

# CR05AS-8

Thyristor

Low Power Use

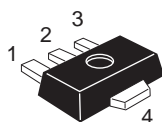
R07DS0135EJ0500  
 (Previous: REJ03G0348-0400)  
 Rev.5.00  
 Sep 15, 2010

## Features

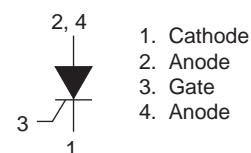
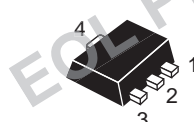
- $I_{T(AV)}$  : 0.5 A
- $V_{DRM}$  : 400 V
- $I_{GT}$  : 100  $\mu$ A
- Non-Insulated Type
- Planar Passivation Type
- Surface Mounted type

## 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 <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	—	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	$T_j = 25^\circ\text{C}$ , $V_D = 6\text{ V}$ , $I_T = 0.1\text{ A}$ <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	$I_{GT}$	20	—	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>

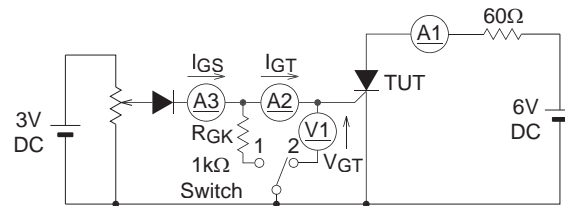
Notes: 2. Soldering with ceramic plate (25 mm × 25 mm × t0.7 mm).

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

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

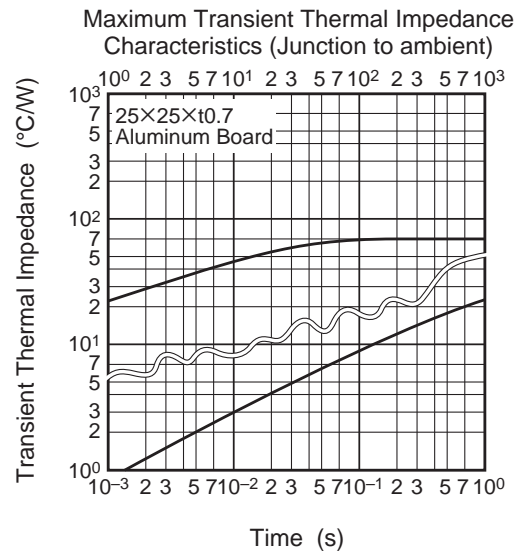
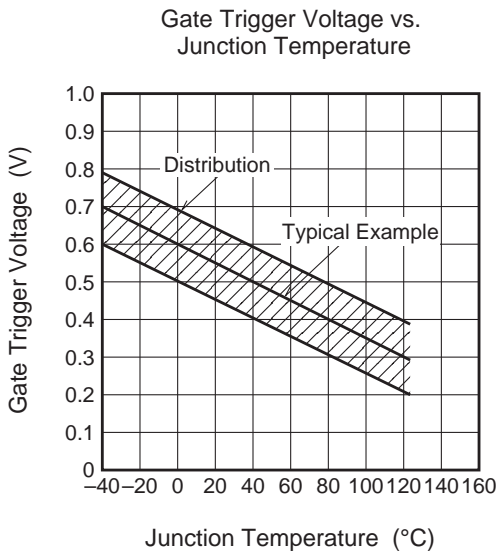
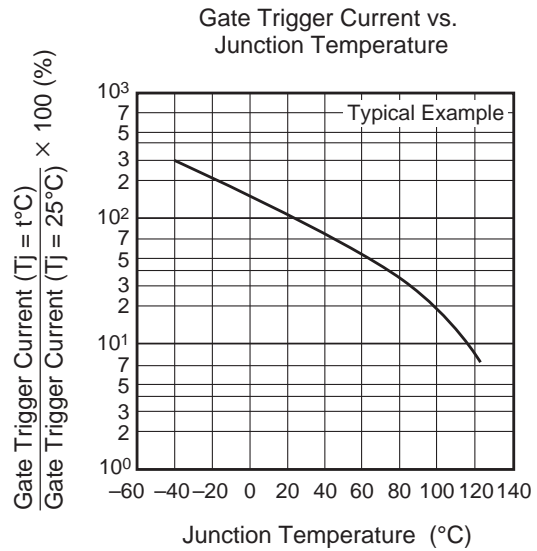
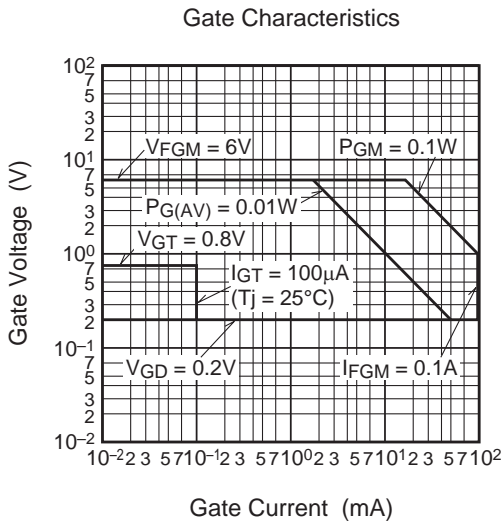
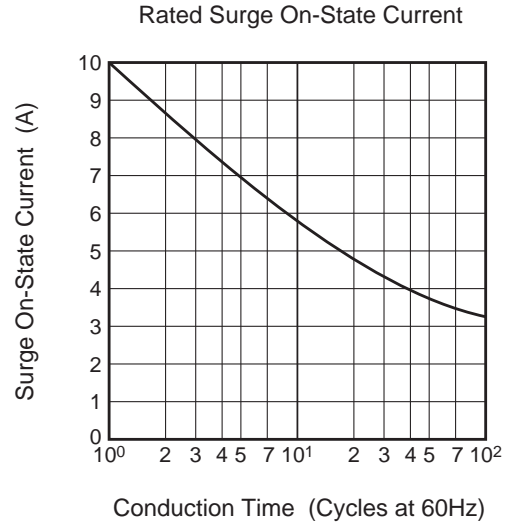
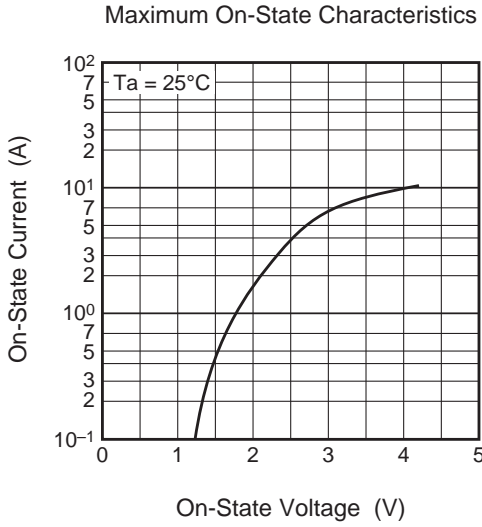
The above values do not include the current flowing through the 1 k $\Omega$  resistance between the gate and cathode.

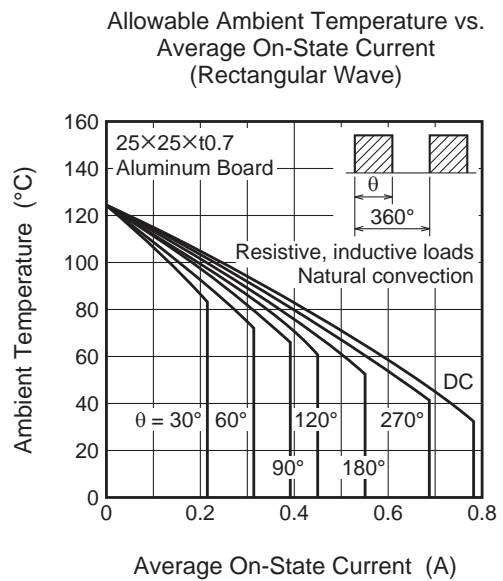
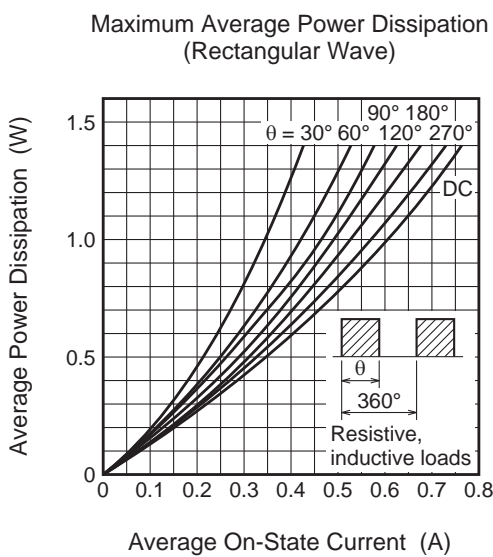
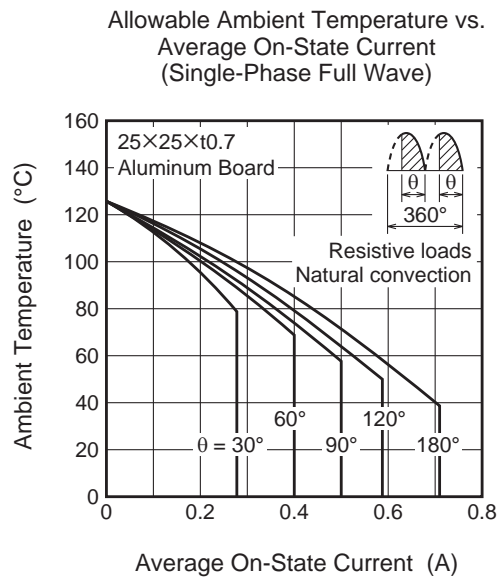
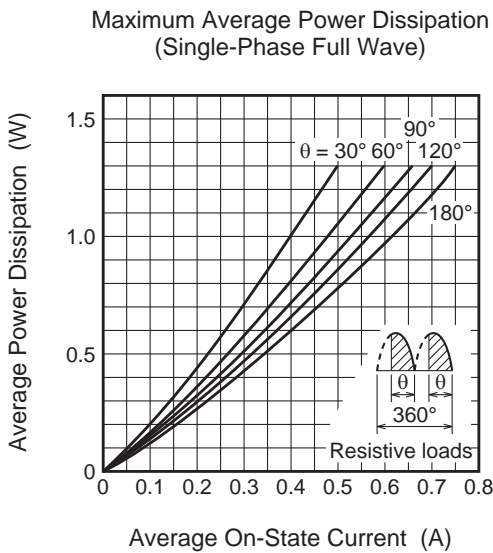
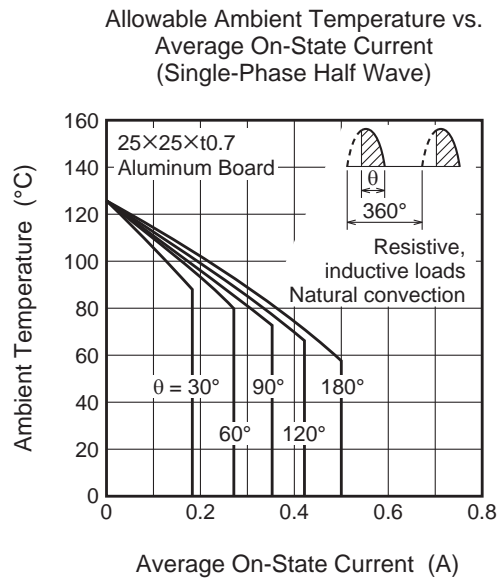
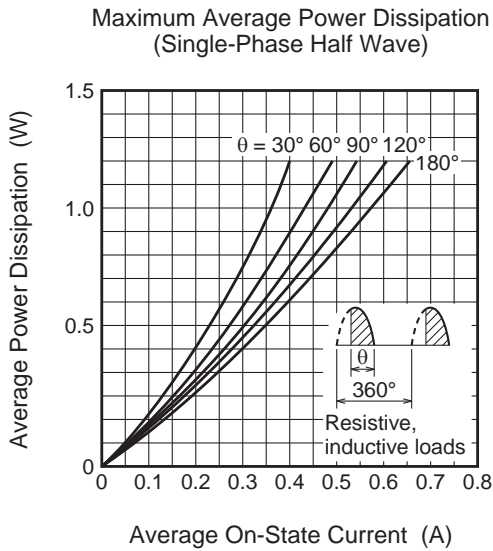
4.  $I_{GT}$ ,  $V_{GT}$  measurement circuit.



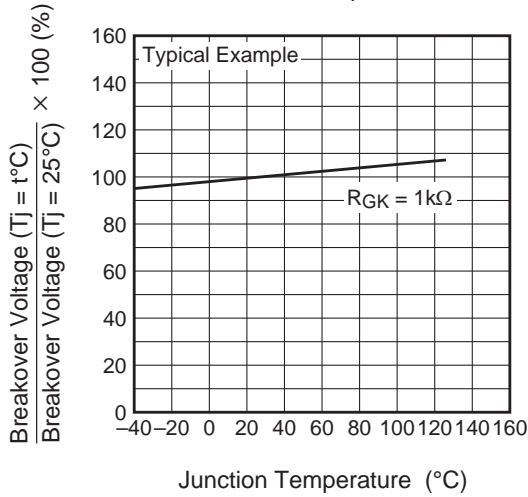
Switch 1 :  $I_{GT}$  measurement  
 Switch 2 :  $V_{GT}$  measurement  
 (Inner resistance of voltage meter is about 1k $\Omega$ )

Performance Curves

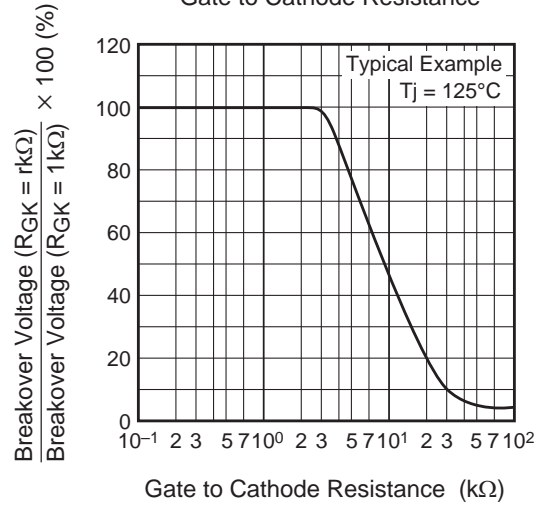




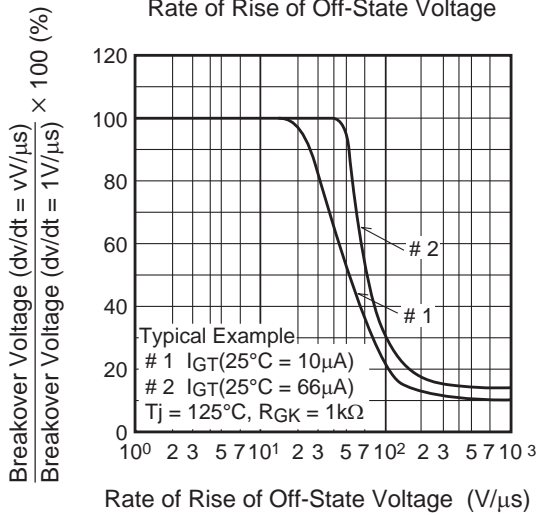
Breakover Voltage vs. Junction Temperature



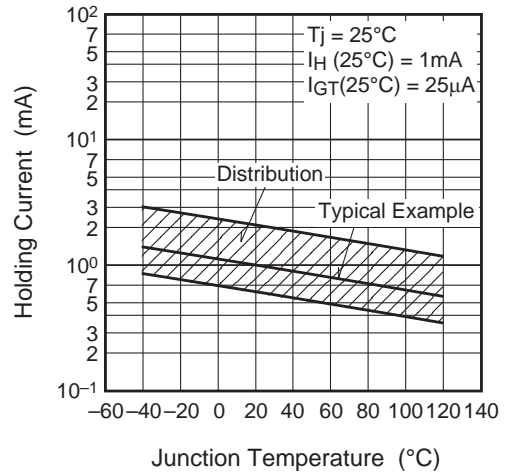
Breakover Voltage vs. Gate to Cathode Resistance



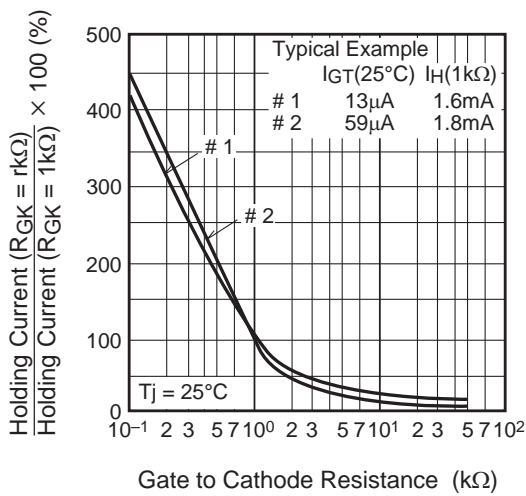
Breakover Voltage vs. Rate of Rise of Off-State Voltage



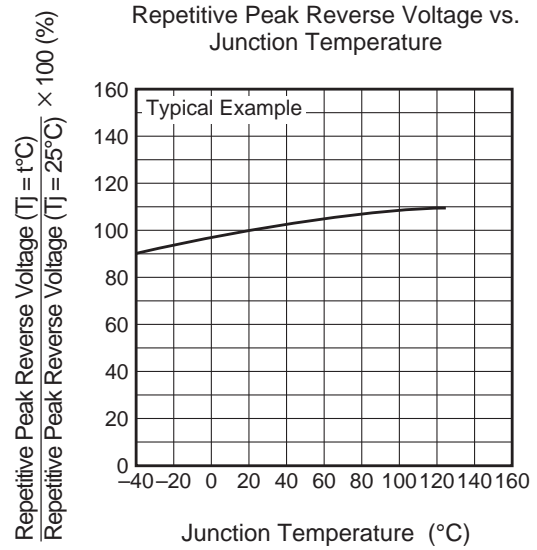
Holding Current vs. Junction Temperature

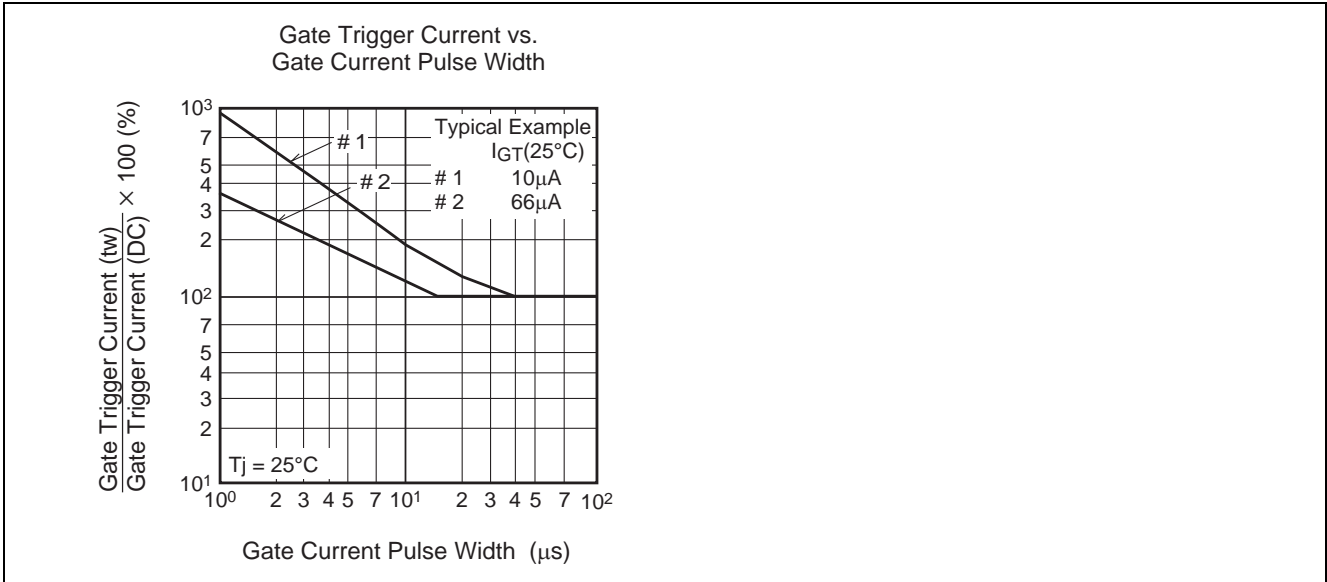


Holding Current vs. Gate to Cathode Resistance



Repetitive Peak Reverse Voltage vs. Junction Temperature

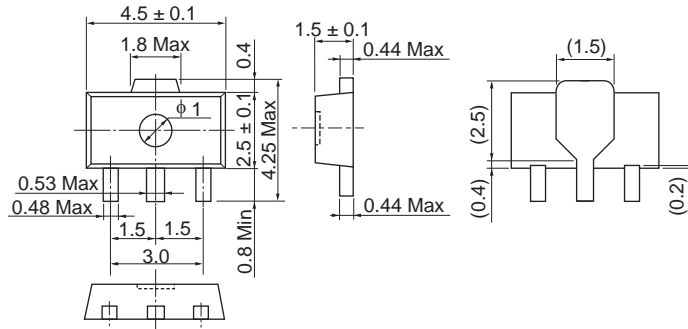




Package Dimensions

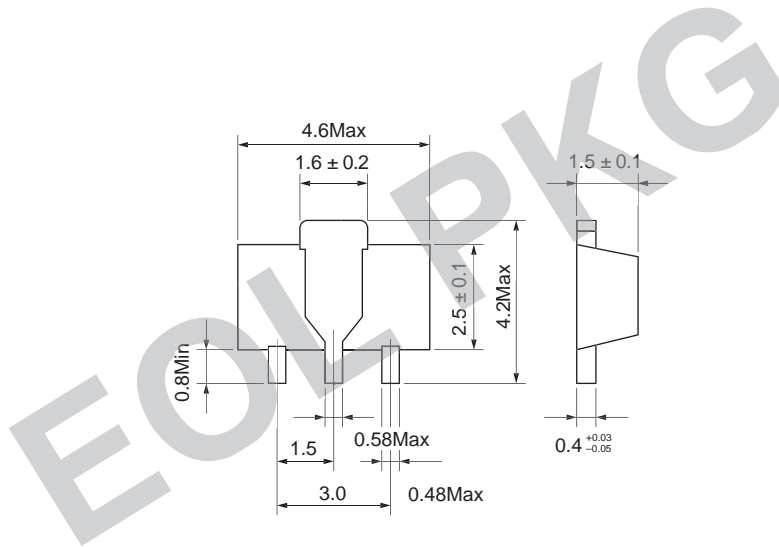
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
UPAK	SC-62	PLZZ0004CA-A	UPAK / UPAKV	0.050g

Unit: mm



Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
SOT-89	SC-62	PLZZ0004CB-A	—	0.48g

Unit: mm



### 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.



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