

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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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

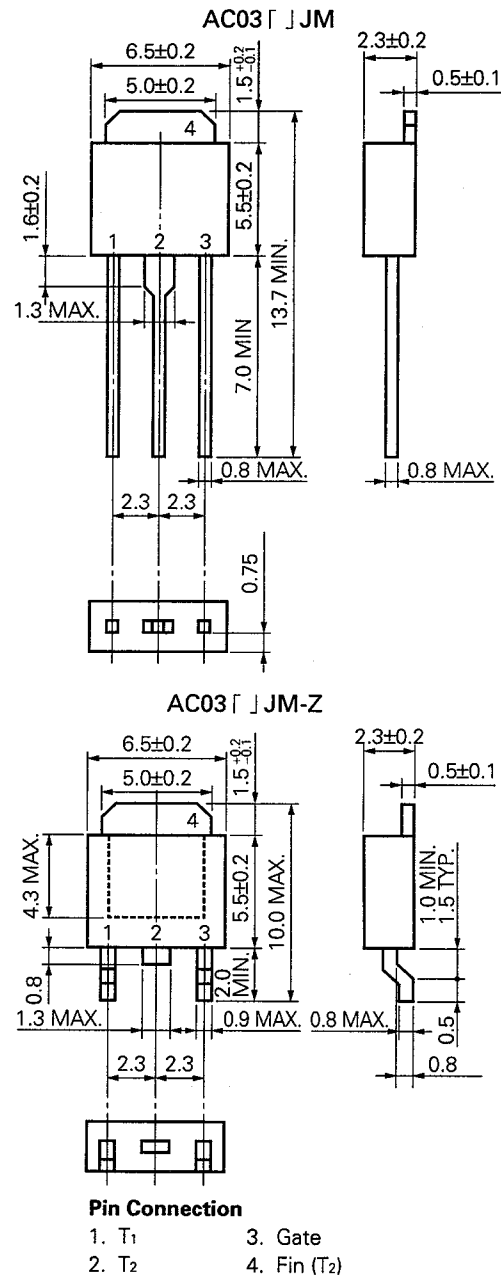
Standard

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)



ABSOLUTE MAXIMUM RATINGS ($T_a = 25\text{ }^{\circ}\text{C}$)

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	$I_{\text{T(RMS)}}$	3 ($T_c = 110\text{ }^{\circ}\text{C}$)		A	See Fig. 11
Surge On-State Current	I_{TSM}	30 (50 Hz 1 cycle)		A	See Fig. 2
Fusing Current	$\int i^2 dt$	4.0 (1 ms $\leq t \leq$ 10 ms)		A ² s	
Peak Gate Power Dissipation	P_{GM}	3 ($f \geq 50\text{ Hz}$, Duty $\leq 10\%$)		W	
Average Gate Power Dissipation	$P_{\text{G(AV)}}$	0.3		W	
Peak Gate Current	I_{GM}	± 0.5 ($f \geq 50\text{ Hz}$, Duty $\leq 10\%$)		A	
Junction Temperature	T_j	-40 to $+125$		$^{\circ}\text{C}$	
Storage Temperature	T_{stg}	-55 to $+150$		$^{\circ}\text{C}$	

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

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 $7.5\text{ cm}^2 \times 0.7\text{ mm}$.

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

Fig. 1 $i_T - v_T$ CHARACTERISTIC

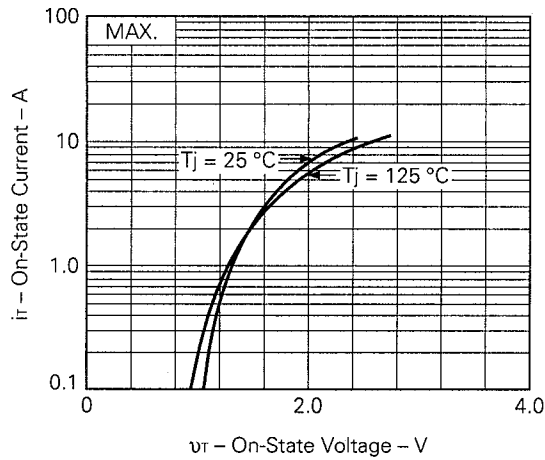


Fig. 2 I_{TSM} RATING

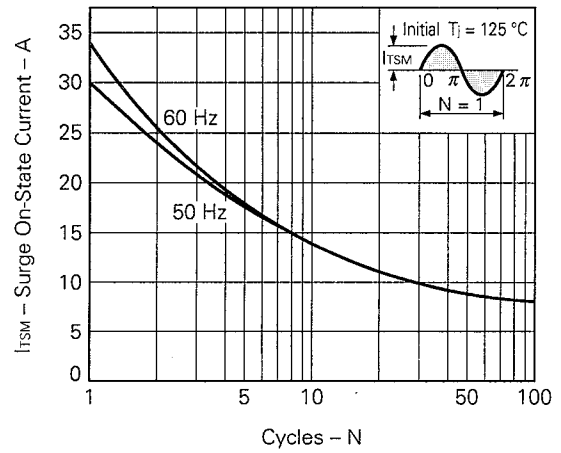


Fig. 3 $V_G - I_G$ RATING

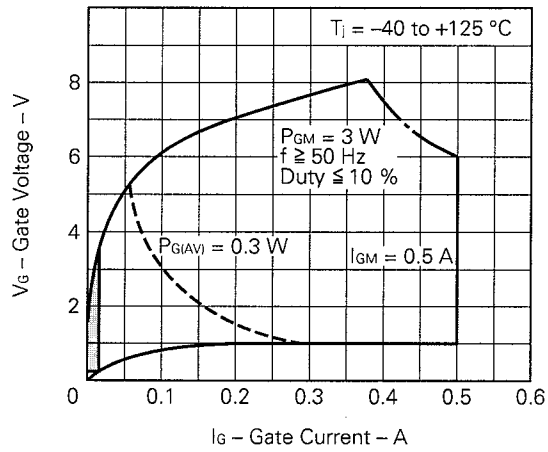


Fig. 4 $V_{GT} - I_{GT}$ CHARACTERISTIC

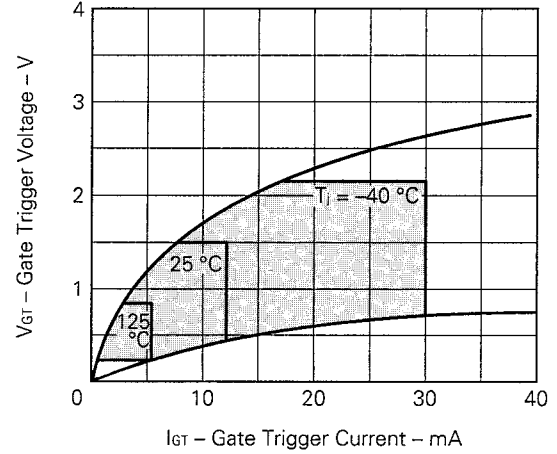


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

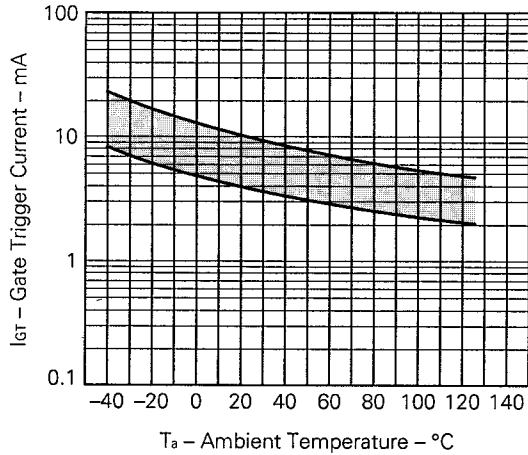


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

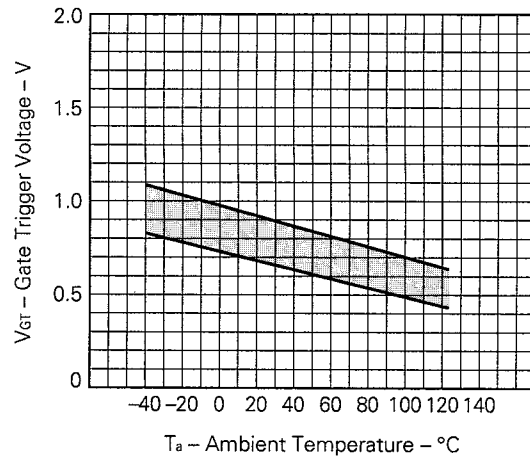


Fig. 7 $I_{GT} - \tau$ TYPICAL DISTRIBUTION

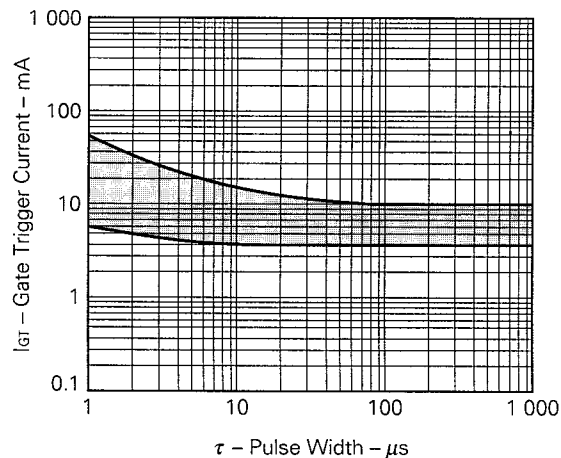


Fig. 8 $V_{GT} - \tau$ TYPICAL DISTRIBUTION

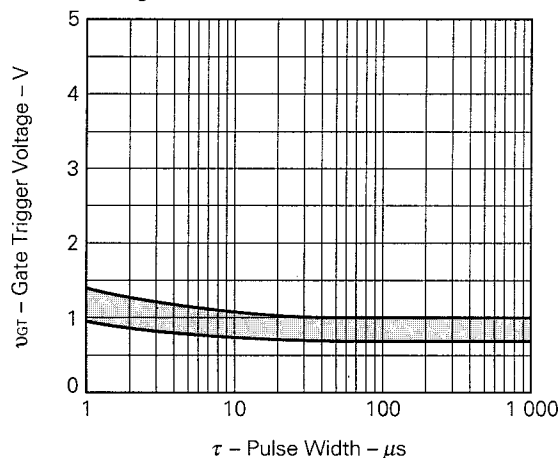


Fig. 9 $I_H - T_a$ TYPICAL DISTRIBUTION

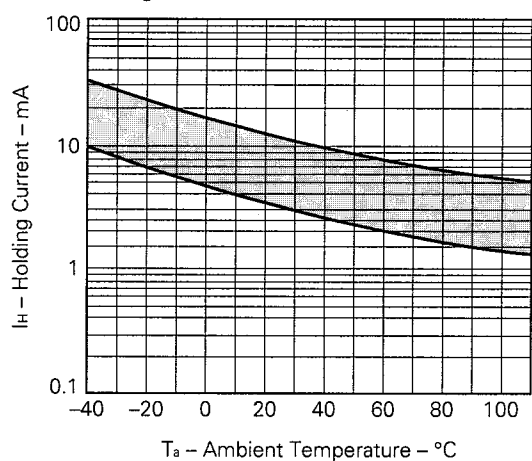


Fig. 10 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

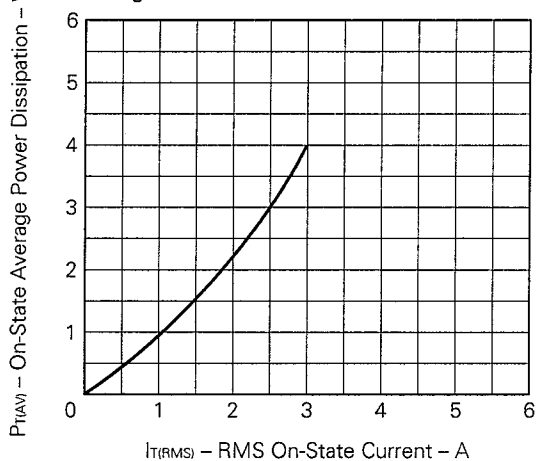


Fig. 11 $T_C - I_{T(RMS)}$ RATING

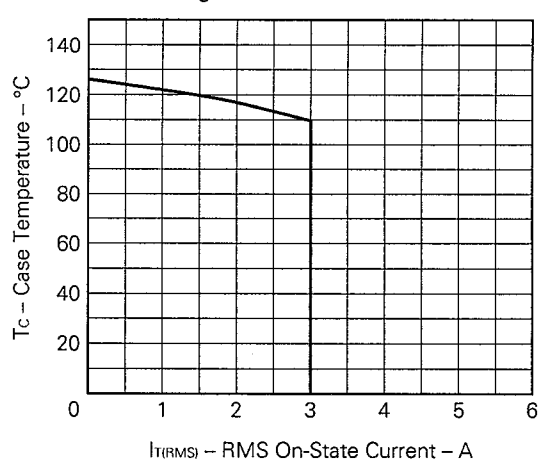


Fig. 12 $T_a - I_{T(RMS)}$ RATING

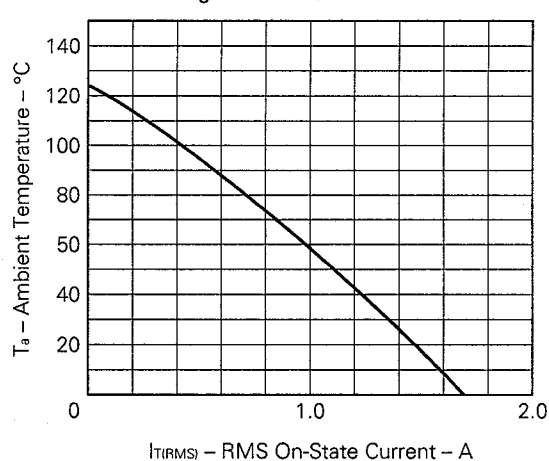
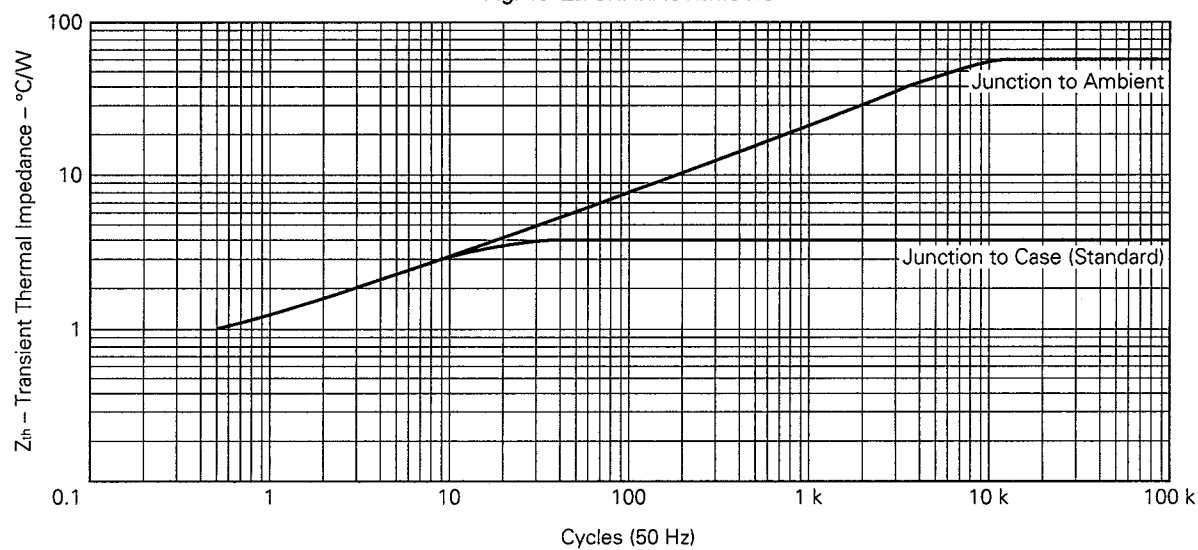


Fig. 13 Z_{th} CHARACTERISTIC

REFERENCE

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

[MEMO]

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