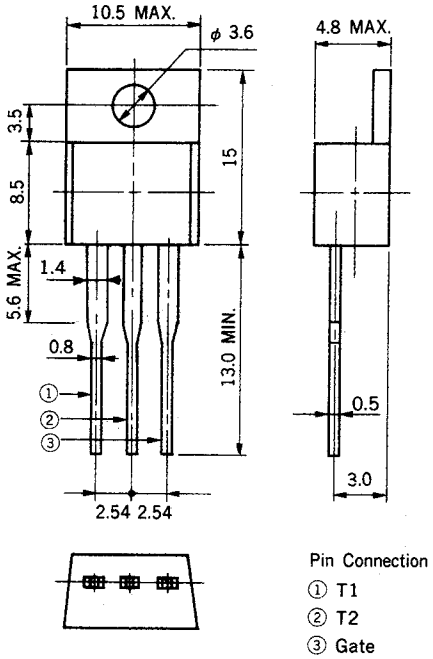
NEC
ELECTRON DEVICE

TRIACS

AC12DGM to AC12FGM

12 A MOLD TRIAC

PACKAGE DIMENSIONS (Unit: mm)



Pin Connection
① T1
② T2
③ Gate

The AC12DGM to AC12FGM are all diffused mold type triac granted RMS On-state current 12 Amps, with rated voltages up to 600 volts.

FEATURES

- 100 A Surge Current
- TO-220AB mold package
- Low-cost

APPLICATIONS

- Motor speed control
- Lamp dimmer, Temperature controllers
- Various solid state switches, etc.

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	AC12DGM	AC12EGM	AC12FGM	UNIT	NOTE
Repetitive Peak off Voltage	V_{DRM}	400	500	600	V	
Non-repetitive Peak off Voltage	V_{DSM}	500	600	700	V	
RMS On-State Current	$I_{T\ (RMS)}$	12 (T_C = 98 °C)			A	See Fig. 11, 12
Peak Surge On-State Current	I_{TSM}	100 (50 Hz, Non-repetitive)			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}	5.0			W	
Average Gate Power Dissipation	$P_{G\ (AV)}$	0.5			W	
Peak Gate Current	I_{FGM}	±3			A	
Junction Temperature	T_j	−40 to +125			°C	
Storage Temperature	T_{stg}	−40 to +125			°C	

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ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	NOTE
Peak off-State Current		I_{DRM}	T_j = 125 °C, V_{DM} = V_{DRM}	–	–	2	mA	
On-State Voltage		V_{TM}	I_{TM} = 10 A	–	–	1.4	V	See Fig. 1
Gate Trigger Current	Trigger Mode I	I_{GT}	V_{DM} = 12 V R_L = 30 Ω	–	–	30	mA	See Fig. 4
	II			–	–	80		
	III			–	–	30		
	IV			–	–	30		
Gate Trigger Voltage	Trigger Mode I	V_{GT}	V_{DM} = 12 V R_L = 30 Ω	–	–	1.5	V	See Fig. 4
	II			–	–	2.0		
	III			–	–	1.5		
	IV			–	–	1.5		
Gate Non-Trigger Voltage		V_{GD}	T_j = 125 °C V_{DM} = 1/2 V_{DRM}	0.3	–	–	V	
Commutating dv/dt		(dv/dt) C	T_j = 125 °C (di$_T$/dt) C = −6 A/ms V_D = 400 V	10	–	–	V/μs	
Holding Current		I_H	V_D = 24 V	–	30	–	mA	
Thermal Resistance		R_{th} (j-c)	Junction to Case	–	–	1.8	°C/W	See Fig. 13

Trigger Mode & Test Circuit

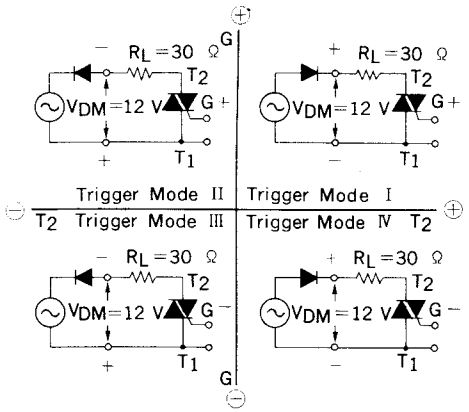


Fig. 1 $i_T - v_T$ CHARACTERISTIC

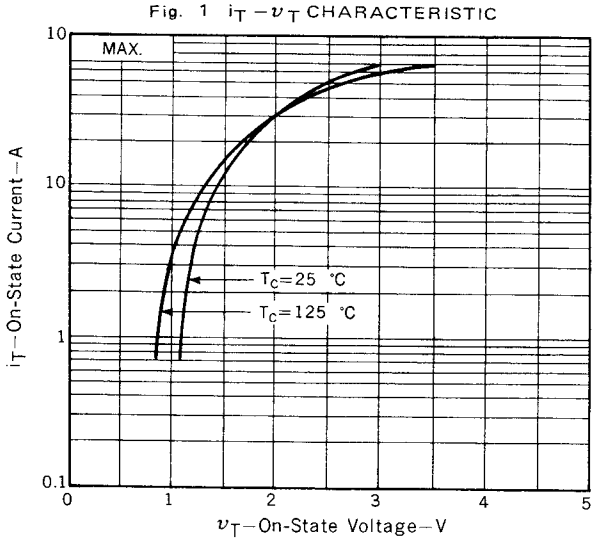


Fig. 2 I_{TSM} RATING

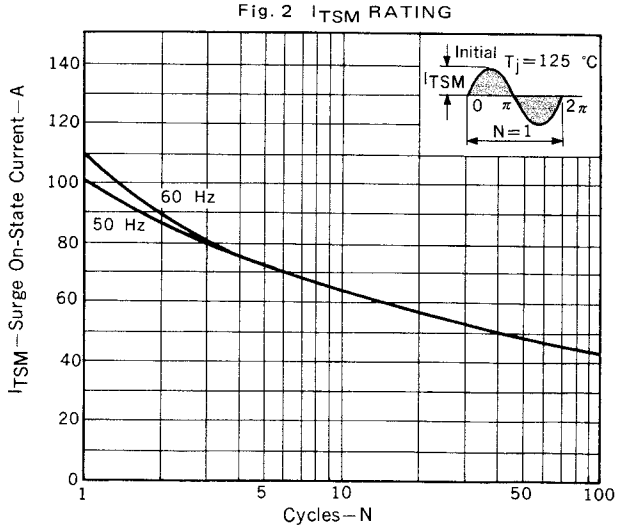


Fig. 3 $V_G - I_G$ RATING

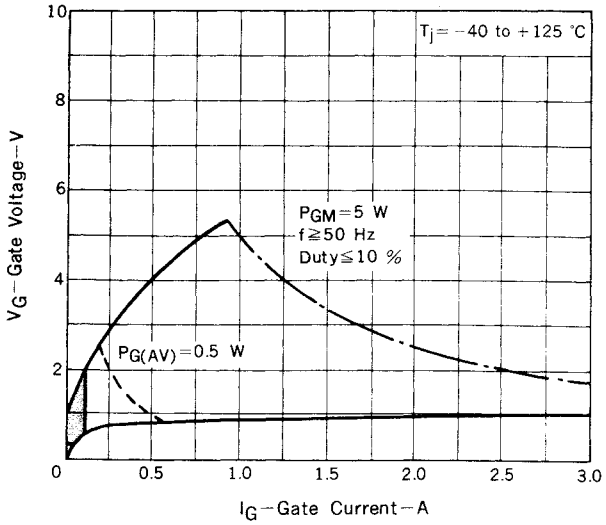


Fig. 4 $V_{GT} - I_{GT}$ CHARACTERISTIC

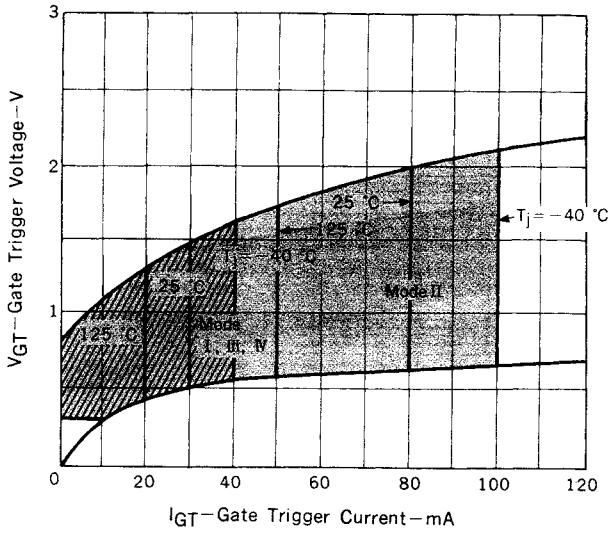


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

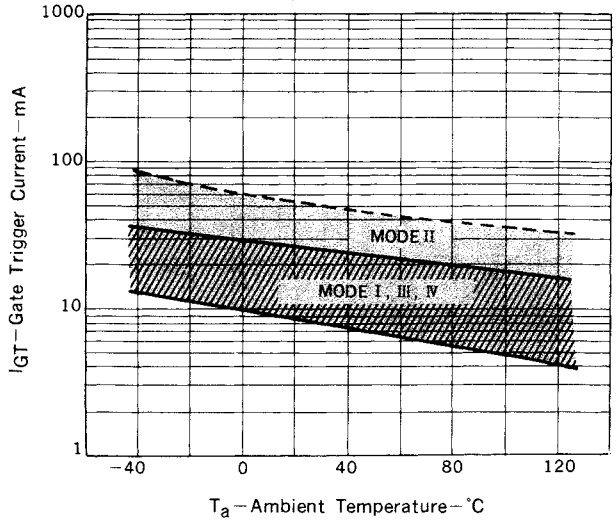


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

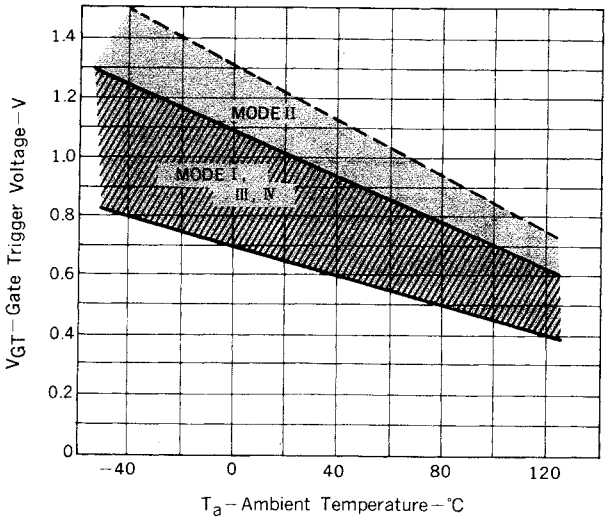


Fig. 7 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

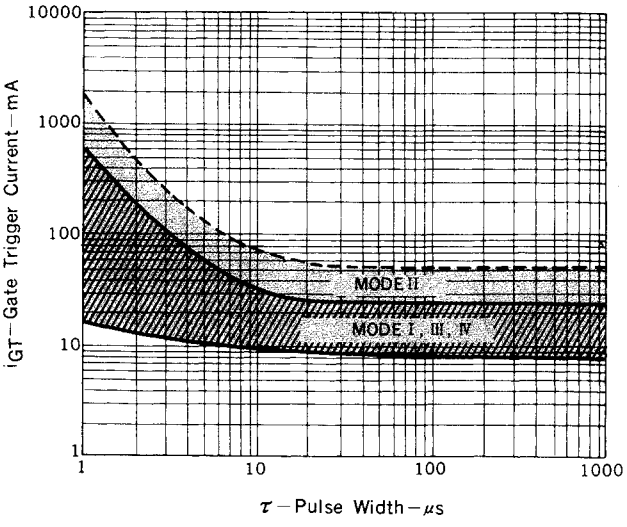


Fig. 8 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

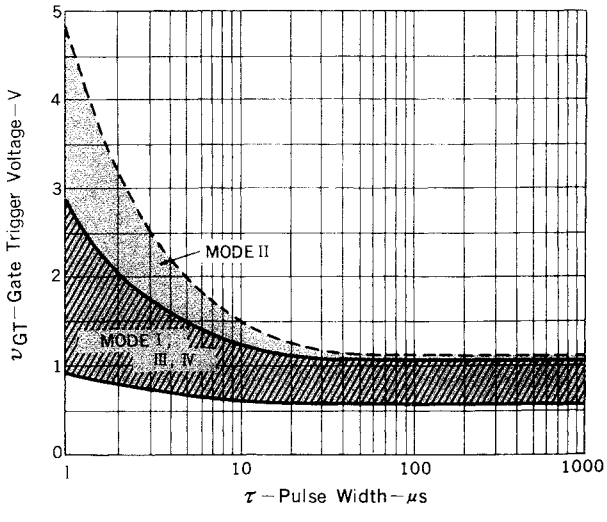


Fig. 9 $I_H - T_a$ TYPICAL DISTRIBUTION

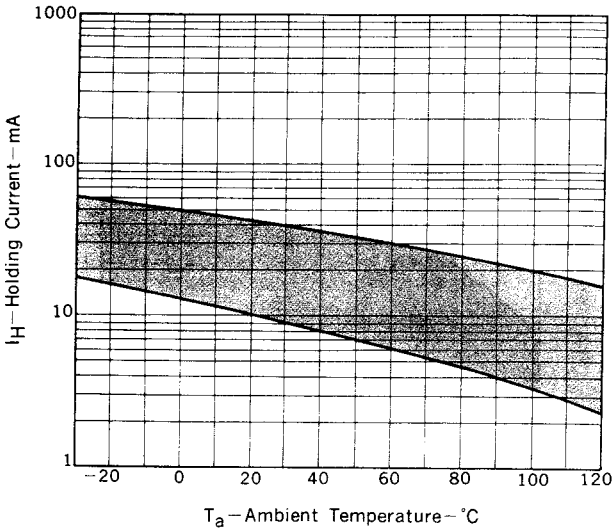


Fig. 10 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

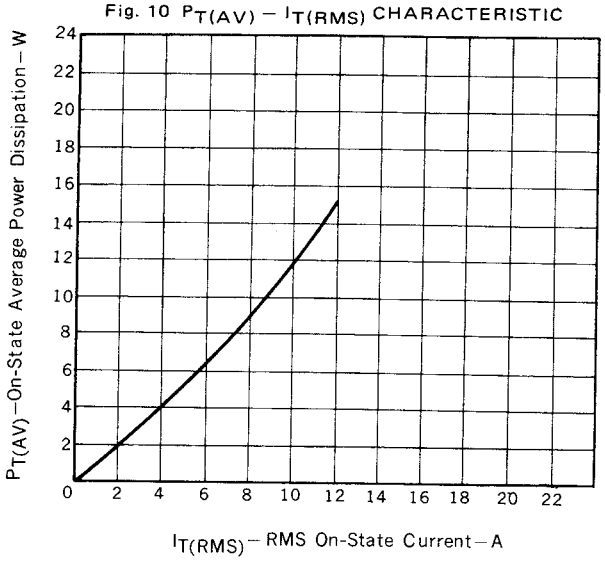


Fig. 11 $T_c - I_{T(RMS)}$ RATING

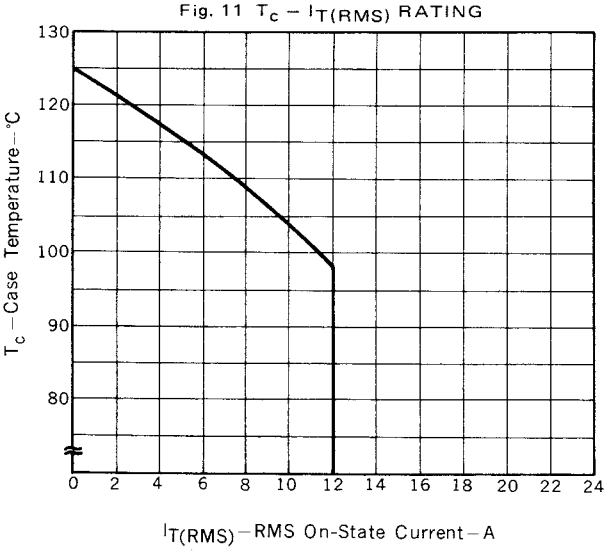


Fig. 12 $T_a - I_{T(RMS)}$ RATING

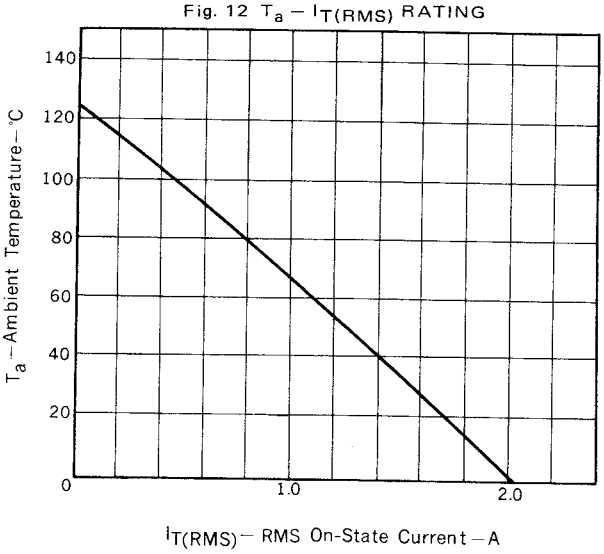
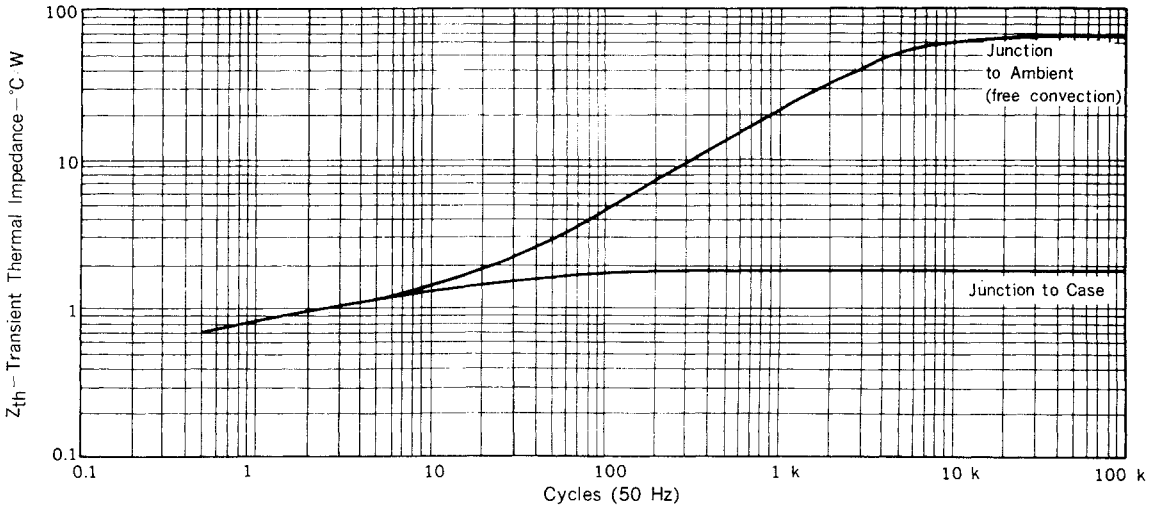


Fig. 13 Z_{th} CHARACTERISTIC



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