

To all our customers

Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.

The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.)

Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

CR05AS

LOW POWER USE

NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

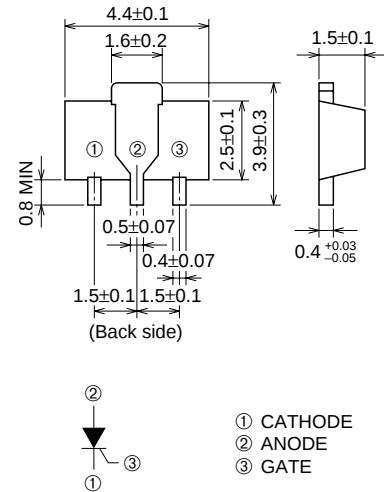
CR05AS



- 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")	
V_{RRM}	Repetitive peak reverse voltage	200	400	V
V_{RSM}	Non-repetitive peak reverse voltage	300	500	V
V_R (DC)	DC reverse voltage	160	320	V
V_{DRM}	Repetitive peak off-state voltage *1	200	400	V
V_D (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 ² s
PGM	Peak gate power dissipation		0.1	W
PG (AV)	Average gate power dissipation		0.01	W
V_{FGM}	Peak gate forward voltage		6	V
V_{RGM}	Peak gate reverse voltage		6	V
I_{FGM}	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	μA
IH	Holding current	$T_j=25^{\circ}\text{C}$, $V_D=12\text{V}$, $R_{GK}=1\text{k}\Omega$	—	—	3	mA
Rth (j-a)	Thermal resistance	Junction to ambient *2	—	—	70	$^{\circ}\text{C/W}$

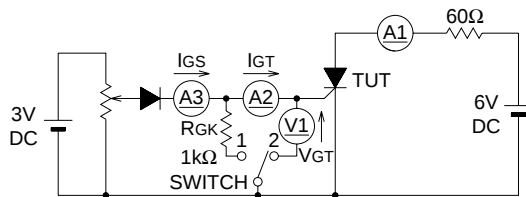
*2. Soldering with ceramic plate (25mm × 25mm × t0.7).

*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 (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. IGT, VGT measurement circuit.

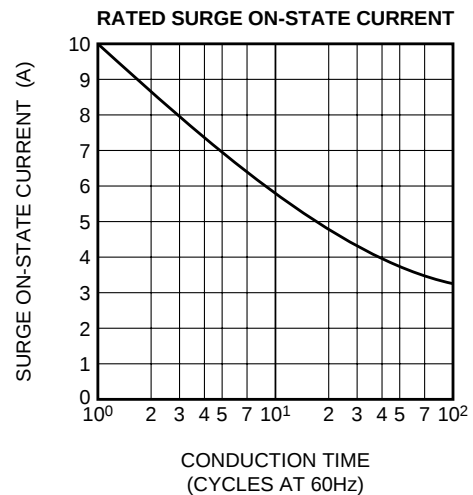
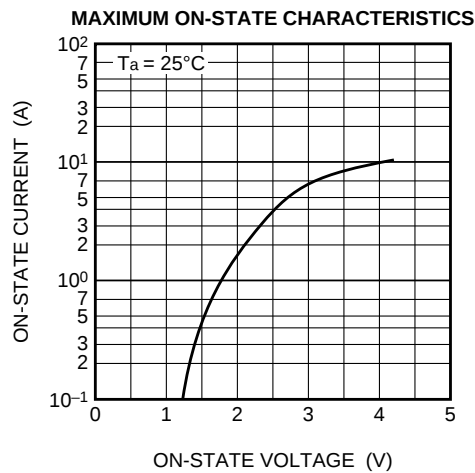


SWITCH 1 : IGT measurement

SWITCH 2 : VGT measurement

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

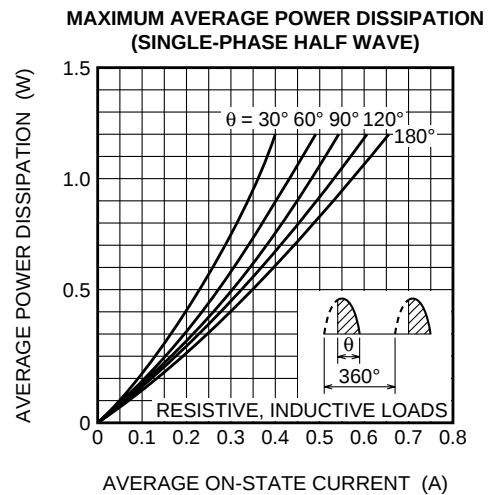
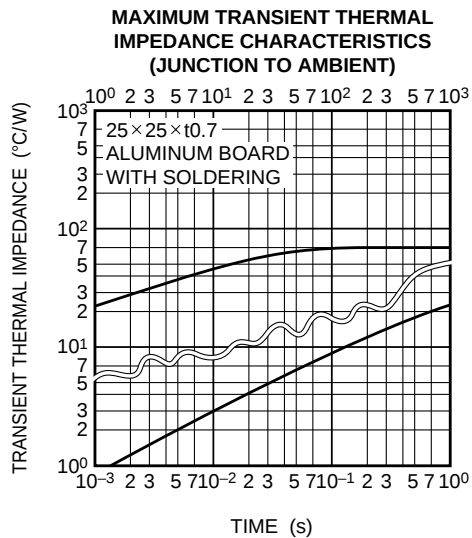
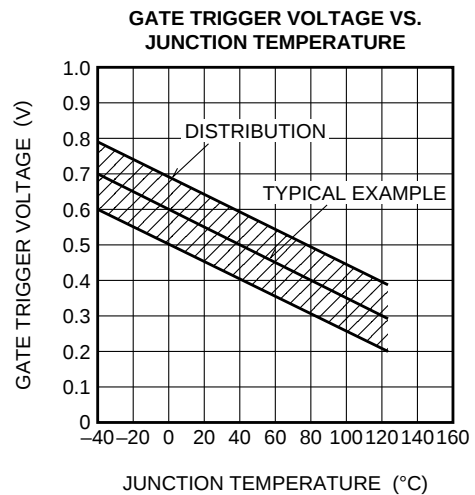
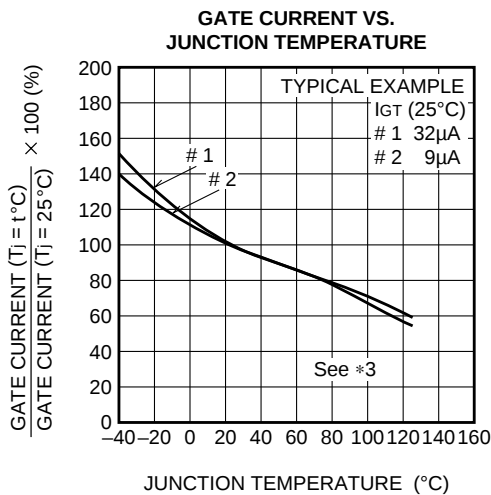
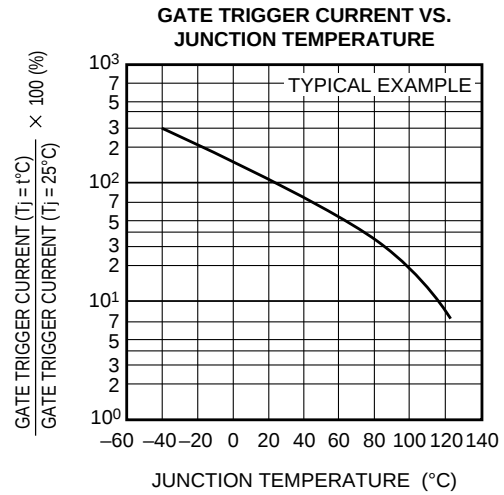
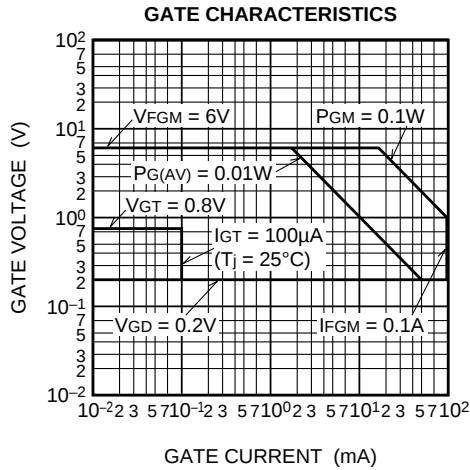
PERFORMANCE CURVES



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LOW POWER USE

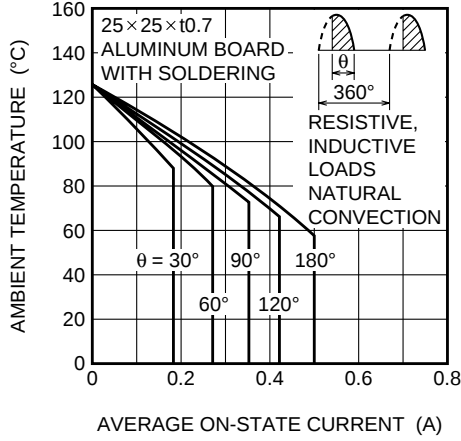
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE



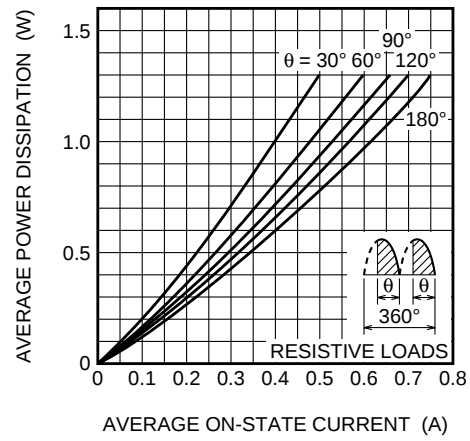
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LOW POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

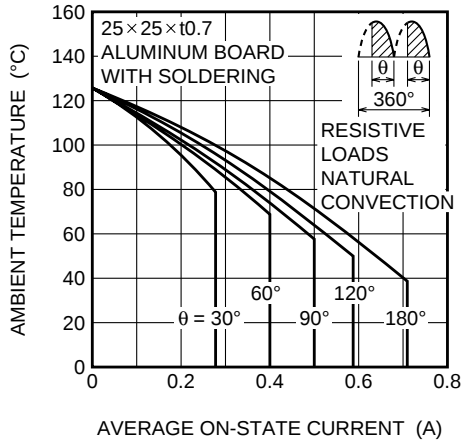
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE HALF WAVE)



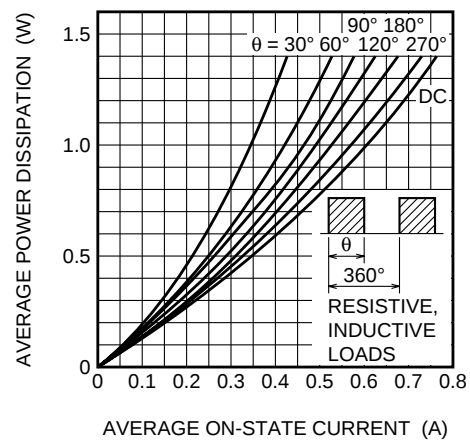
MAXIMUM AVERAGE POWER DISSIPATION
(SINGLE-PHASE FULL WAVE)



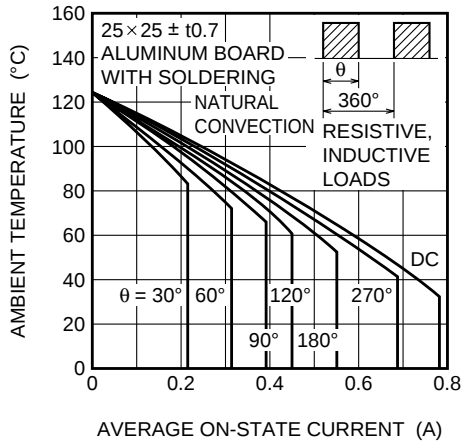
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE FULL WAVE)



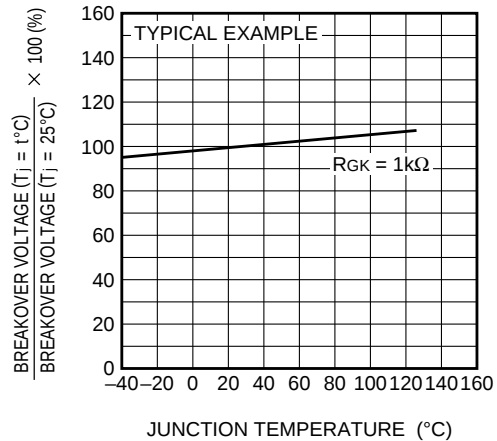
MAXIMUM AVERAGE POWER DISSIPATION
(RECTANGULAR WAVE)



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



BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE



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LOW POWER USE

NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

