

# CR08AS-12A

600V - 0.8A - Thyristor  
Low Power Use

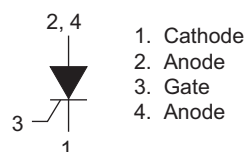
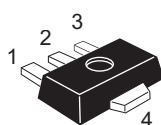
R07DS0489EJ0300  
Rev.3.00  
May 22, 2013

## Features

- $I_{T(AV)}$  : 0.8 A
- $V_{DRM}$  : 600 V
- $I_{GT}$ : 100  $\mu$ A
- Non-Insulated Type
- Planar Type
- Surface Mounted type

## Outline

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



## Applications

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

## 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 <sup>Note1</sup>	$V_{DRM}$	600	V
DC off-state voltage <sup>Note1</sup>	$V_{D(DC)}$	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, $T_a=51^{\circ}\text{C}$ <sup>Note2</sup>
Surge on-state current	$I_{TSM}$	10	A	60Hz sine half wave, 1full cycle, peak value, non-repetitive
$I^2t$ for fusing	$I^2t$	0.42	$\text{A}^2\text{s}$	Value corresponding to 1cycle 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	—	50	mg	Typical value

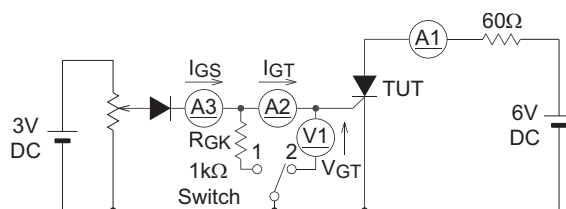
Notes: 1. With gate to cathode resistance  $R_{GK} = 1 \text{ k}\Omega$

## 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	$T_j = 25^\circ\text{C}$ , $I_{TM} = 2.5\text{ A}$ instantaneous value
Gate trigger voltage	$V_{GT}$	—	—	0.8	V	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 0.1\text{ A}$ <sup>Note3</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	$\mu\text{A}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 0.1\text{ A}$ <sup>Note3</sup>
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 <sup>Note2</sup>

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

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

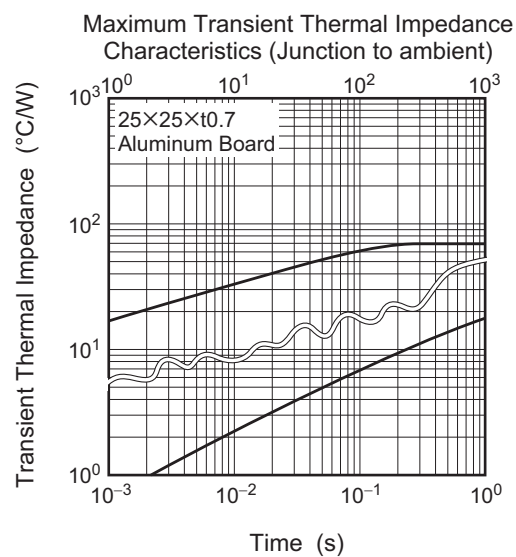
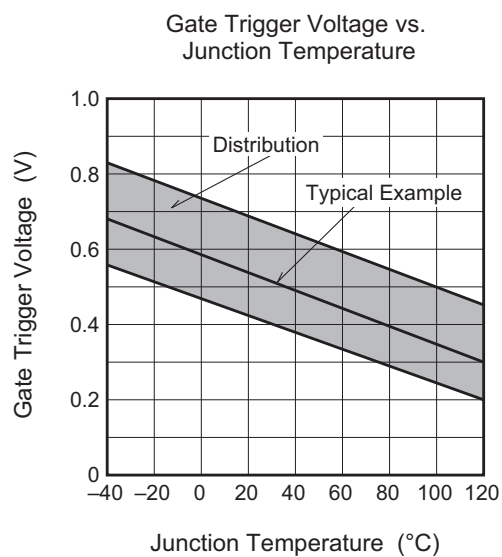
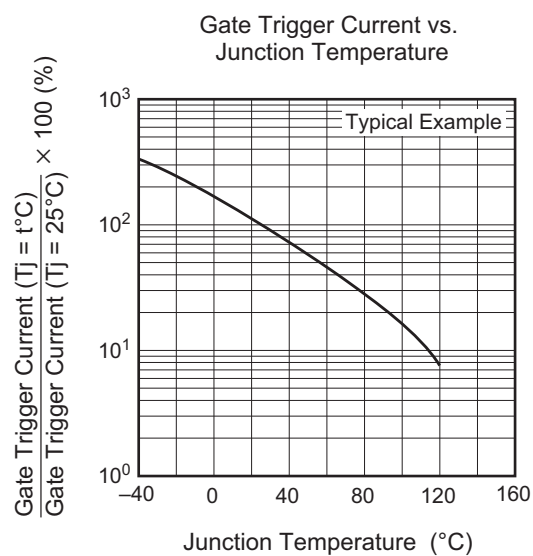
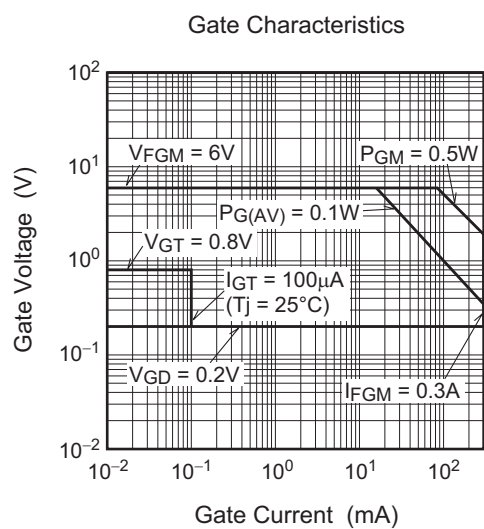
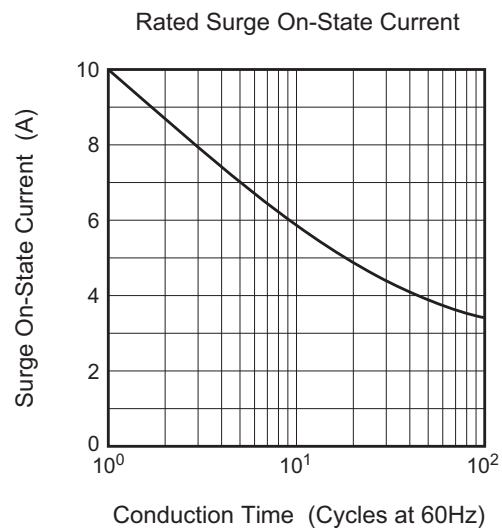
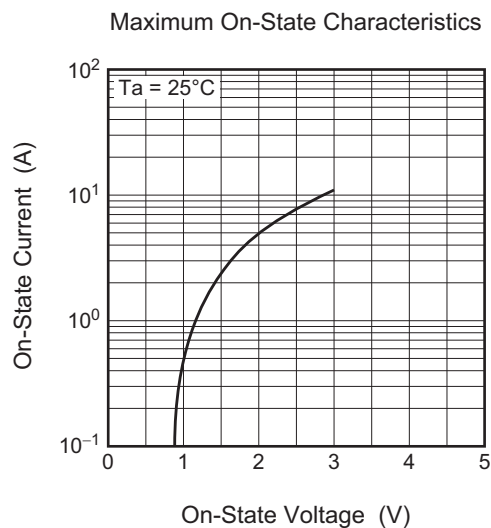


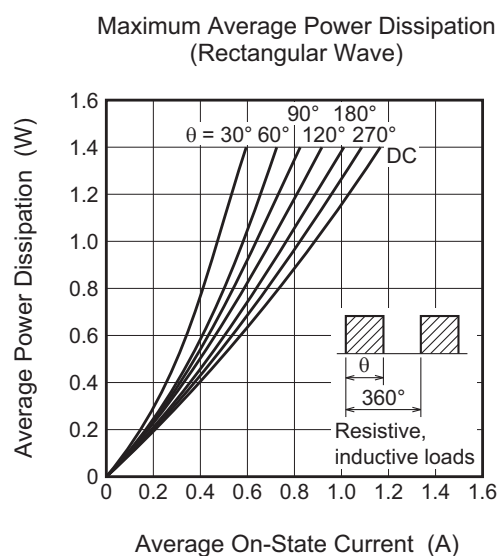
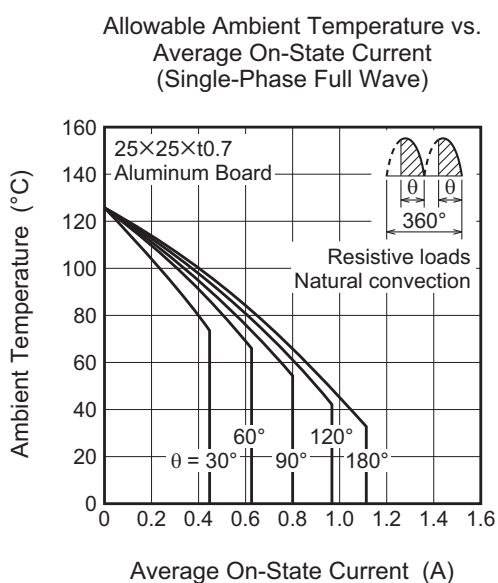
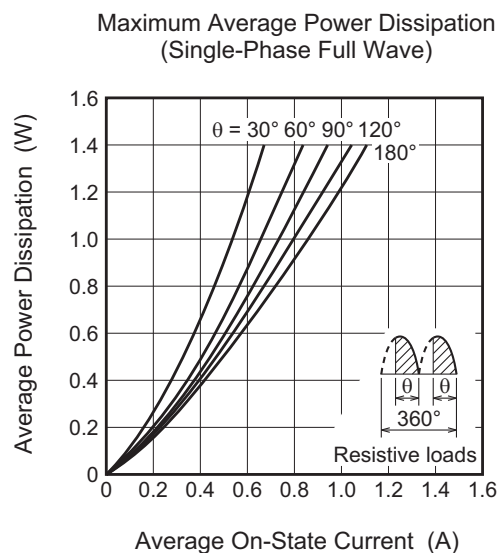
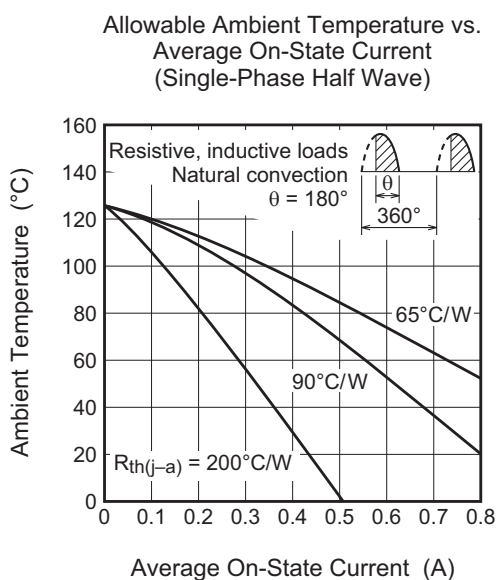
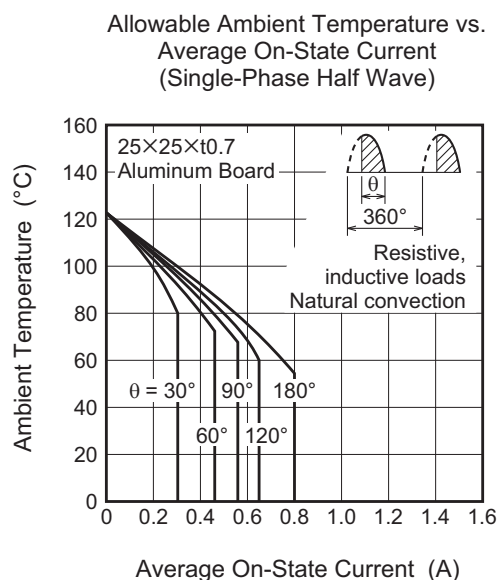
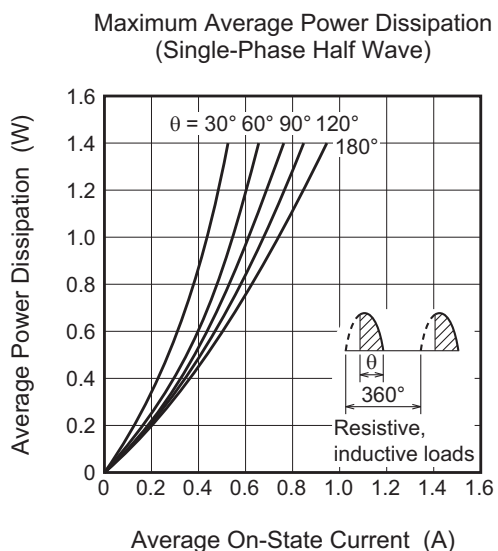
Switch 1 :  $I_{GT}$  measurement

Switch 2 :  $V_{GT}$  measurement

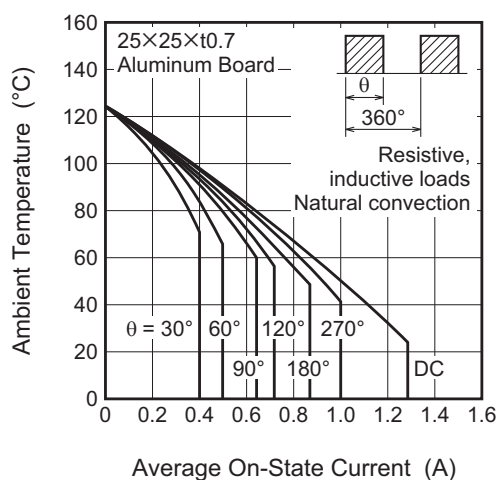
(Inner resistance of voltage meter is about 1k $\Omega$ )

## Performance Curves

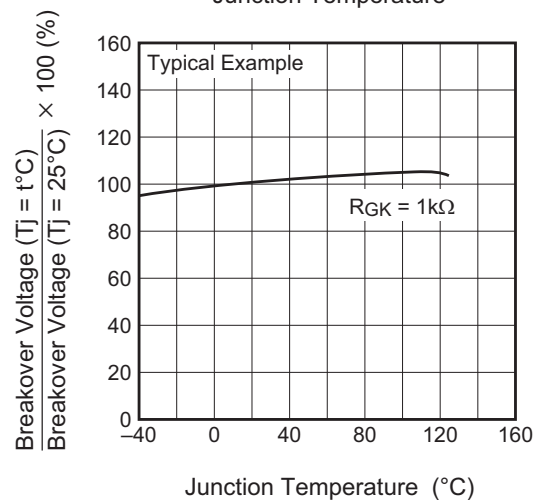




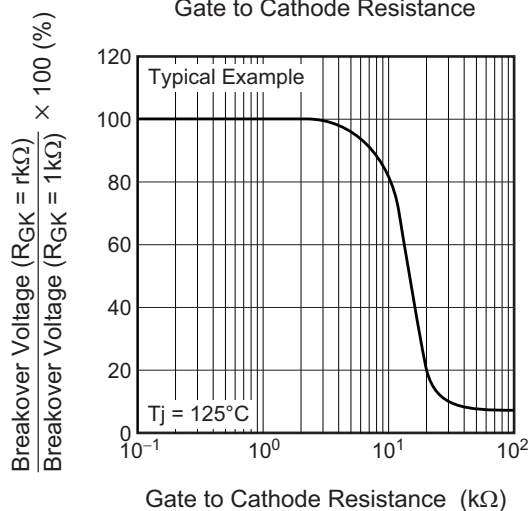
Allowable Ambient Temperature vs.  
Average On-State Current  
(Rectangular Wave)



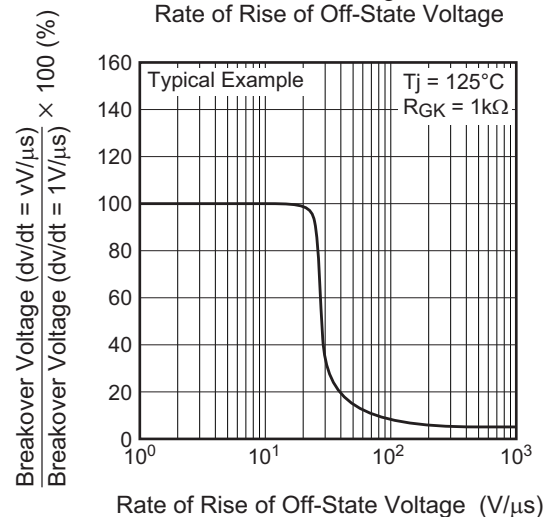
Breakover Voltage vs.  
Junction Temperature



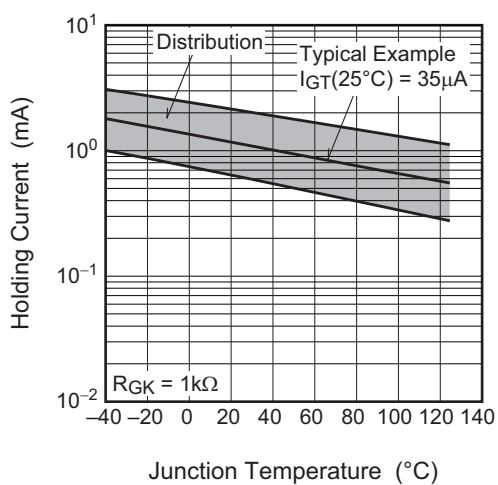
Breakover Voltage vs.  
Gate to Cathode Resistance



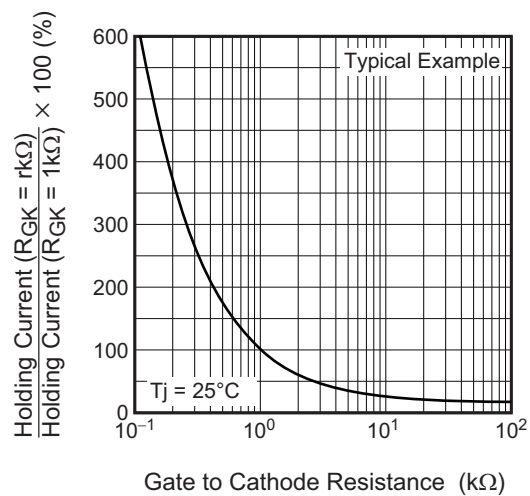
Breakover Voltage vs.  
Rate of Rise of Off-State Voltage

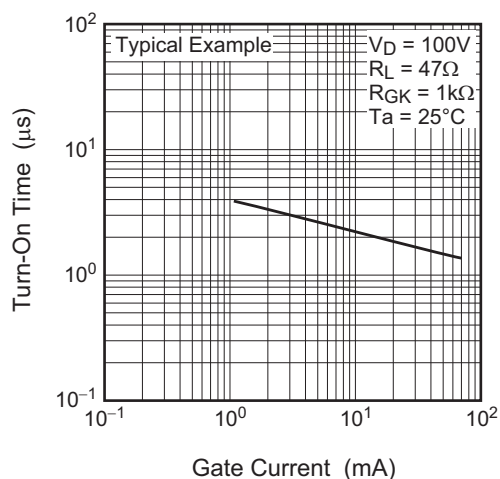
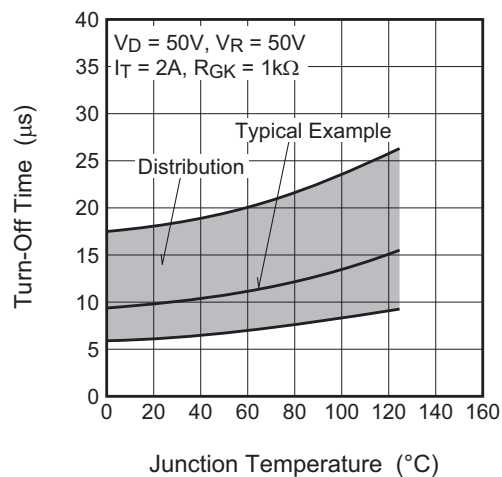
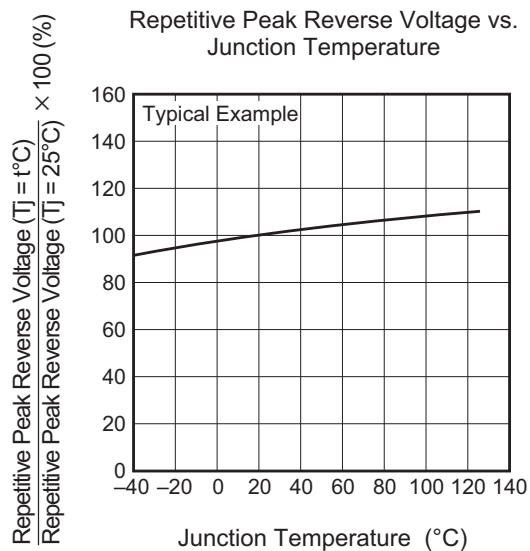
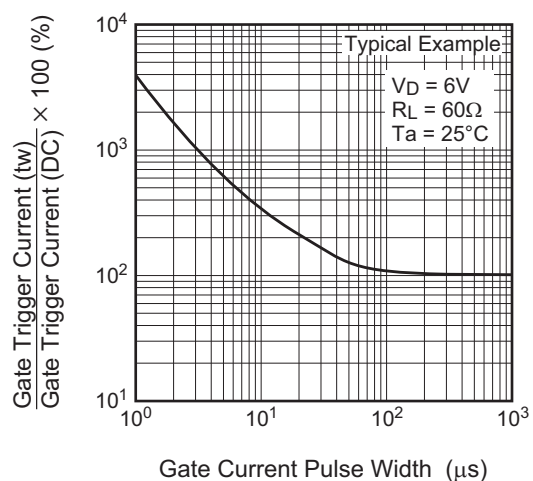
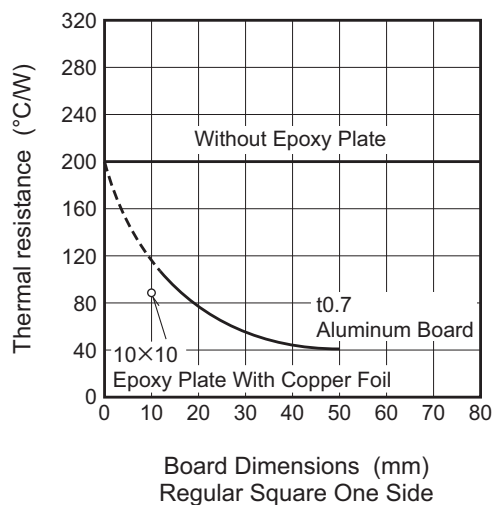


Holding Current vs.  
Junction Temperature



Holding Current vs.  
Gate to Cathode Resistance



Turn-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

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
UPAK	SC-62	PLZZ0004CA-A	UPAK / UPAKV	0.050g	

The drawing shows three views of the CR08AS-12A package:

- Top View:** Overall width is  $4.5 \pm 0.1$  mm. The central body width is  $1.8 \text{ Max}$  mm. The distance from the body to the lead is  $0.4$  mm. The lead width is  $2.5 \pm 0.1$  mm. The total width including leads is  $4.25 \text{ Max}$  mm. The lead thickness is  $0.53 \text{ Max}$  mm. The distance between the two leads is  $1.5$  mm. The total distance between the inner edges of the leads is  $3.0$  mm. The minimum lead height is  $0.8 \text{ Min}$  mm. A circular feature with diameter  $\phi 1$  is located on the top surface.
- Side View:** The lead height is  $1.5 \pm 0.1$  mm. The lead thickness is  $0.44 \text{ Max}$  mm. The distance from the body to the lead is  $0.44 \text{ Max}$  mm.
- End View:** The lead width is  $(1.5)$  mm. The lead thickness is  $(0.4)$  mm. The distance between the two leads is  $(0.2)$  mm.

## Ordering Information

Orderable Part Number	Packing	Quantity	Remark
CR08AS-12A-T14 #B10	Embossed Tape	4000 pcs.	Taping direction "T1"

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

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