

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.

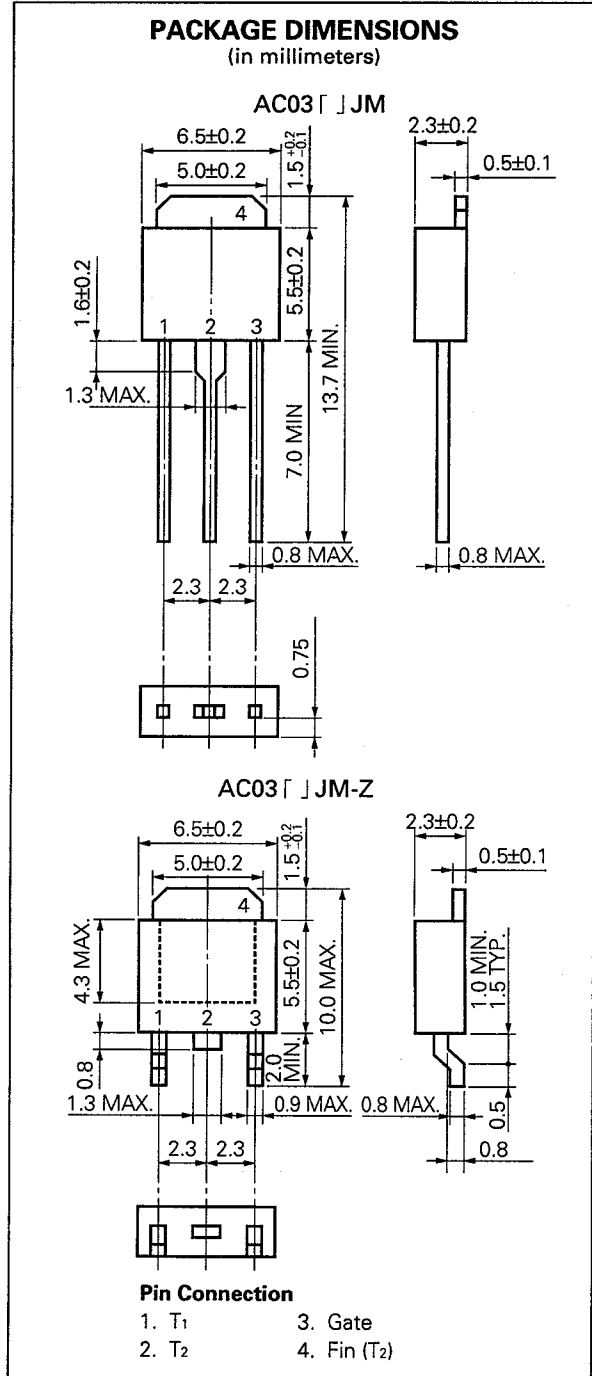
**QUALITY GRADE**

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.



**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25 °C)**

CHARACTERISTIC	SYMBOL	AC03DJM	AC03FJM	UNIT	NOTE
Repetitive Peak Off-State Voltage	V <sub>DRM</sub>	400	600	V	
Non-repetitive Peak Off-State Voltage	V <sub>DSM</sub>	500	700	V	
RMS On-State Current	I <sub>T(RMS)</sub>	3 (T <sub>c</sub> = 110 °C)		A	See Fig. 11
Surge On-State Current	I <sub>TSM</sub>	30 (50 Hz 1 cycle)		A	See Fig. 2
Fusing Current	$\int i^2 dt$	4.0 (1 ms ≤ t ≤ 10 ms)		A <sup>2</sup> s	
Peak Gate Power Dissipation	P <sub>GM</sub>	3 (f ≥ 50 Hz, Duty ≤ 10 %)		W	
Average Gate Power Dissipation	P <sub>G(AV)</sub>	0.3		W	
Peak Gate Current	I <sub>GM</sub>	±0.5 (f ≥ 50 Hz, Duty ≤ 10 %)		A	
Junction Temperature	T <sub>j</sub>	-40 to +125		°C	
Storage Temperature	T <sub>stg</sub>	-55 to +150		°C	

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)**

CHARACTERISTIC		SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	NOTE	
Peak Off-State Current		I <sub>DRM</sub>	V <sub>DM</sub> = V <sub>DRM</sub>	-	-	100	μA		
Peak Off-State Current		I <sub>DRM</sub>	T <sub>j</sub> = 125 °C, V <sub>DM</sub> = V <sub>DRM</sub>	-	-	1	mA		
On-State Voltage		V <sub>TM</sub>	I <sub>TM</sub> = 5 A	-	-	1.8	V	See Fig. 1	
Gate-trigger Current	Trigger Mode I	I <sub>GT</sub>	V <sub>DM</sub> = 12 V, R <sub>L</sub> = 30 Ω	T <sub>2</sub> +, G+	-	-	12	mA	See Fig. 4, 5, 7
	II			T <sub>2</sub> -, G+	-	-	-		
	III			T <sub>2</sub> -, G-	-	-	12		
	IV			T <sub>2</sub> +, G-	-	-	12		
Gate-trigger Voltage	Trigger Mode I	V <sub>GT</sub>	V <sub>DM</sub> = 12 V, R <sub>L</sub> = 30 Ω	T <sub>2</sub> +, G+	-	-	1.5	V	See Fig. 4, 6, 8
	II			T <sub>2</sub> -, G+	-	-	-		
	III			T <sub>2</sub> -, G-	-	-	1.5		
	IV			T <sub>2</sub> +, G-	-	-	1.5		
Gate Non-Trigger Voltage		V <sub>GD</sub>	T <sub>j</sub> = 125 °C, V <sub>DM</sub> = 1/2 V <sub>DRM</sub>	0.2	-	-	V		
Holding Current		I <sub>H</sub>	V <sub>DM</sub> = 24 V, I <sub>TM</sub> = 5 A	-	7	-	mA		
Critical Rate of Rise of Off-State Voltage		dV/dt	T <sub>j</sub> = 125 °C, V <sub>DM</sub> = 2/3 V <sub>DRM</sub>	-	100	-	V/μs		
Commutating dV/dt		(dV/dt) <sub>C</sub>	T <sub>j</sub> = 125 °C (di <sub>T</sub> /dt) <sub>C</sub> = -1.6 A/ms V <sub>DM</sub> = 400 V	5	-	-	V/μs		
Thermal Resistance		R <sub>th(j-c)</sub>	Junction to Case	-	-	4	°C/W	See Fig. 13	
Thermal Resistance		R <sub>th(j-a)</sub>	Junction to Ambient*	-	-	62.5	°C/W	AC03DJM-Z AC03FJM-Z	

\* Mounted on ceramic substrate of 7.5 cm<sup>2</sup> × 0.7 mm.

TYPICAL CHARACTERISTICS ( $T_a = 25\text{ }^\circ\text{C}$ )

Fig. 1  $i_T - v_T$  CHARACTERISTIC

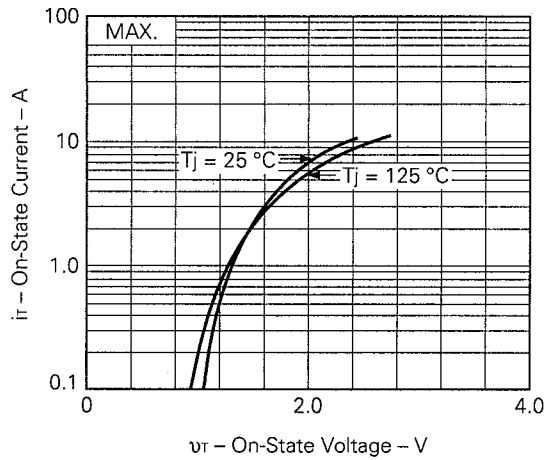


Fig. 2  $I_{TSM}$  RATING

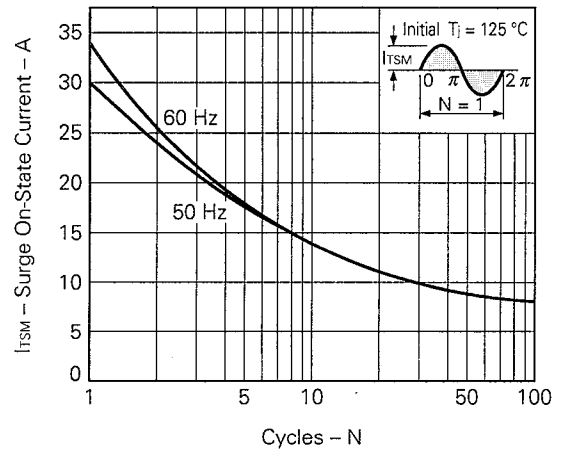


Fig. 3  $V_G - I_G$  RATING

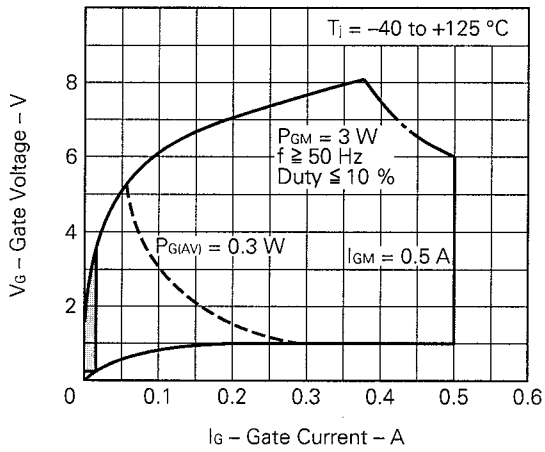


Fig. 4  $V_{GT} - I_{GT}$  CHARACTERISTIC

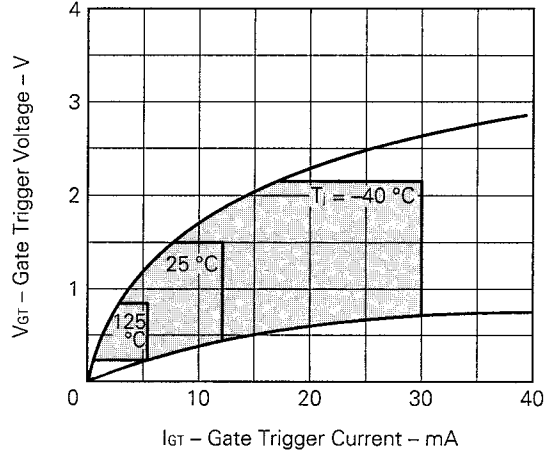


Fig. 5  $I_{GT} - T_a$  TYPICAL DISTRIBUTION

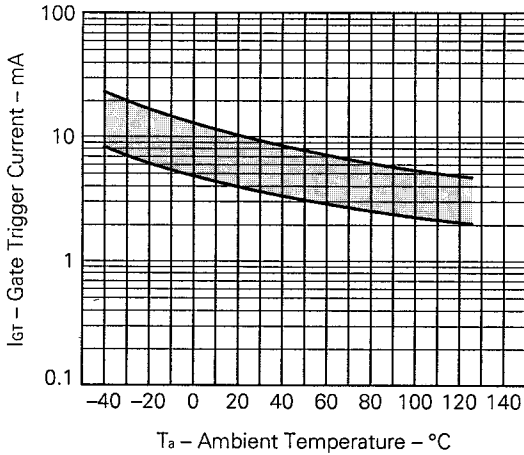


Fig. 6  $V_{GT} - T_a$  TYPICAL DISTRIBUTION

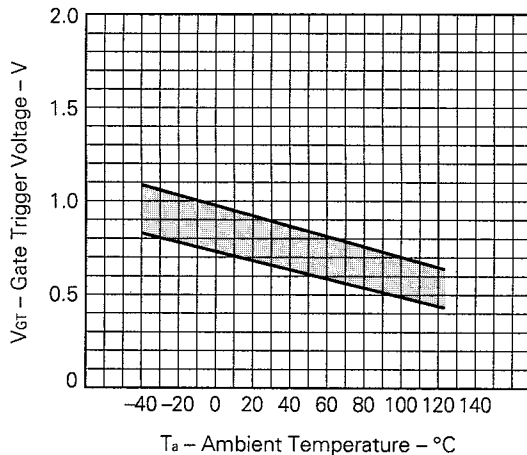


Fig. 7  $i_{GT} - \tau$  TYPICAL DISTRIBUTION

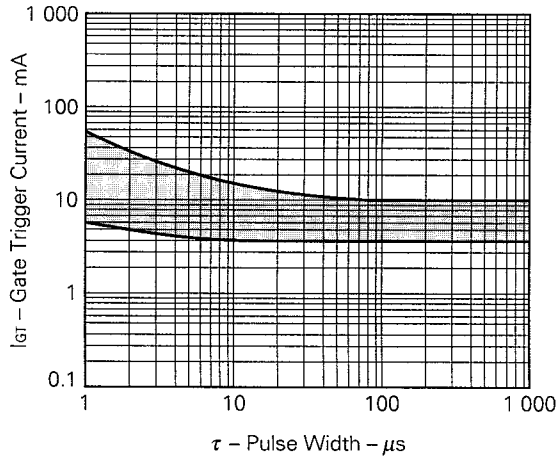


Fig. 8  $v_{GT} - \tau$  TYPICAL DISTRIBUTION

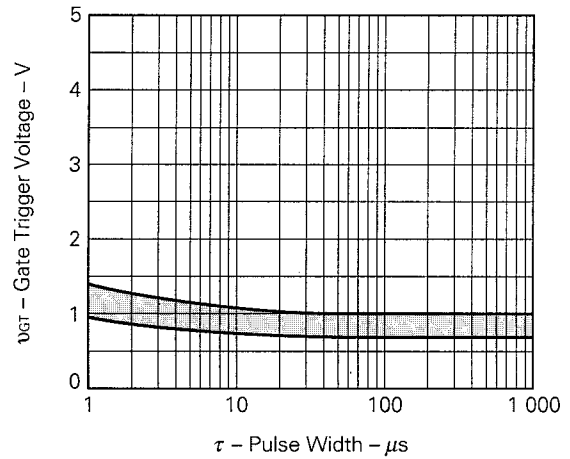


Fig. 9  $I_H - T_a$  TYPICAL DISTRIBUTION

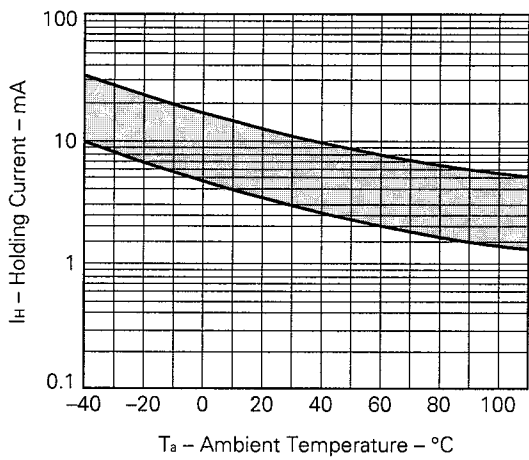


Fig. 10  $P_{T(AV)} - I_{T(RMS)}$  CHARACTERISTIC

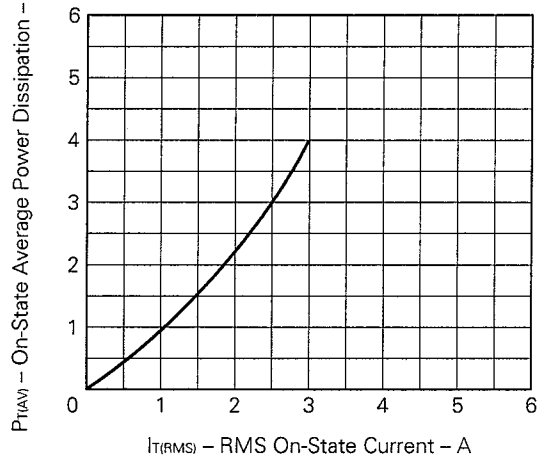


Fig. 11  $T_c - I_{T(RMS)}$  RATING

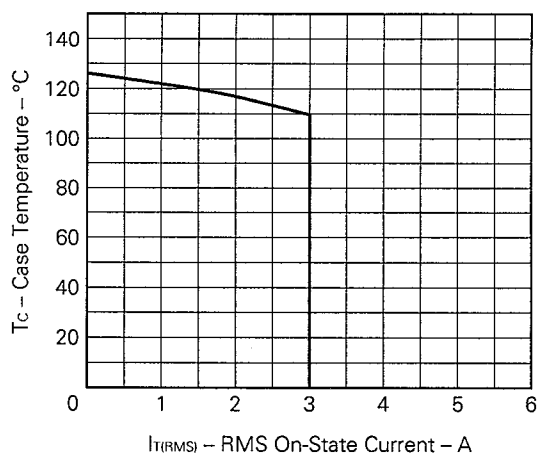


Fig. 12  $T_a - I_{T(RMS)}$  RATING

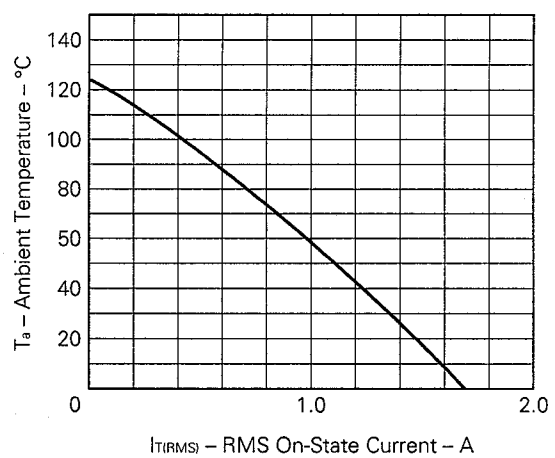
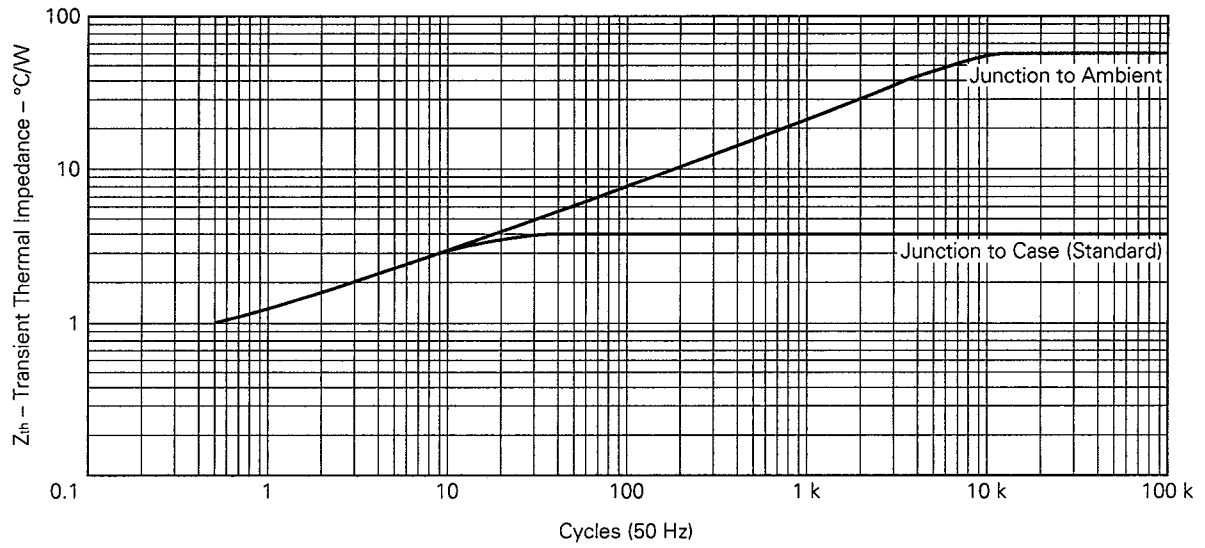


Fig. 13 Z<sub>th</sub> CHARACTERISTIC



REFERENCE

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

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Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.