

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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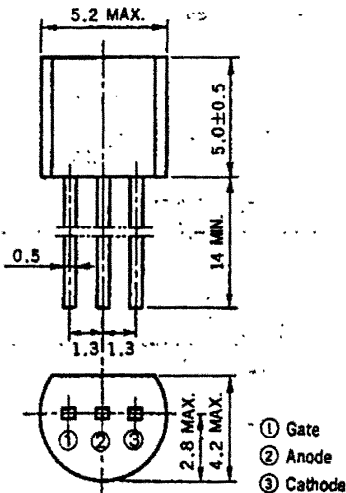
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03P2M, 03P4M

0.47 A(R.M.S.) ALL DIFFUSED MOLD TYPE SCR

PACKAGE DIMENSIONS

in millimeters



DESCRIPTION

The 03P2M and 03P4M are P-gate all diffused mold type SCR rated at 0.47 Amps RMS maximum on-state current, with rated voltages up to 400 volts.

FEATURES

- Plastic TO-92 package.
- 200 μ A gate sensitivity.
- 5 mA holding current.
- 8 A surge current.

APPLICATIONS

- Cassette tape recorder, Television
- Automobile equipment
- Photoflash
- Automatic gas lighter,
- Solid-state relay
- Light display equipment
- Motor, solenoid and temperature control etc.

MAXIMUM RATINGS ($R_{GK} = 1 \text{ k}\Omega$)

ITEM	SYMBOL	03P2M	03P4M	UNIT
Non-Repetitive Peak Reverse Voltage	V_{RSM}	300	500	V
Non-Repetitive Peak Off-State Voltage	V_{DSM}	300	500	V
Repetitive Peak Reverse Voltage	V_{RRM}	200	400	V
Repetitive Peak Off-State Voltage	V_{DRM}	200	400	V
Average On-State Current	$I_T(AV)$	0.3 ($T_g = 30^\circ\text{C}$, Single phase half wave)		A
RMS On-State Current	$I_T(RMS)$	0.47		A
Surge On-State Current	I_{TSM}	8 ($f = 50 \text{ Hz}$, 1 cycle)		A
Fusing Current	$\int i_T^2 dt$	0.15 ($1 \text{ ms} \leq t \leq 10 \text{ ms}$)		A^2s
Peak Gate Power Dissipation	P_{GM}	0.1 ($f \geq 50 \text{ Hz}$, duty $\leq 10\%$)		W
Average Gate Power Dissipation	$P_{G(AV)}$	0.01		W
Peak Gate Forward Current	I_{FGM}	0.1 ($f \geq 50 \text{ Hz}$, duty $\leq 10\%$)		A
Peak Gate Reverse Voltage	V_{RGM}	6		V
Junction Temperature	T_j	-40 to +125		$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to +150		$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$, $R_{GK} = 1\text{ k}\Omega$)

ITEM	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Reverse Current	I_{RRM}	$V_{RM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	—	—	10	μA
			$T_j = 125^\circ\text{C}$	—	—	100	
Repetitive Peak Off-State Current	I_{DRM}	$V_{DM} = V_{DRM}$	$T_j = 25^\circ\text{C}$	—	—	10	μA
			$T_j = 125^\circ\text{C}$	—	—	100	
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DM} = \frac{2}{3} V_{DRM}$, $T_j = 125^\circ\text{C}$	—	40	—	$\text{V}/\mu\text{s}$	
On-State Voltage	V_{TM}	$I_{TM} = 4\text{ A}$	—	—	2.5	V	
Gate Trigger Current	I_{GT}	$V_{DM} = 6\text{ V}$, $R_L = 100\ \Omega$	—	—	200	μA	
Gate Trigger Voltage	V_{GT}	$V_{DM} = 6\text{ V}$, $R_L = 100\ \Omega$	—	—	0.8	V	
Gate Non-Trigger Voltage	V_{GD}	$V_{DM} = \frac{1}{2} V_{DRM}$, $T_j = 125^\circ\text{C}$	0.1	—	—	V	
Holding Current	I_H	$V_{DM} = 24\text{ V}$, $I_{TM} = 4\text{ A}$	—	—	5	mA	
Commutating Turn-Off Time	t_q	$I_{TM} = 200\text{ mA}$, $di/dt = 15\text{ A}/\mu\text{s}$ $V_{RM} \geq 25\text{ V}$, $V_{DM} = \frac{2}{3} V_{DRM}$ $dv/dt = 20\text{ V}/\mu\text{s}$, $T_j = 125^\circ\text{C}$	—	25	—	μs	
			Thermal Resistance	$R_{th(j-c)}$	Junction to Case (flat side of case is temperature reference point)	—	—
$R_{th(j-a)}$	Junction to Ambient	—	—	230			

Fig. 1 $I_{TM} - V_{TM}$ CHARACTERISTICS

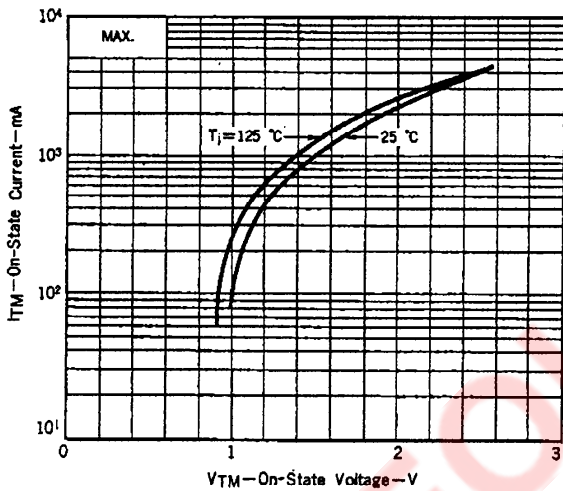


Fig. 2 I_{TSM} RATING

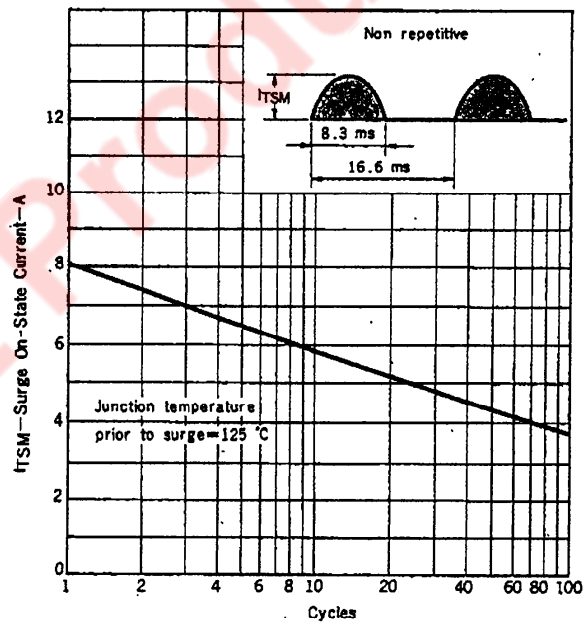


Fig. 3 GATE POWER RATINGS

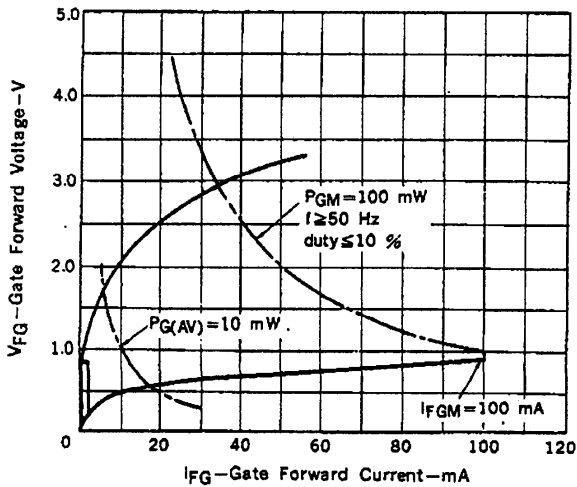


Fig. 4 $I_{GS} - V_{GT}$ DISTRIBUTION

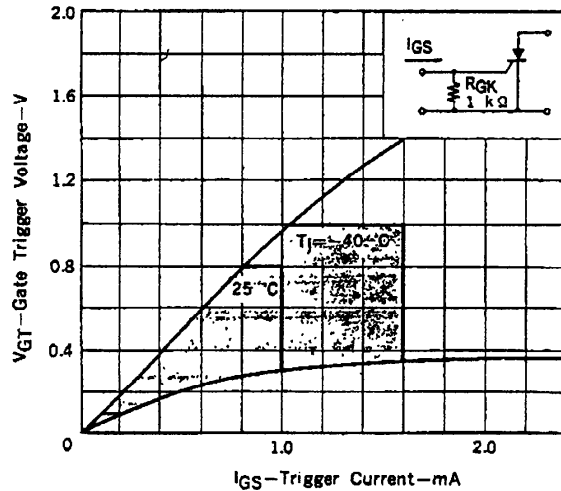


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

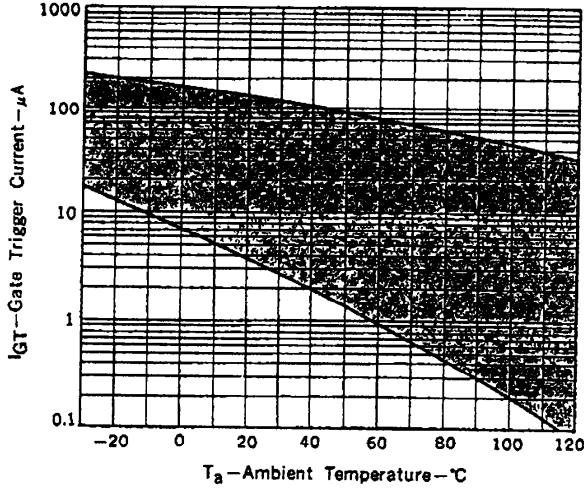


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

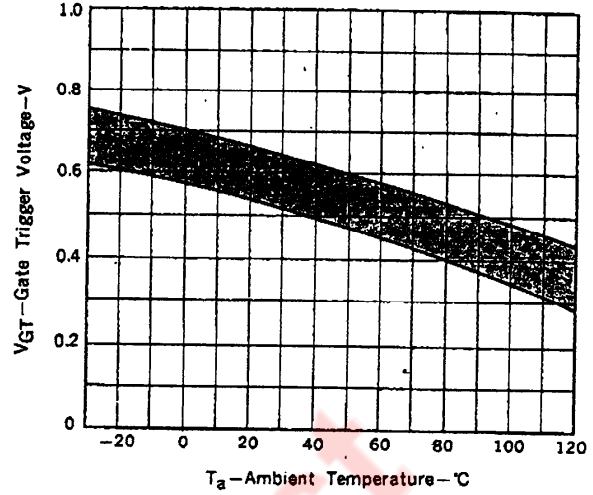


Fig. 7 $i_{GS} - \tau_G$ TYPICAL DISTRIBUTION

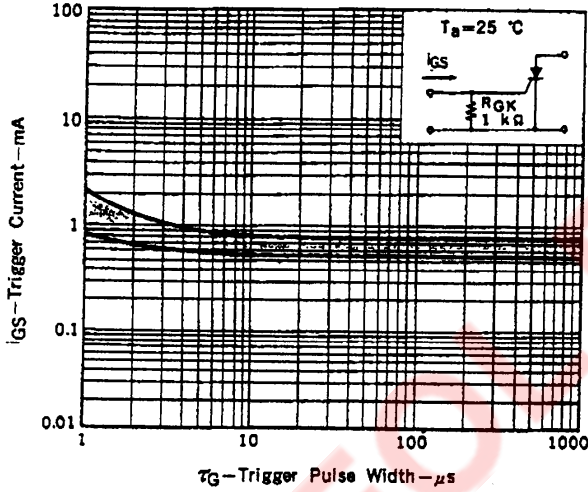


Fig. 8 $V_{GT} - \tau_G$ TYPICAL DISTRIBUTION

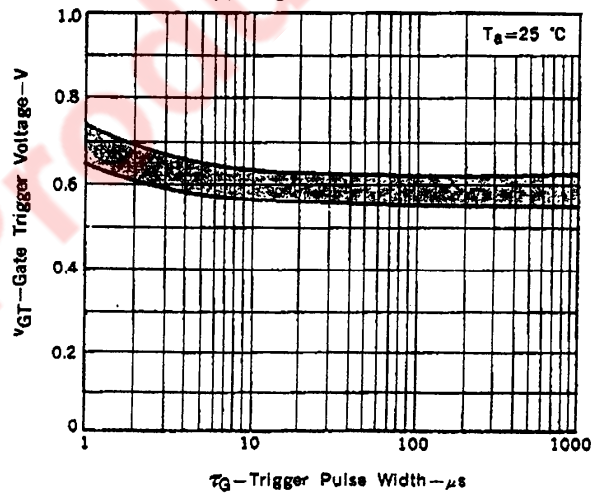


Fig. 9 $P_{T(AV)} - I_{T(AV)}$ CHARACTERISTICS

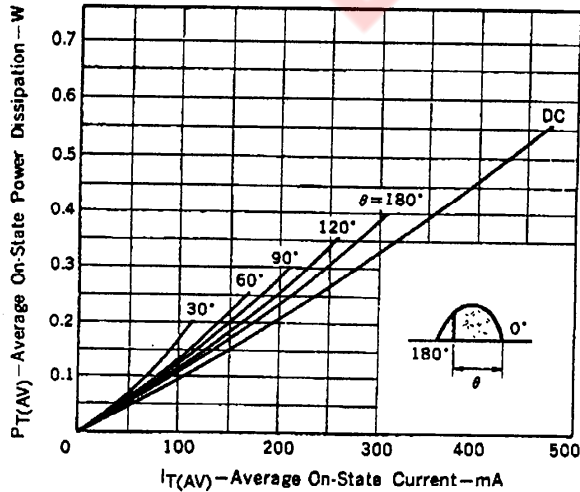


Fig. 10 $I_{T(AV)} - T_a$ RATINGS

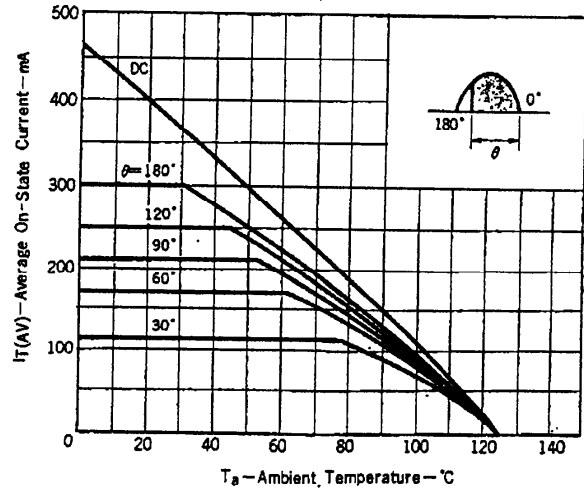


Fig. 11 $I_H - T_a$ TYPICAL DISTRIBUTION

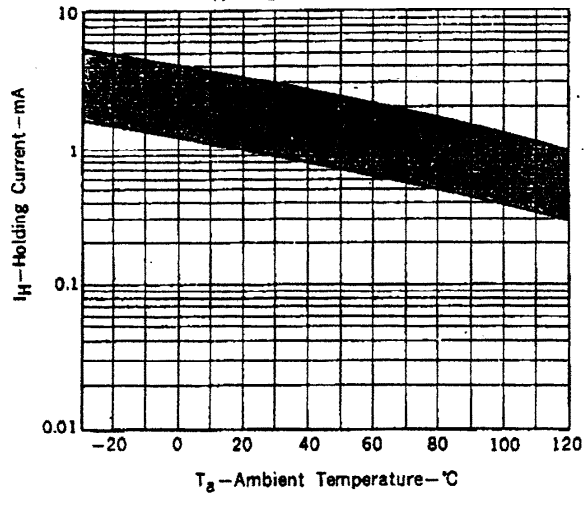
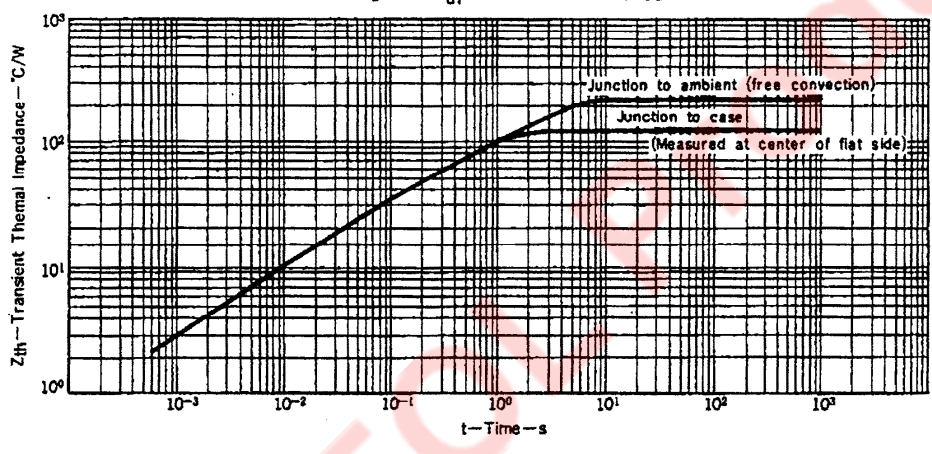


Fig. 12 Z_{th} CHARACTERISTICS



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