


CR05AS

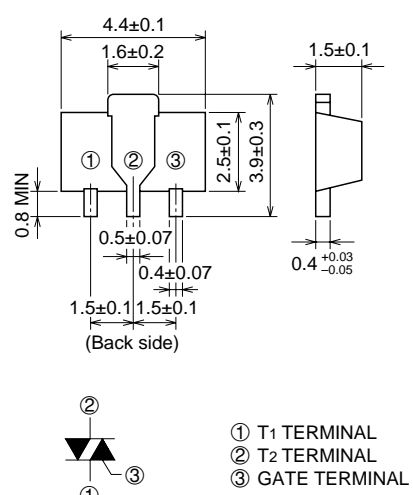
LOW POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

CR05AS



- I_T (AV) **0.5A**
- V_{DRM} **200V/400V**
- I_{GT} **100 μ A**

OUTLINE DRAWING Dimensions in mm



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^2t	I^2t for fusing	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current	0.4	A ² 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 $R_{GK}=1\text{k}\Omega$

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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
V _{TM}	On-state voltage	$T_a=25^\circ\text{C}$, $I_{TM}=1.5\text{A}$, instantaneous value	—	—	1.9	V
V _{GT}	Gate trigger voltage	$T_a=25^\circ\text{C}$, $V_D=6\text{V}$, $I_T=0.1\text{A}$ *4	—	—	0.8	V
V _{GD}	Gate non-trigger voltage	$T_j=125^\circ\text{C}$, $V_D=1/2V_{DRM}$, $R_{GK}=1\text{k}\Omega$	0.2	—	—	V
I _{GT}	Gate trigger current	$T_j=25^\circ\text{C}$, $V_D=6\text{V}$, $I_T=0.1\text{A}$ *4	1	—	100*3	μA
I _H	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	$^\circ\text{C/W}$

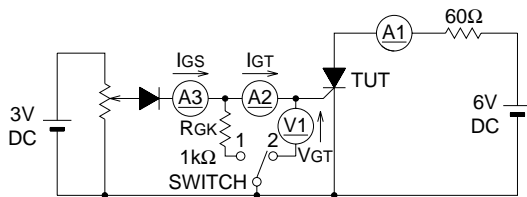
*2. Soldering with ceramic plate (25mm × 25mm × t0.7).

*3. If special values of 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} (μA)	1 ~ 30	20 ~ 50	40 ~ 100

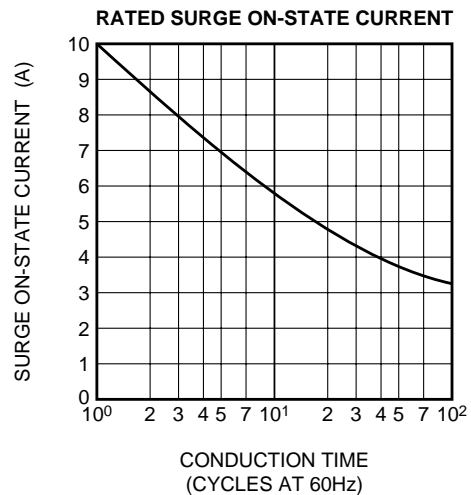
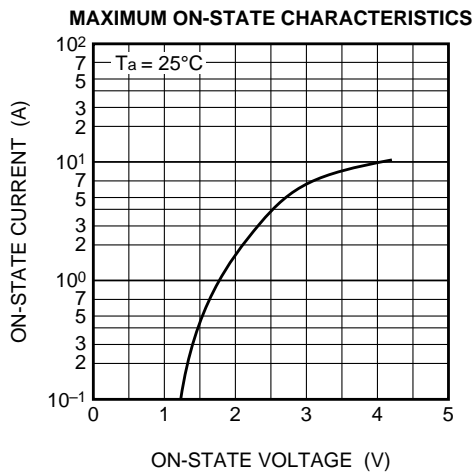
The above values do not include the current flowing through the 1k Ω resistance between the gate and cathode.

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



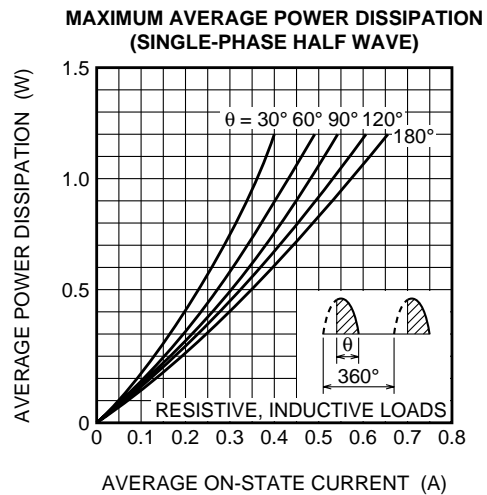
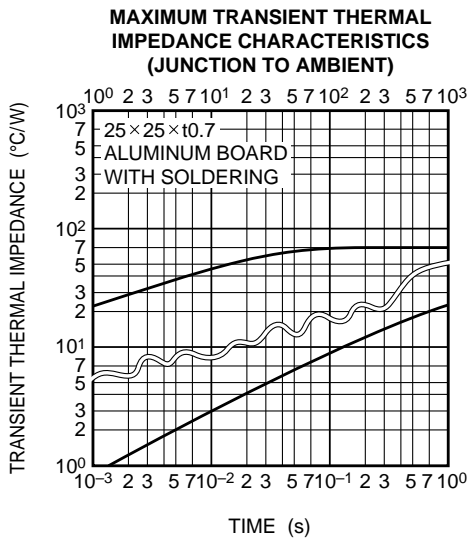
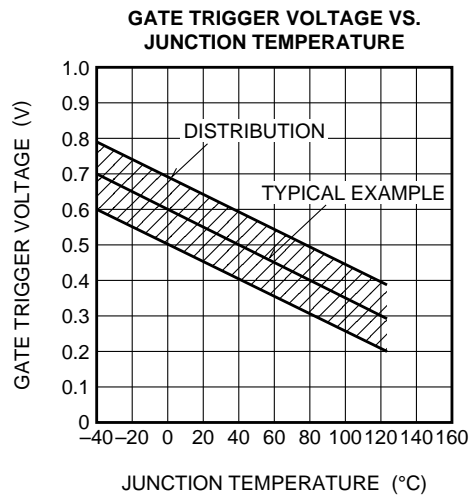
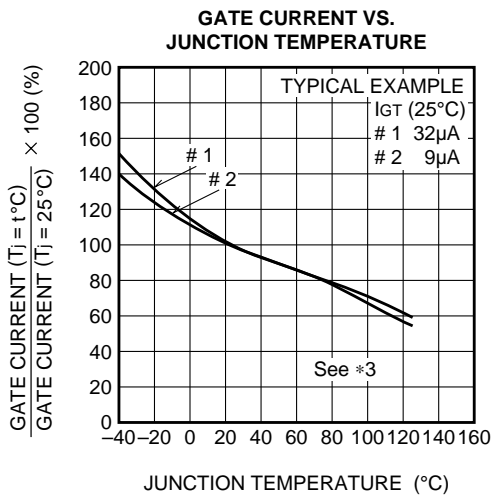
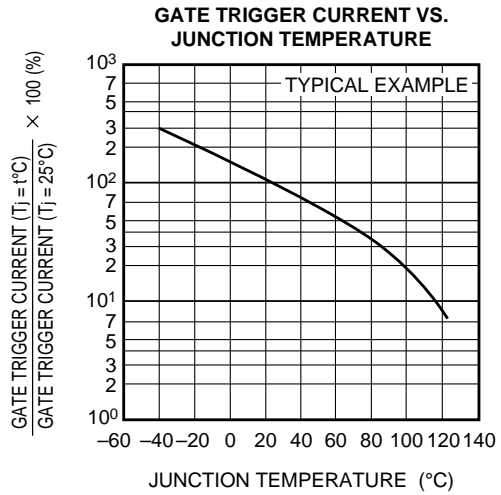
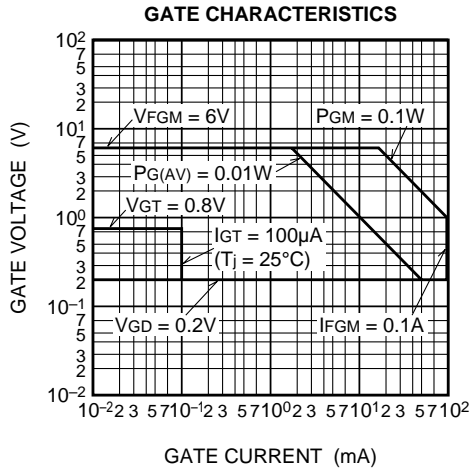
SWITCH 1 : I_{GT} measurement
SWITCH 2 : V_{GT} measurement
(Inner resistance of voltage meter is about 1k Ω)

PERFORMANCE CURVES



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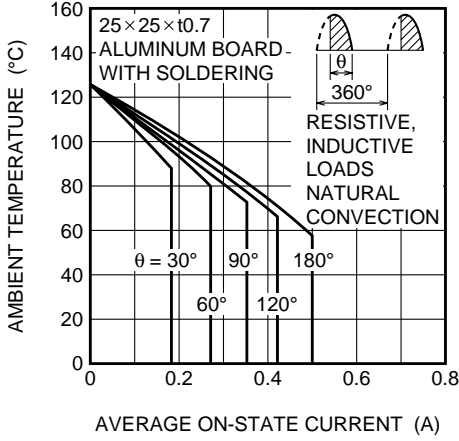
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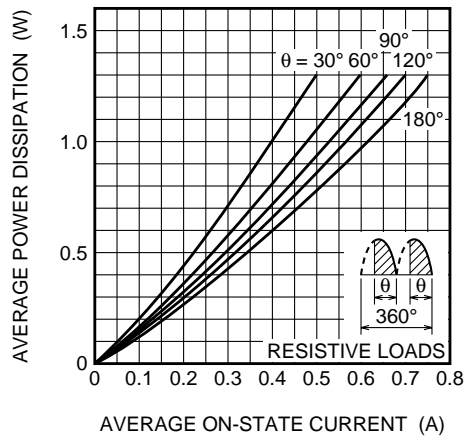
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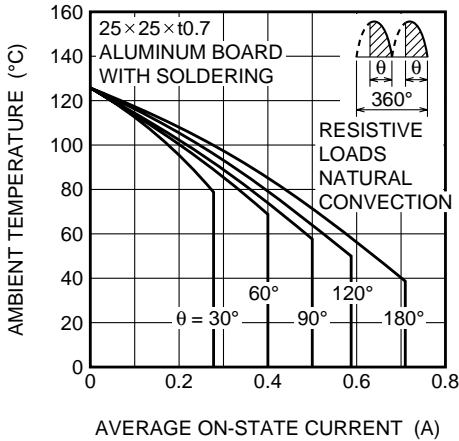
ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)



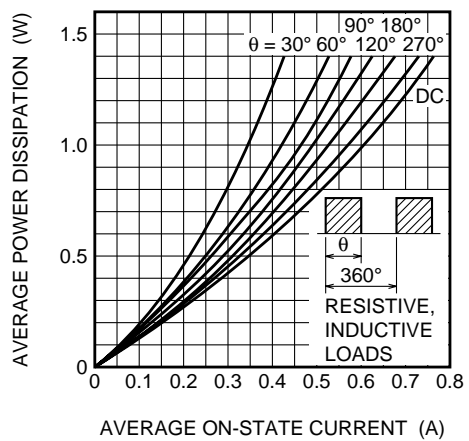
MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE FULL WAVE)



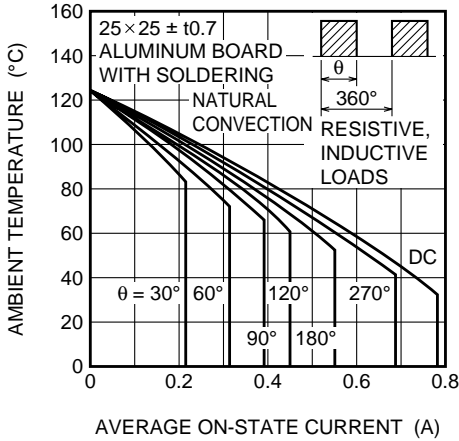
ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE FULL WAVE)



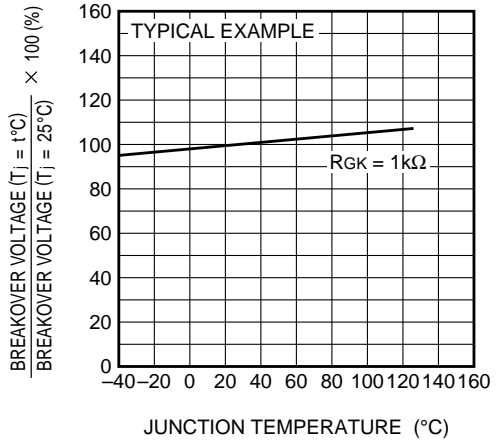
MAXIMUM AVERAGE POWER DISSIPATION (RECTANGULAR WAVE)



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



BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE



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