

# CR05AS-8

## Thyristor

Low Power Use

REJ03G0348-0200

Rev.2.00

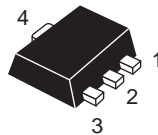
Mar.01.2005

### Features

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

### Outline

PLZZ0004CB-A  
(Package name: SOT-89)



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

### 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 <sup>Note1</sup>	$V_{DRM}$	400	V
DC off-state voltage <sup>Note1</sup>	$V_{D(DC)}$	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, $T_a = 57^\circ\text{C}$ <sup>Note2</sup>
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	$\text{A}^2\text{s}$	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	—	48	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	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 0.1\text{ A}$ <sup>Note4</sup>
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	$I_{GT}$	1	—	100 <sup>Note3</sup>	$\mu\text{A}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 0.1\text{ A}$ <sup>Note4</sup>
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 <sup>Note2</sup>

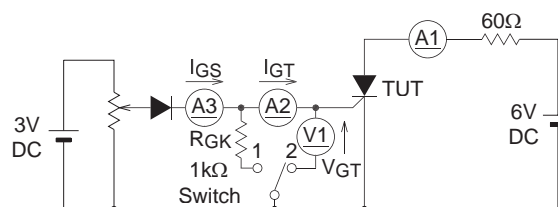
Notes: 2. Soldering with ceramic plate (25 mm × 25 mm × t0.7 mm).

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

Item	A	B	C	D	E
$I_{GT}$ ( $\mu\text{A}$ )	1 to 30	20 to 50	40 to 100	1 to 50	20 to 100

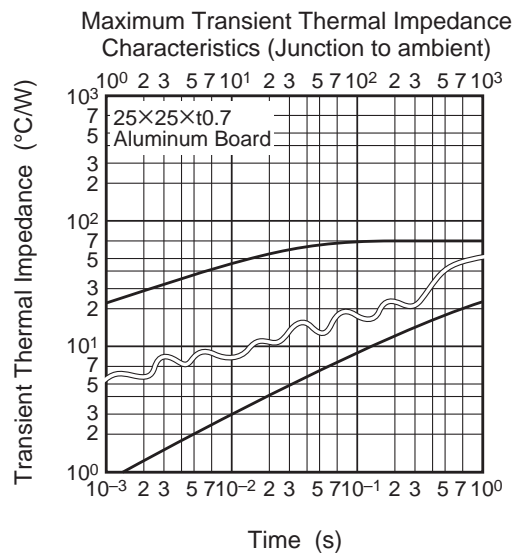
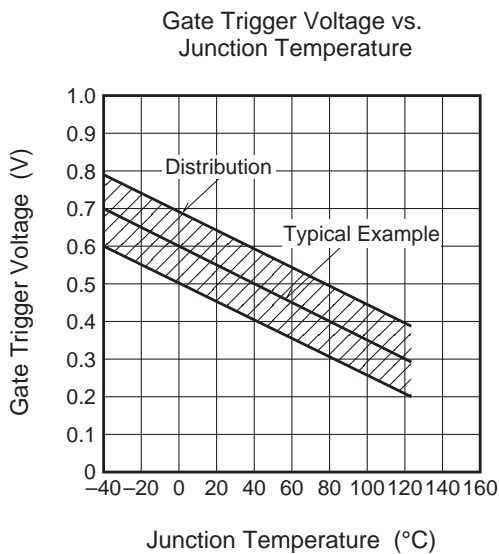
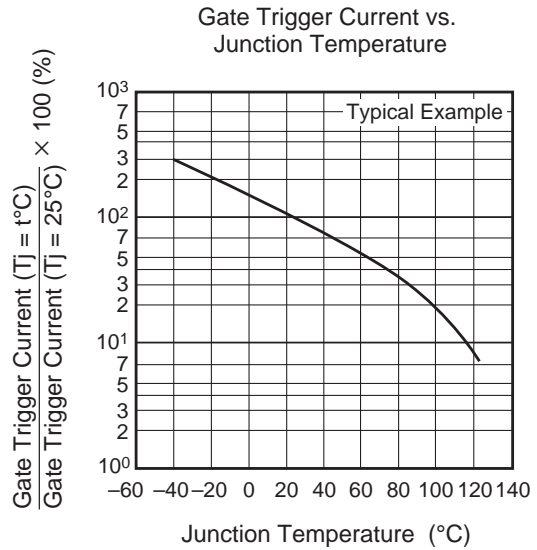
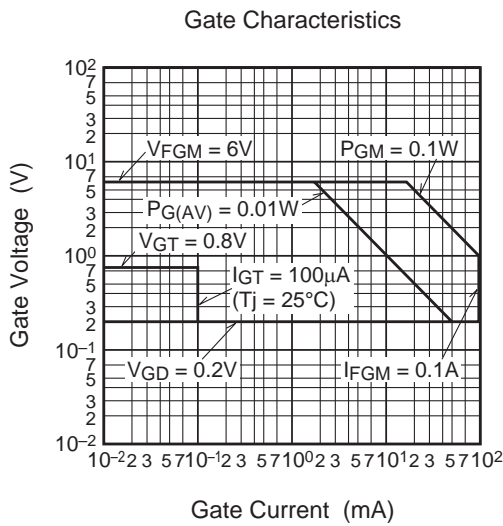
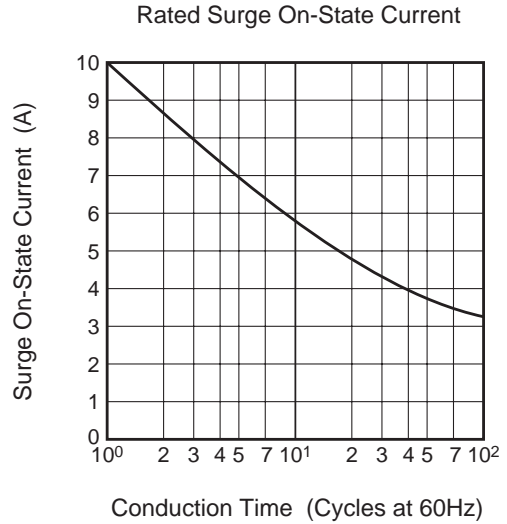
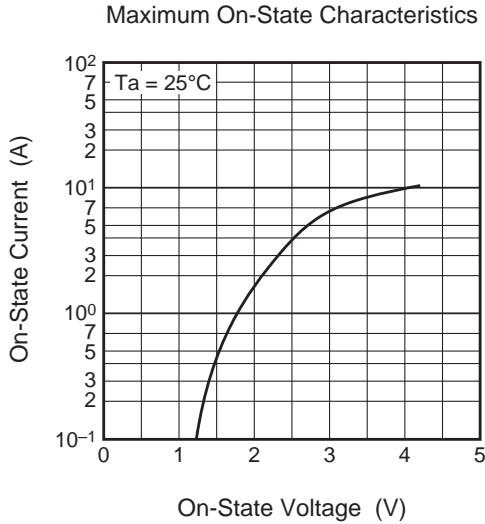
The above values do not include the current flowing through the 1 k $\Omega$  resistance between the gate and cathode.

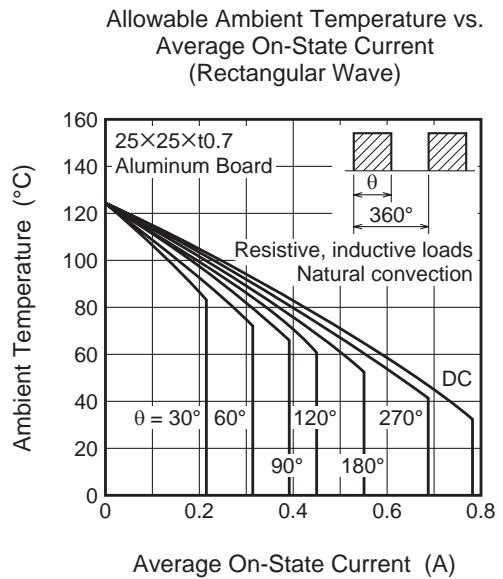
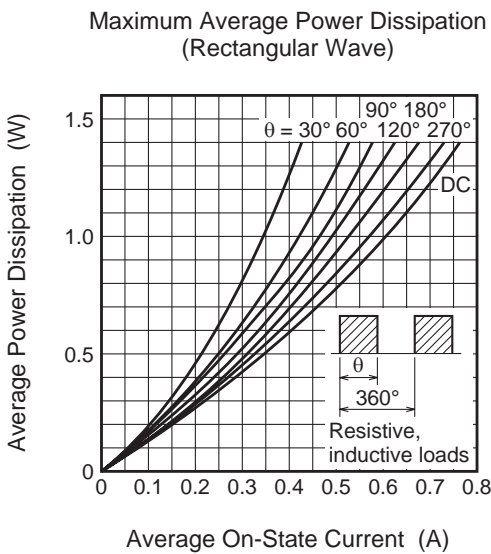
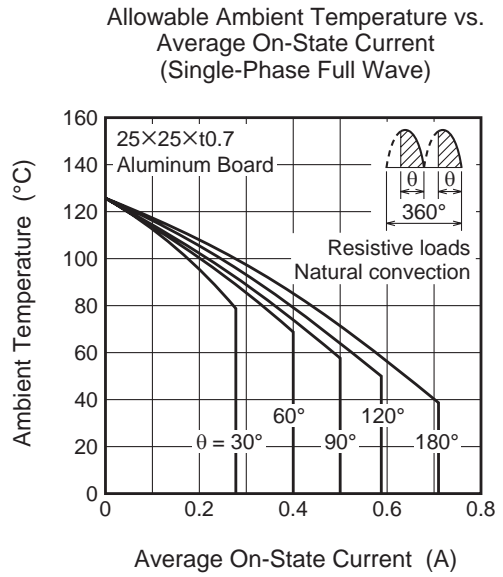
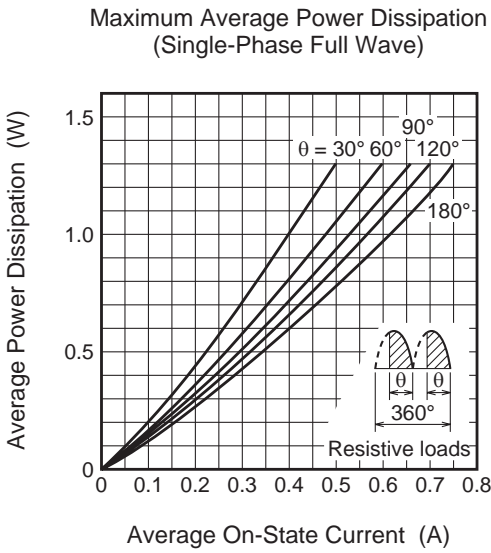
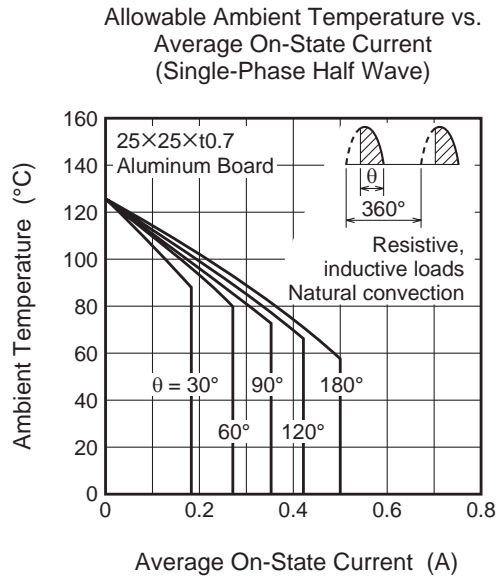
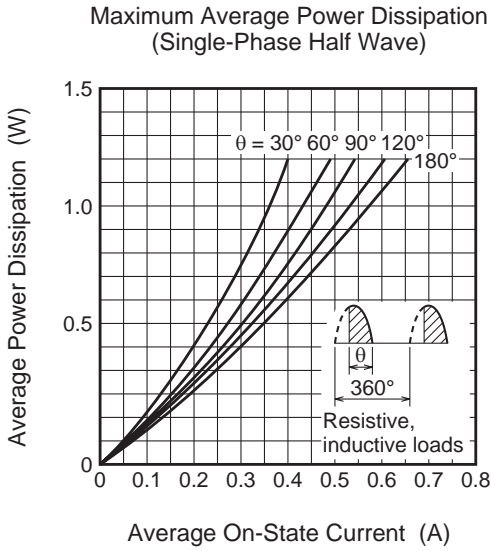
4.  $I_{GT}$ ,  $V_{GT}$  measurement circuit.



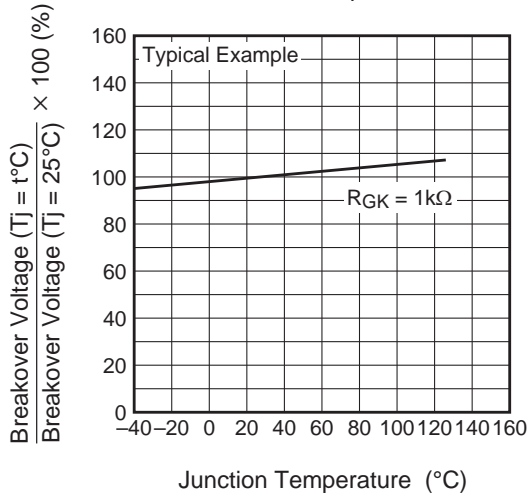
Switch 1 :  $I_{GT}$  measurement  
 Switch 2 :  $V_{GT}$  measurement  
 (Inner resistance of voltage meter is about 1k $\Omega$ )

Performance Curves

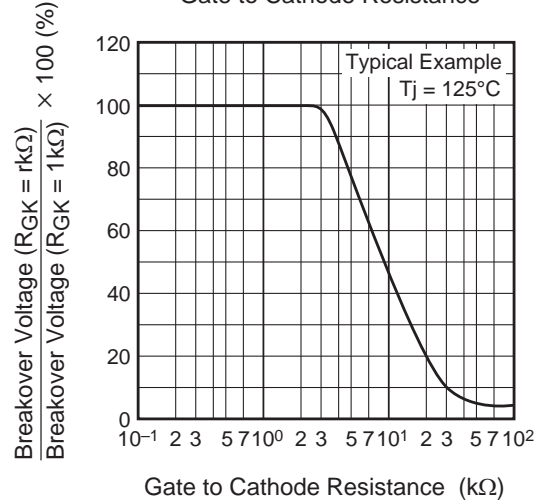




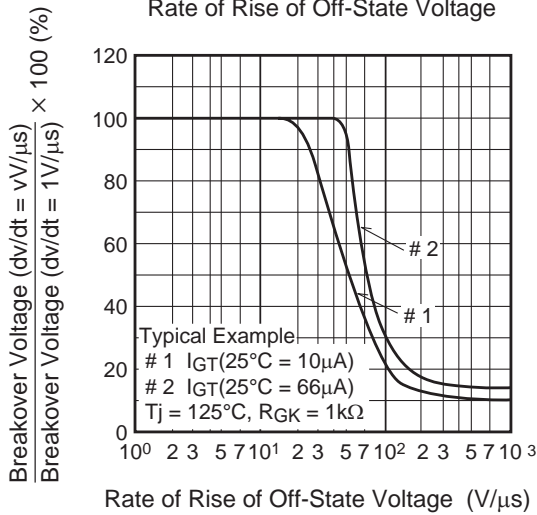
Breakover Voltage vs. Junction Temperature



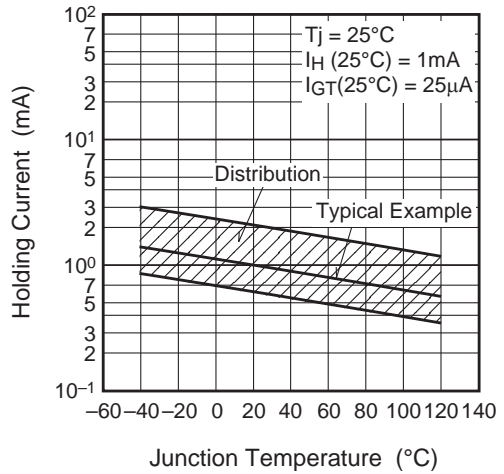
Breakover Voltage vs. Gate to Cathode Resistance



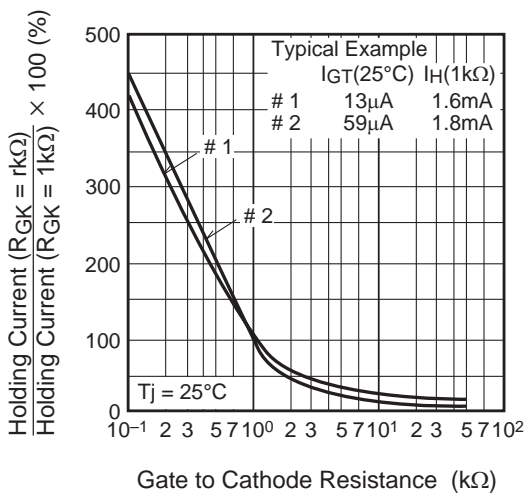
Breakover Voltage vs. Rate of Rise of Off-State Voltage



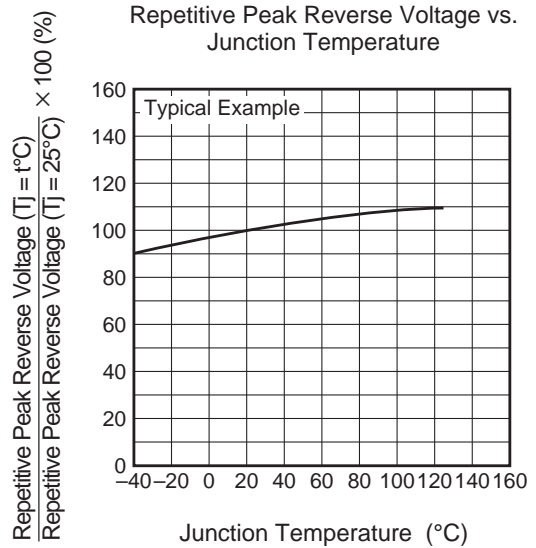
Holding Current vs. Junction Temperature

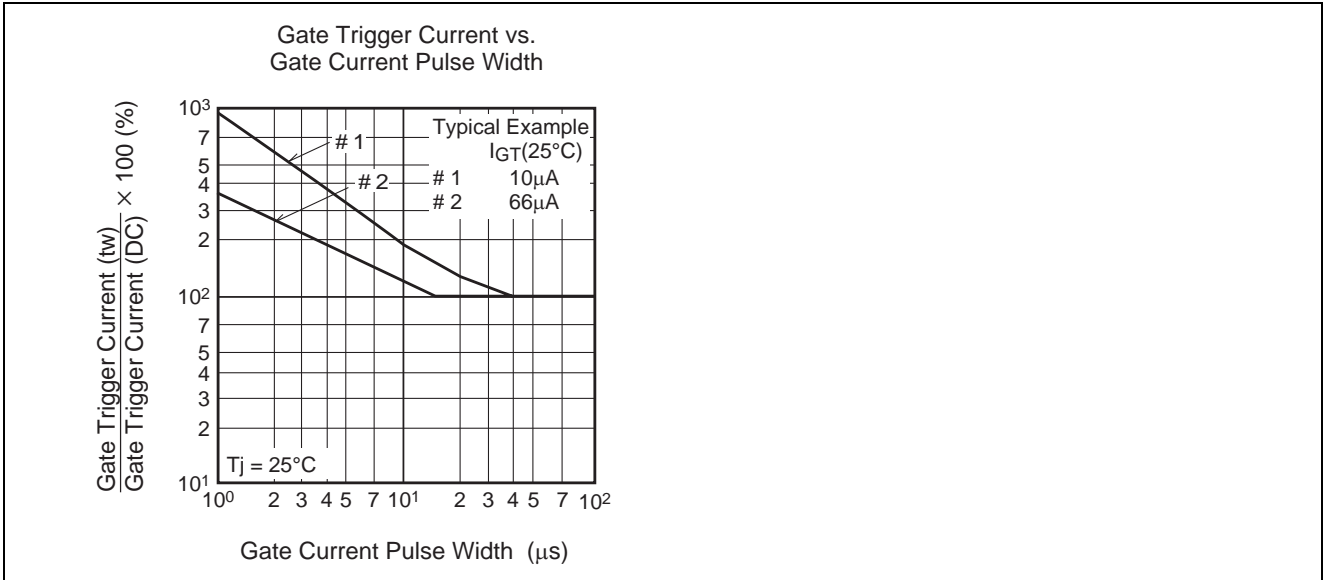


Holding Current vs. Gate to Cathode Resistance

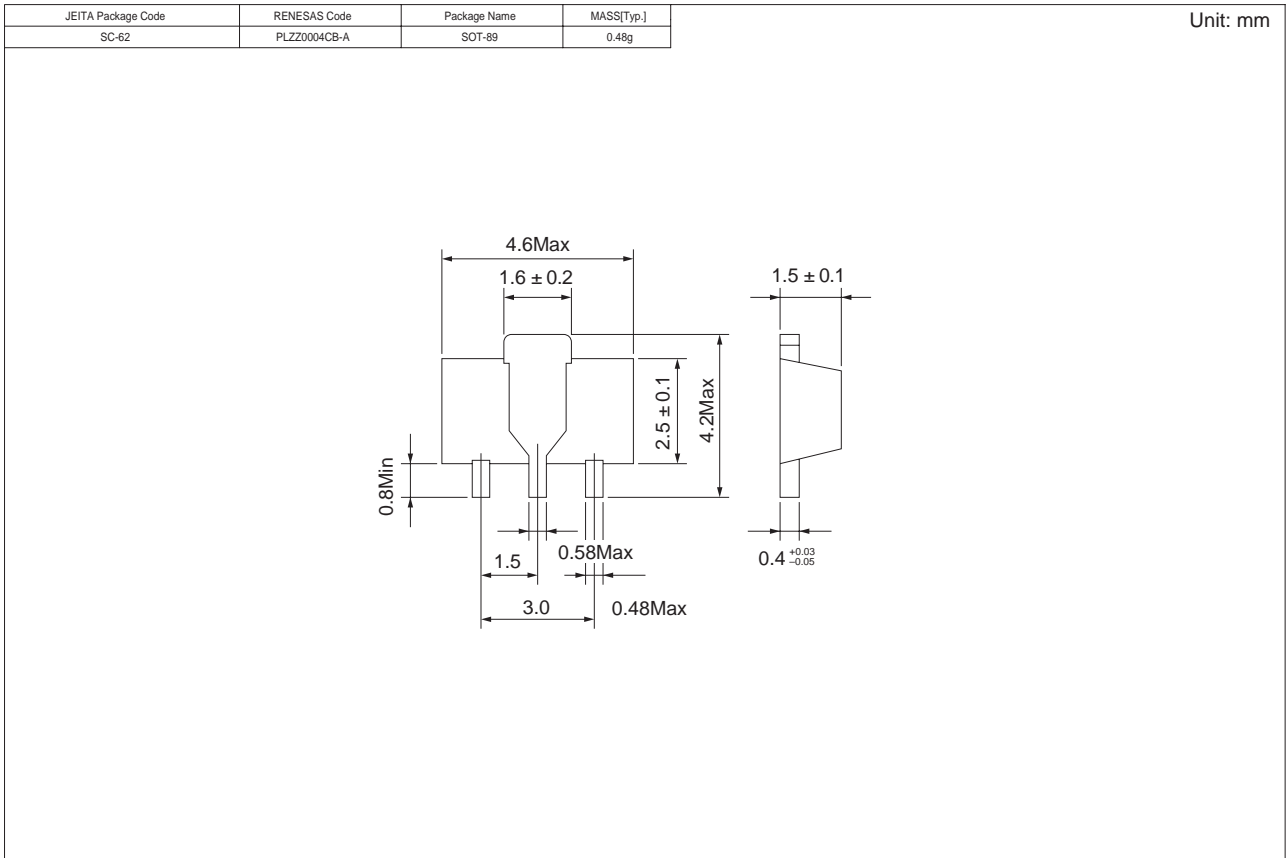


Repetitive Peak Reverse Voltage vs. Junction Temperature





## Package Dimensions



## Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Stick	25	Type name	CR05AS-8
Surface-mounted type	Taping	3000	Type name – T +Direction (1 or 2) +3	CR05AS-8-T13

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

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