

To our customers,

Old Company Name in Catalogs and Other Documents

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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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1 A POWER MINI MOLD TRIAC
DESCRIPTION

The AC01DJM is all diffused type TRIAC granted RMS On-state Current 1 Amps, with rated voltages up to 400 volts.

This is designed specifically to be driven by low-level logic in any gating mode.

FEATURES

- The AC01DJM offers sensitive gate specs of 5 and 10 mA, in all for quadrants.
- You can fill the gap between microprocessor controls and the power-output requirements.
- This is housed in the popular SOT-89 package.
- The package features excellent environmental stress and temperature cycling.

QUALITY GRADE

Standard

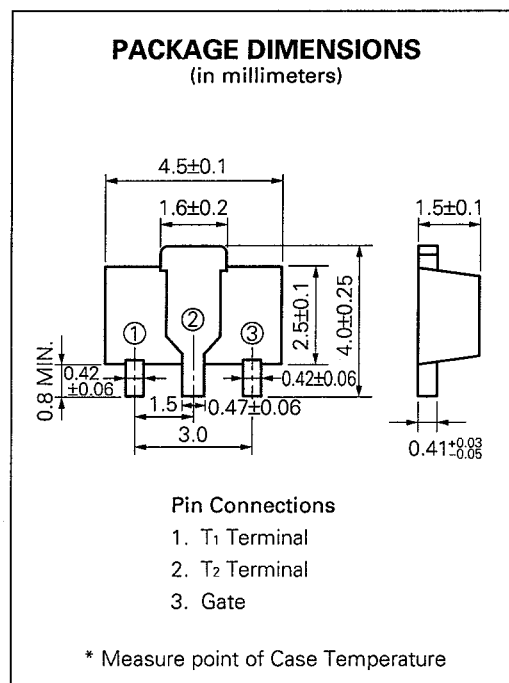
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

APPLICATIONS

Solid-state relays, microprocessor interfacing, TTL logic and various solid-state switch designs alone or with larger TRIAC.

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MAXIMUM RATINGS	UNIT	NOTE
Repetitive Peak Off Voltage	V _{DRM}	400	V	
Non-repetitive Peak Off Voltage	V _{DSM}	500	V	
RMS On-State Current	I _{T(RMS)}	1 (T _c = 113 °C)	A	See Fig. 12
Peak Surge On-State Current	I _{TSM}	7 (50 Hz), 8 (60 Hz)	A	See Fig. 2
Fusing Current	$\int i^2 dt$	0.2 (1 ms ≤ t ≤ 10 ms)	A ² s	
Peak Gate Power Dissipation	P _{GM}	1 (f ≥ 50 Hz, Duty ≤ 10 %)	W	
Average Gate Power Dissipation	P _{G(AV)}	0.1	W	
Peak Gate Current	I _{GM}	±0.5 (f ≥ 50 Hz, Duty ≤ 10 %)	A	
Junction Temperature	T _j	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}	T _j = 25 °C	-	-	10	μA	
				T _j = 125 °C	-	-	100		
On-State Voltage		V _{TM}	I _{TM} = 1.2 A	-	-	1.5	V	See Fig. 1	
DC Gate Trigger Current	MODE I	I _{GT}	V _{DM} = 12 V R _L = 100 Ω	G; Positive, T ₂ ; Positive	-	-	5	mA	See Fig. 5, 7
	II			G; Negative, T ₂ ; Positive	-	-	10		
	III			G; Negative, T ₂ ; Negative	-	-	5		
	IV			G; Positive, T ₂ ; Negative	-	-	5		
DC Gate Trigger Voltage	MODE I	V _{GT}	V _{DM} = 12 V R _L = 100 Ω	G; Positive, T ₂ ; Positive	-	-	1.0	V	See Fig. 6, 8
	II			G; Negative, T ₂ ; Positive	-	-	1.5		
	III			G; Negative, T ₂ ; Negative	-	-	1.0		
	IV			G; Positive, T ₂ ; Negative	-	-	1.0		
Gate Non-Trigger Voltage		V _{GD}	T _j = 125 °C, V _{DM} = 1/2 V _{DRM}	0.1	-	-	V		
DC Holding Current		I _H	V _D = 24 V, I _{TM} = 1 A	-	-	10	mA		
Critical Rate of Rise of Off-State Voltage		dv/dt	T _j = 125 °C, V _{DM} = 2/3 V _{DRM} Gate Open Circuited Exponential Waveform	-	10	-	V/μs		
Critical Rate of Rise of Commutating Off-State Voltage		(dv/dt) _c	T _j = 125 °C, I _{TM} = 1.2 A (di _T /dt) _c = -0.5 A/ms V _{DM} = 400 V	0.5	-	-	V/μs		
Steady State		R _{th(j-c)}	Junction to Case	-	-	10	°C/W	See Fig. 13	
Thermal Resistance		R _{th(j-a)}	Junction to Ambient	-	-	120	°C/W		

TYPICAL CHARACTERISTICS (T_a = 25 °C)

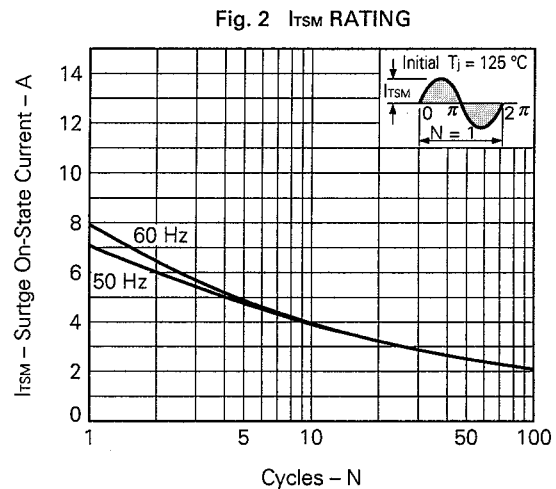
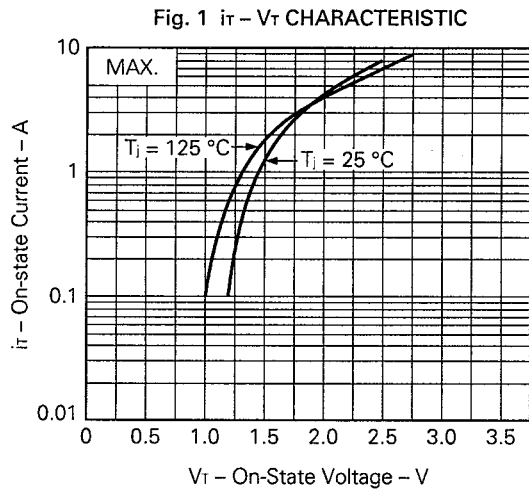


Fig. 3 $V_G - I_G$ RATING

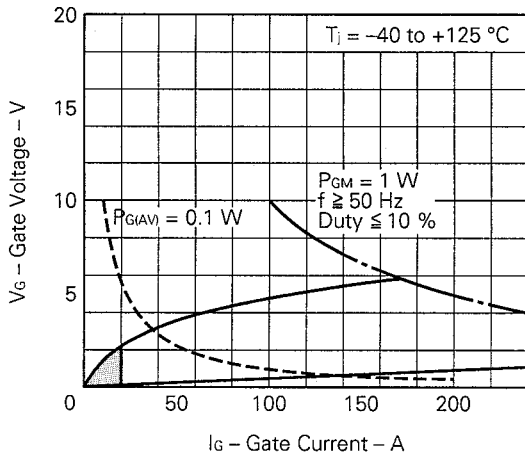


Fig. 4 GATE CHARACTERISTIC

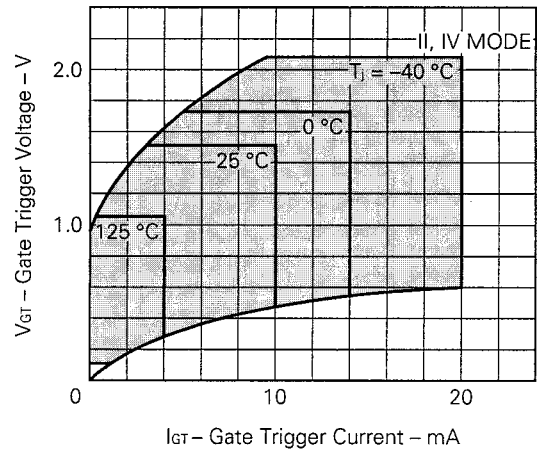


Fig. 5 GATE CHARACTERISTIC

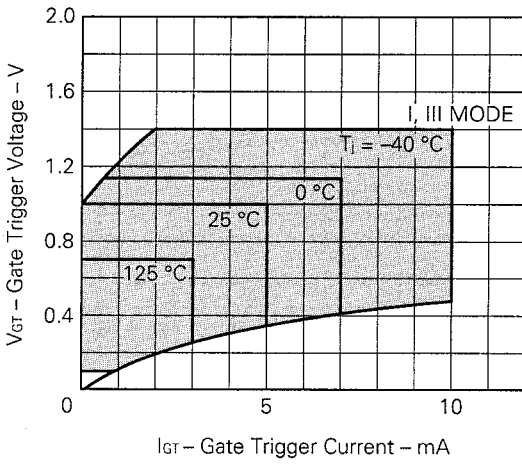


Fig. 6 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

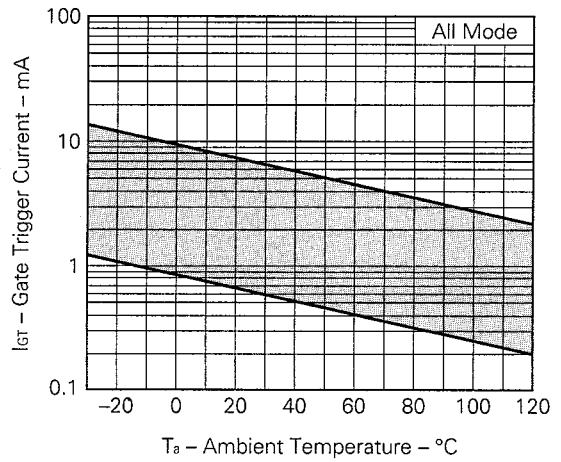


Fig. 7 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

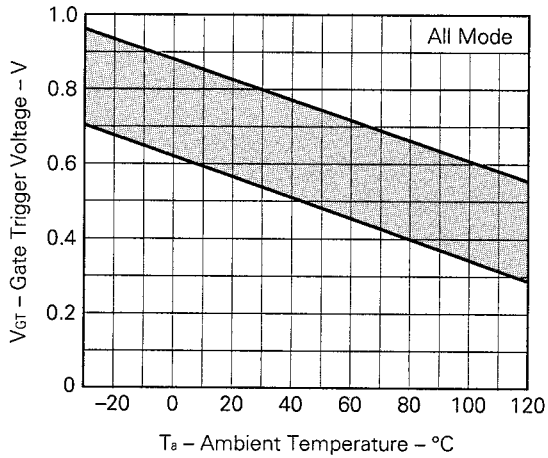


Fig. 8 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

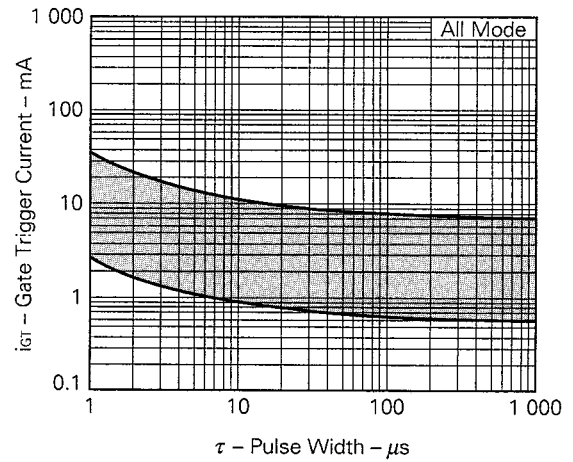


Fig. 9 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

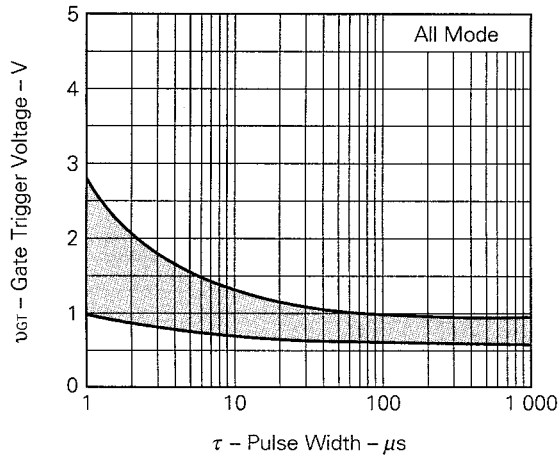


Fig. 10 $I_H - T_a$ TYPICAL DISTRIBUTION

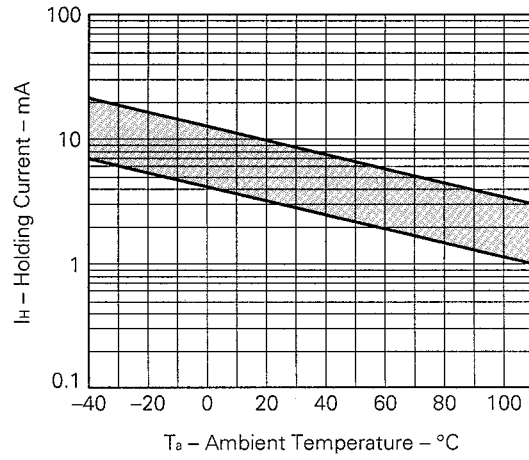


Fig. 11 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

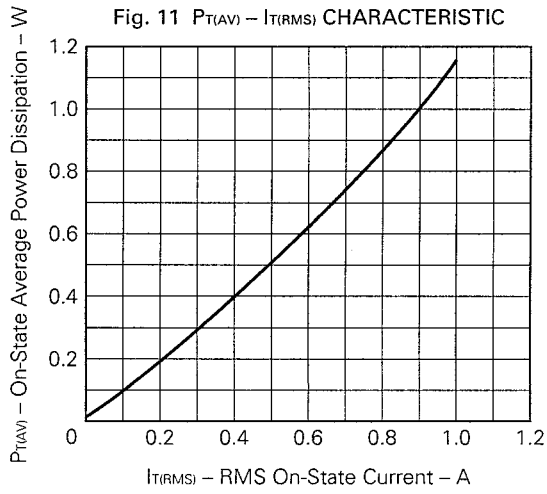


Fig. 12 $T_c - I_{T(RMS)}$ RATING

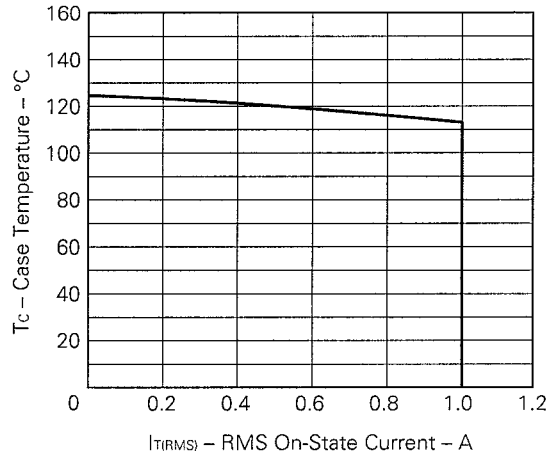


Fig. 13 $T_a - I_{T(RMS)}$ RATING

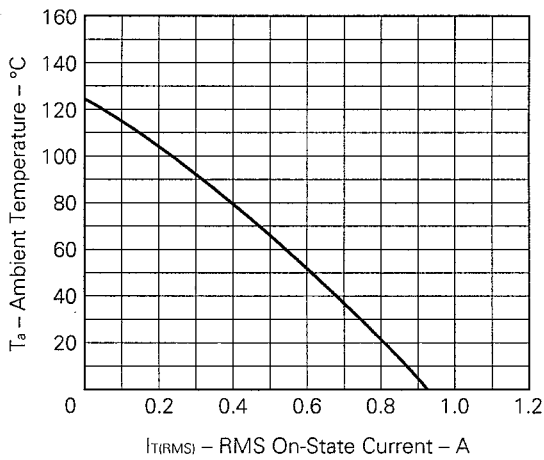
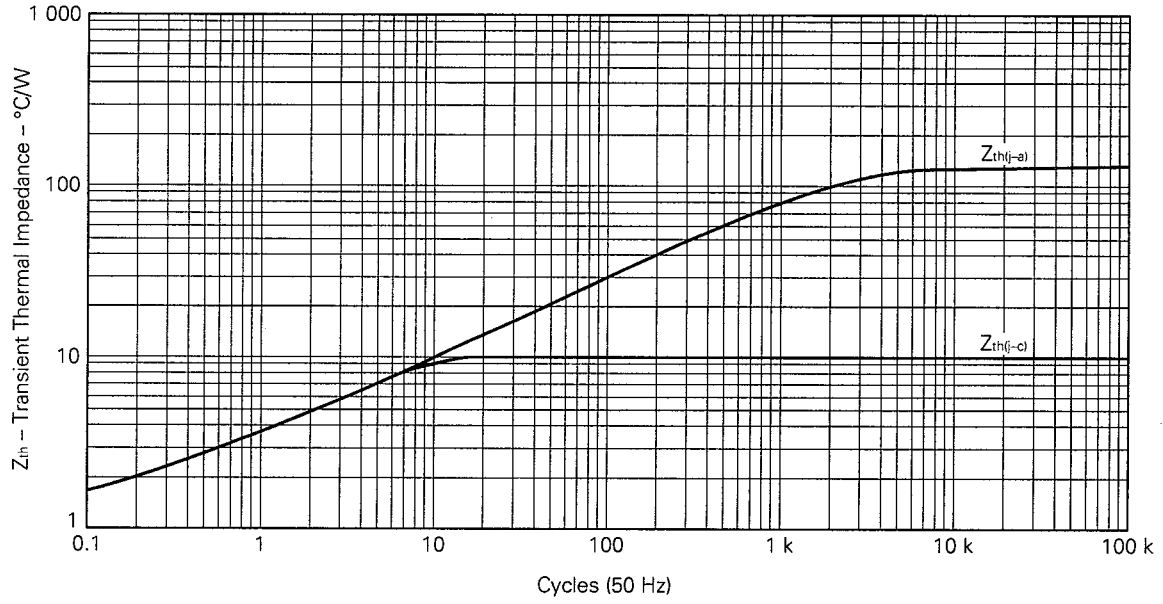


Fig. 14 Z_{th} CHARACTERISTIC



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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