NEC

THYRISTORS
3P4MH, 3P6MH

3 A MOLD SCR

The 3P4MH and 3P6MH are P-gate fully diffused mold SCRs with an average on-current of 3 A. The repeat peak off-voltages (and reverse voltages) are 400 V and 600 V.

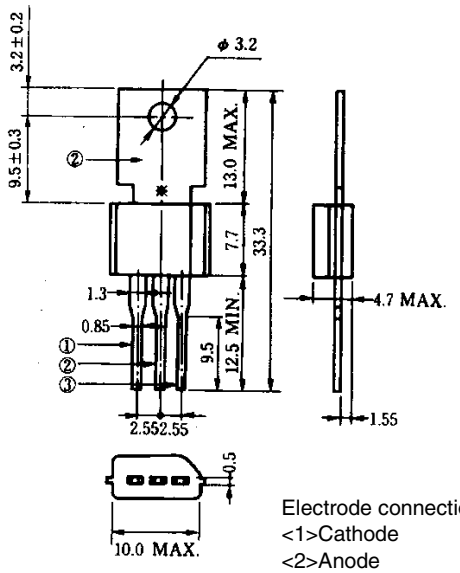
FEATURES

- This transistor features a small and lightweight package and is easy to handle even on the mounting surface due to its TO-202AA dimensions. Processing of lead wires and heatsink (tablet) using jigs is also possible.
- Employs flame-retardant epoxy resin (UL94V-0).

APPLICATIONS

Noncontact switches of consumer electronic euipments, electric equipments, audio quipments, and light indutry equipements

PACKAGE DRAWING (UNIT: mm)



Electrode connection
<1>Cathode
<2>Anode
<3>Gate
Standard weight: 1.4

*TC test bench-mark

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	3P4MH	3P6MH	Ratings	Unit
Non-repetitive peak reverse voltage	V_{RSM}	500	700	V	R_{GK} = 1 kΩ
Non-repetitive peak off-state voltage	V_{DSM}	500	700	V	R_{GK} = 1 kΩ
Repetitive peak reverse voltage	V_{RRM}	400	600	V	R_{GK} = 1 kΩ
Repetitive peak off-voltage	V_{DRM}	400	600	V	R_{GK} = 1 kΩ
Average on-state current	$I_{T(AV)}$	3 (Tc = 87°C, Single half-wave, θ = 180°)		A	Refer to Figure 11.
Effective on-state current	$I_{T(RMS)}$	4.7		A	–
Surge on-state current	I_{TSM}	65 (f = 50 Hz, Sine half-wave, 1 cycle) 70 (f = 60 Hz, Sine half-wave, 1 cycle)		A	Refer to Figure 2.
Fusing current	$\int i_t^2 dt$	20 (1 ms≤t≤10 ms)		A^2s	–
Critical rate of rise of on-state current	dI_T/dt	50		A/μs	–
Peak gate power dissipation	P_{GM}	2 (f≥50 Hz, Duty≤10%)		W	Refer to Figure 3.
Average gate power dissipation	$P_{G(AV)}$	0.2		W	
Peak gate forward current	I_{FGM}	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}	−55 tp +150		°C	–

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

Parameter	Symbol	Conditions		Specifications			Unit	Remarks
				MIN.	TYP.	MAX.		
Repeat peak reverse current	I_{RRM}	$V_{RM} = V_{RRM}$	T_j = 25°C	–	–	100	μA	–
			T_j = 125°C	–	–	2	mA	–
Repeat peak off-current	I_{DRM}	$V_{DM} = V_{DRM}$	T_j = 25°C	–	–	100	μA	–
			T_j = 125°C	–	–	2	mA	–
Critical rate-of-rise of off-state voltage	dV/dt	T_j = 125°C, $V_{DM} = \frac{2}{3}V_{DRM}$		–	3	–	V/μs	–
On-state voltage	V_{TM}	I_T = 10 A		–	–	1.6	V	Refer to Figure 1.
Gate trigger current	I_{GT}	V_{DM} = 6 V, R_L = 100 Ω		–	–	0.2	mA	Refer to Figure 14.
Gate trigger voltage	V_{GT}	V_{DM} = 6 V, R_L = 100 Ω		–	–	0.8	V	
Gate non-trigger voltage	V_{GD}	T_j = 125°C, $V_{DM} = \frac{V_{DRM}}{2}$		0.2	–	–	V	–
Holding current	I_H	V_{DM} = 24 V, I_{TM} = 10 A		–	1	5	mA	–
Commutating turn-off time	T_q	T_j = 125°C, I_T = 3 A, di_R/dt = 15 A/μs $V_R \geq 25$ V, $V_{DM} = \frac{2}{3}V_{DRM}$ dV_D/dt = 1 V/μs		–	80	–	μs	–
Thermal resistance	$R_{th(j-c)}$	Junction-to-case DC		–	–	8	°C/W	Refer to Figure 13.
	$R_{th(j-a)}$	Junction-to-ambient DC		–	–	75		

TYPICAL CHARACTERISTICS (Ta = 25°C)

Figure 1. i_T vs. v_T Characteristics

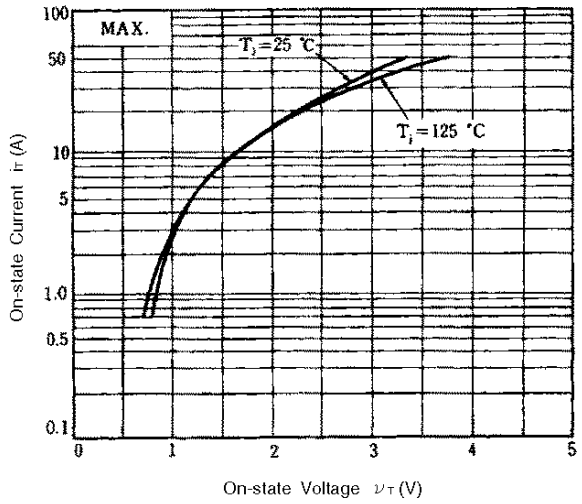


Figure 2. I_{TSM} Rating

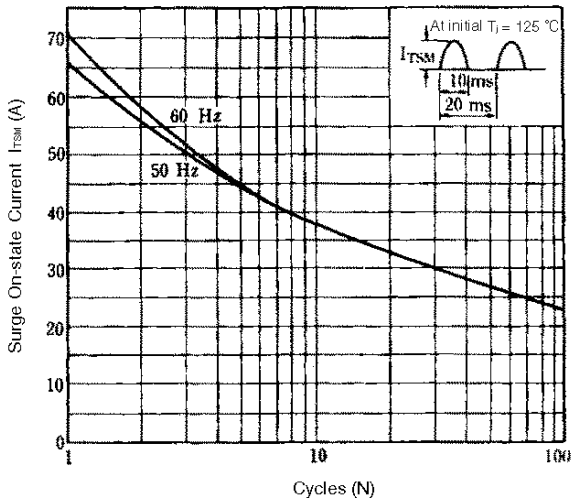


Figure 3. Gate Rating

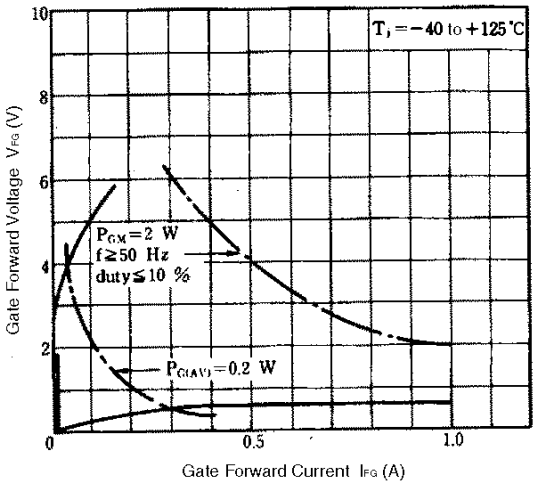


Figure 4. Example of Gate Characteristics

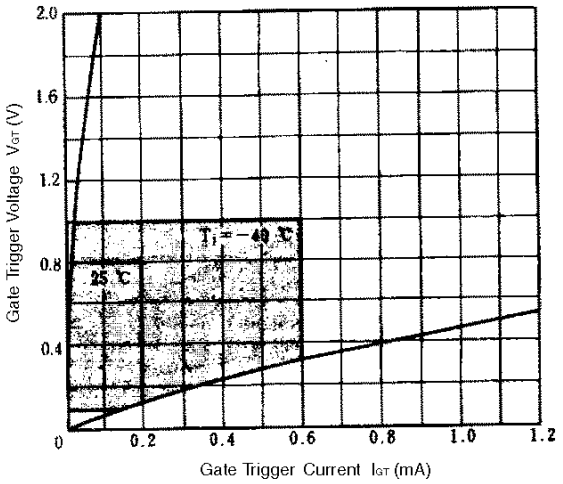


Figure 5. I_{GT} vs. T_A Example of Characteristics

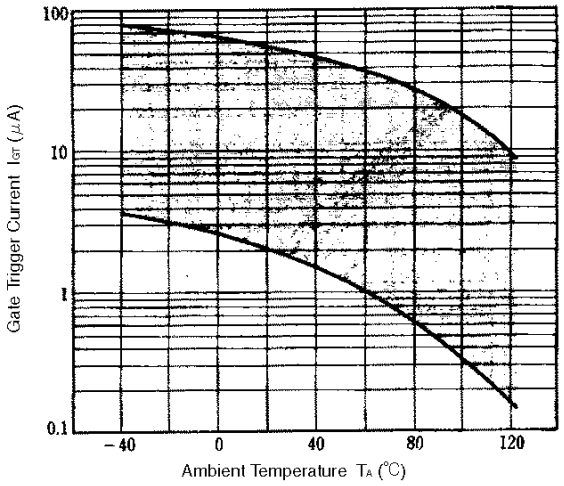


Figure 6. V_{GT} vs. T_A Example of Characteristics

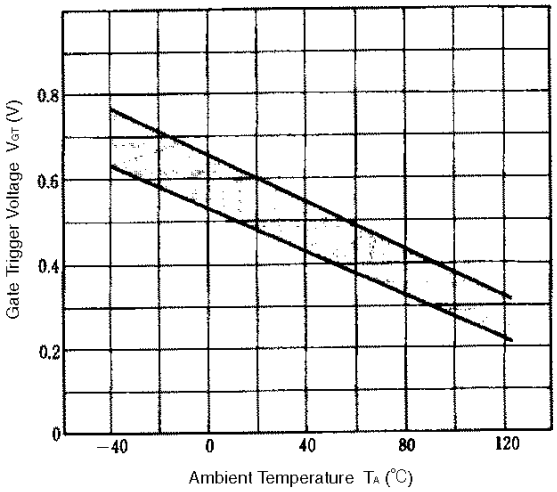


Figure 7. I_{GT} vs. τ Example of Characteristics

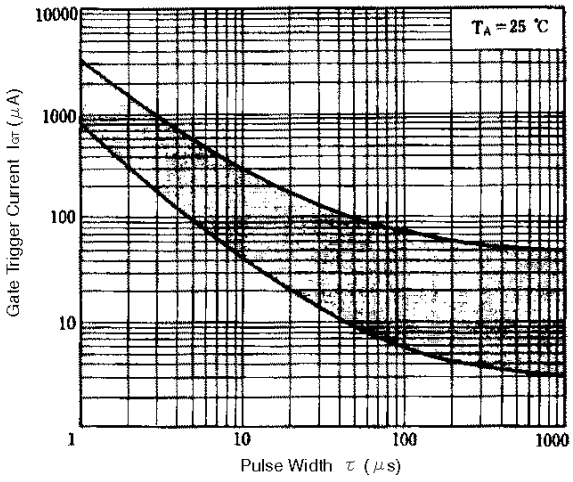


Figure 8. υ_{GT} vs. τ Example of Characteristics

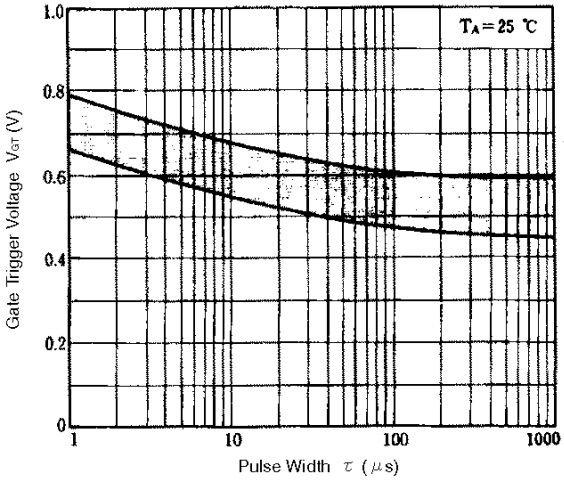


Figure 9. I_H vs. T_A Example of Characteristics

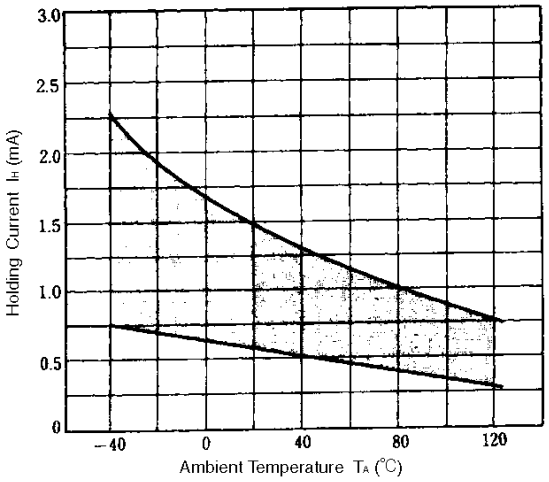


Figure 10. $P_{T(AV)}$ vs. $I_{T(AV)}$ Characteristics

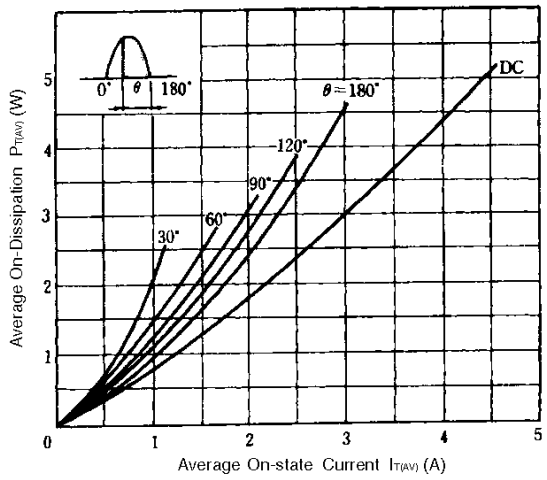


Figure 11. T_C vs. $I_{T(AV)}$ Rating

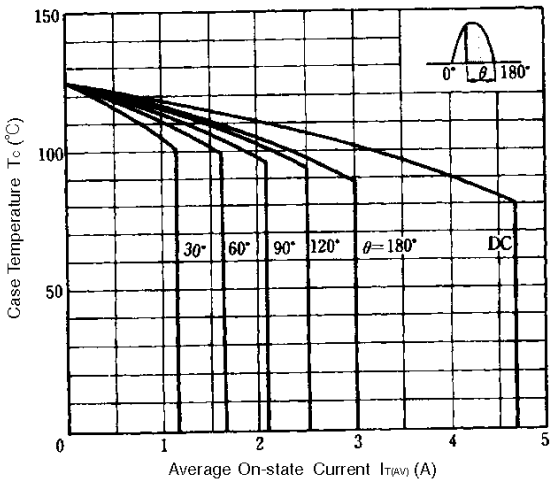


Figure 12. T_A vs. $I_{T(AV)}$ Rating

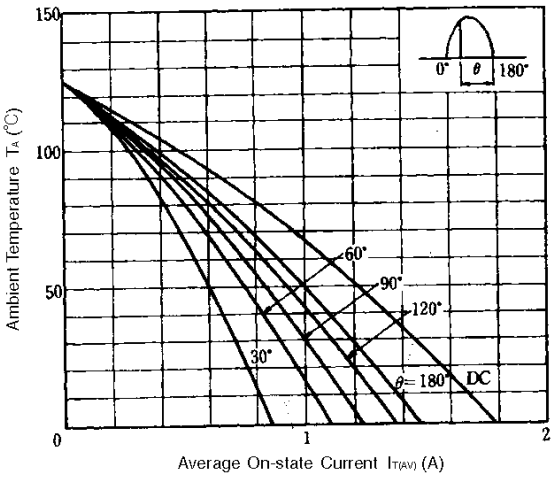
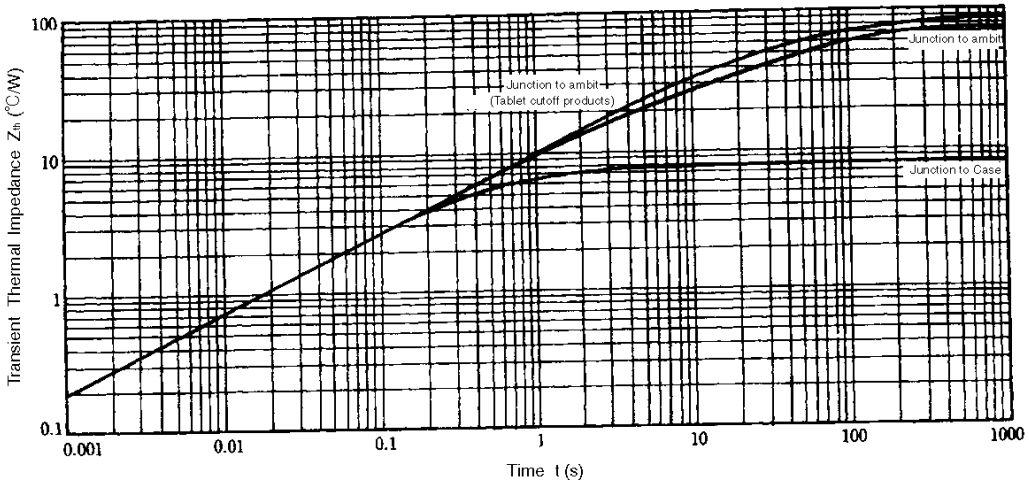


Figure 13. Z_{th} Characteristics



[MEMO]

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