

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

CR04AM

LOW POWER USE
GLASS PASSIVATION TYPE

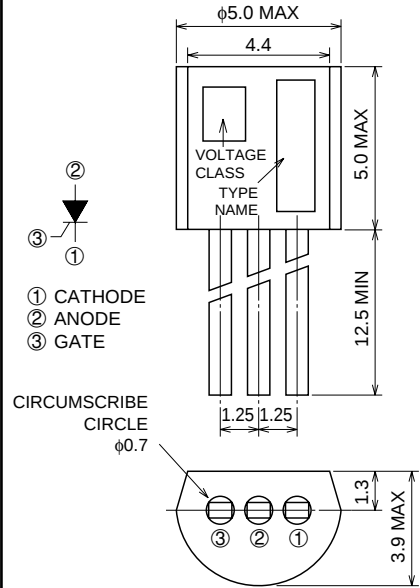
CR04AM



- I_T (AV) 0.4A
- V_{DRM} 400V/600V
- I_{GT} 100 μ A

OUTLINE DRAWING

Dimensions
in mm



JEDEC : TO-92

APPLICATION

Ignitor, solid state relay, strobe flasher, circuit breaker, other general purpose control applications

MAXIMUM RATINGS

Symbol	Parameter	Voltage class		Unit
		8	12	
V_{RRM}	Repetitive peak reverse voltage	400	600	V
V_{RSM}	Non-repetitive peak reverse voltage	500	720	V
V_R (DC)	DC reverse voltage	320	480	V
V_{DRM}	Repetitive peak off-state voltage	*1 400	600	V
V_D (DC)	DC off-state voltage	*1 320	480	V

Symbol	Parameter	Conditions	Ratings	Unit
I_T (RMS)	RMS on-state current		0.63	A
I_T (AV)	Average on-state current	Commercial frequency, sine half wave, 180° conduction, $T_a=54^\circ\text{C}$	0.4	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		0.5	W
PG (AV)	Average gate power dissipation		0.1	W
V_{FGM}	Peak gate forward voltage		6	V
V_{RGM}	Peak gate reverse voltage		6	V
I_{FGM}	Peak gate forward current		0.3	A
T_j	Junction temperature		-40 ~ +125	°C
T_{stg}	Storage temperature		-40 ~ +125	°C
—	Weight	Typical value	0.23	g

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

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ELECTRICAL CHARACTERISTICS

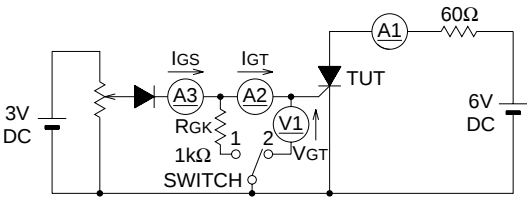
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IRRM	Repetitive peak reverse current	T _j =125°C, V _{RRM} applied	—	—	0.5	mA
IDRM	Repetitive peak off-state current	T _j =125°C, V _{DRM} applied, R _{GK} =1kΩ	—	—	0.5	mA
V _{TM}	On-state voltage	T _a =25°C, I _{TM} =1.2A, instantaneous value	—	—	1.2	V
V _{GT}	Gate trigger voltage	T _a =25°C, V _D =6V, I _T =0.1A *3	—	—	0.8	V
V _{GD}	Gate non-trigger voltage	T _j =125°C, V _D =1/2V _{DRM} , R _{GK} =1kΩ	0.2	—	—	V
I _{GT}	Gate trigger current	T _j =25°C, V _D =6V, I _T =0.1A *3	1	—	100*2	μA
I _H	Holding current	T _j =25°C, V _D =12V, R _{GK} =1kΩ	—	1.5	3	mA
R _{th} (j-a)	Thermal resistance	Junction to ambient	—	—	150	°C/W

*2. 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

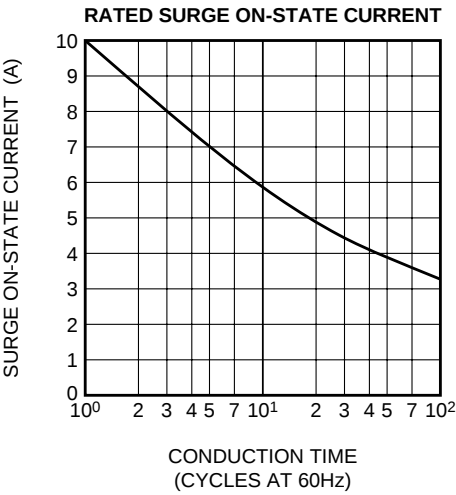
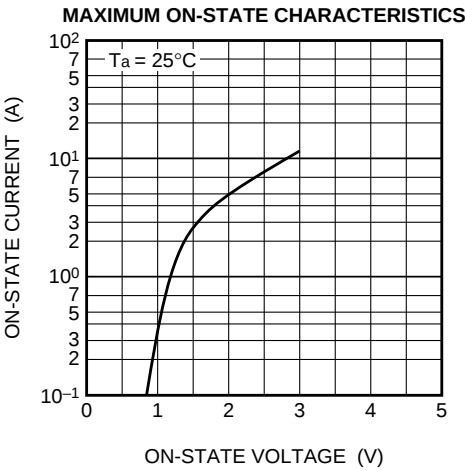
The above values do not include the current flowing through the 1kΩ resistance between the gate and cathode.

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



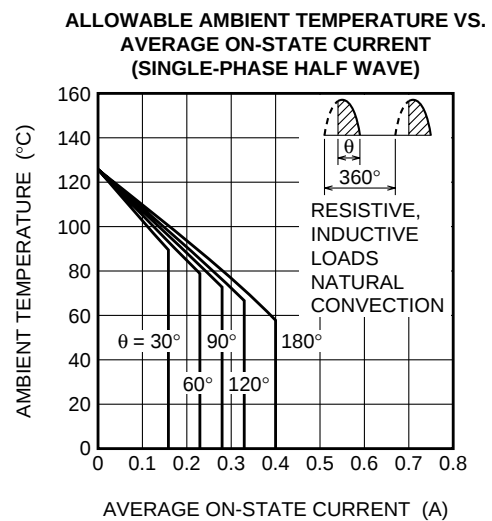
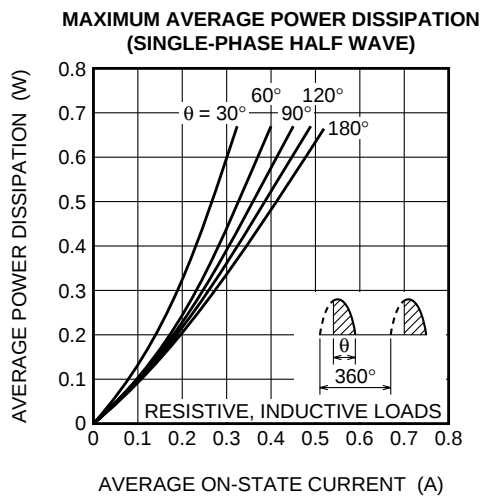
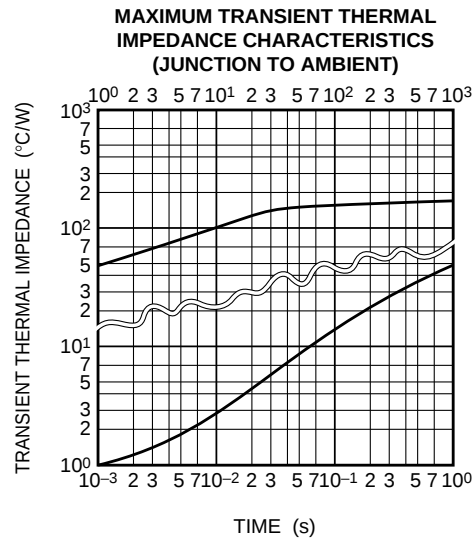
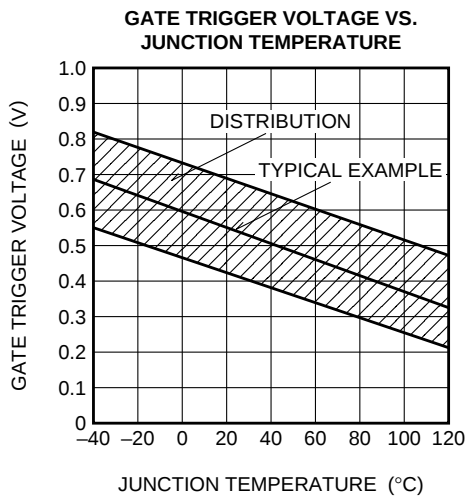
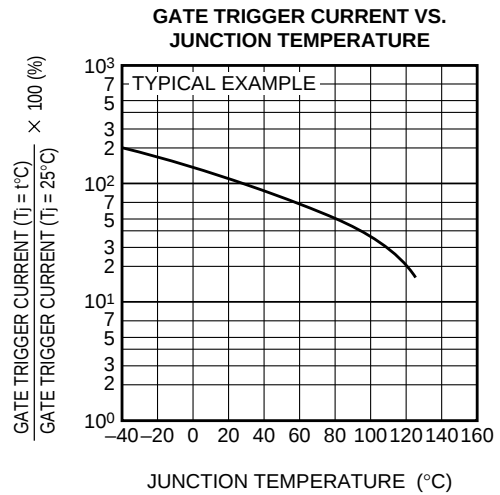
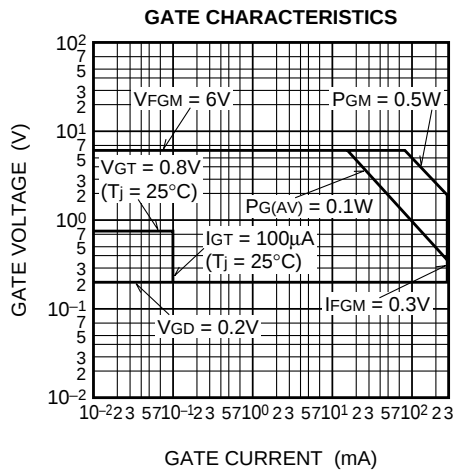
SWITCH 1 : I_{GT} measurement
SWITCH 2 : V_{GT} measurement
(Inner resistance of voltage meter is about 1kΩ)

PERFORMANCE CURVES



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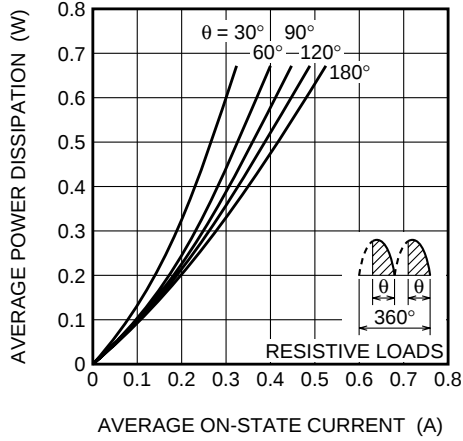
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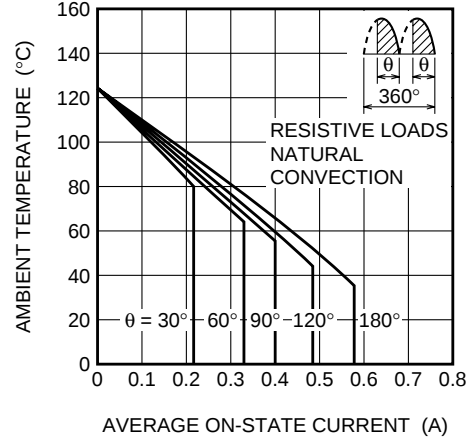
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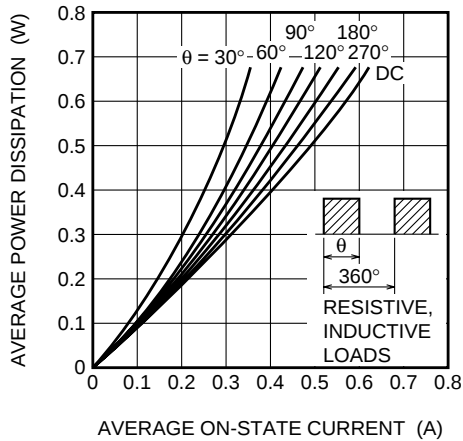
MAXIMUM AVERAGE POWER DISSIPATION
(SINGLE-PHASE FULL WAVE)



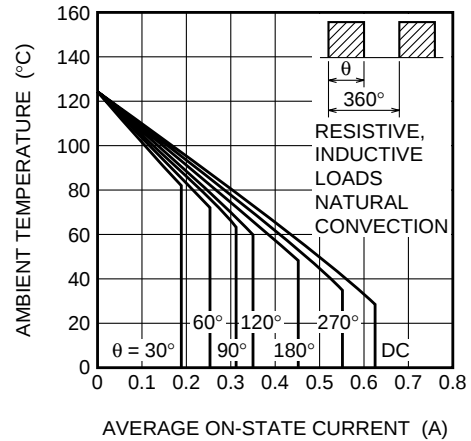
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(SINGLE-PHASE FULL WAVE)



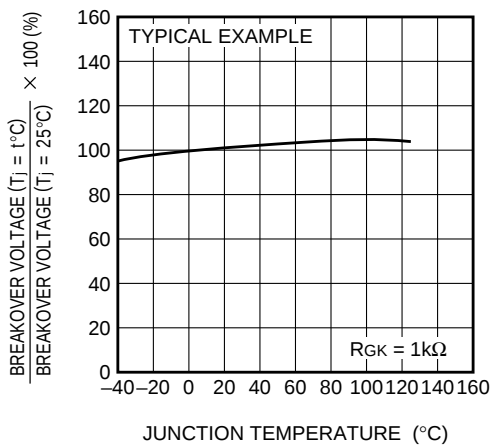
MAXIMUM AVERAGE POWER DISSIPATION
(RECTANGULAR WAVE)



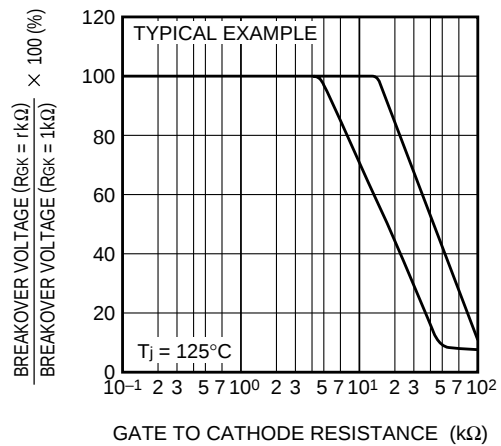
ALLOWABLE AMBIENT TEMPERATURE VS.
AVERAGE ON-STATE CURRENT
(RECTANGULAR WAVE)



BREAKOVER VOLTAGE VS.
JUNCTION TEMPERATURE

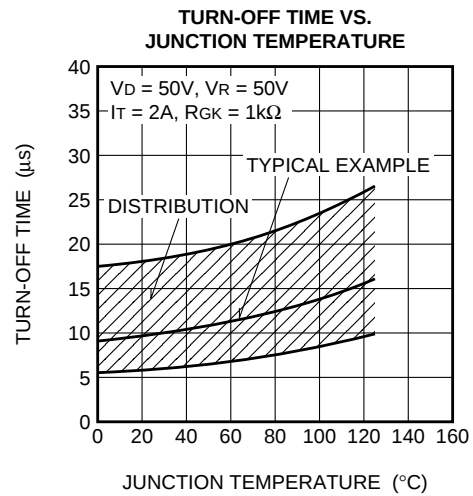
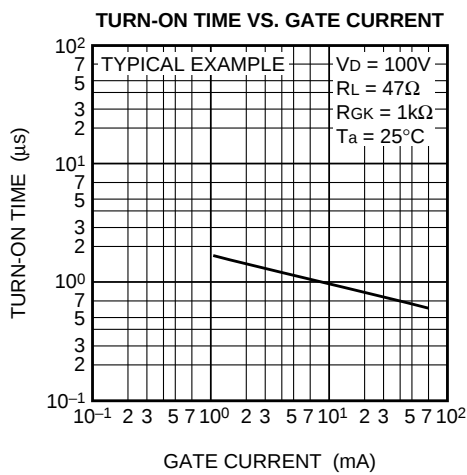
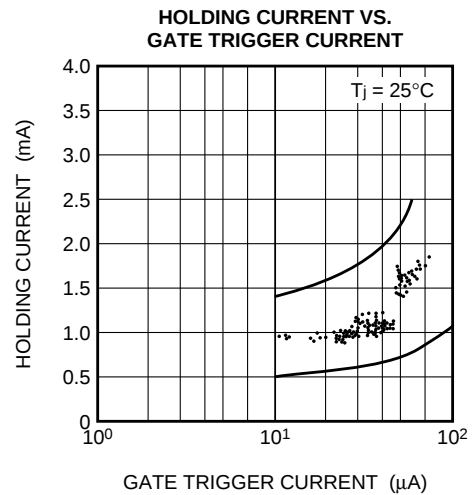
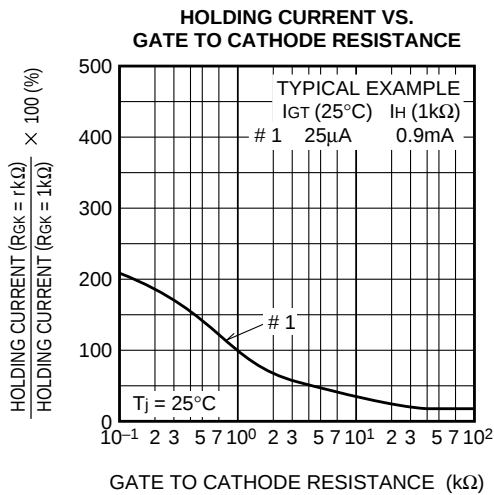
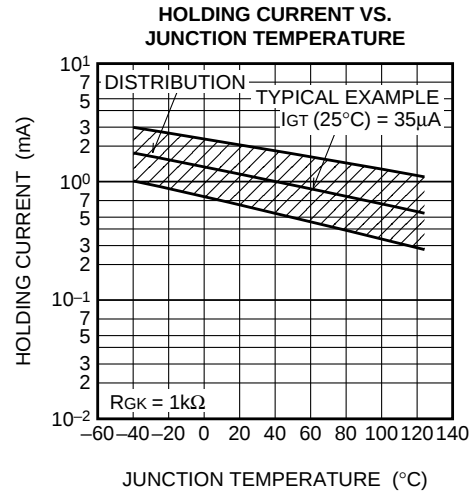
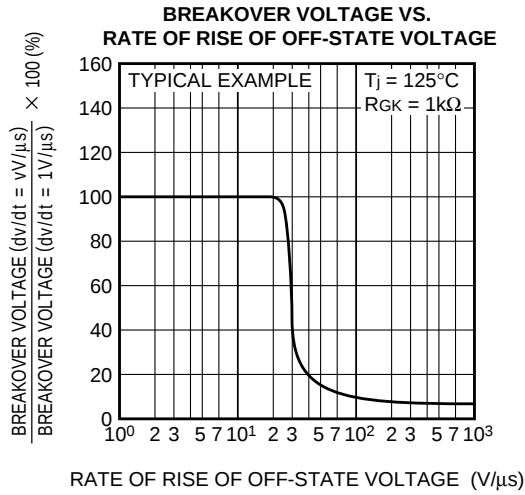


BREAKOVER VOLTAGE VS.
GATE TO CATHODE RESISTANCE



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