

To our customers,

Old Company Name in Catalogs and Other Documents

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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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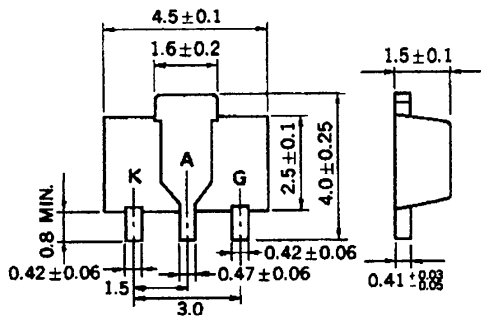
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THYRISTORS

03P2J, 03P4J, 03P5J

0.47 A_{r.m.s.} ALL DIFFUSED TYPE SCR
POWER MINI MOLD

PACKAGE DIMENSIONS in millimeters



K: Cathode
A: Anode
G: Gate
SOT-89

DESCRIPTION

The 03P2J, 03P4J and 03P5J are designed for many switching applications, especially in Hybrid Integrated Circuits.

FEATURES

- World Standard Miniature Package: SOT-89
- High Anode to Cathode Voltage
 - : $V_{DRM}, V_{RRM} = 200\text{ V}$ (03P2J)
 - : $V_{DRM}, V_{RRM} = 400\text{ V}$ (03P4J)
 - : $V_{DRM}, V_{RRM} = 500\text{ V}$ (03P5J)

APPLICATIONS

- Cassette tape recorder
- Solid-state relay
- Strobe flasher
- Ground fault detector
- Automobile equipment

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

ITEM	SYMBOL	03P2J	03P4J	03P5J	UNIT
Non-Repetitive Peak Reverse Voltage	V_{RSM}	300	500	600	V
Non-Repetitive Peak Off-State Voltage	V_{DSM}	300	500	600	V
Repetitive Peak Reverse Voltage	V_{RRM}	200	400	500	V
Repetitive Peak Off-State Voltage	V_{DRM}	200	400	500	V
Average On-State Current	$I_{T(AV)}$	0.3 ($T_B = 77^\circ\text{C}$, Single phase half wave)			A
RMS On-State Current	$I_T(RMS)$	0.47			A
Surge On-State Current	I_{TSM}	6 ($f = 50\text{ Hz}$, 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	-55 to +125			$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 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}	$V_{RM} = V_{RRM}$ $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	—	—	10 100	μA
Repetitive Peak Off-State Current	I_{DRM}	$V_{DM} = V_{DRM}$ $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	—	—	10 100	μA
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}	$I_{TM} = 1\text{ A}$	—	—	1.6	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	$V_{DM} = 24\text{ V}$, $I_{TM} = 1\text{ A}$	—	—	5	mA
Commutating Turn-Off Time	t_q	$I_{TM} = 200\text{ mA}$, $di_T/dt = 15\text{ A}/\mu\text{s}$ $V_{RM} \geq 25\text{ V}$, $V_{DM} = \frac{2}{3}V_{DRM}$ $dv/dt = 20\text{ V}/\mu\text{s}$, $T_j = 125^\circ\text{C}$	—	25	—	μs
Thermal Resistance	$R_{th(j-a)}$	Junction to Ambient*	—	—	65	$^\circ\text{C}/\text{W}$

*Mounted on $0.7\text{ mm} \times 2.5\text{ cm}^2$ ceramic substrate

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

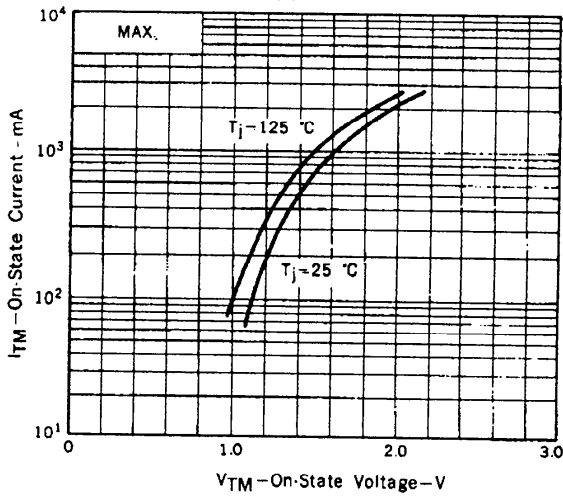


Fig. 2 I_{TSM} RATING

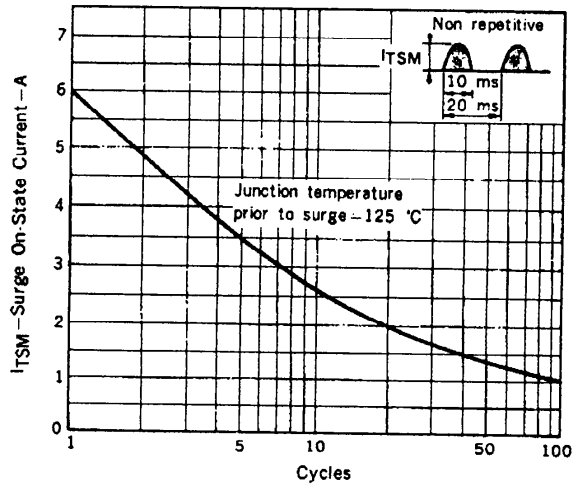


Fig. 3 GATE POWER RATINGS

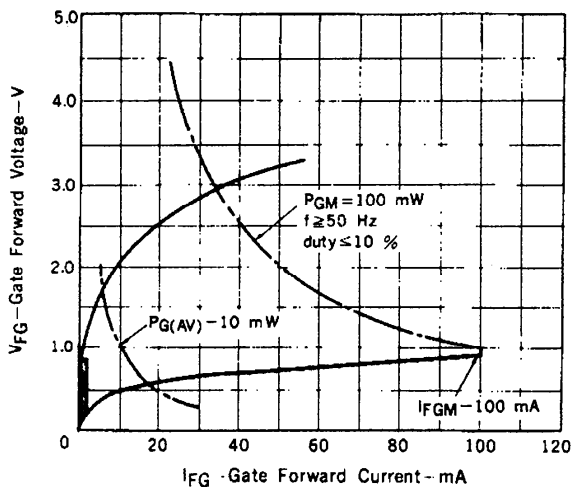


Fig. 4 $I_{GS} - V_{GT}$ DISTRIBUTION

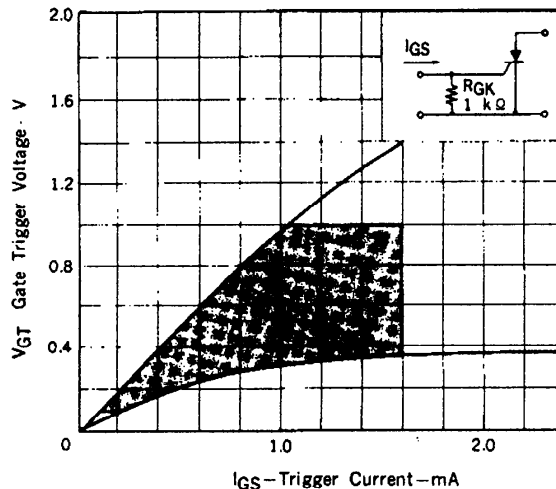


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

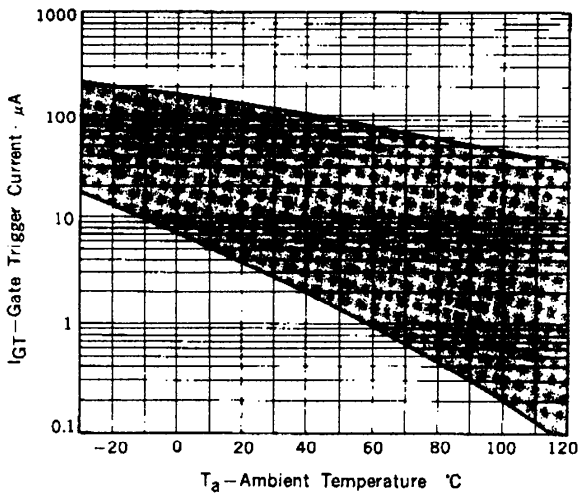


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

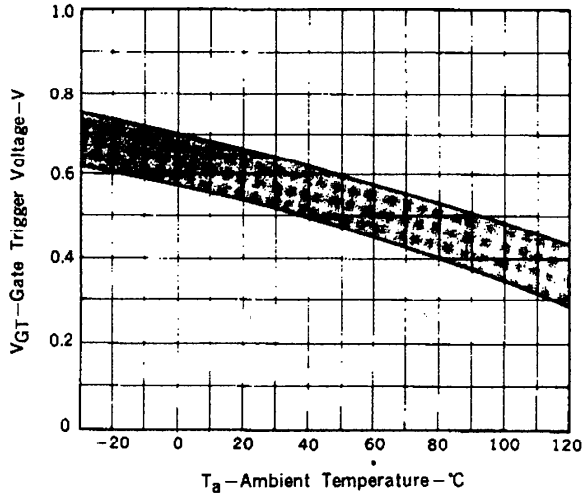


Fig. 7 $I_{GS} - \tau_G$ TYPICAL DISTRIBUTION

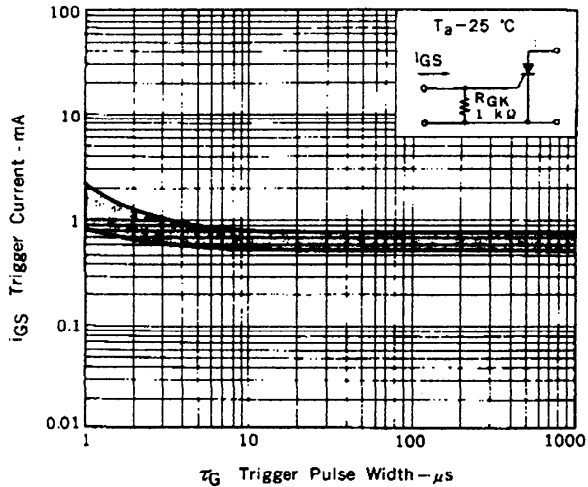


Fig. 8 $V_{GT} - \tau_G$ TYPICAL DISTRIBUTION

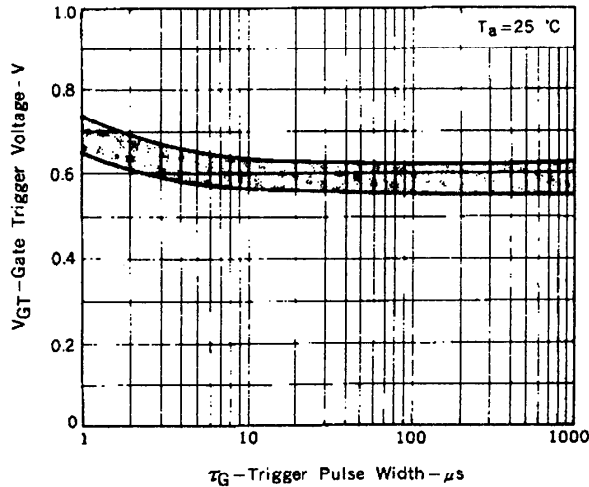


Fig. 9 $P_{T(AV)} - I_{T(AV)}$ CHARACTERISTICS

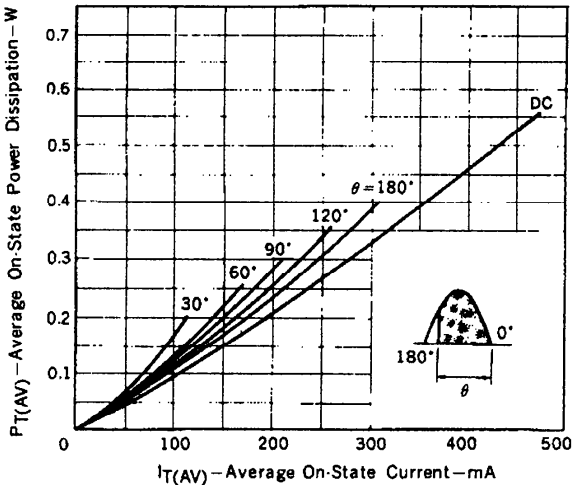


Fig. 10 $I_{T(AV)} - T_a$ RATINGS

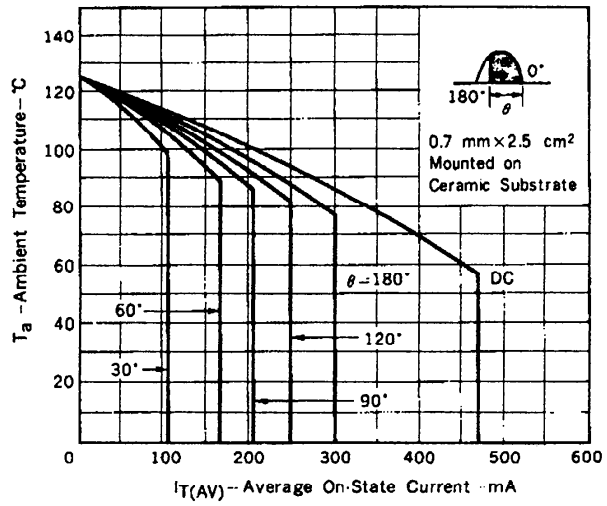
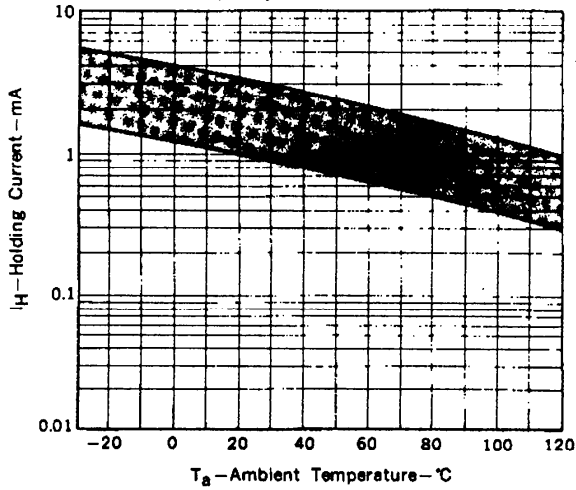


Fig. 11 $I_H - T_a$ TYPICAL DISTRIBUTION



NEC Corporation

INTERNATIONAL ELECTRON DEVICES DIV.
 NEC Building, 33-1, Shiba Gocho
 Minato-ku, Tokyo 108, Japan
 Tel: Tokyo 454-1111
 Telex Address: NECTOK J22686
 Cable Address: MICROPHONE TOKYO