

CR08AS-12

Thyristor

Low Power Use

REJ03G0349-0200

Rev.2.00

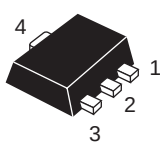
Mar.01.2005

Features

- $I_{T(AV)}$: 0.8 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- Non-Insulated Type
- Glass 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
		12 (Mark AF)	
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

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	I_T (RMS)	1.26	A	
Average on-state current	I_T (AV)	0.8	A	Commercial frequency, sine half wave 180° conduction, $T_a = 51^\circ\text{C}$ ^{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	0.42	A^2s	Value corresponding to 1 cycle of half wave 60Hz, 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	$^\circ\text{C}$	
Mass	—	48	mg	Typical value

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

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	0.5	mA	$T_j = 125^\circ\text{C}$, V_{RRM} applied, $R_{GK} = 1\text{ k}\Omega$
Repetitive peak off-state current	I_{DRM}	—	—	0.5	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 1\text{ k}\Omega$
On-state voltage	V_{TM}	—	—	1.5	V	$T_a = 25^\circ\text{C}$, $I_{TM} = 2.5\text{ A}$, 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}	1	—	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	—	1.5	3	mA	$T_j = 25^\circ\text{C}$, $V_D = 12\text{ V}$, $R_{GK} = 1\text{ k}\Omega$
Thermal resistance	$R_{th(j-a)}$	—	—	65	$^\circ\text{C/W}$	Junction to ambient ^{Note2}

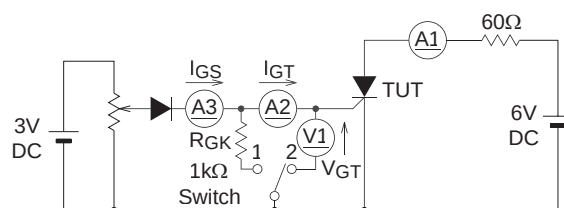
Notes: 2. Soldering with ceramic plate (25 mm × 25 mm × 0.7 mm).

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

Item	A	B	C	D	E
I_{GT} (μA)	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 Ω resistance between the gate and cathode.

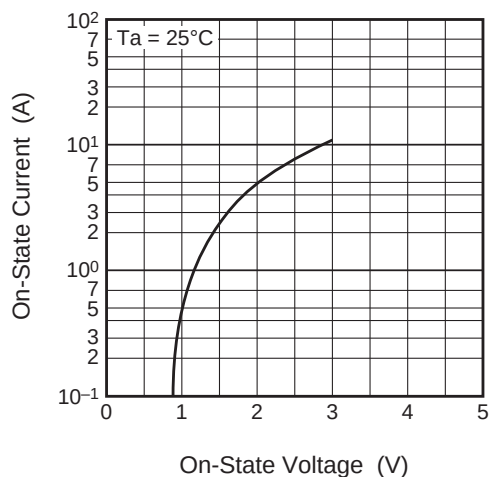
4. I_{GT} , V_{GT} measurement circuit.



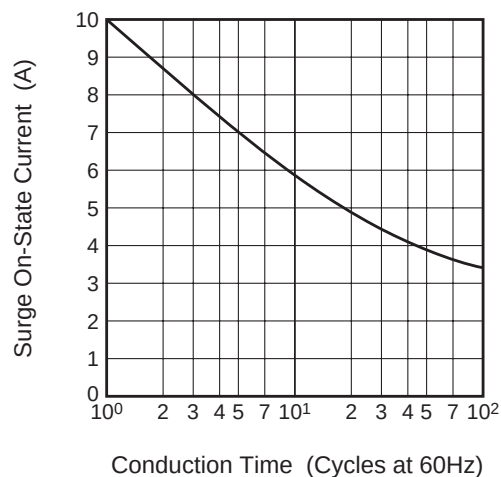
Switch 1 : I_{GT} measurement
 Switch 2 : V_{GT} measurement
 (Inner resistance of voltage meter is about 1k Ω)

Performance Curves

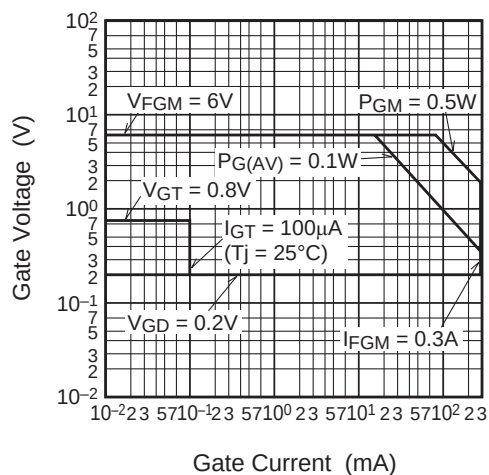
Maximum On-State Characteristics



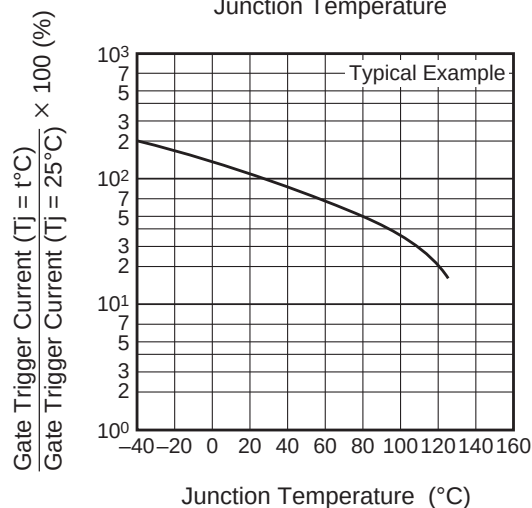
Rated Surge On-State Current



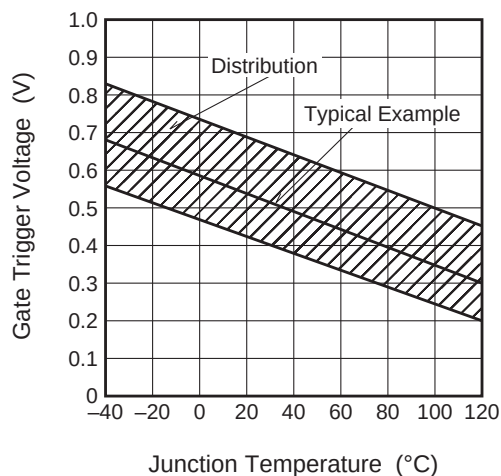
Gate Characteristics



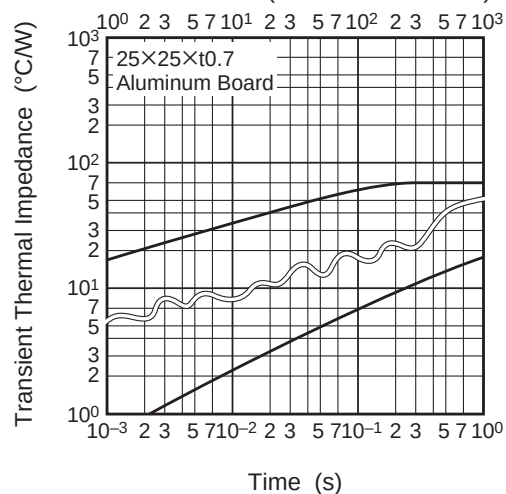
Gate Trigger Current vs. Junction Temperature



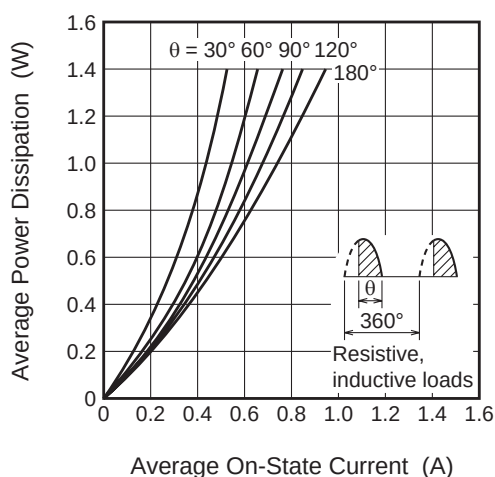
Gate Trigger Voltage vs. Junction Temperature



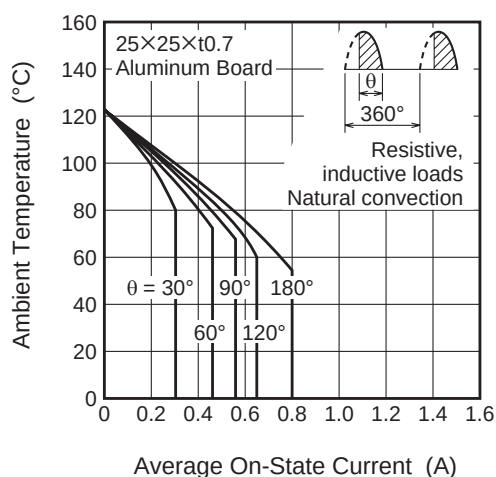
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



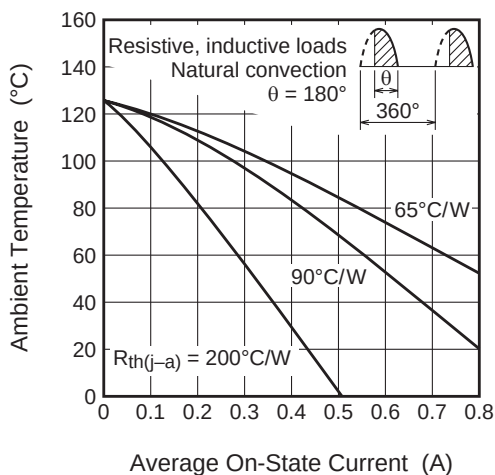
Maximum Average Power Dissipation
(Single-Phase Half Wave)



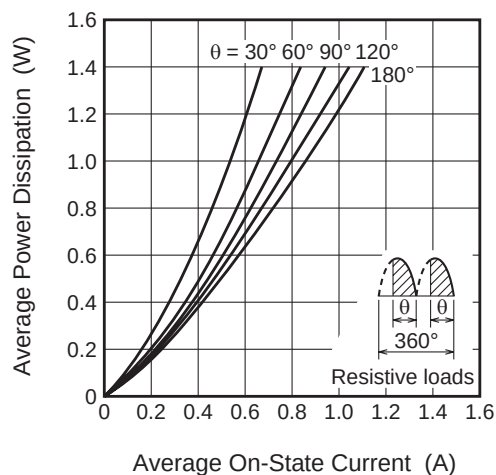
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



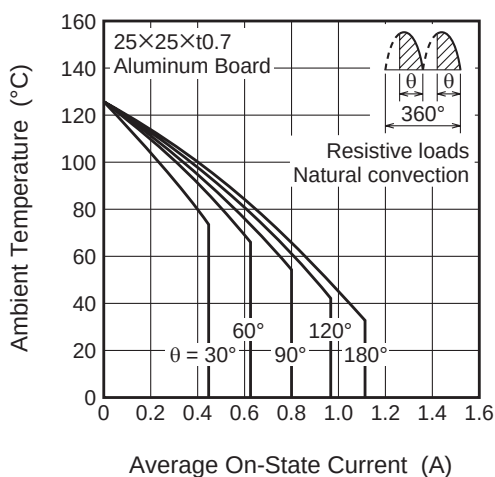
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



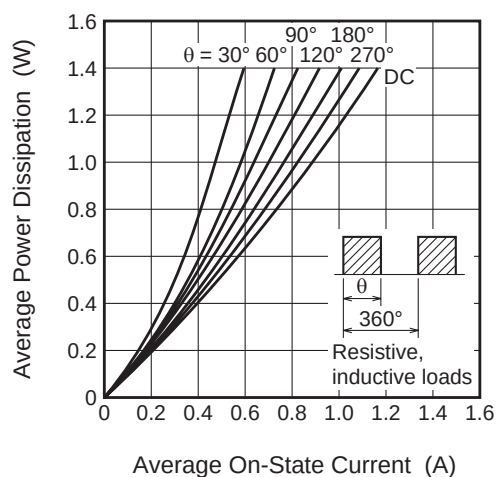
Maximum Average Power Dissipation
(Single-Phase Full Wave)



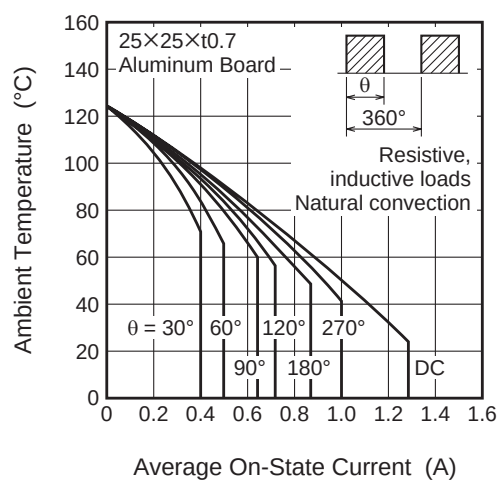
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



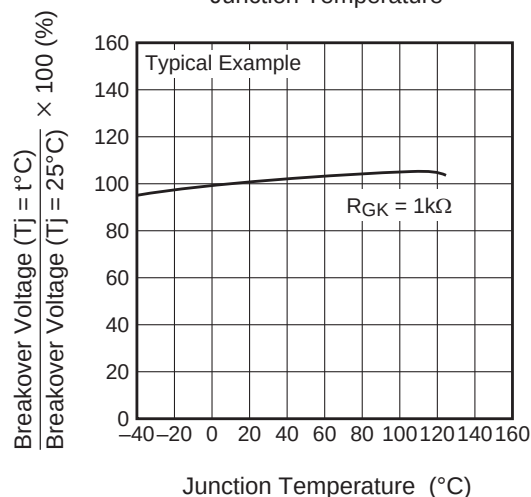
Maximum Average Power Dissipation
(Rectangular Wave)



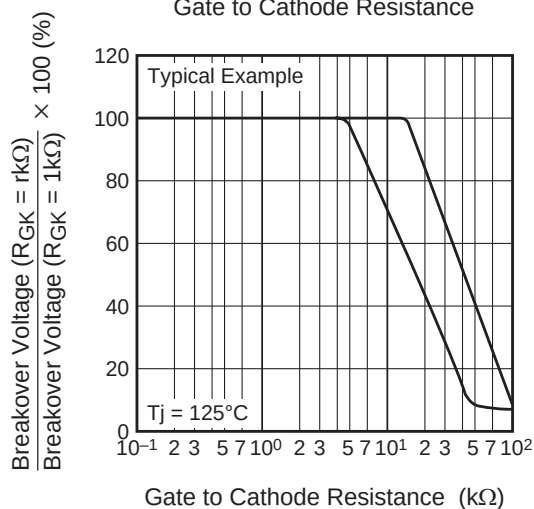
Allowable Ambient Temperature vs.
Average On-State Current
(Rectangular Wave)



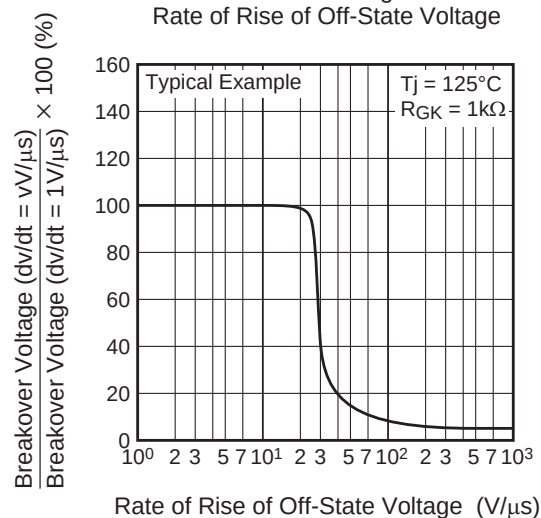
Breakover Voltage vs.
Junction Temperature



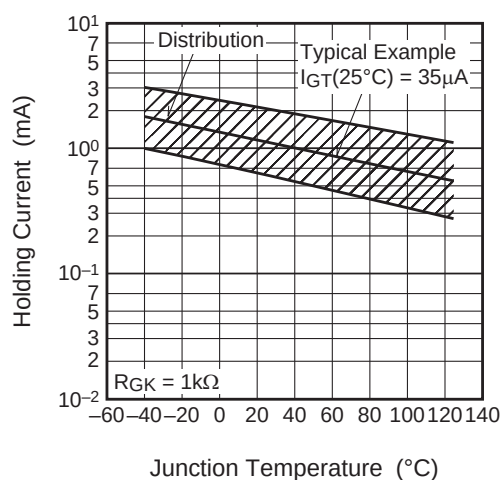
Breakover Voltage vs.
Gate to Cathode Resistance



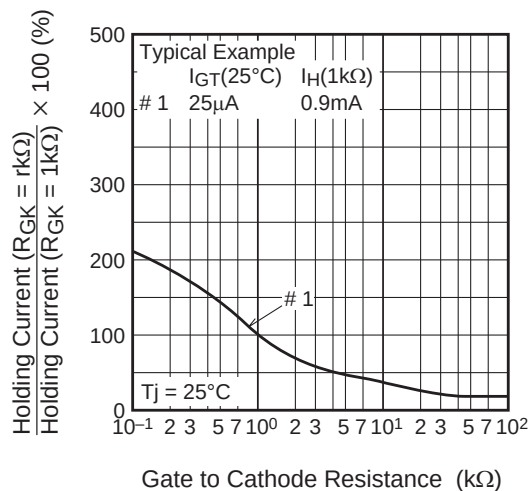
Breakover Voltage vs.
Rate of Rise of Off-State Voltage

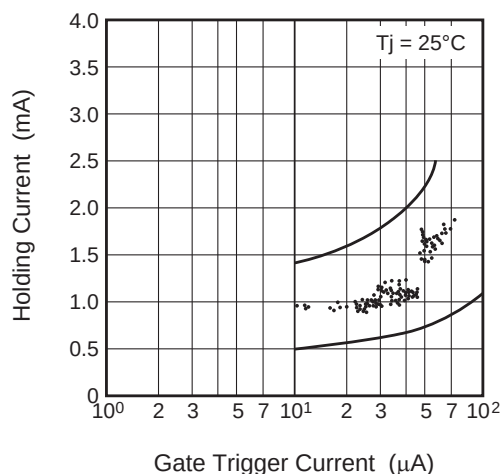
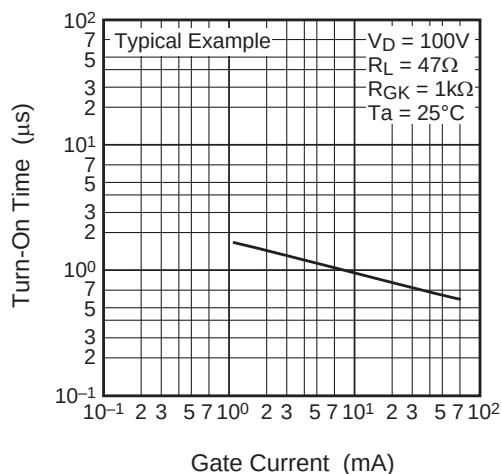
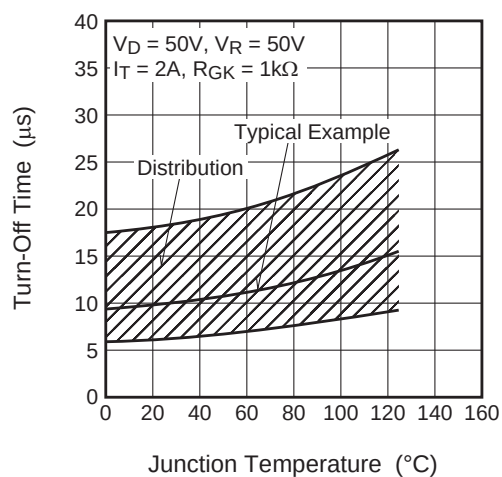
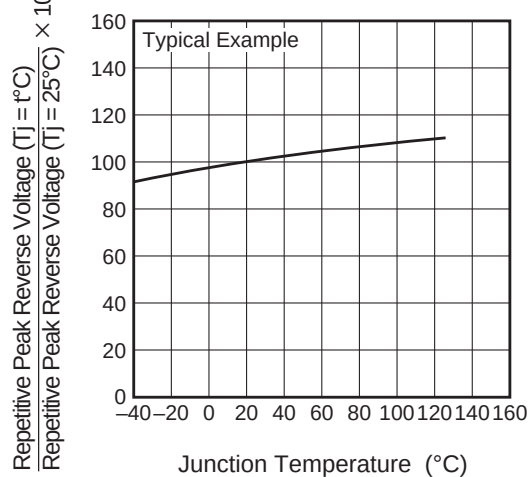
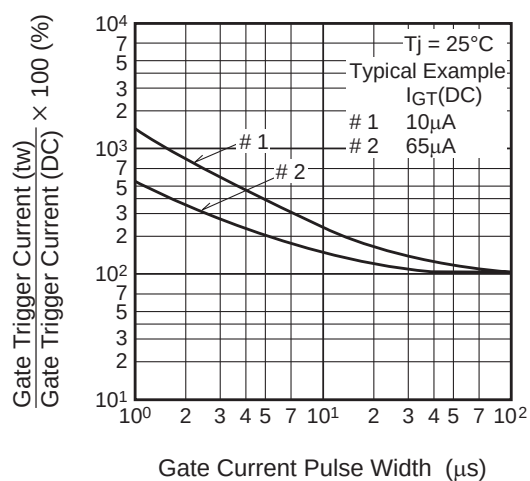
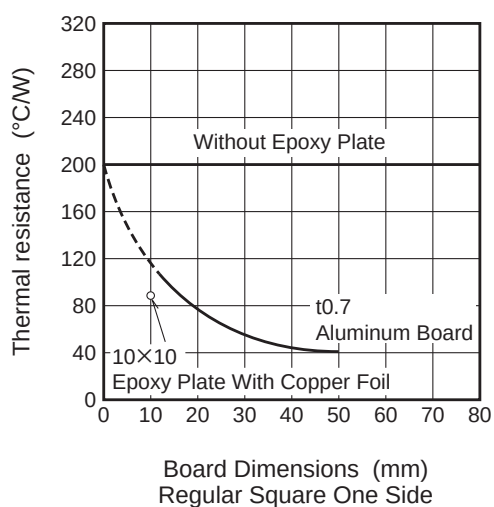


Holding Current vs.
Junction Temperature

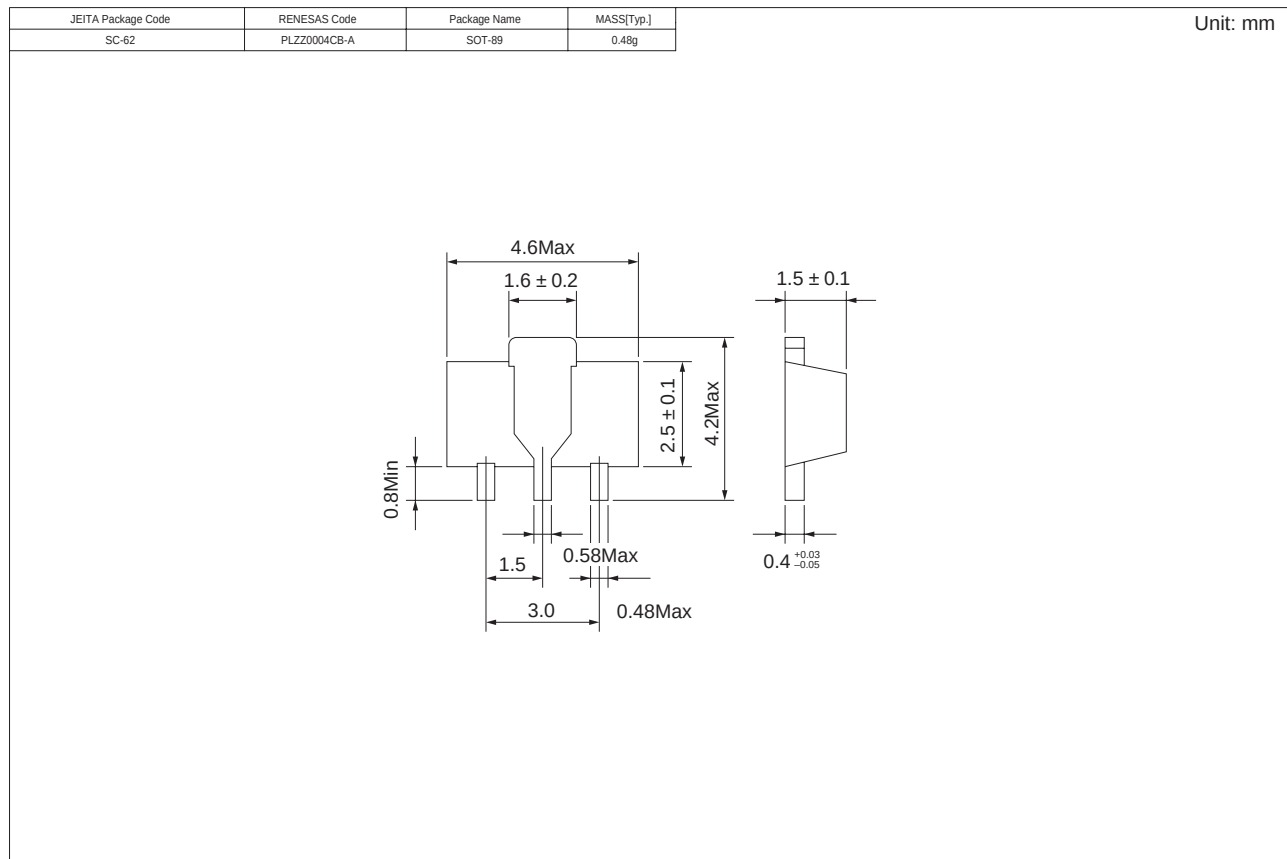


Holding Current vs.
Gate to Cathode Resistance



Holding Current vs.
Gate Trigger CurrentTurn-On Time vs.
Gate CurrentTurn-Off Time vs.
Junction TemperatureRepetitive Peak Reverse Voltage vs.
Junction TemperatureGate Trigger Current vs.
Gate Current Pulse WidthThermal Impedance vs.
Board Dimensions

Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Stick	25	Type name	CR08AS-12
Surface-mounted type	Taping	3000	Type name – T +Direction (1 or 2) +3	CR08AS-12-T13

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

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