

# CR05AS

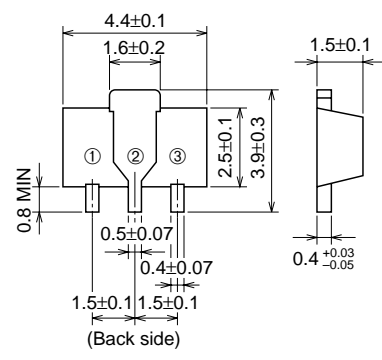
LOW POWER USE  
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

**CR05AS**

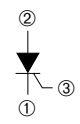


- $I_T$  (AV) ..... **0.5A**
- $V_{DRM}$  ..... **200V/400V**
- $I_{GT}$  ..... **100 $\mu$ A**

**OUTLINE DRAWING** Dimensions in mm



(Back side)



① CATHODE  
② ANODE  
③ GATE

SOT-89

## APPLICATION

Solid state relay, strobe flasher, ignitor, hybrid IC

## MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		4 (marked "CB")	8 (marked "CD")	
VRRM	Repetitive peak reverse voltage	200	400	V
VRSM	Non-repetitive peak reverse voltage	300	500	V
VR (DC)	DC reverse voltage	160	320	V
VDRM	Repetitive peak off-state voltage *1	200	400	V
VD (DC)	DC off-state voltage *1	160	320	V

Symbol	Parameter	Conditions	Ratings	Unit
$I_T$ (RMS)	RMS on-state current		0.79	A
$I_T$ (AV)	Average on-state current	Commercial frequency, sine half wave, 180° conduction, $T_a=57^\circ\text{C}$ *2	0.5	A
$I_{TSM}$	Surge on-state current	60Hz sine half wave 1 full cycle, peak value, non-repetitive	10	A
$I^2_t$	$I^2_t$ for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	0.4	A <sup>2</sup> s
PGM	Peak gate power dissipation		0.1	W
PG (AV)	Average gate power dissipation		0.01	W
VFGM	Peak gate forward voltage		6	V
VRGM	Peak gate reverse voltage		6	V
IFGM	Peak gate forward current		0.1	A
$T_j$	Junction temperature		-40 ~ +125	°C
$T_{stg}$	Storage temperature		-40 ~ +125	°C
—	Weight	Typical value	48	mg

\*1. With Gate-to-cathode resistance  $R_{GK}=1k\Omega$

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## ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IRRM	Repetitive peak reverse current	$T_j=125^\circ\text{C}$ , $V_{RRM}$ applied	—	—	0.1	mA
IDRM	Repetitive peak off-state current	$T_j=125^\circ\text{C}$ , $V_{DRM}$ applied, $R_{GK}=1\text{k}\Omega$	—	—	0.1	mA
VTM	On-state voltage	$T_a=25^\circ\text{C}$ , $I_{TM}=1.5\text{A}$ , instantaneous value	—	—	1.9	V
VGT	Gate trigger voltage	$T_a=25^\circ\text{C}$ , $V_D=6\text{V}$ , $I_T=0.1\text{A}$ *4	—	—	0.8	V
VGD	Gate non-trigger voltage	$T_j=125^\circ\text{C}$ , $V_D=1/2V_{DRM}$ , $R_{GK}=1\text{k}\Omega$	0.2	—	—	V
IGT	Gate trigger current	$T_j=25^\circ\text{C}$ , $V_D=6\text{V}$ , $I_T=0.1\text{A}$ *4	1	—	100*3	$\mu\text{A}$
IH	Holding current	$T_j=25^\circ\text{C}$ , $V_D=12\text{V}$ , $R_{GK}=1\text{k}\Omega$	—	—	3	mA
$R_{th(j-a)}$	Thermal resistance	Junction to ambient *2	—	—	70	$^\circ\text{C/W}$

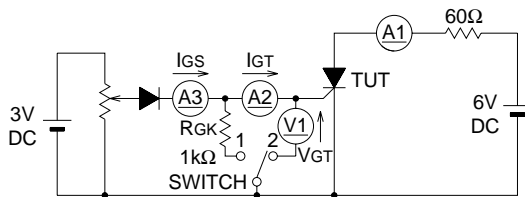
\*2. Soldering with ceramic plate (25mm × 25mm × t0.7).

\*3. If special values of IGT are required, choose at least two items from those listed in the table below. (Example: AB, BC)

Item	A	B	C
IGT ( $\mu\text{A}$ )	1 ~ 30	20 ~ 50	40 ~ 100

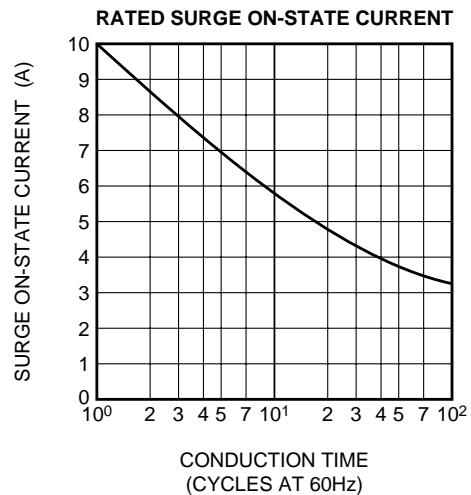
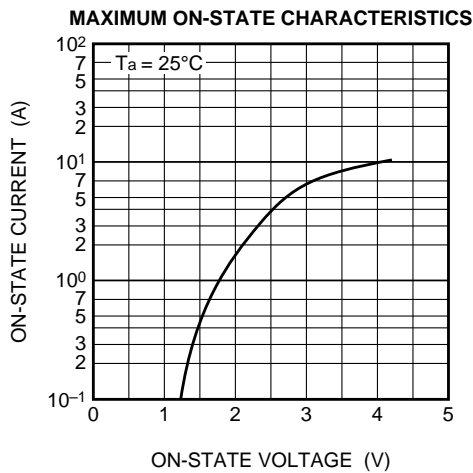
The above values do not include the current flowing through the 1k $\Omega$  resistance between the gate and cathode.

\*4. IGT, VGT measurement circuit.



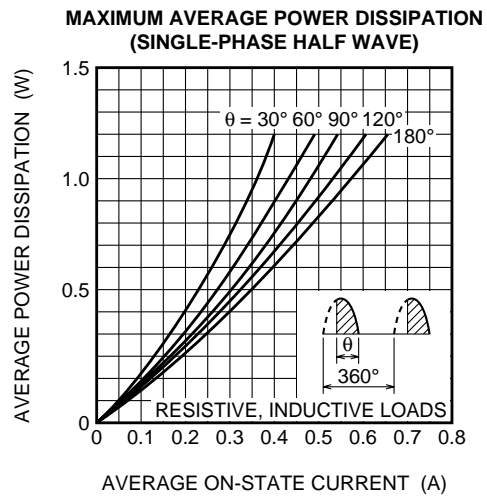
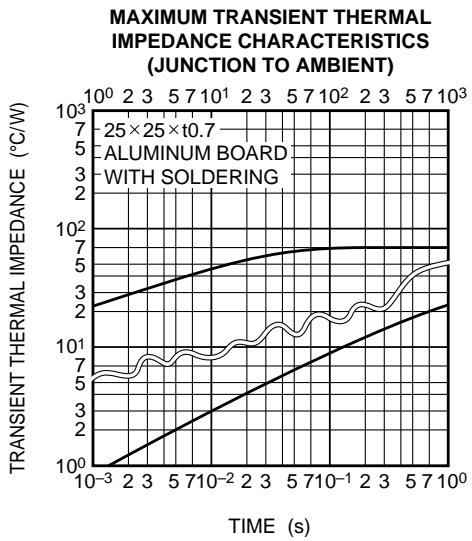
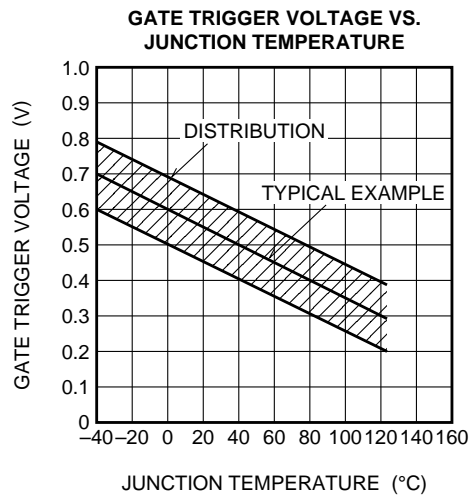
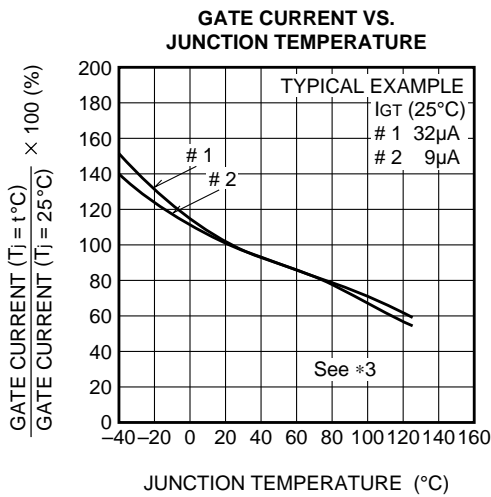
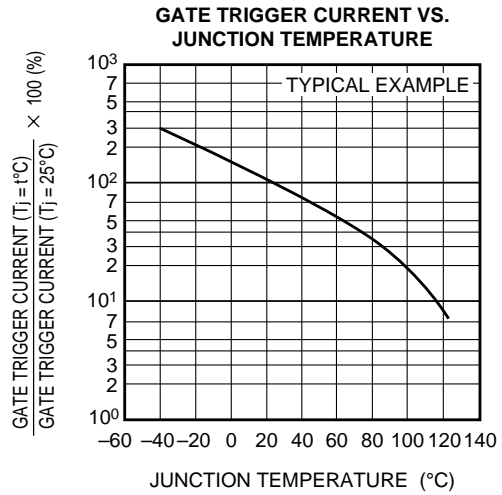
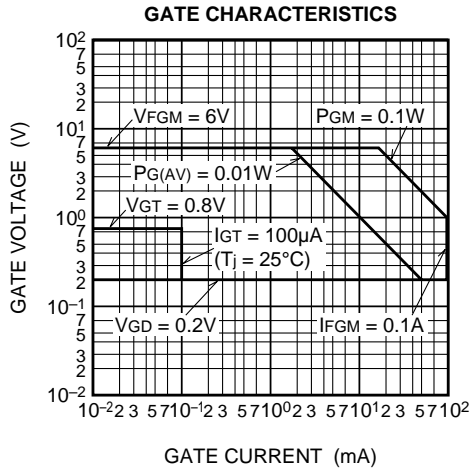
SWITCH 1 : IGT measurement  
 SWITCH 2 : VGT measurement  
 (Inner resistance of voltage meter is about 1k $\Omega$ )

## PERFORMANCE CURVES



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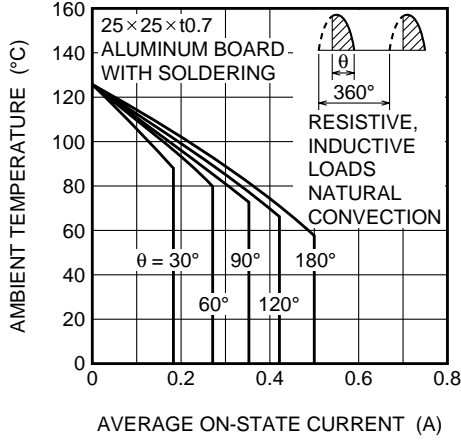
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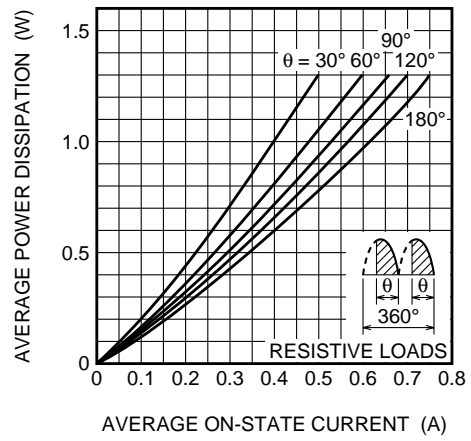
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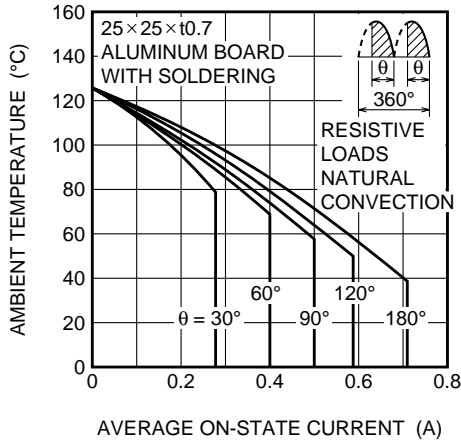
**ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)**



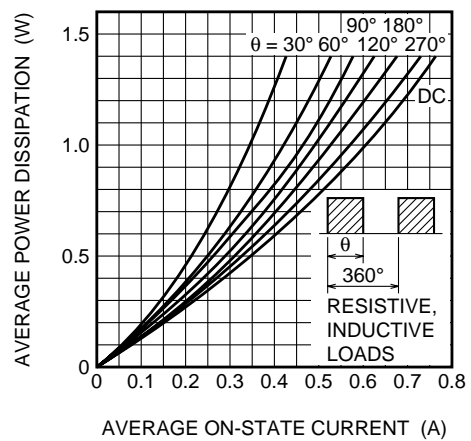
**MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE FULL WAVE)**



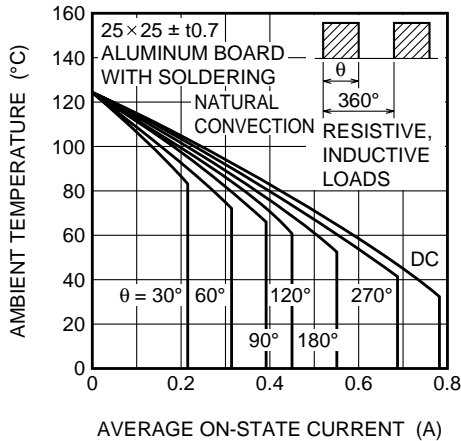
**ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE FULL WAVE)**



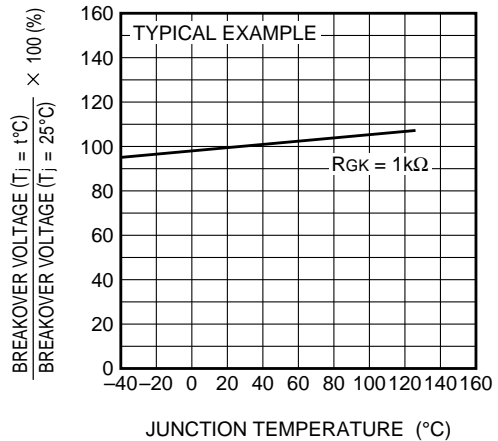
**MAXIMUM AVERAGE POWER DISSIPATION (RECTANGULAR WAVE)**



**ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (RECTANGULAR WAVE)**



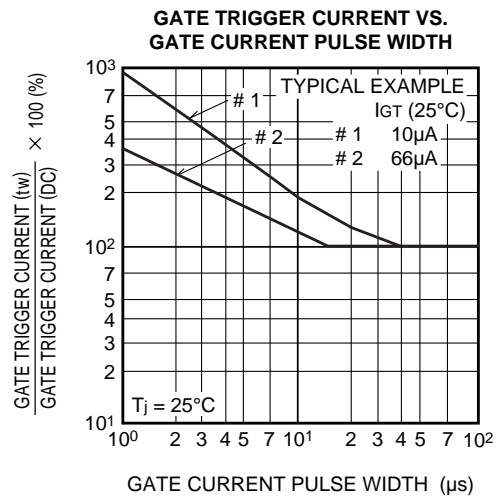
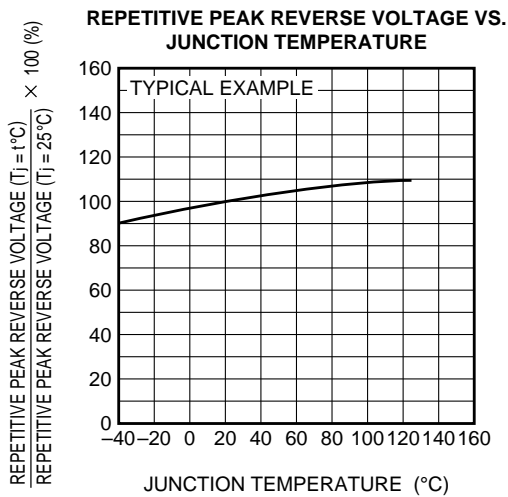
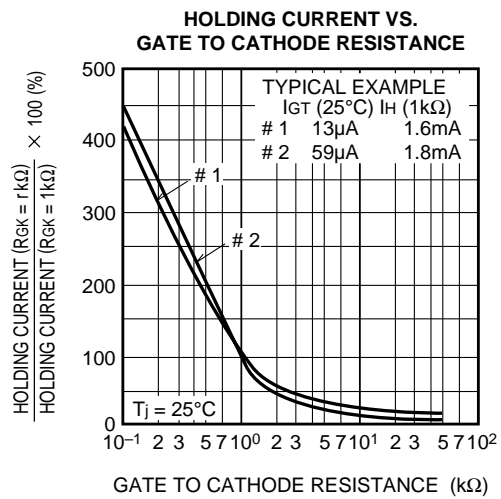
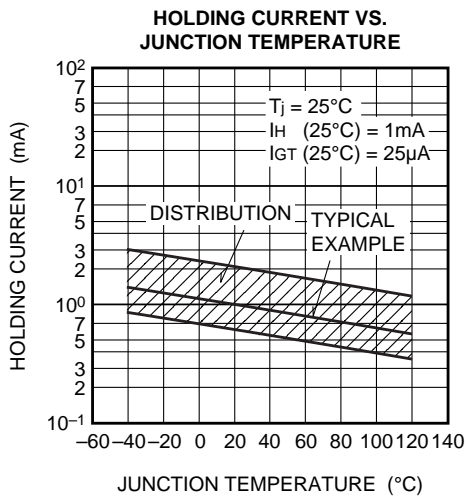
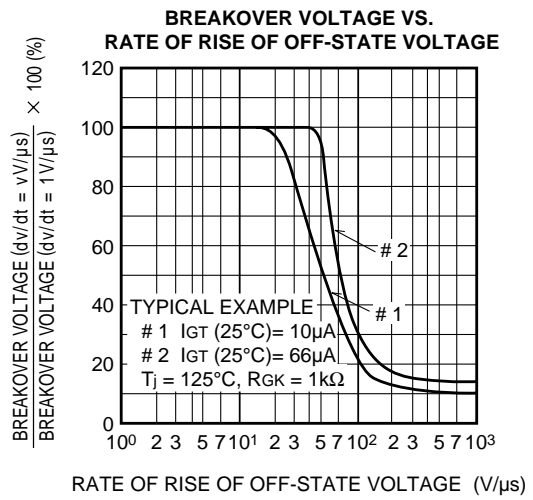
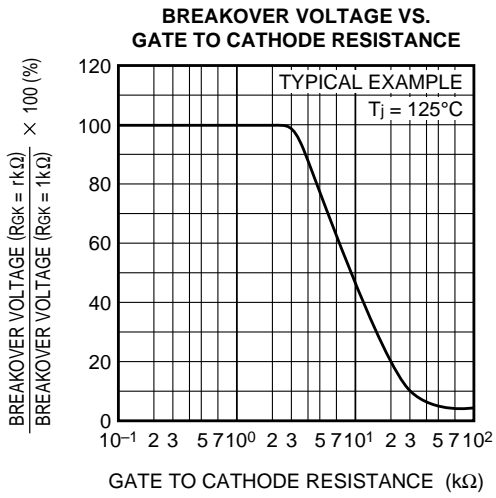
**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE**



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Datasheets for electronics components.