

CR05AS-8

Thyristor

Low Power Use

REJ03G0348-0100

Rev.1.00

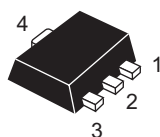
Aug.20.2004

Features

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

Outline

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, $T_a = 57^\circ\text{C}$ ^{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	0.4	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	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	$T_j = 25^\circ\text{C}$, $V_D = 6 \text{ V}$, $I_T = 0.1 \text{ A}$ ^{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	—	—	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 ^{Note2}

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

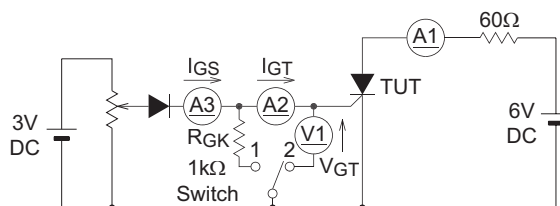
3. If special values of I_{GT} are required, choose at least two items from those listed in the table below.

(Example: AB, BC)

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

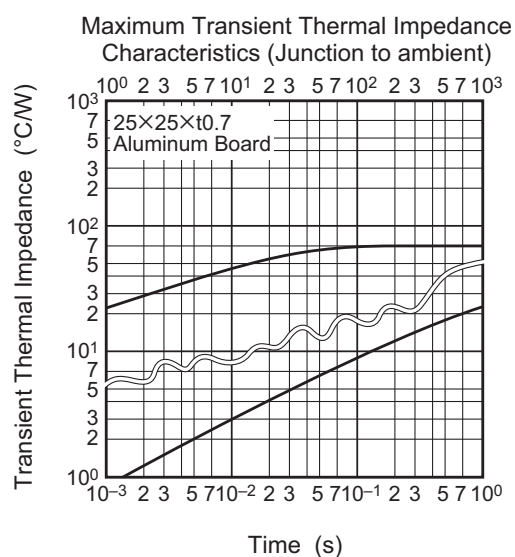
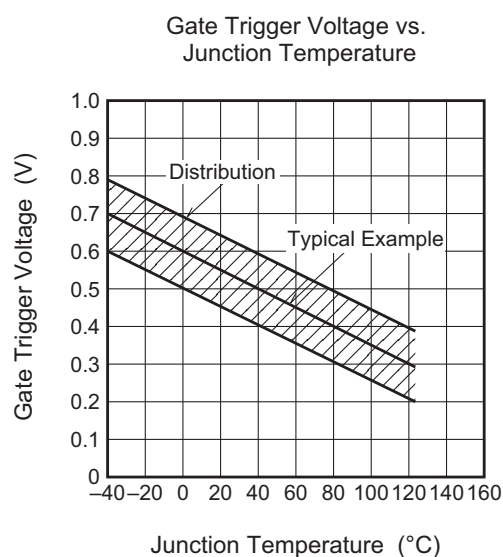
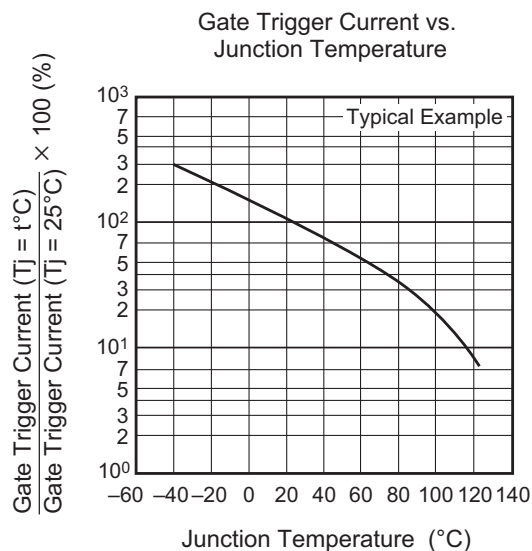
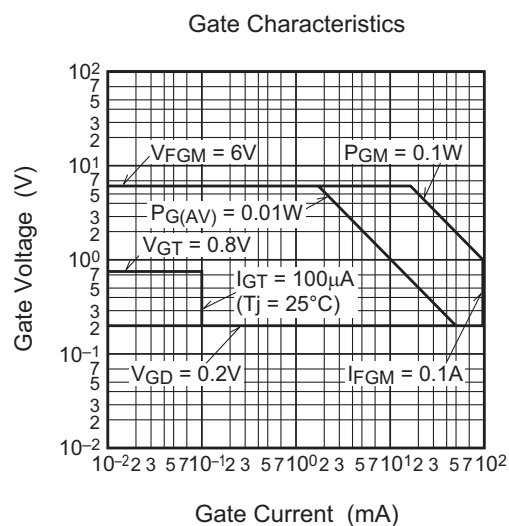
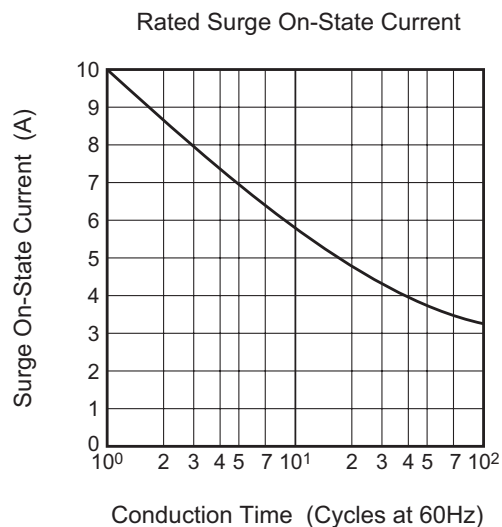
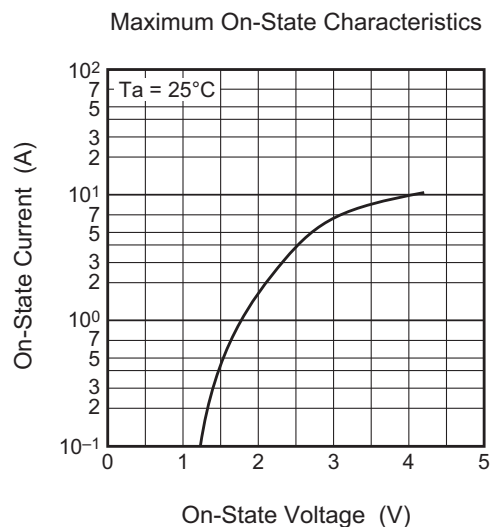


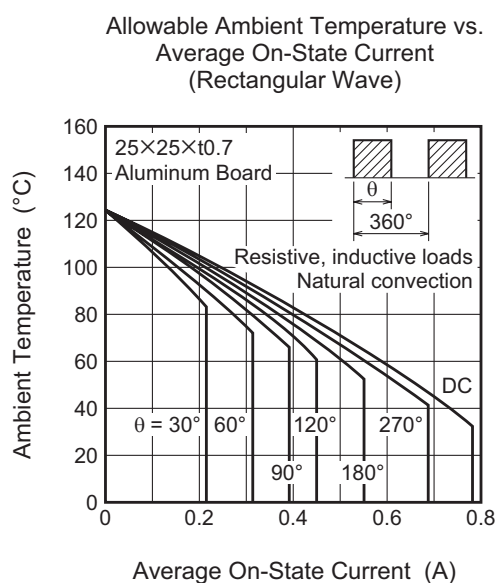
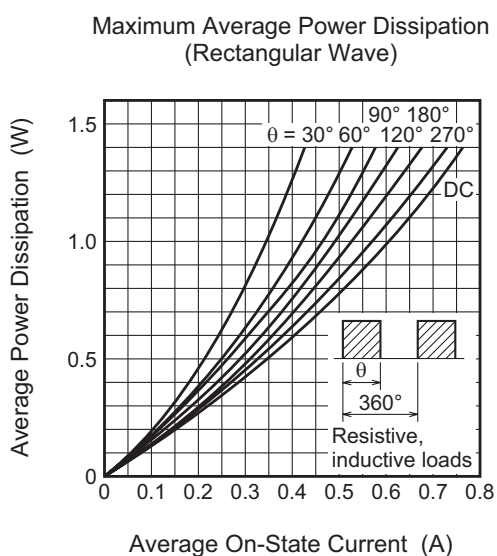
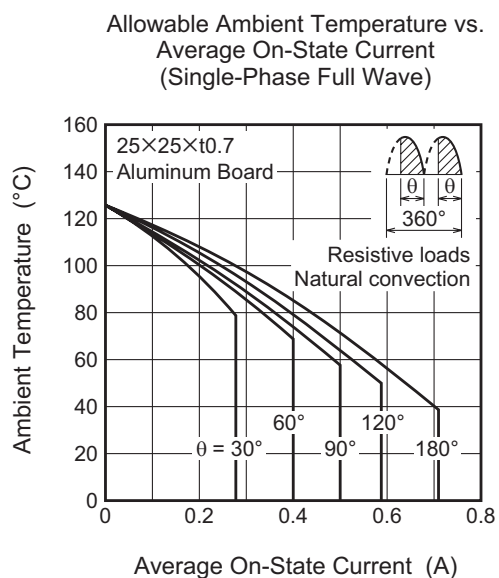
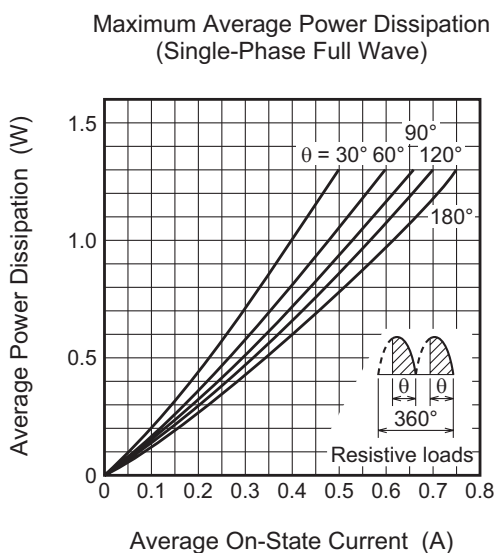
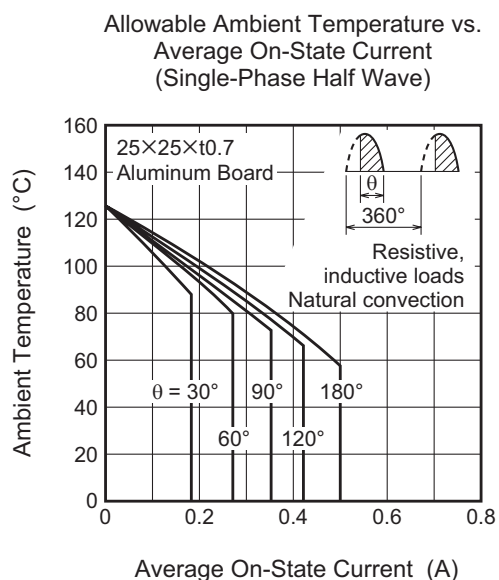
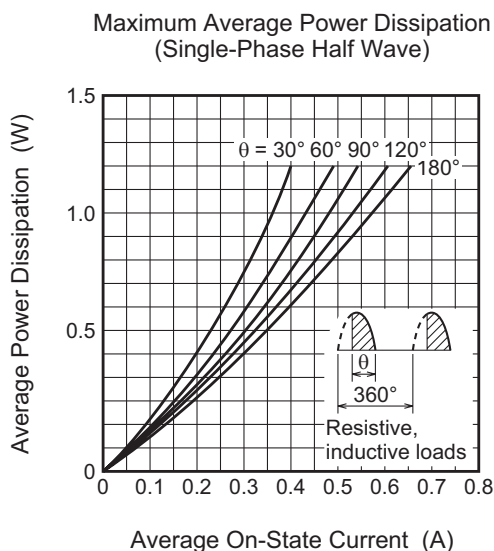
Switch 1 : I_{GT} measurement

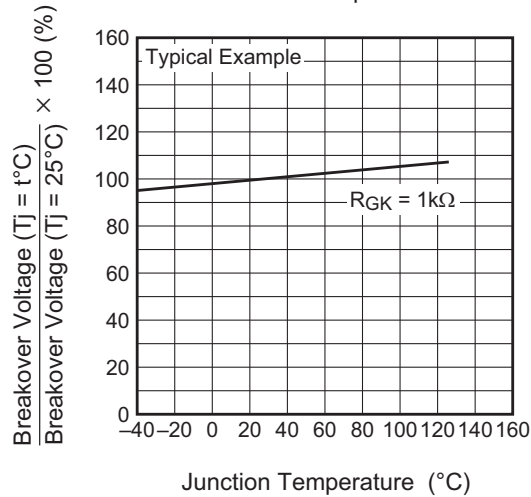
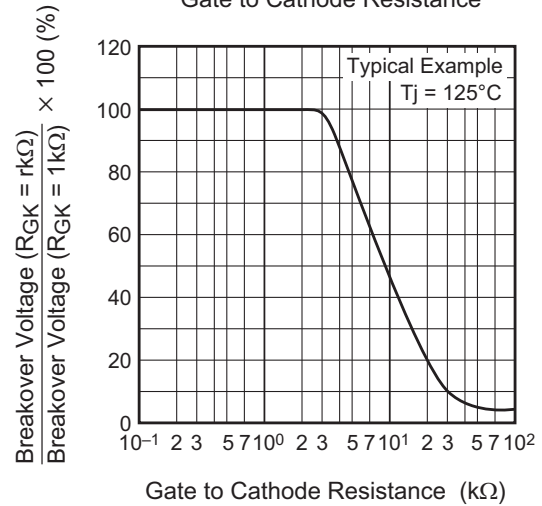
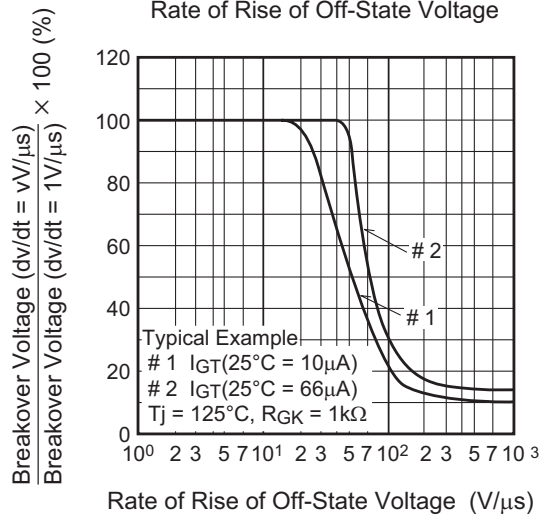
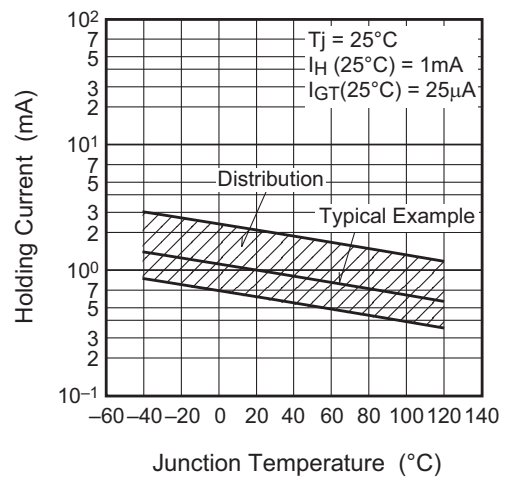
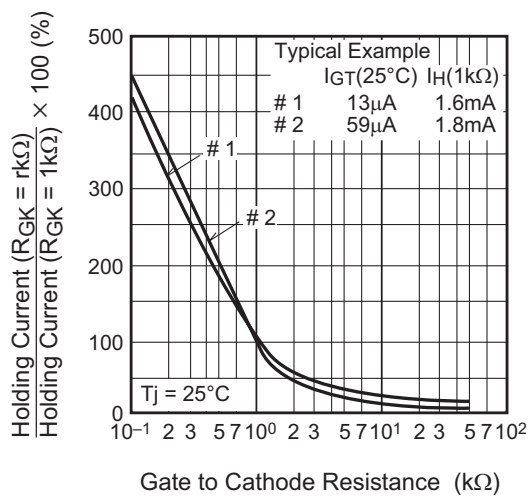
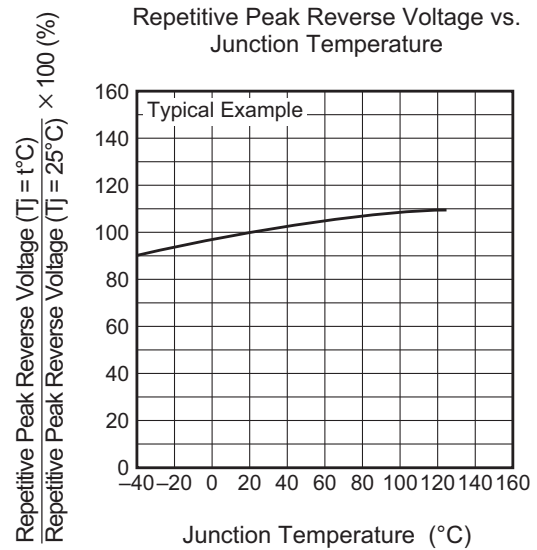
Switch 2 : V_{GT} measurement

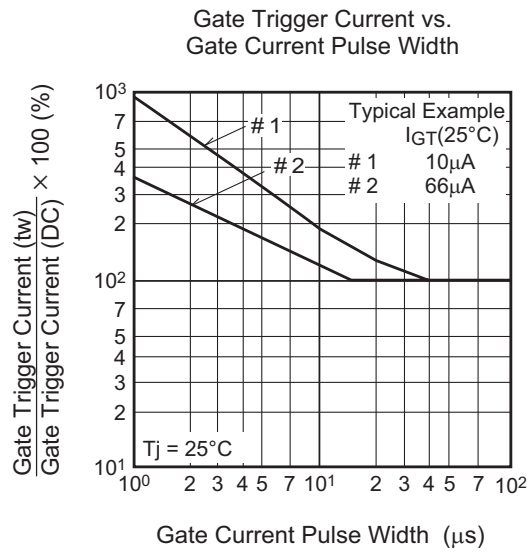
(Inner resistance of voltage meter is about 1k Ω)

Performance Curves





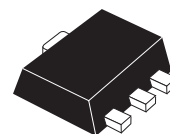
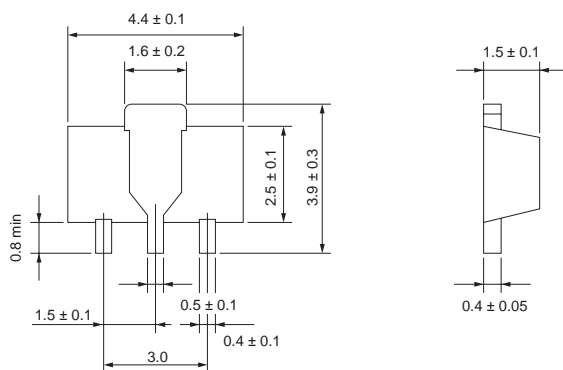
Breakover Voltage vs.
Junction TemperatureBreakover Voltage vs.
Gate to Cathode ResistanceBreakover Voltage vs.
Rate of Rise of Off-State VoltageHolding Current vs.
Junction TemperatureHolding Current vs.
Gate to Cathode ResistanceRepetitive Peak Reverse Voltage vs.
Junction Temperature



Package Dimensions

SOT-89

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
Conforms	—	0.048	Cu alloy



Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A ₁	—	—	—
A ₂	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y ₁	—	—	—
ZD	—	—	—
ZE	—	—	—

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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