NEC
ELECTRON DEVICE

TRIACS

AC03DSM, AC03FSM
AC03DSMA, AC03FSMA

3 A MOLD ISOLATED TRIAC

The AC03□SM and AC03□SMA are all diffused mold type triac granted RMS On-state current 3 Amps, with rated voltages up to 600 volts.

FEATURES

- Isolated plastic package (Modified TO-220AB)
- 30 A Surge current

APPLICATIONS

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

MAXIMUM RATINGS

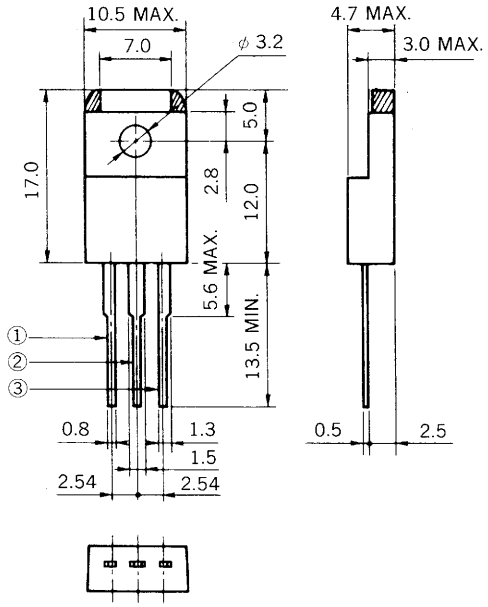
ITEM	SYMBOL	AC03DSM AC03DSMA	AC03FSM AC03FSMA	UNIT	NOTE
Repetitive Peak Off-State Voltage	V_{DRM}	400	600	V	
Non-repetitive Peak Off-State Voltage	V_{DSM}	500	700	V	
RMS On-State Current	$I_{T(RMS)}$	3 (T_C = 109 °C, θ = 180 °)		A	See Fig. 12, 13
Surge On-State Current	I_{TSM}	30 (50 Hz 1 cycle)		A	See Fig. 2
Fusing Current	$\int i_T^2 dt$	4.0		A^2s	
Peak Gate Power Dissipation	P_{GM}	3 (f ≧ 50 Hz, Duty ≦ 10 %)		W	
Average Gate Power Dissipation	$P_{G(AV)}$	0.3		W	
Peak Gate Current	I_{GM}	±0.5 (f ≧ 50 Hz, Duty ≦ 10 %)		A	
Junction Temperature	T_j	−40 to +125		°C	
Storage Temperature	T_{stg}	−55 to +150		°C	
Isolation Voltage	−	1500 (AC 1 min)		V_{RMS}	Only AC03□SM

ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

ITEM		SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT	NOTE
Peak Off-State Current		I_{DRM}	$V_{DM} = V_{DRM}$, T_j = 125 °C		—	—	1	mA	
On-State Voltage		V_{TM}	I_{TM} = 5 A		—	—	1.8	V	See Fig. 1
Gate-trigger Current	Trigger Mode I	I_{GT}	V_{DM} = 12 V, R_L = 30 Ω	T_2+, G+	—	—	15	mA	See Fig. 4, 5
	II			T_2−, G+	—	—	45		
	III			T_2+, G−	—	—	15		
	IV			T_2−, G−	—	—	15		
Gate-trigger Voltage	Trigger Mode I	V_{GT}	V_{DM} = 12 V, R_L = 30 Ω	T_2+, G+	—	—	1.5	V	See Fig. 4, 5
	II			T_2−, G+	—	—	2.0		
	III			T_2−, G−	—	—	1.5		
	IV			T_2+, G−	—	—	1.5		
Gate Non-Trigger Voltage		V_{GD}	T_j = 125 °C, $V_{DM} = \frac{1}{2} V_{DRM}$		0.2	—	—	V	
Commutating dV/dt		(dv/dt)C	T_j = 125 °C, $(di_T/dt)C$ = −1.6 A/ms, V_{DM} = 400 V		5	—	—	V/μs	
Holding Current		I_H	V_D = 24 V, I_{TM} = 5 A		—	5	—	mA	
Thermal Resistance		$R_{th(j-c)}$	Junction to Case		—	—	4.5	°C/W	See Fig. 7
		$R_{th(j-a)}$	Junction to Ambient		—	—	65	°C/W	

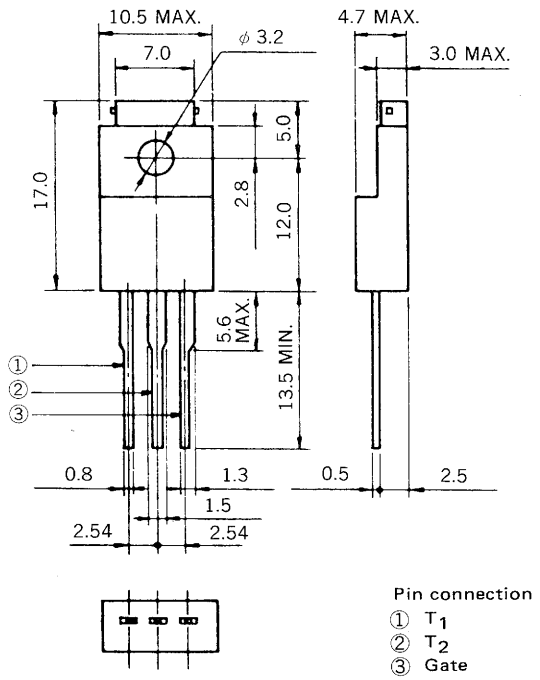
PACKAGE DIMENSIONS (Unit : mm)

AC03DSM, AC03FSM



▨ Mold Coating

AC03DSMA, AC03FSMA



Pin connection
① T_1
② T_2
③ Gate

CHARACTERISTICS

Fig. 1 $i_T - v_T$ CHARACTERISTIC

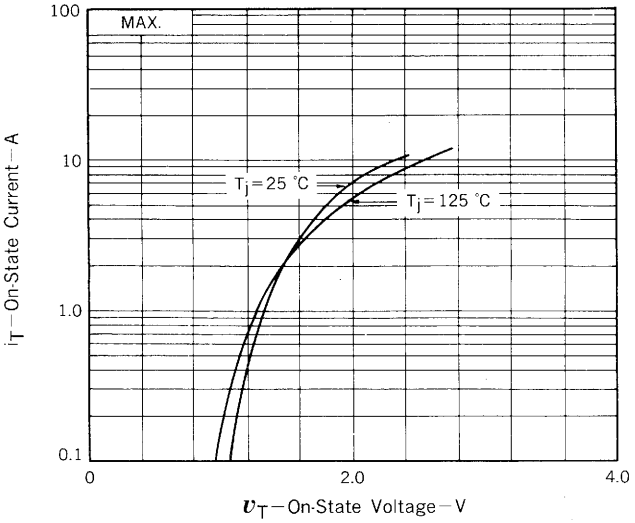


Fig. 2 I_{TSM} RATING

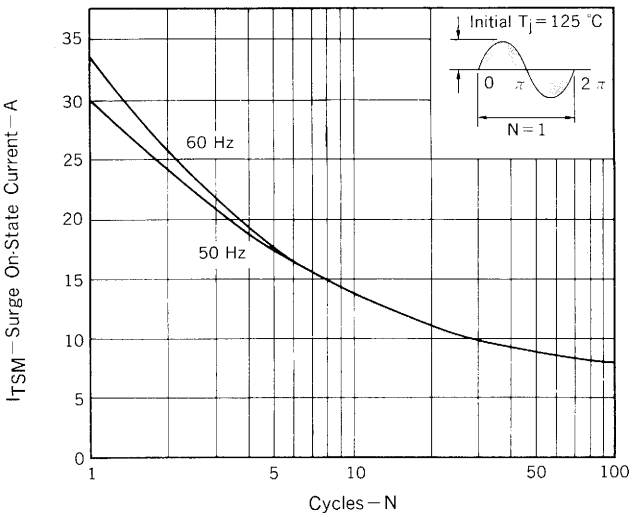


Fig. 3 $V_G - I_G$ RATING

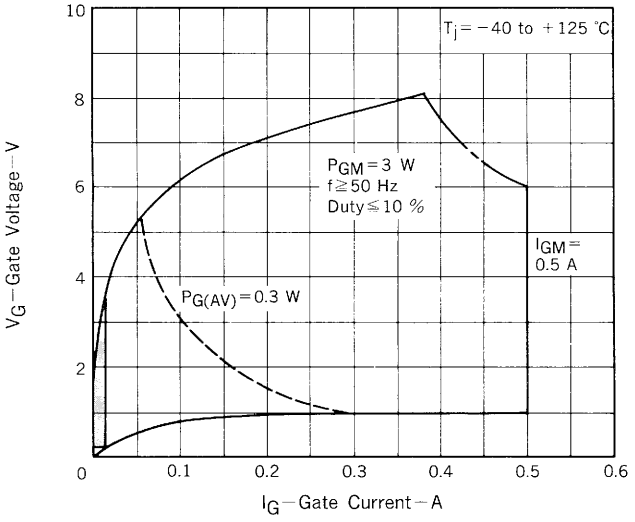


Fig. 4 $V_{GT} - I_{GT}$ CHARACTERISTIC

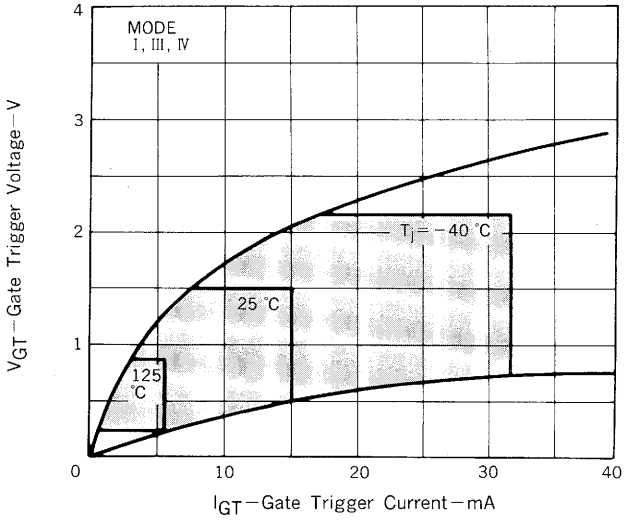


Fig. 5 $V_{GT} - I_{GT}$ CHARACTERISTIC

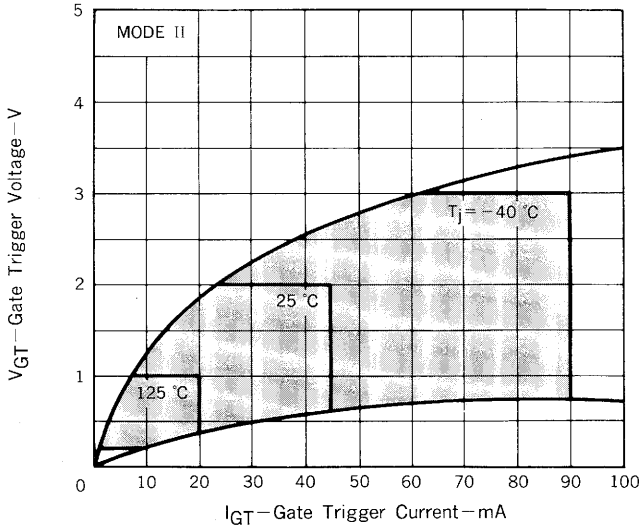


Fig. 6 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

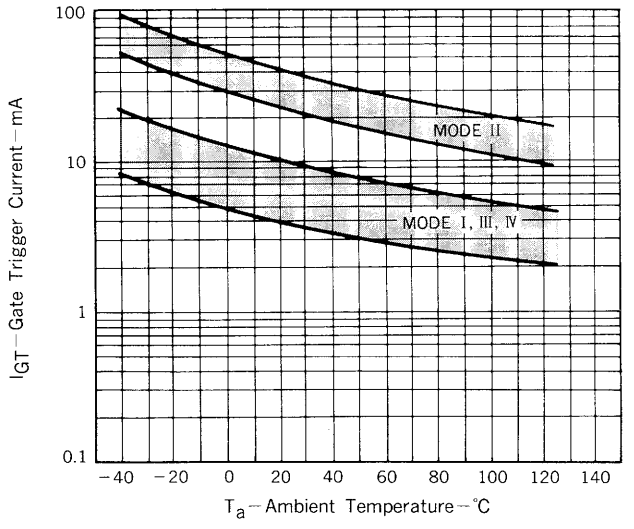


Fig. 7 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

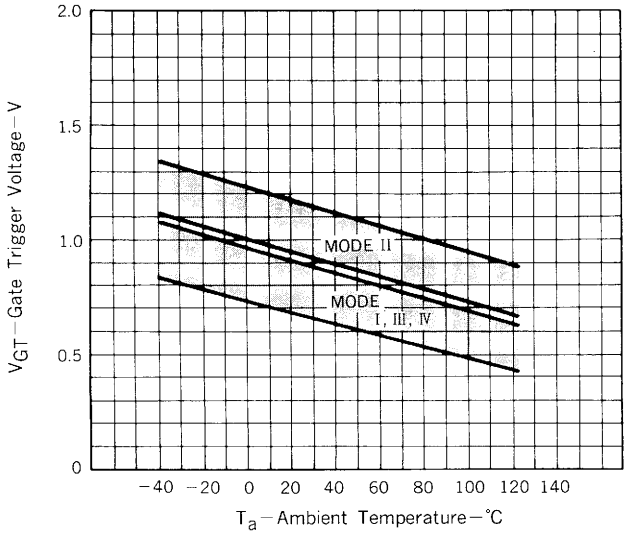


Fig. 8 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

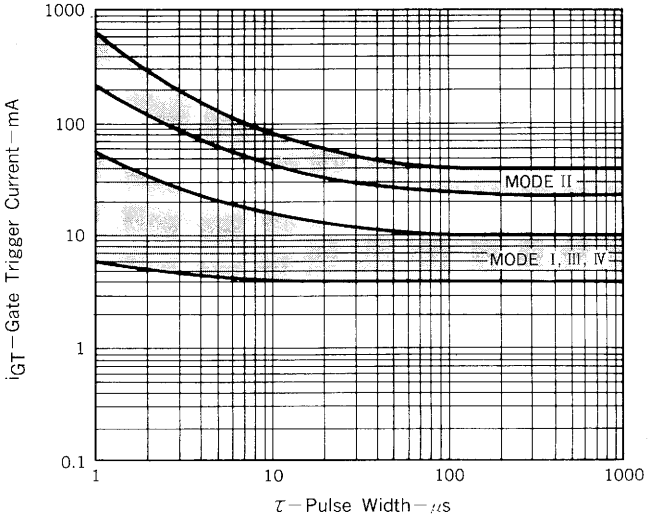


Fig. 9 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

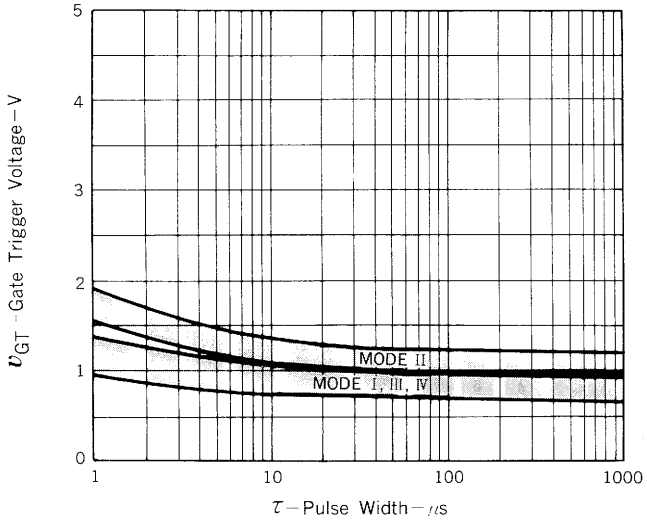


Fig. 10 $I_H - T_a$ TYPICAL DISTRIBUTION

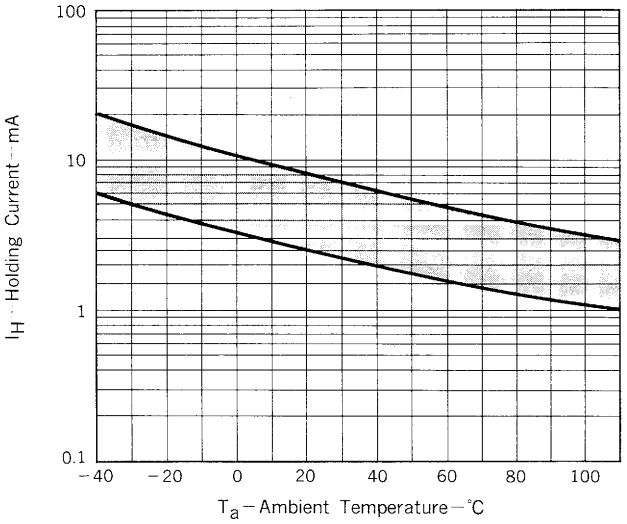


Fig. 11 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

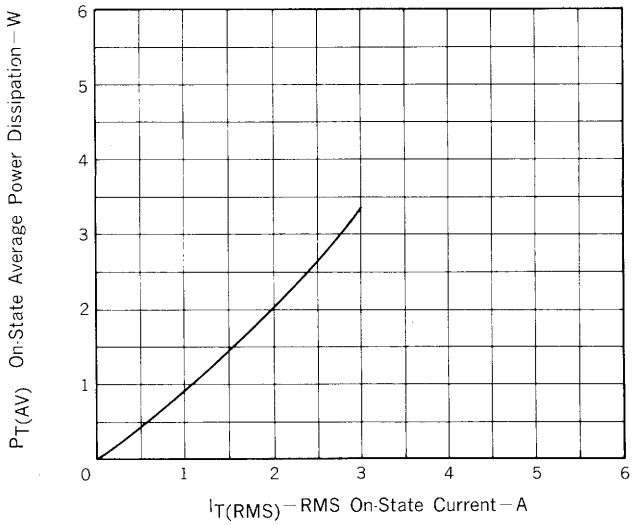


Fig. 12 $T_c - I_{T(RMS)}$ RATING

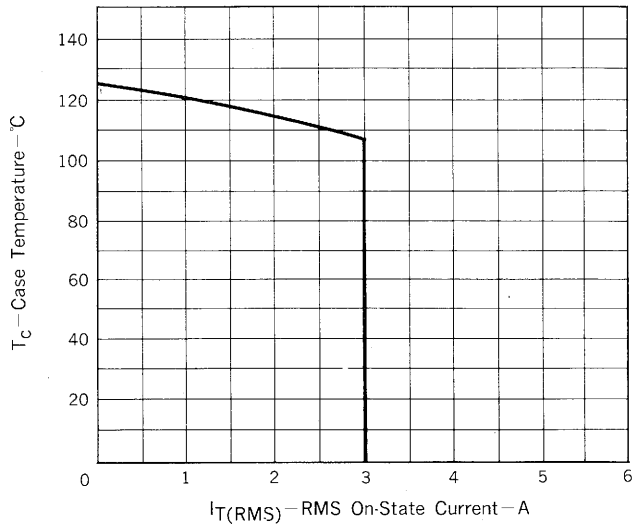


Fig. 13 $T_a - I_{T(RMS)}$ RATING

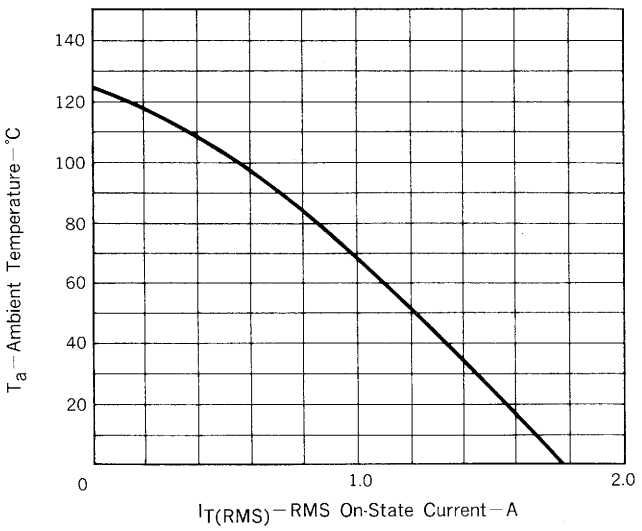
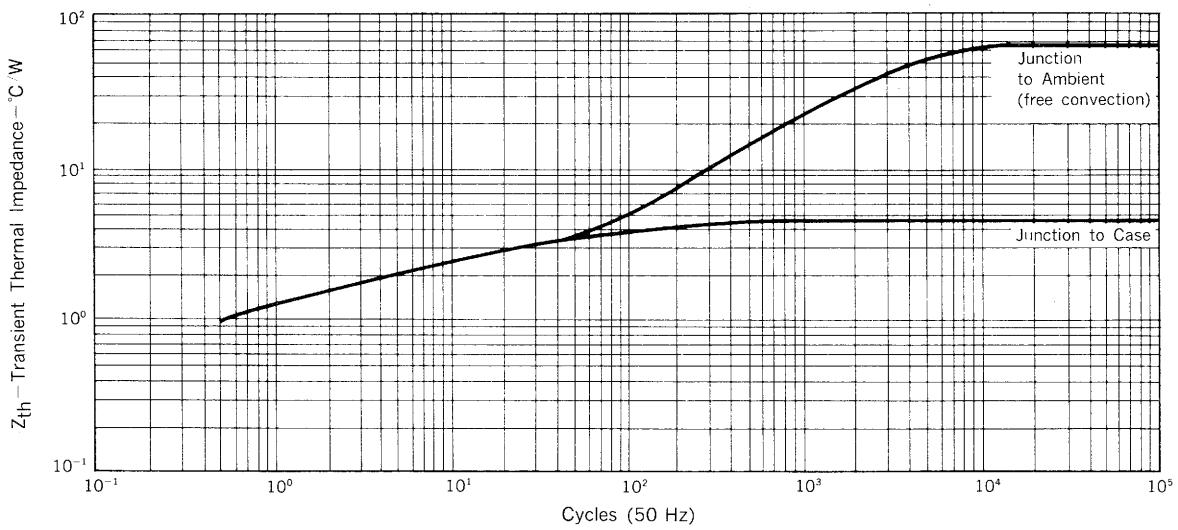


Fig. 14 Z_{th} CHARACTERISTIC



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