NEC

TRIACS

AC03DJM, AC03DJM-Z, AC03FJM, AC03FJM-Z

3 A MOLD TRIAC

DESCRIPTION

The AC03DJM and AC03FJM are all diffused mold type TRIAC granted RMS On-state current 3 Amps, with rated voltage up to 600 volts.

FEATURES

- Small and surface mount package.
- 30 A Surge Current
- Less holding current distribution provides free application design.

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

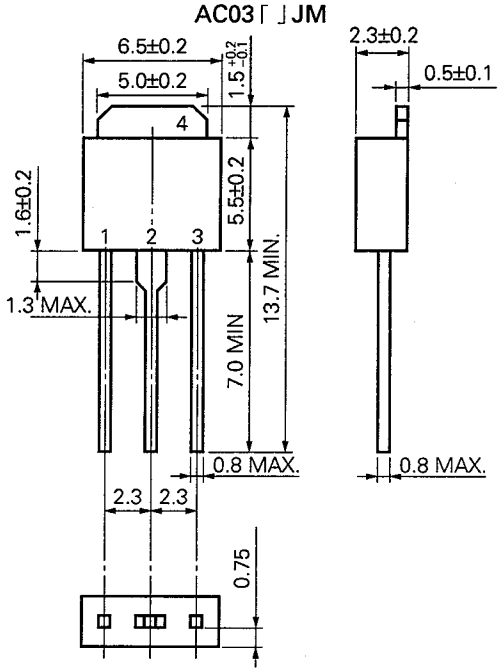
APPLICATIONS

Temperature Control, Light Dimmer Control, AC Motor Speed, Control Electric Jar, Electric Lamp Starter, Various Solid State Switch, etc.

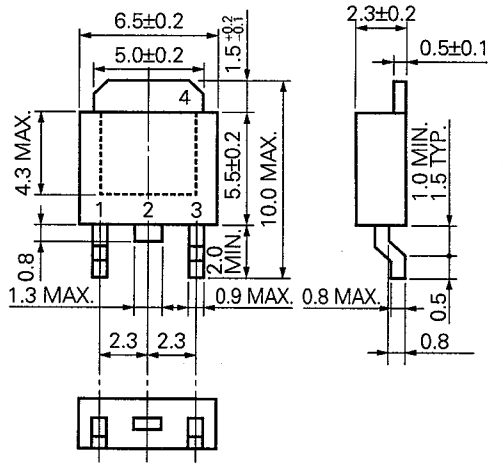
PACKAGE DIMENSIONS

(in millimeters)

AC03 ⌜ ⌟ JM



AC03 ⌜ ⌟ JM-Z



Pin Connection

1. T_1
2. T_2
3. Gate
4. Fin (T_2)

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ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	AC03DJM	AC03FJM	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 = 110 °C)		A	See Fig. 11
Surge On-State Current	I_{TSM}	30 (50 Hz 1 cycle)		A	See Fig. 2
Fusing Current	$\int i_T^2 dt$	4.0 (1 ms ≦ t ≦ 10 ms)		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	

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT	NOTE
Peak Off-State Current		I_{DRM}	$V_{DM} = V_{DRM}$		–	–	100	μA	
Peak Off-State Current		I_{DRM}	T_j = 125 °C, $V_{DM} = V_{DRM}$		–	–	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+	–	–	12	mA	See Fig. 4, 5, 7
	II			T_2 −, G+	–	–	–		
	III			T_2 −, G−	–	–	12		
	IV			T_2 +, G−	–	–	12		
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, 6, 8
	II			T_2 −, G+	–	–	–		
	III			T_2 −, G−	–	–	1.5		
	IV			T_2 +, G−	–	–	1.5		
Gate Non-Trigger Voltage		V_{GD}	T_j = 125 °C, V_{DM} = 1/2 V_{DRM}		0.2	–	–	V	
Holding Current		I_H	V_{DM} = 24 V, I_{TM} = 5 A		–	7	–	mA	
Critical Rate of Rise of Off-State Voltage		dV/dt	T_j = 125 °C, V_{DM} = 2/3 V_{DRM}		–	100	–	V/μs	
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	
Thermal Resistance		$R_{th(j-c)}$	Junction to Case		–	–	4	°C/W	See Fig. 13
Thermal Resistance		$R_{th(j-a)}$	Junction to Ambient*		–	–	62.5	°C/W	AC03DJM-Z AC03FJM-Z

* Mounted on ceramic substrate of 7.5 cm^2 × 0.7 mm.

TYPICAL CHARACTERISTICS (T_a = 25 °C)

Fig. 1 i_T – v_T CHARACTERISTIC

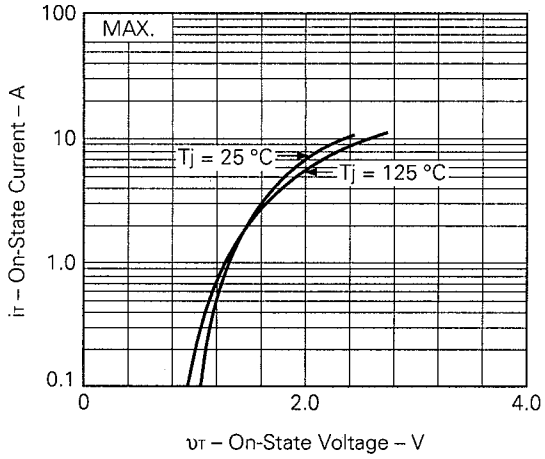


Fig. 2 I_{TSM} RATING

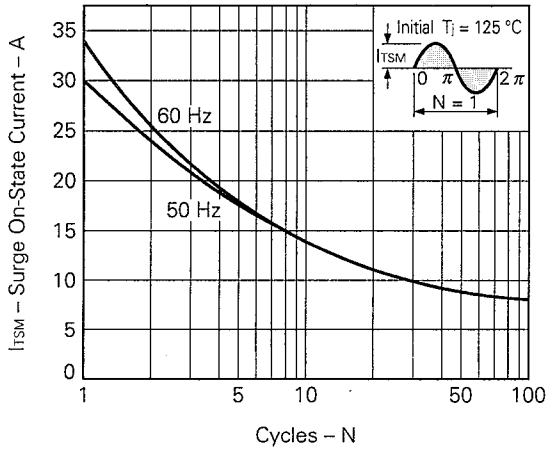


Fig. 3 V_G – I_G RATING

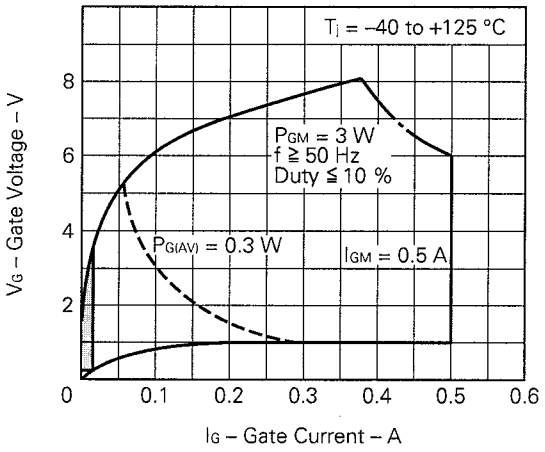


Fig. 4 V_{GT} – I_{GT} CHARACTERISTIC

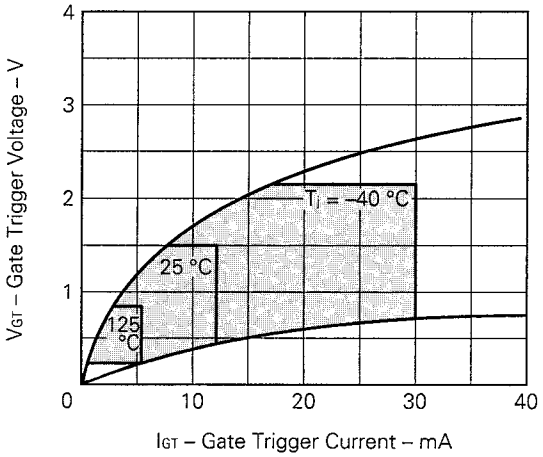


Fig. 5 I_{GT} – T_a TYPICAL DISTRIBUTION

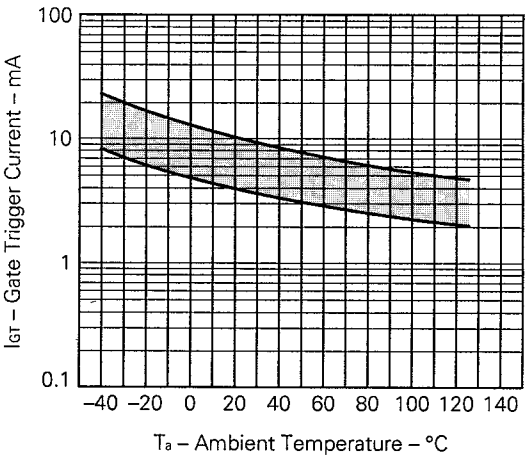


Fig. 6 V_{GT} – T_a TYPICAL DISTRIBUTION

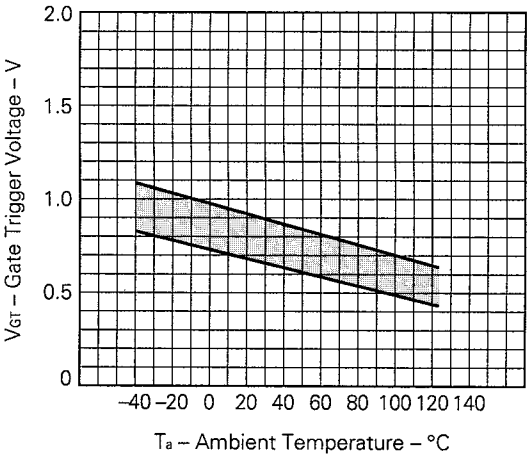


Fig. 7 i_{GT} – τ TYPICAL DISTRIBUTION

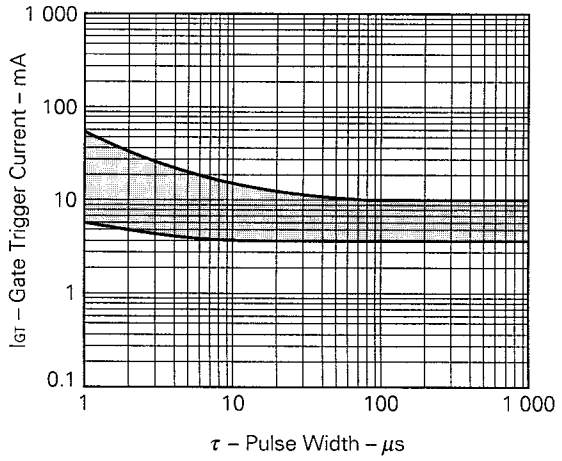


Fig. 8 v_{GT} – τ TYPICAL DISTRIBUTION

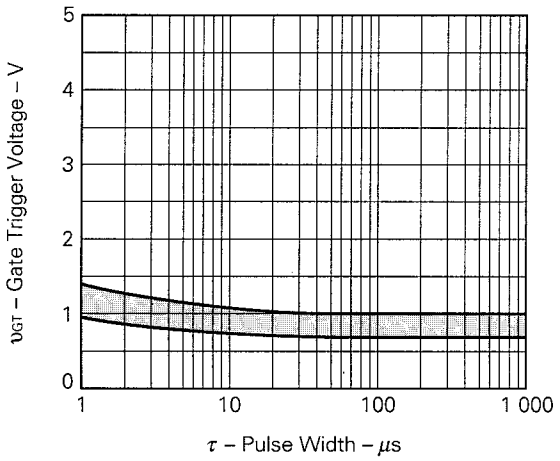


Fig. 9 I_H – T_a TYPICAL DISTRIBUTION

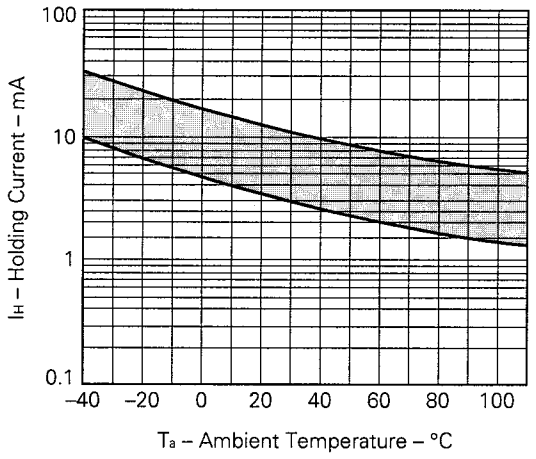


Fig. 10 $P_{T(AV)}$ – $I_{T(RMS)}$ CHARACTERISTIC

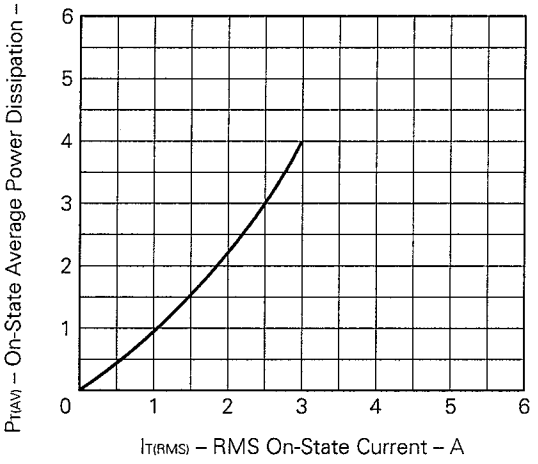


Fig. 11 T_C – $I_{T(RMS)}$ RATING

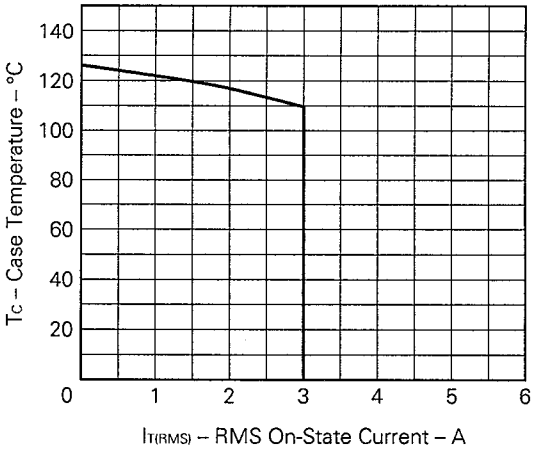


Fig. 12 T_a – $I_{T(RMS)}$ RATING

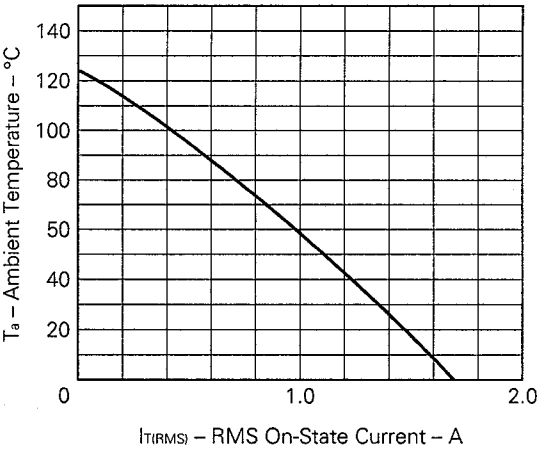
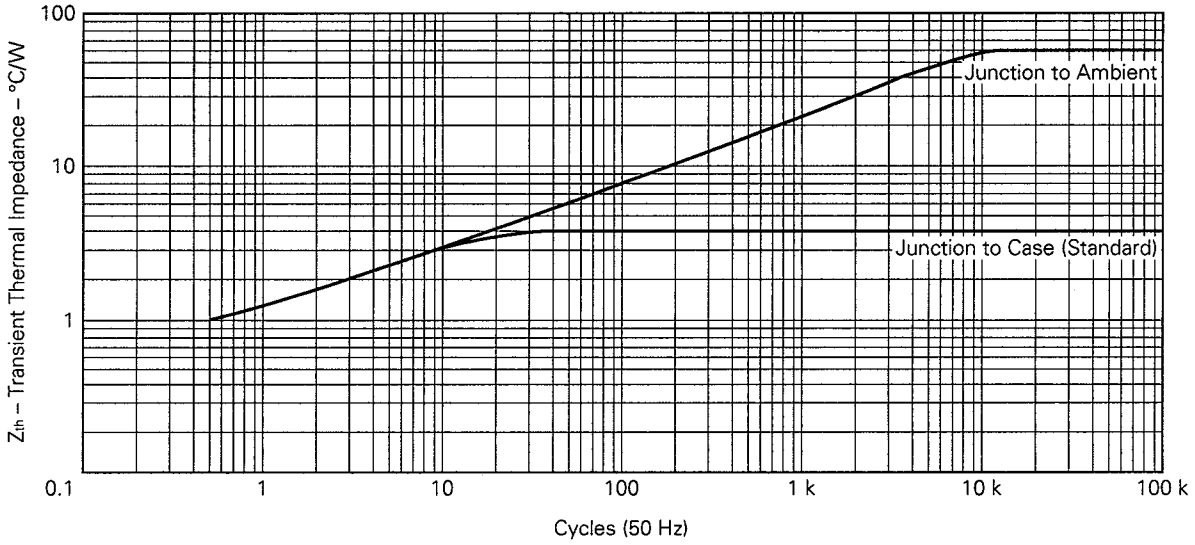


Fig. 13 Z_{th} CHARACTERISTIC



REFERENCE

Document name	Document No.
Quality control guide of semoiconductor devices	MEI-1202
Assembly manual of semiconductor devices	IEI-1207

[MEMO]