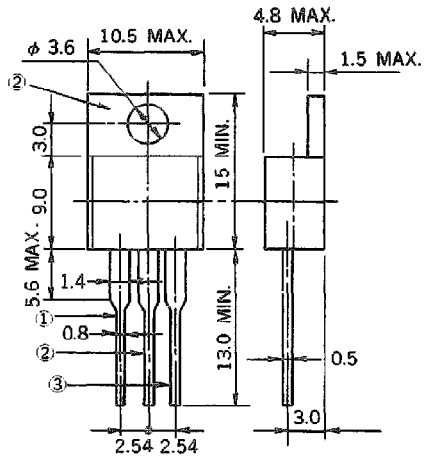
NEC
ELECTRON DEVICE

THYRISTORS
8P2M, 8P4M

8 A(12 $A_{r.m.s.}$)THYRISTOR

PACKAGE DIMENSIONS
in millimeters



Pin Connection
① Cathode
② Anode
③ Gate

The 8P2M and 8P4M are P gate all diffused mold type Thyristor granted 8 Amp On-state Average Current (T_c = 90 °C), with voltages up to 400 volts.

FEATURES

- Easy installation by TO-220 AB package.
- 100 A surge current.
- High Voltage.
  : V_{DRM}, V_{RRM} = 200 V (8P2M)
  : V_{DRM}, V_{RRM} = 400 V (8P4M)

APPLICATIONS

- Motor speed control for household appliance.
- Temperature control for heater and constant temperature box.
- Constant voltage power source and battery charger.
- Automotive application such as regulator.
- Various solid state relay etc.

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	8P2M	8P4M	UNIT	NOTE
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	$I_{T(AV)}$	8 (T_c = 90 °C, θ = 180 ° Single phase half wave)		A	See Fig. 11
Surge On-State Current	I_{TSM}	100		A	See Fig. 2
Fusing Current	$\int i_T^2 dt$	45 (1 ms ≦ t ≦ 10 ms)		A^2s	
Peak Gate Power Dissipation	P_{GM}	5 (f ≧ 50 Hz, Duty ≦ 10 %)		W	See Fig. 3
Average Gate Power Dissipation	$P_{G(AV)}$	0.5		W	
Peak Gate Forward Current	I_{FGM}	2 (f ≧ 50 Hz, Duty ≦ 10 %)		A	
Peak Gate Reverse Voltage	V_{RGM}	10		V	
Junction Temperature	T_j	−40 to +125		°C	
Storage Temperature	T_{stg}	−55 to +150		°C	
Weight		2		g	

ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Repetitive Peak Reverse Current	I_{RRM}	$V_{RM} = V_{RRM}$, T_j = 125 °C	–	–	2	mA	
Repetitive Peak Off-State Current	I_{DRM}	$V_{DM} = V_{DRM}$, T_j = 125 °C	–	–	2	mA	
On-State Voltage	V_{TM}	I_{TM} = 25 A	–	–	1.4	V	See Fig. 1
Gate-Trigger Current	I_{GT}	V_{DM} = 6 V, R_L = 100 Ω	–	–	10	mA	See Fig. 4
Gate-Trigger Voltage	V_{GT}	V_{DM} = 6 V, R_L = 100 Ω	–	–	1.5	V	
Gate Non-Trigger Voltage	V_{GD}	V_{DM} = 1/2 V_{DRM}, T_j = 125 °C	0.2	–	–	V	
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DM} = V_{DRM}$, T_j = 125 °C	–	40	–	V/μs	
Holding Current	I_H	V_D = 24 V	–	6	–	mA	
Circuit Commuted Turn-Off Time	t_q	I_{TM} = 5 A, $V_R \geqq$ 25 V V_{DM} = 2/3 V_{DRM}, diR/dt = 15 A/μs dv/dt = 10 V/μs, T_j = 125 °C	–	100	–	μs	
Thermal Resistance	R_{th}	Junction to case	–	–	3	°C/W	See Fig. 13

Fig. 1 $i_T - V_T$ CHARACTERISTIC

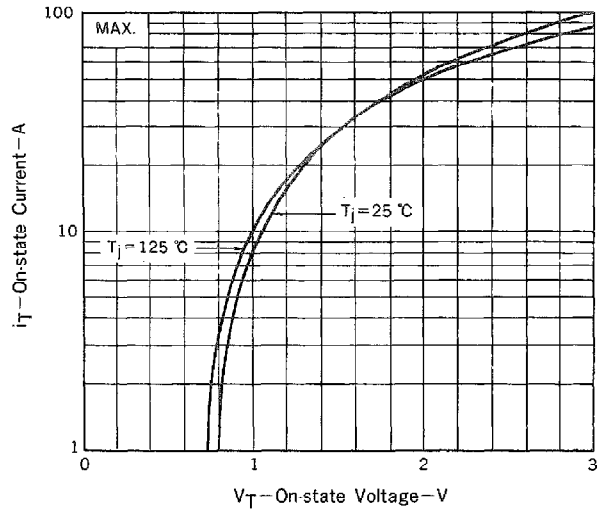


Fig. 2 I_{TSM} RATING

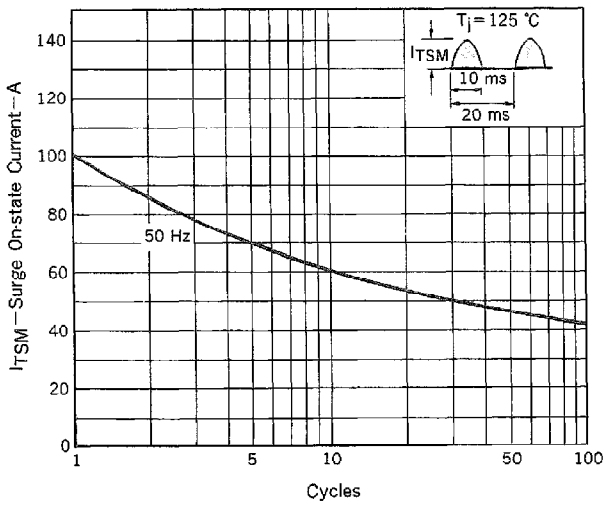


Fig. 3 GATE POWER RATING

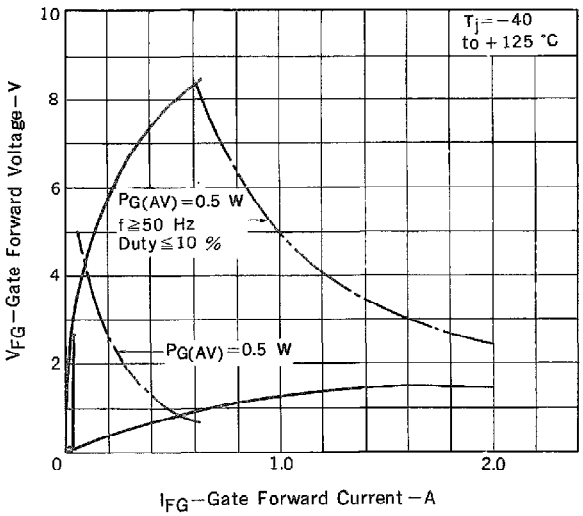


Fig. 4 I_{GT} − V_{GT} DISTRIBUTION

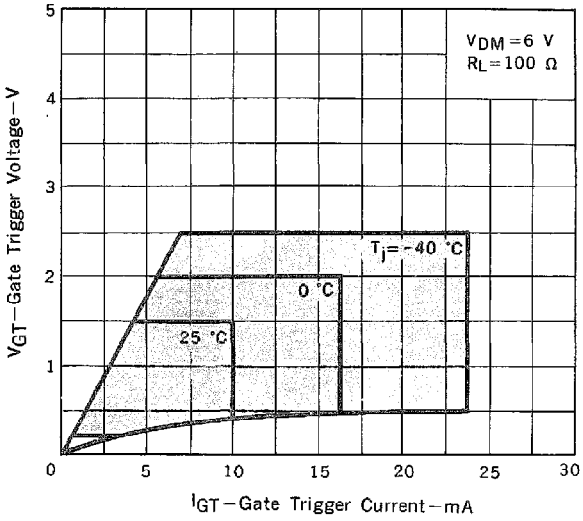


Fig. 5 I_{GT} − T_a TYPICAL DISTRIBUTION

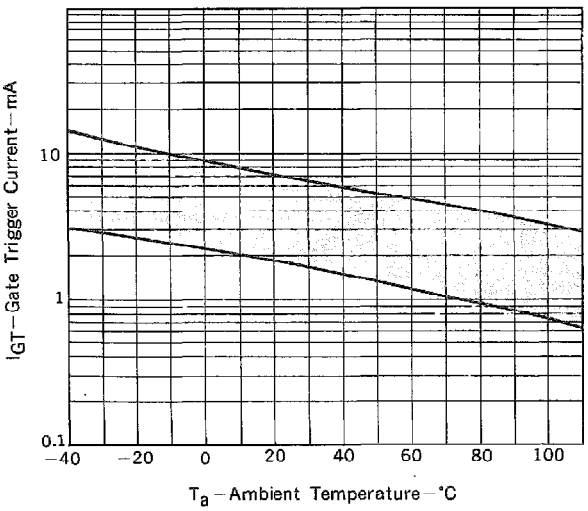


Fig. 6 V_{GT} − T_a TYPICAL DISTRIBUTION

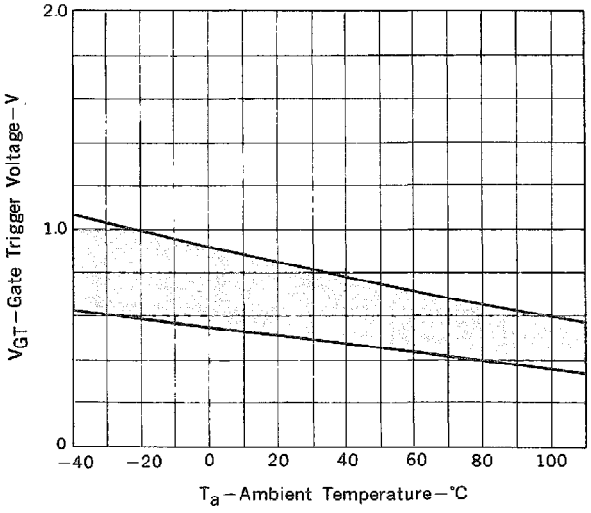


Fig. 7 i_{GS} − τ_G TYPICAL DISTRIBUTION

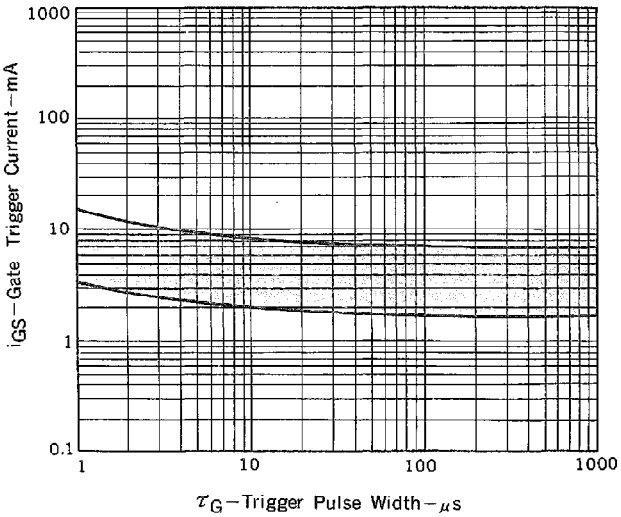


Fig. 8 V_{GT} − τ_G TYPICAL DISTRIBUTION

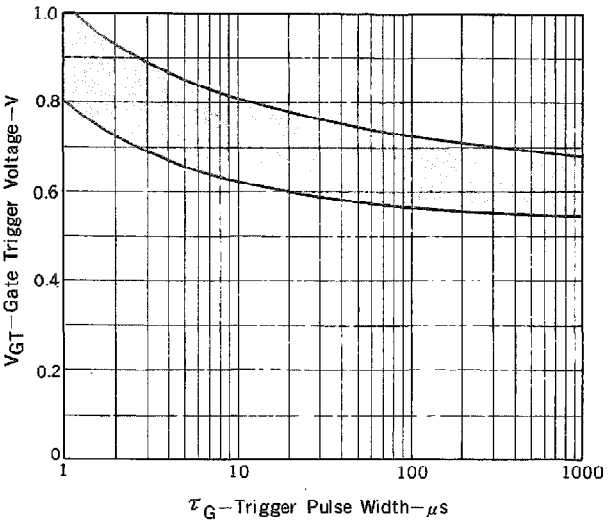


Fig. 9 $I_H - T_a$ TYPICAL DISTRIBUTION

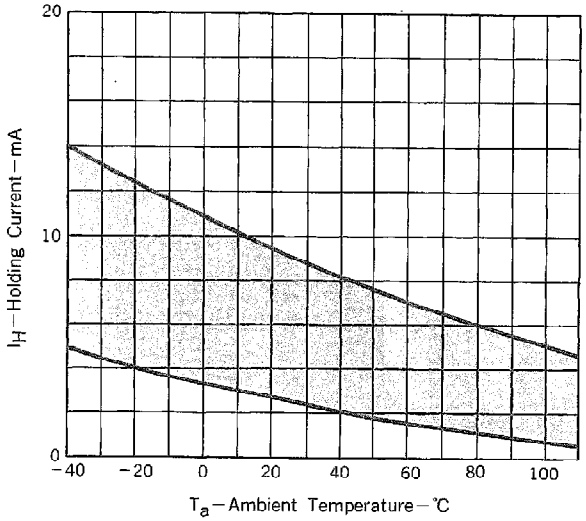


Fig. 10 $P_{T(AV)} - I_{T(AV)}$ CHARACTERISTICS

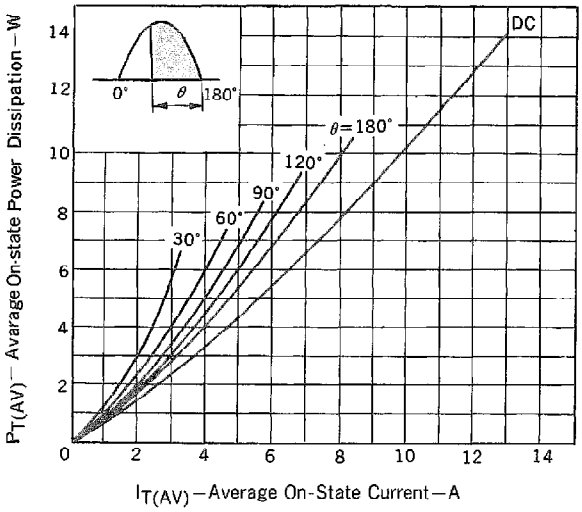


Fig. 11 $T_c - I_{T(AV)}$ RATING

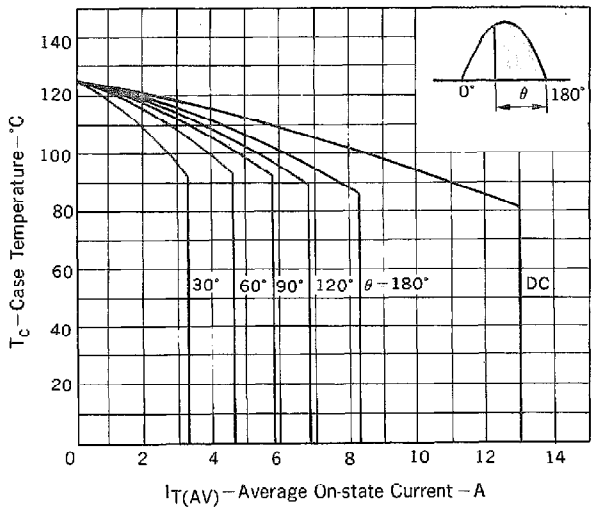


Fig. 12 $T_a - I_{T(AV)}$ RATING

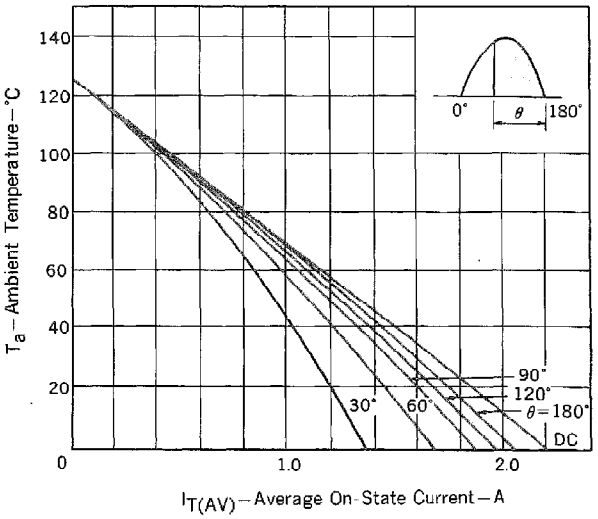
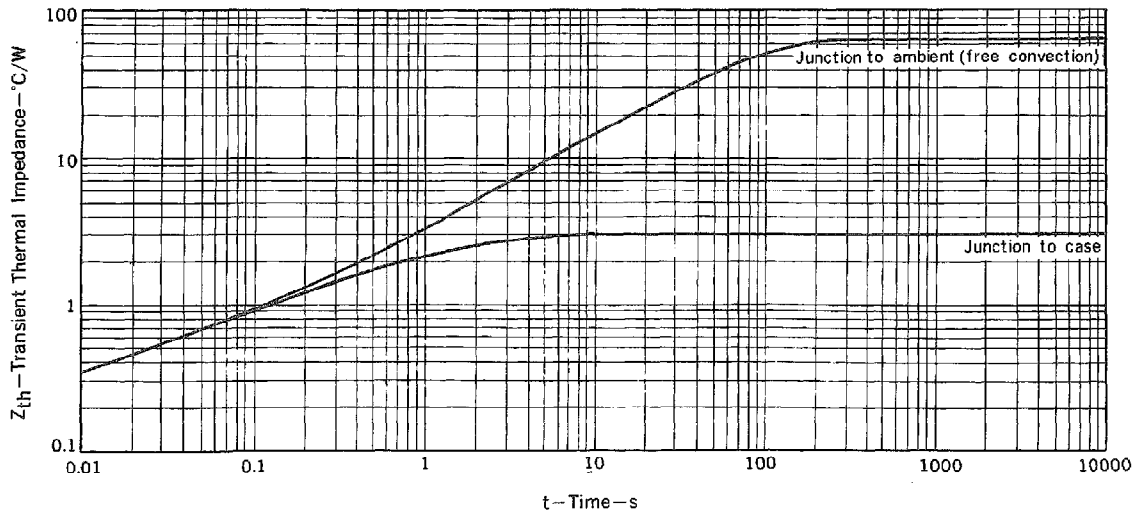


Fig. 13 Z_{th} CHARACTERISTICS



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