CR05AS-8

Thyristor

Low Power Use

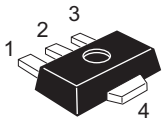
REJ03G0348-0300
Rev.3.00
Mar 22, 2007

Features

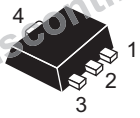
- $I_{T\,(AV)}$: 0.5 A
- V_{DRM} : 400 V
- I_{GT} : 100 µA
- Non-Insulated Type
- Planar Passivation Type

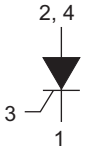
Outline

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



RENESAS Package code: 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[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, Ta = 57°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	Tj	– 40 to +125	°C	
Storage temperature	Tstg	– 40 to +125	°C	
Mass	—	50	mg	Typical value

Notes: 1. With gate to cathode resistance R_{GK} = 1 kΩ.

Electrical Characteristics

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

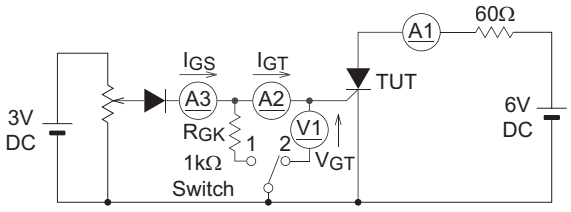
Notes: 2. Soldering with ceramic plate (25 mm × 25 mm × t0.7 mm).

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} (μA)	20 to 50	20 to 100

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

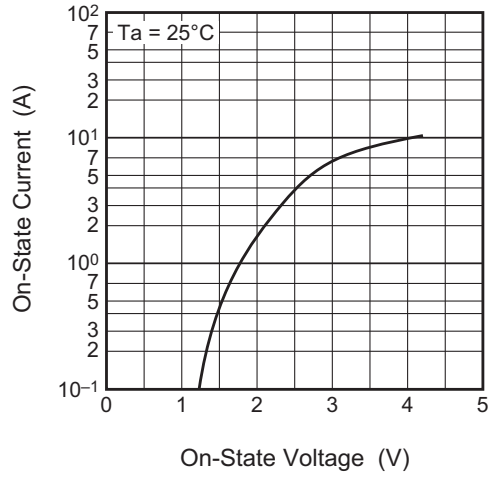
4. I_{GT}, V_{GT} measurement circuit.



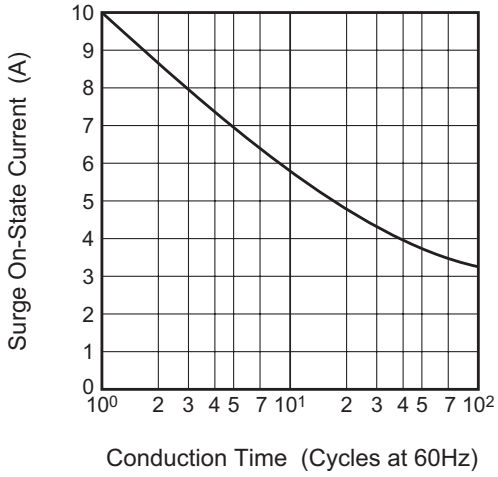
Switch 1 : I_{GT} measurement
Switch 2 : V_{GT} measurement
(Inner resistance of voltage meter is about 1kΩ)

Performance Curves

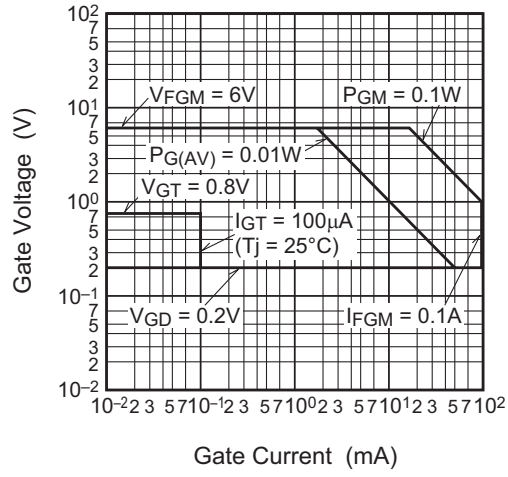
Maximum On-State Characteristics



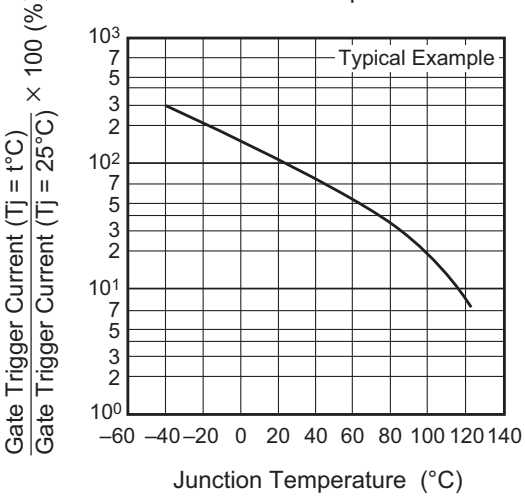
Rated Surge On-State Current



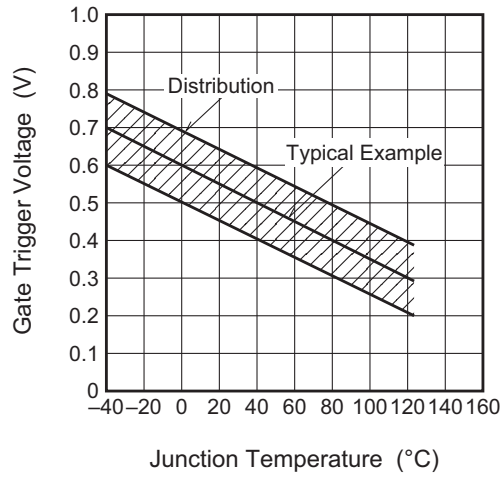
Gate Characteristics



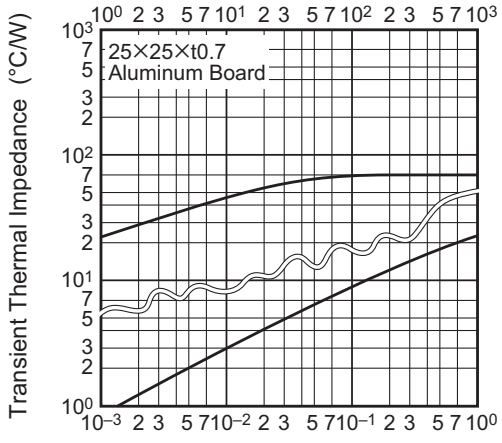
Gate Trigger Current vs. Junction Temperature



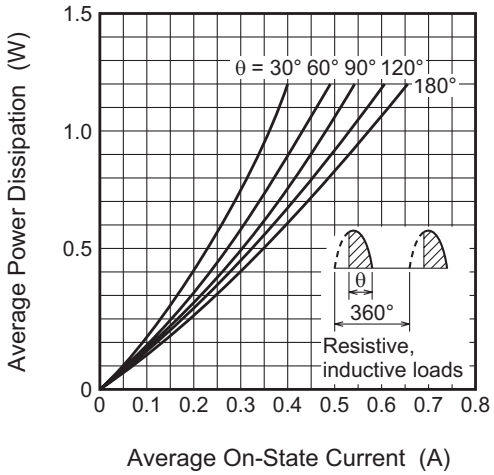
Gate Trigger Voltage vs. Junction Temperature



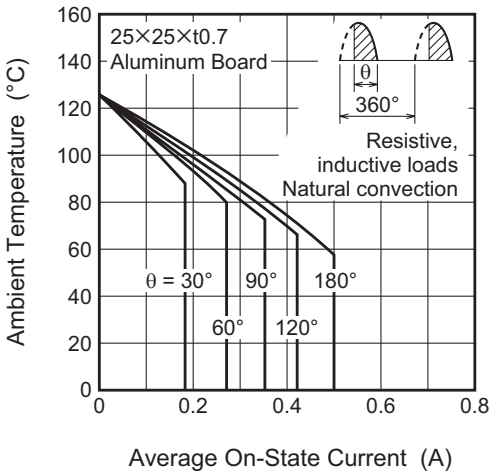
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



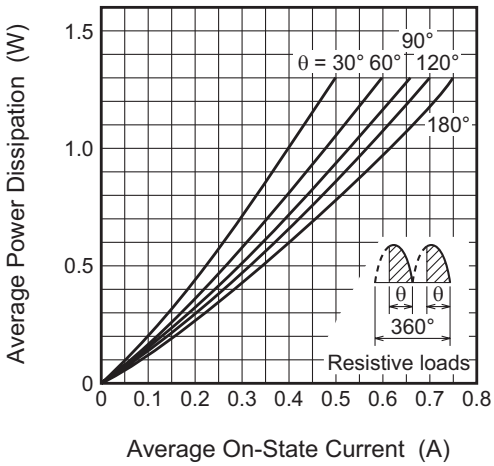
Maximum Average Power Dissipation
(Single-Phase Half Wave)



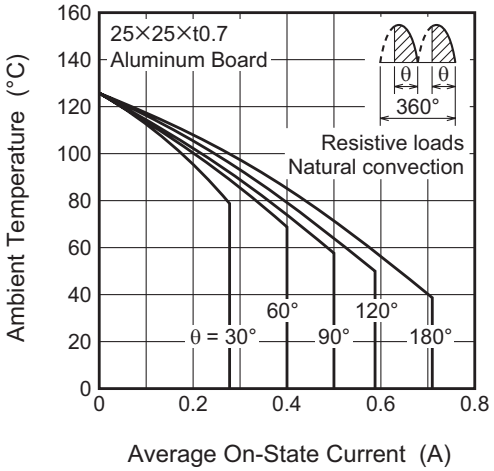
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



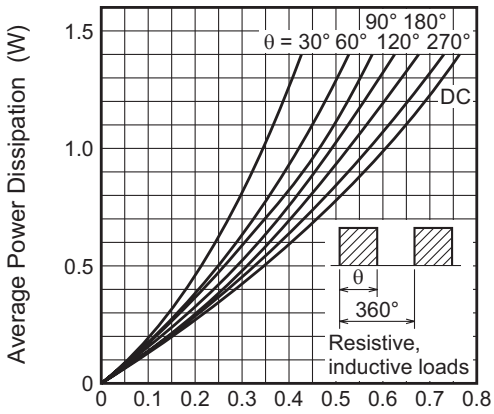
Maximum Average Power Dissipation
(Single-Phase Full Wave)



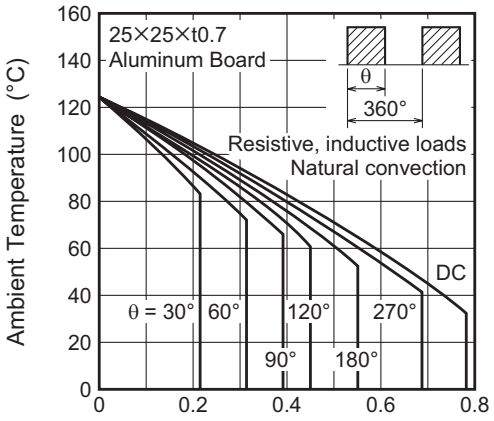
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



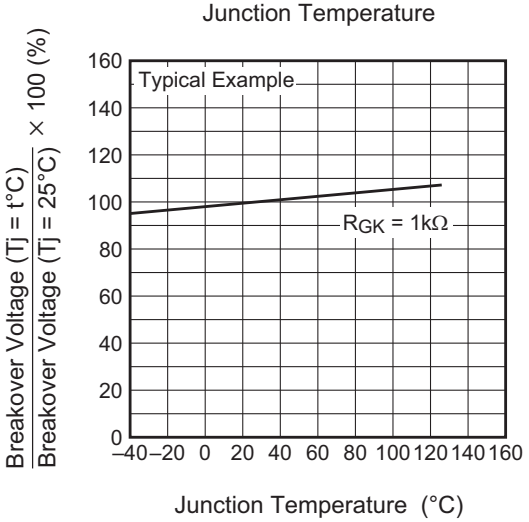
Maximum Average Power Dissipation
(Rectangular Wave)



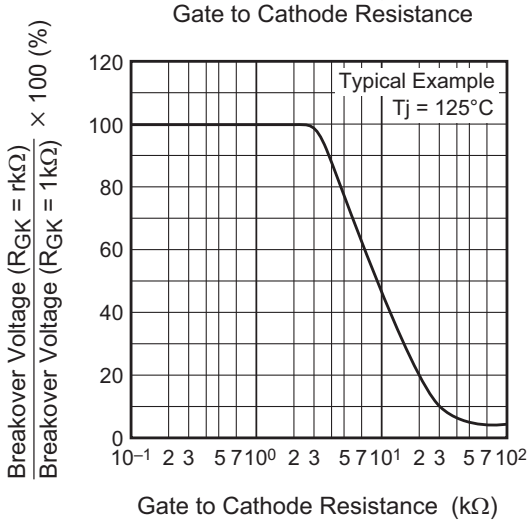
Allowable Ambient Temperature vs.
Average On-State Current
(Rectangular Wave)



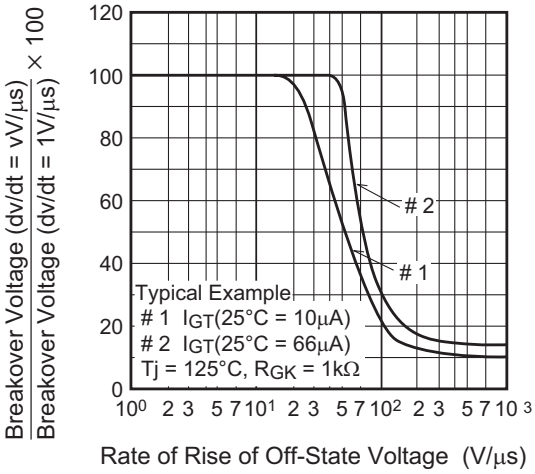
Breakover Voltage vs.
Junction Temperature



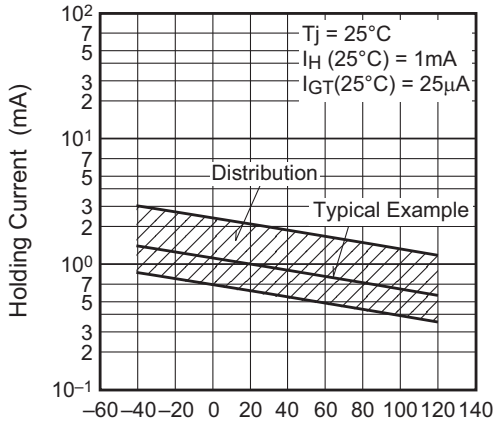
Breakover Voltage vs.
Gate to Cathode Resistance



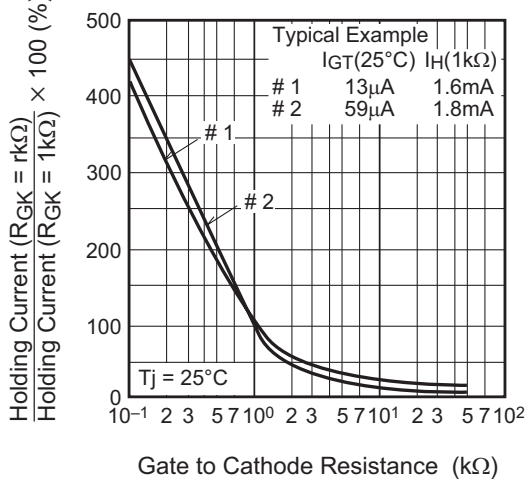
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



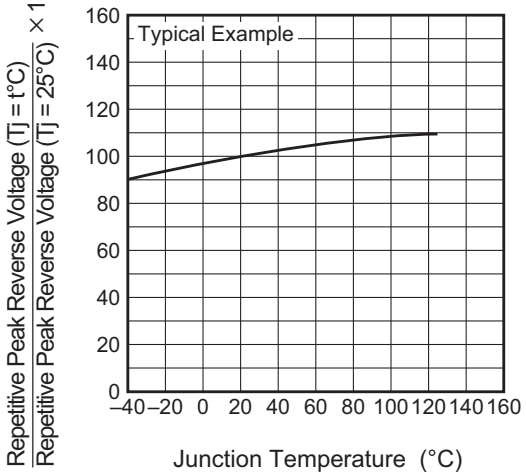
Holding Current vs.
Junction Temperature



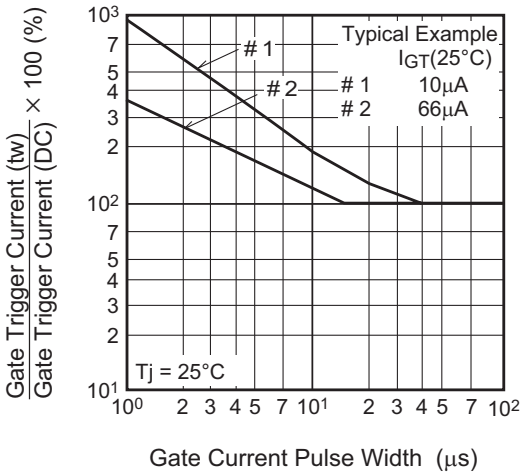
Holding Current vs.
Gate to Cathode Resistance



Repetitive Peak Reverse Voltage vs.
Junction Temperature



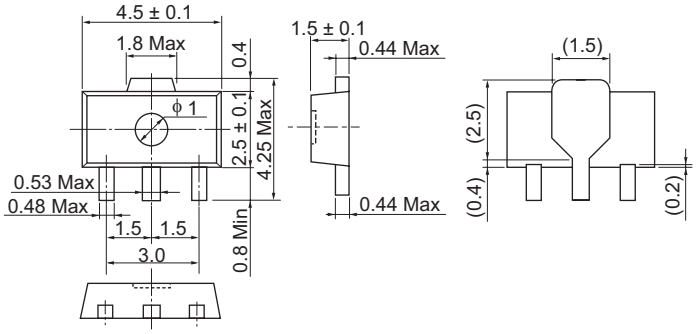
Gate Trigger Current vs.
Gate Current Pulse Width



Package Dimensions

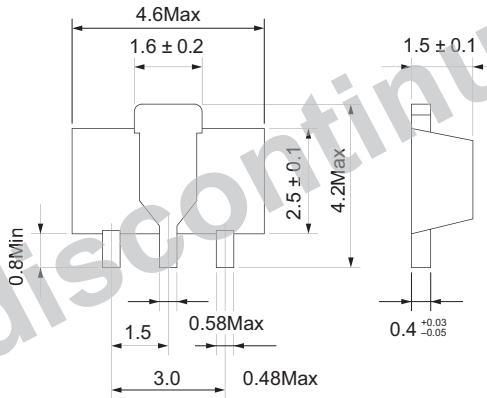
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
UPAK	SC-62	PLZZ0004CA-A	UPAK / UPAKV	0.050g

Unit: mm



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