NEC
ELECTRON DEVICE

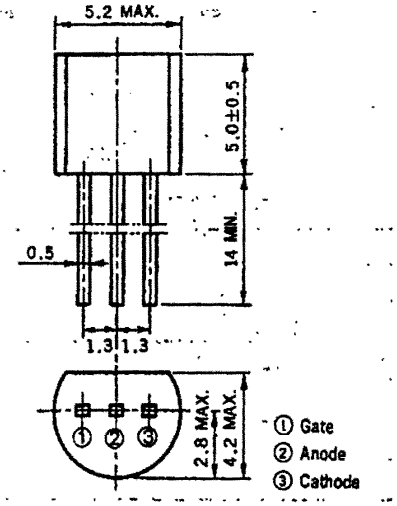
THYRISTORS

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 μA 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 kΩ)

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_a=30 °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 Hz, 1 cycle)		A
Fusing Current	$\int i_T^2 dt$	0.15 (1 ms ≤ t ≤ 10 ms)		A^2s
Peak Gate Power Dissipation	P_{GM}	0.1 (f ≥ 50 Hz, duty ≤ 10 %)		W
Average Gate Power Dissipation	$P_{G(AV)}$	0.01		W
Peak Gate Forward Current	I_{FGM}	0.1 (f ≥ 50 Hz, duty ≤ 10 %)		A
Peak Gate Reverse Voltage	V_{RGM}	6		V
Junction Temperature	T_j	−40 to +125		°C
Storage Temperature	T_{stg}	−40 to +150		°C

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ELECTRICAL CHARACTERISTICS (T_j = 25 °C, R_{GK} = 1 kΩ)

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

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

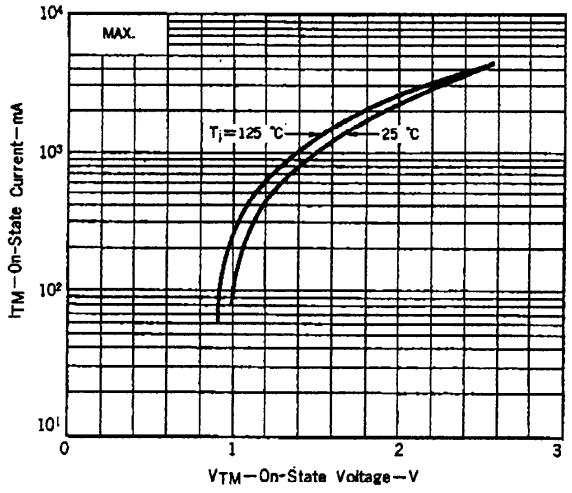


Fig. 2 I_{TSM} RATING

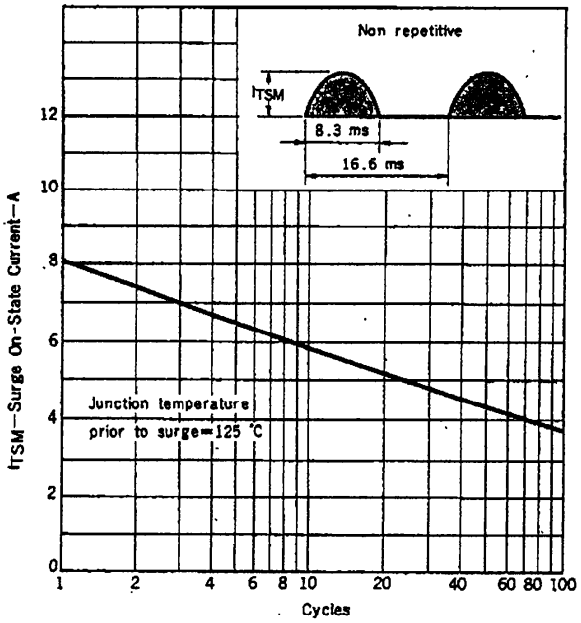


Fig. 3 GATE POWER RATINGS

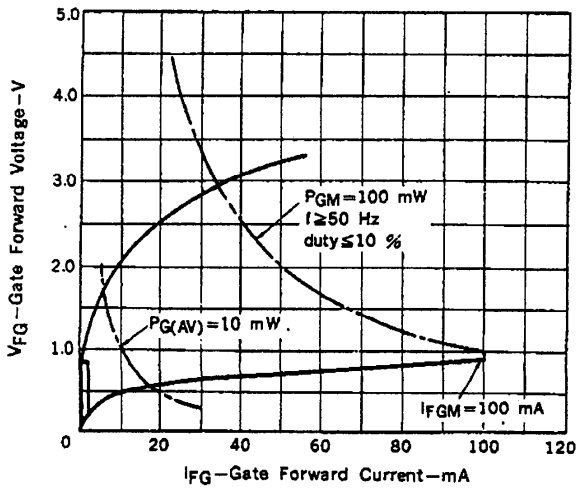


Fig. 4 $I_{GS} - V_{GT}$ DISTRIBUTION

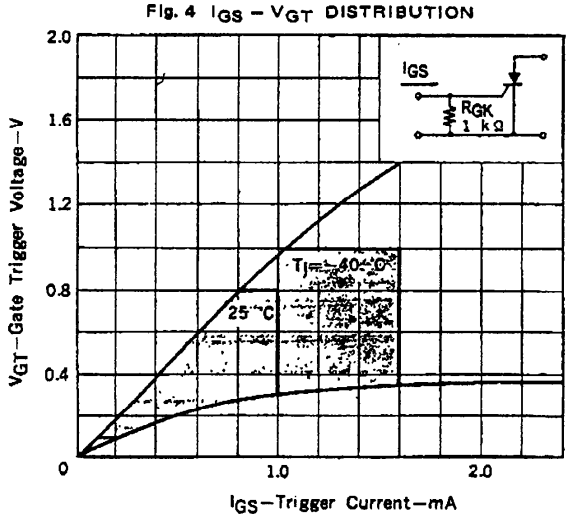


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

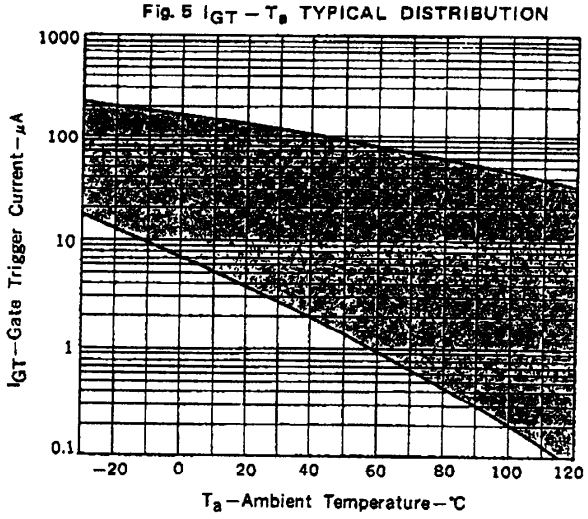


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

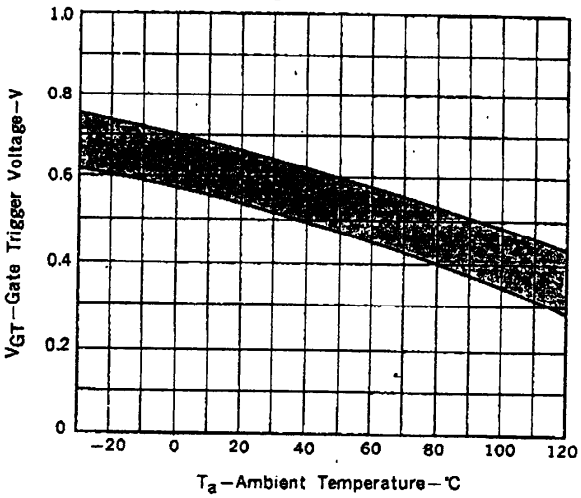


Fig. 7 $I_{GS} - \tau_G$ TYPICAL DISTRIBUTION

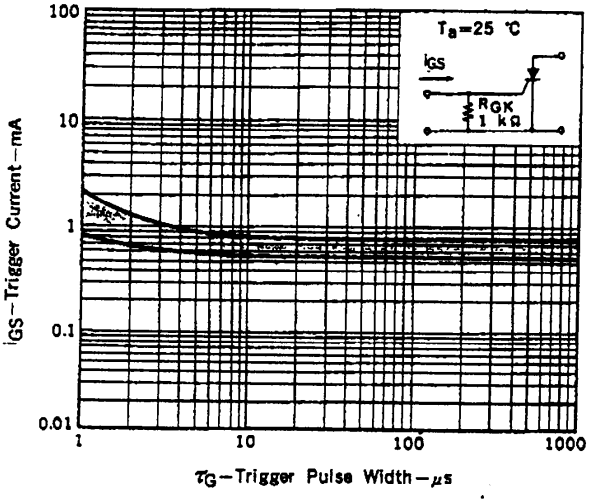


Fig. 8 $V_{GT} - \tau_G$ TYPICAL DISTRIBUTION

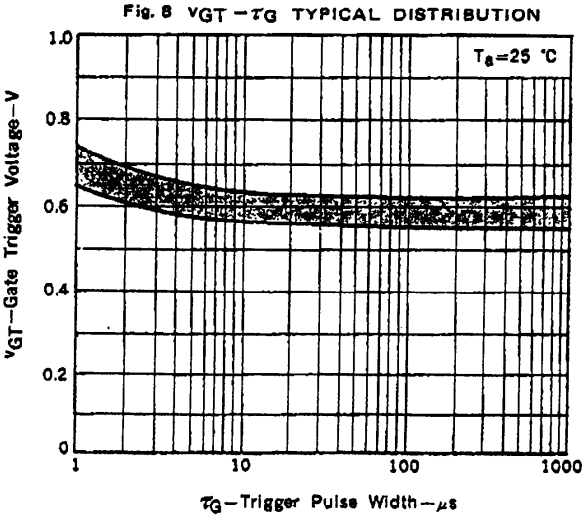


Fig. 9 $P_{T(AV)} - I_{T(AV)}$ CHARACTERISTICS

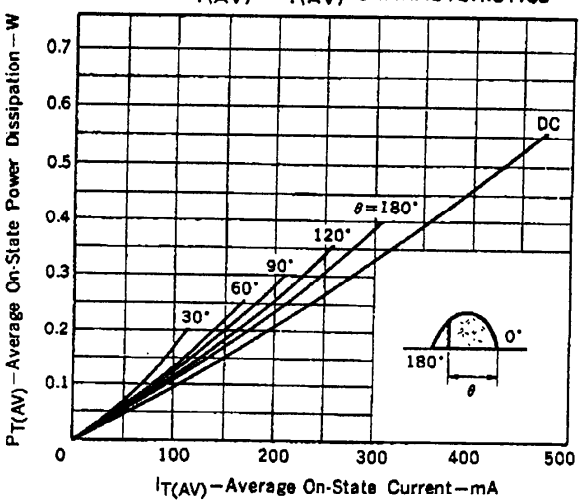


Fig. 10 $I_{T(AV)} - T_a$ RATINGS

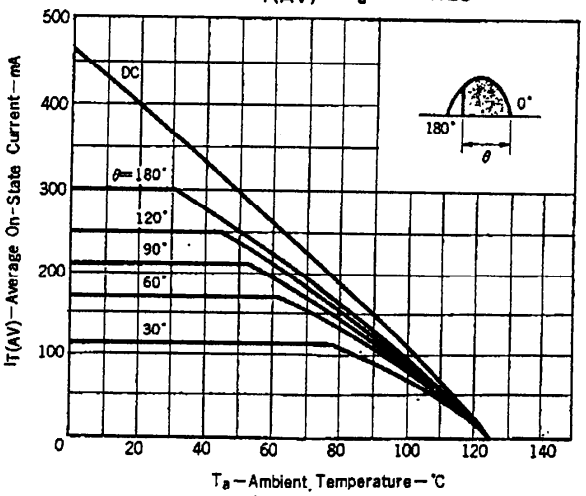


Fig. 11 $I_H - T_a$ TYPICAL DISTRIBUTION

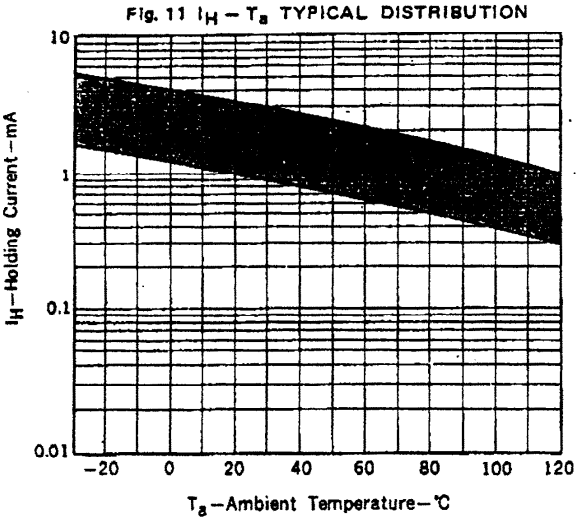
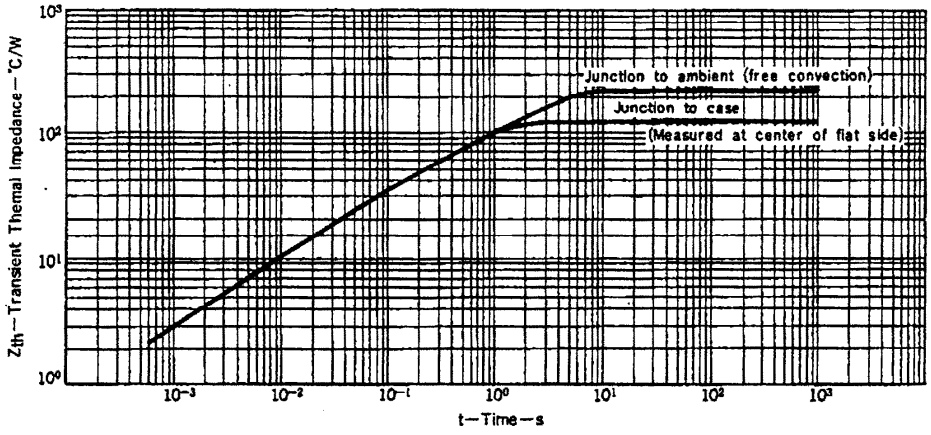


Fig. 12 Z_{th} CHARACTERISTICS



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