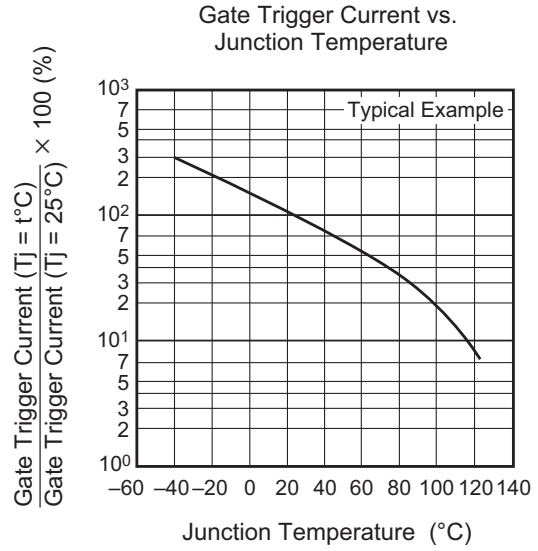
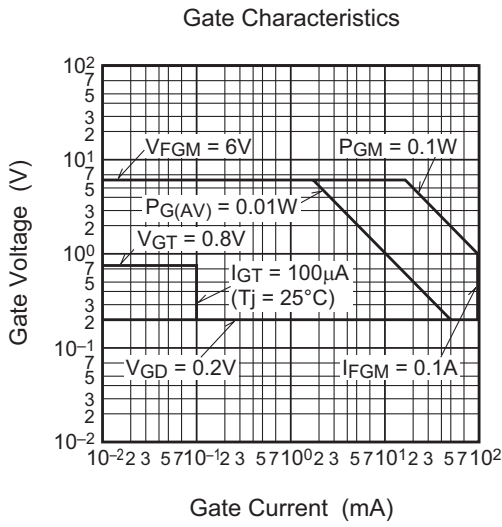
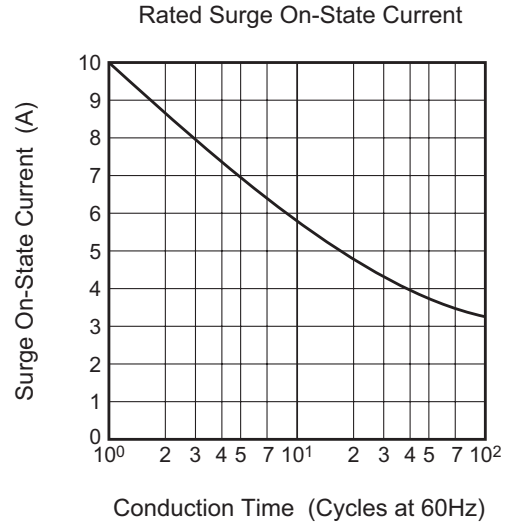
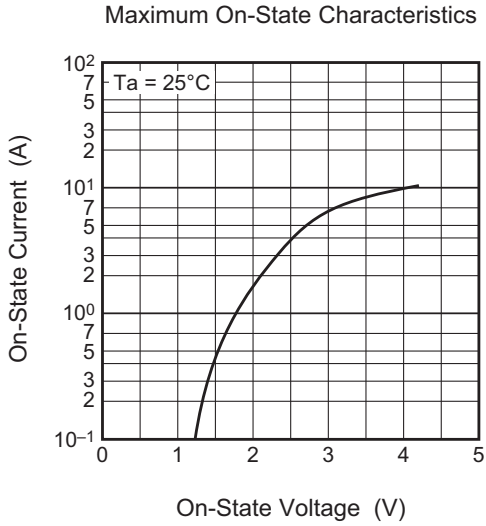
The above values do not include the current flowing through the 1 k Ω resistance between the gate and cathode.

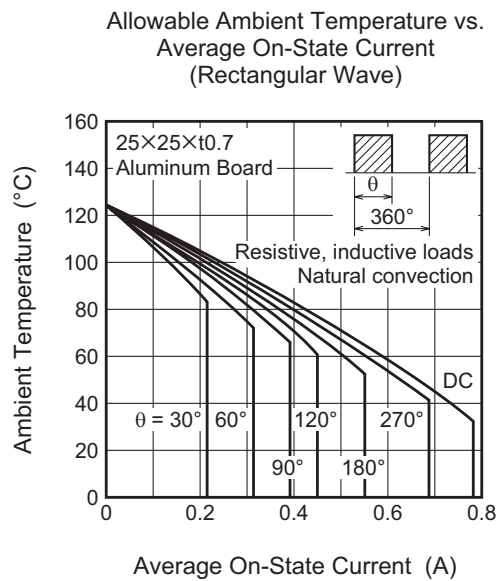
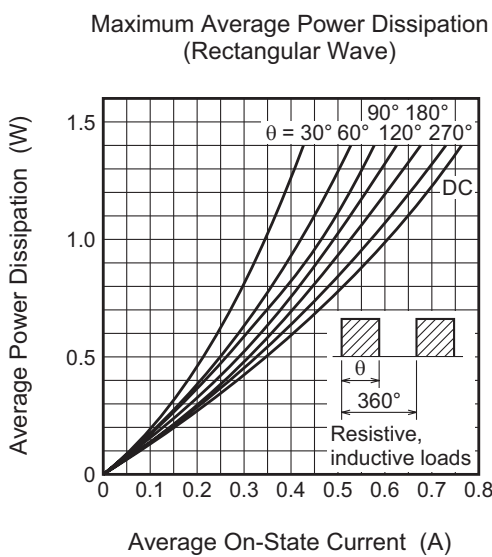
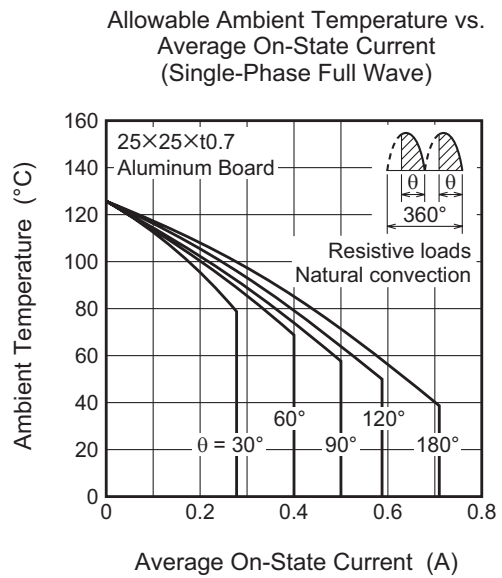
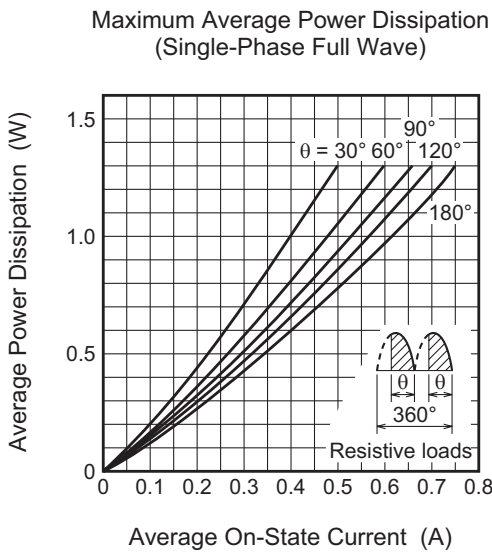
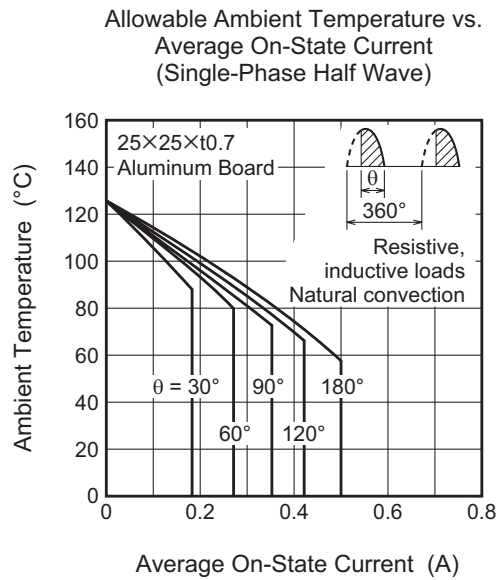
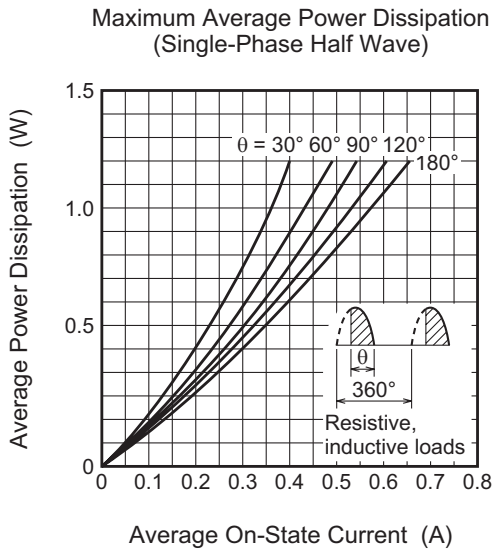
4. I_{GT} , V_{GT} measurement circuit.



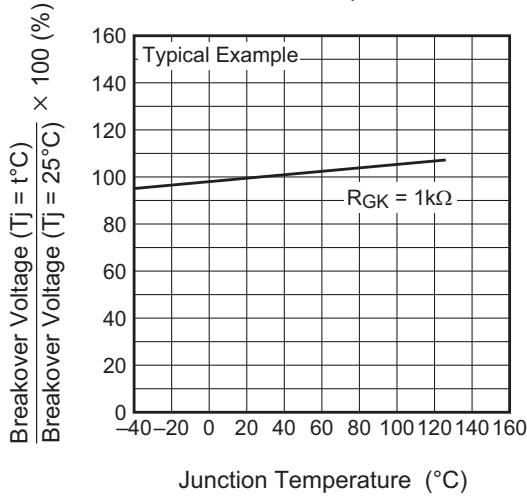
Switch 1 : I_{GT} measurement
 Switch 2 : V_{GT} measurement
 (Inner resistance of voltage meter is about 1k Ω)

Performance Curves

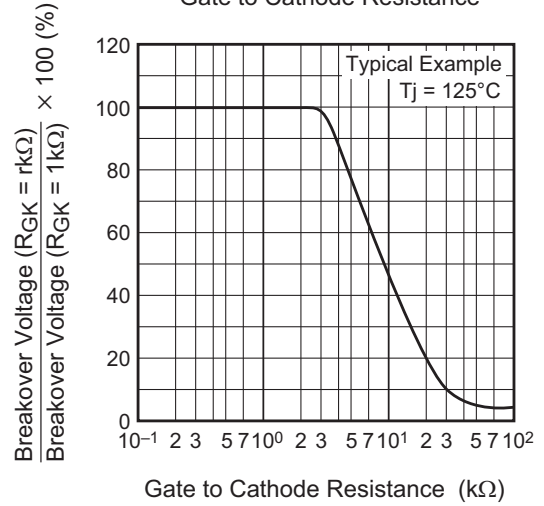




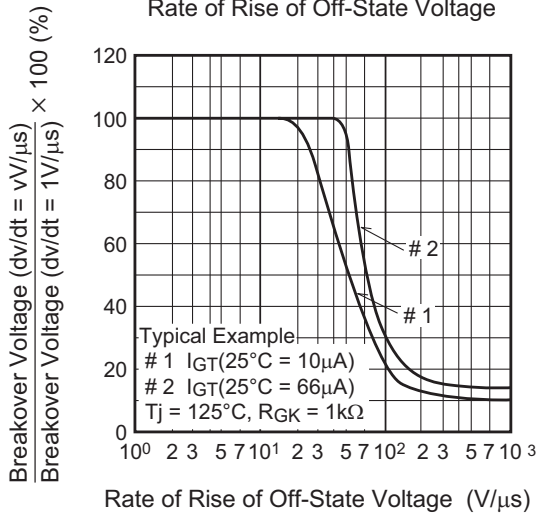
Breakover Voltage vs. Junction Temperature



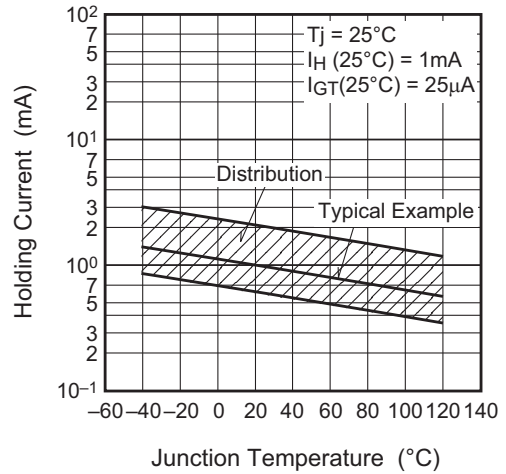
Breakover Voltage vs. Gate to Cathode Resistance



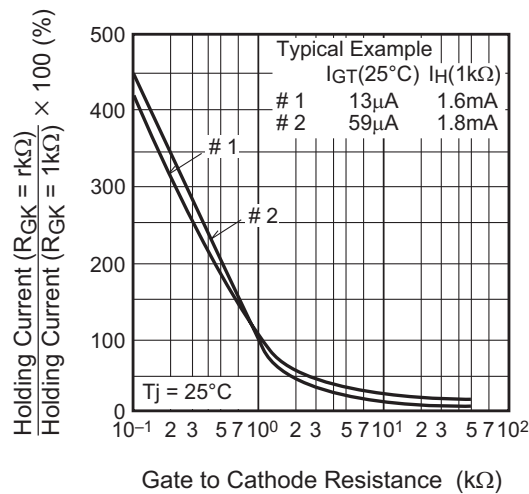
Breakover Voltage vs. Rate of Rise of Off-State Voltage



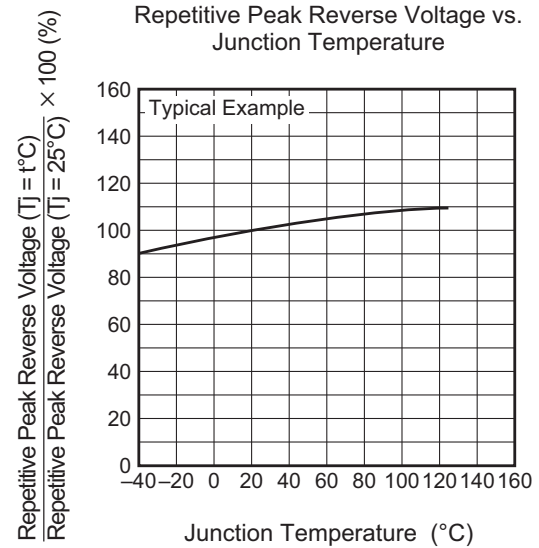
Holding Current vs. Junction Temperature

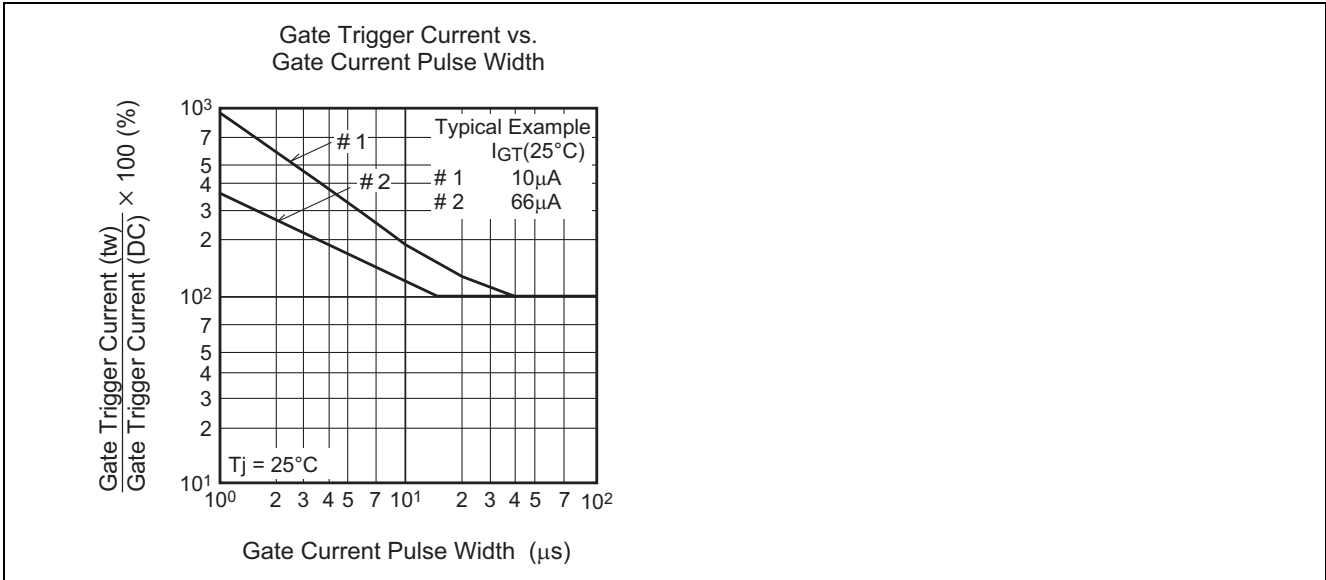


Holding Current vs. Gate to Cathode Resistance

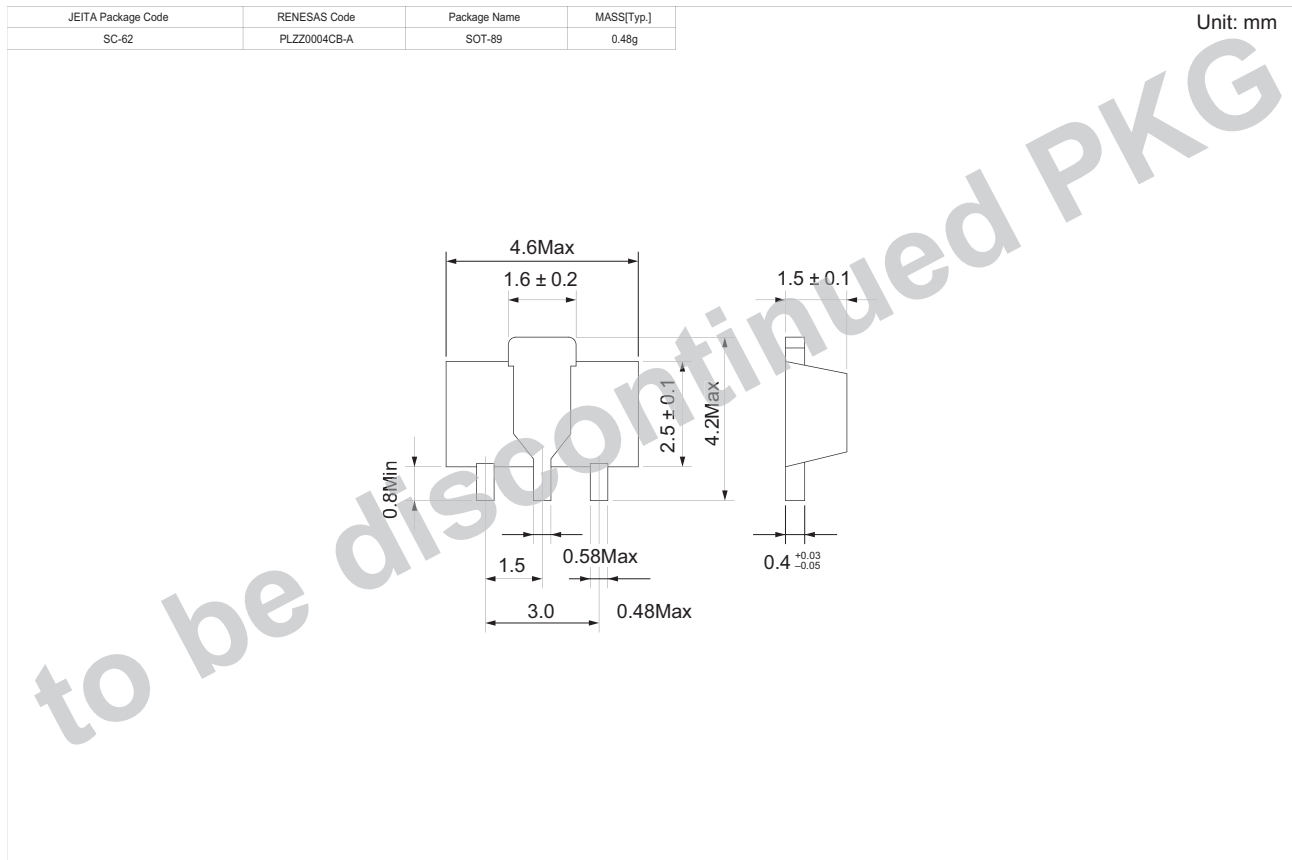
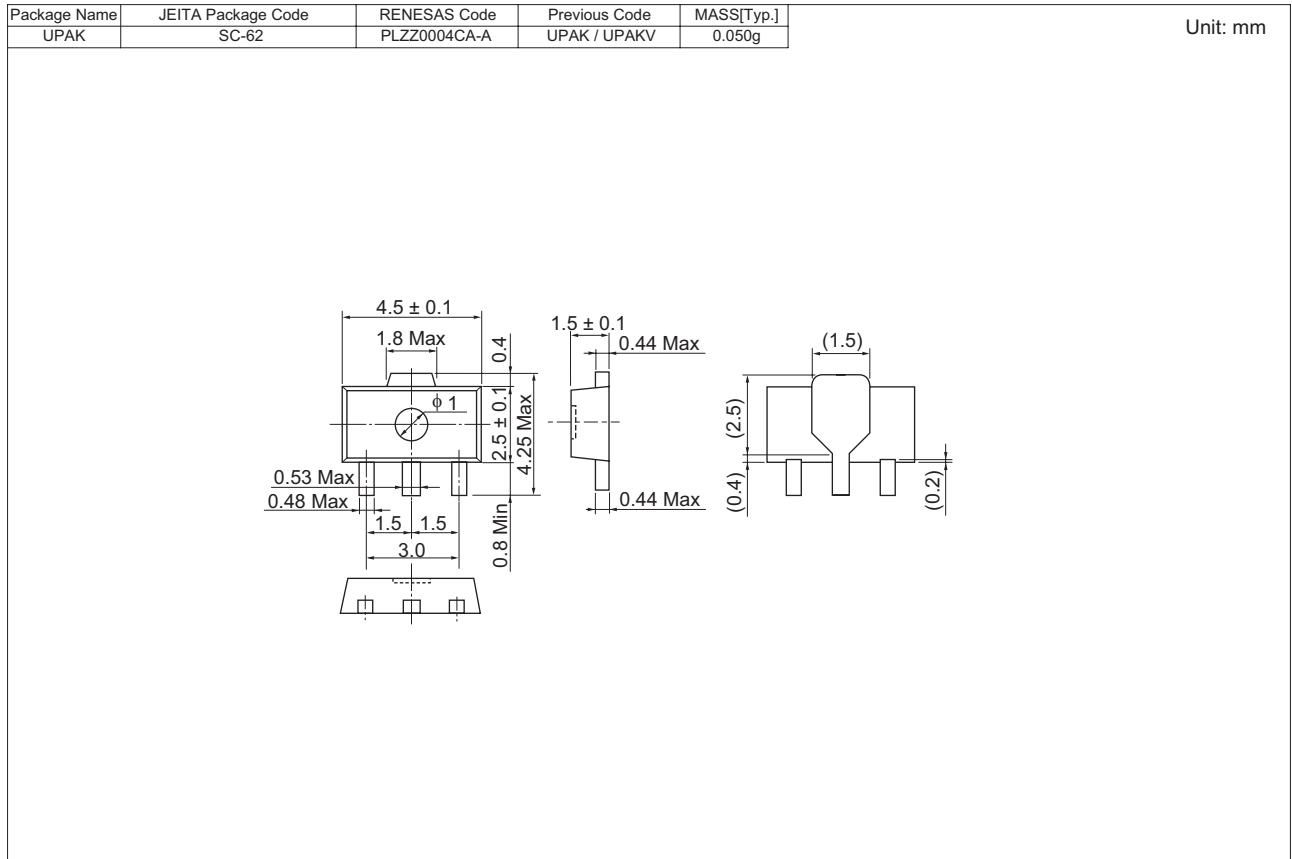


Repetitive Peak Reverse Voltage vs. Junction Temperature





Package Dimensions



Order Code

| Lead form | Standard packing | Quantity | Standard order code | Standard order code example |
|----------------------|------------------|----------|--|-----------------------------|
| Surface-mounted type | Taping | 4000 | Type name – ET +Direction (1 or 2) + 4 | CR05AS-8-ET14 |

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

Notes:

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