NEC

TRIAC

AC01DJM

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.

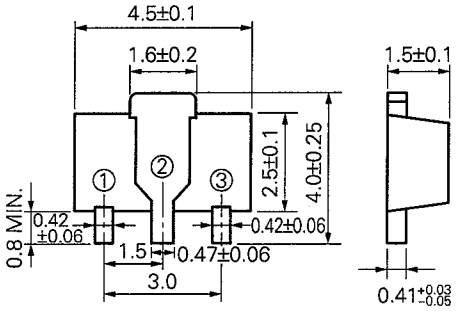
This is designed specifically to be driven by low-level logic in any gating mode.

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.

PACKAGE DIMENSIONS

(in millimeters)



Pin Connections

1. T_1 Terminal
2. T_2 Terminal
3. Gate

* Measure point of Case Temperature

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	$\int i^2Tdt$	0.2 (1 ms ≦ t ≦ 10 ms)	A^2s	
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	

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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. 1 i_T – V_T CHARACTERISTIC

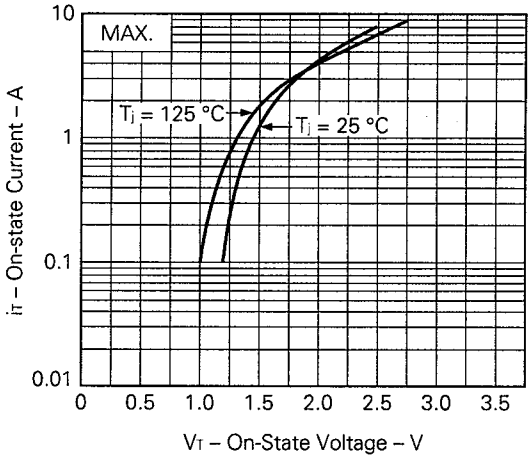


Fig. 2 I_{TSM} RATING

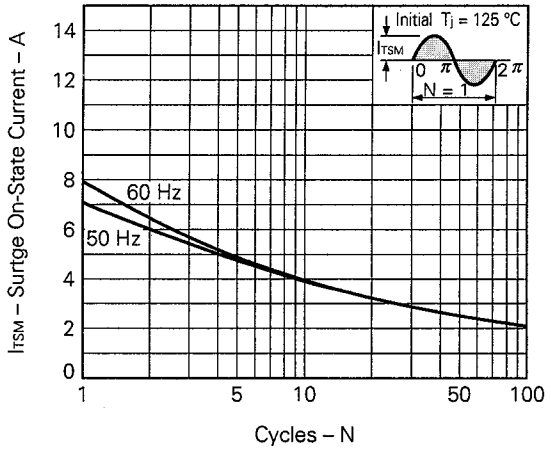


Fig. 3 V_G – I_G RATING

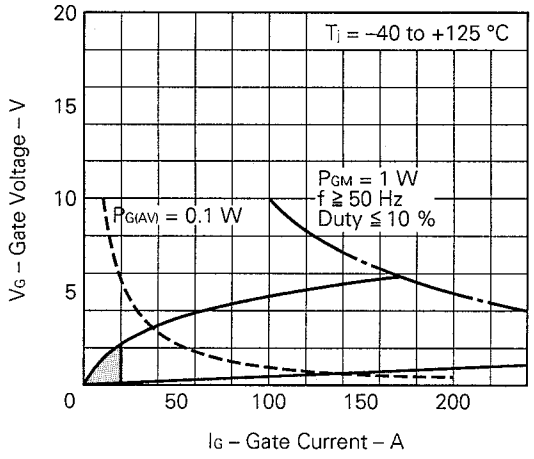


Fig. 4 GATE CHARACTERISTIC

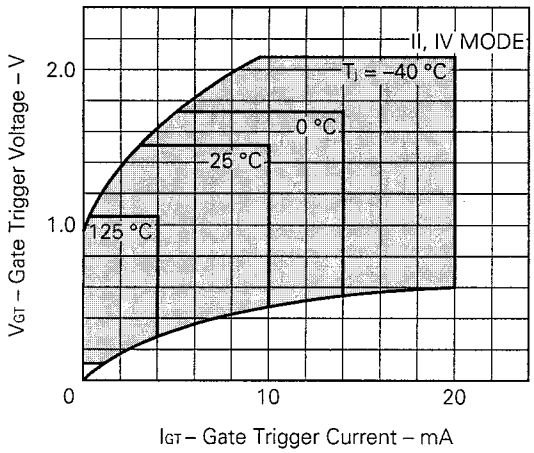


Fig. 5 GATE CHARACTERISTIC

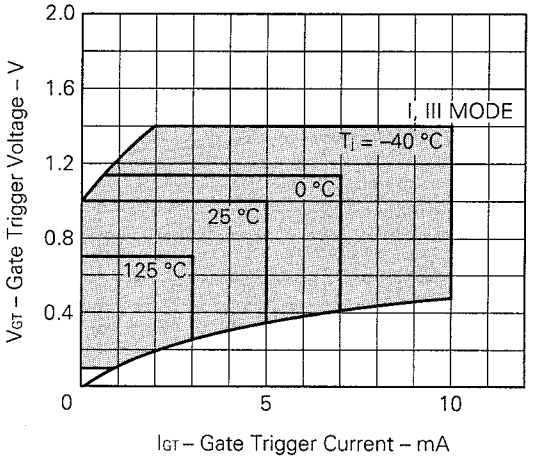


Fig. 6 I_{GT} – T_a TYPICAL DISTRIBUTION

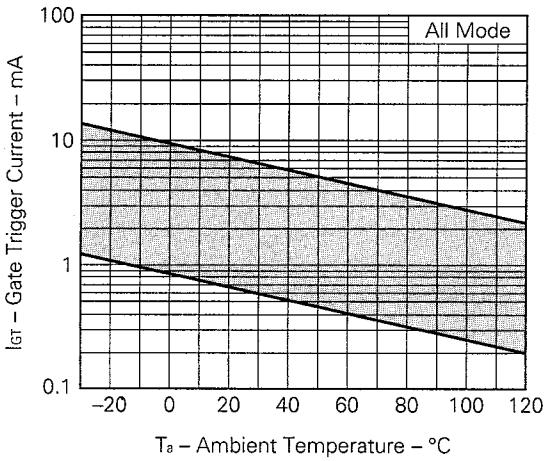


Fig. 7 V_{GT} – T_a TYPICAL DISTRIBUTION

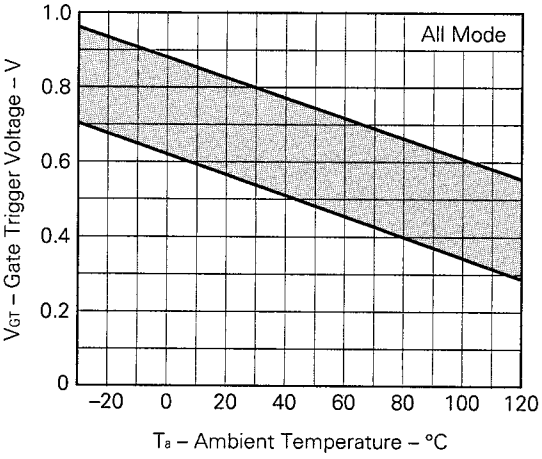


Fig. 8 i_{GT} – τ TYPICAL DISTRIBUTION

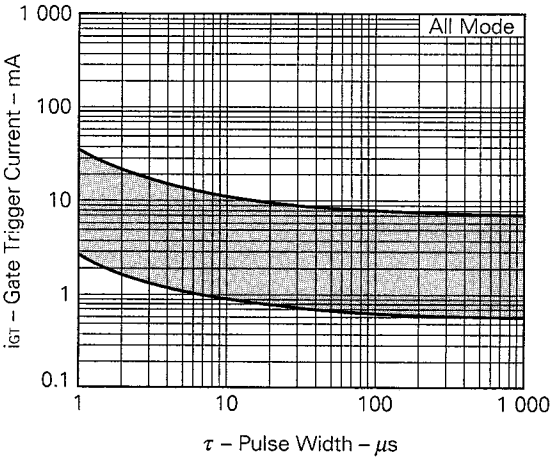


Fig. 9 υ_{GT} – τ TYPICAL DISTRIBUTION

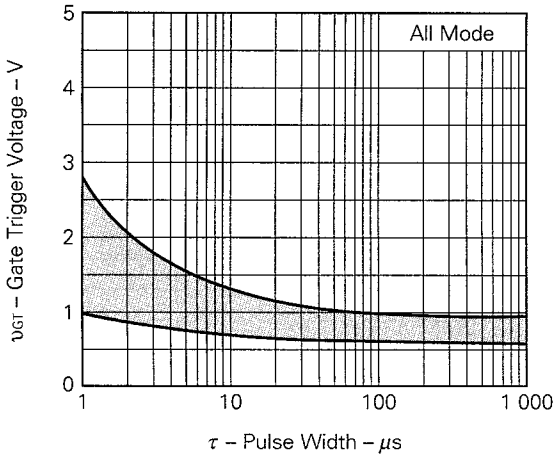


Fig. 10 I_H – T_a TYPICAL DISTRIBUTION

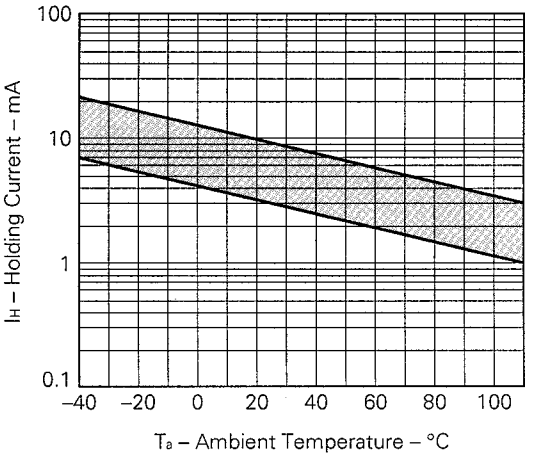


Fig. 11 $P_{T(AV)}$ – $I_{T(RMS)}$ CHARACTERISTIC

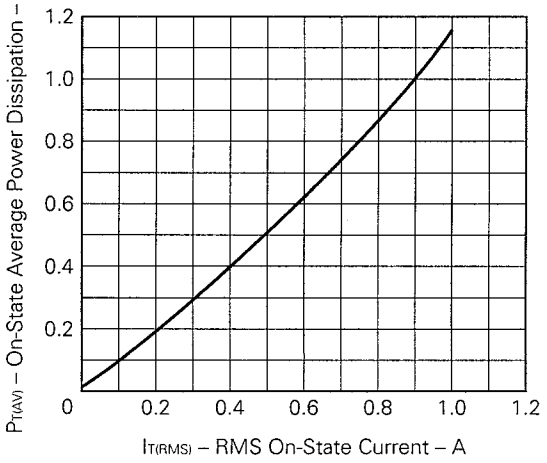


Fig. 12 T_C – $I_{T(RMS)}$ RATING

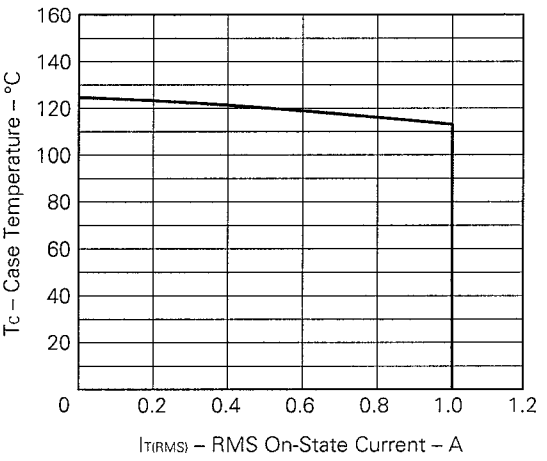


Fig. 13 T_a – $I_{T(RMS)}$ RATING

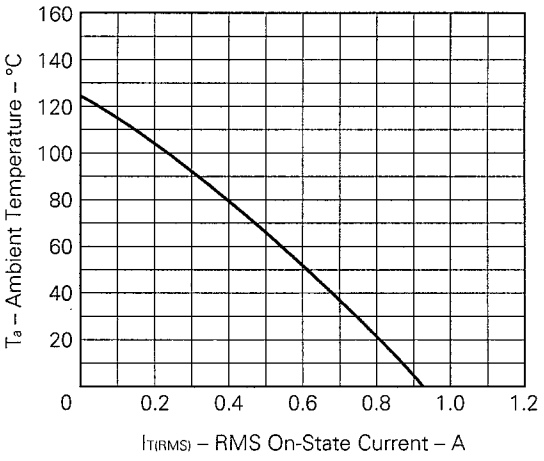
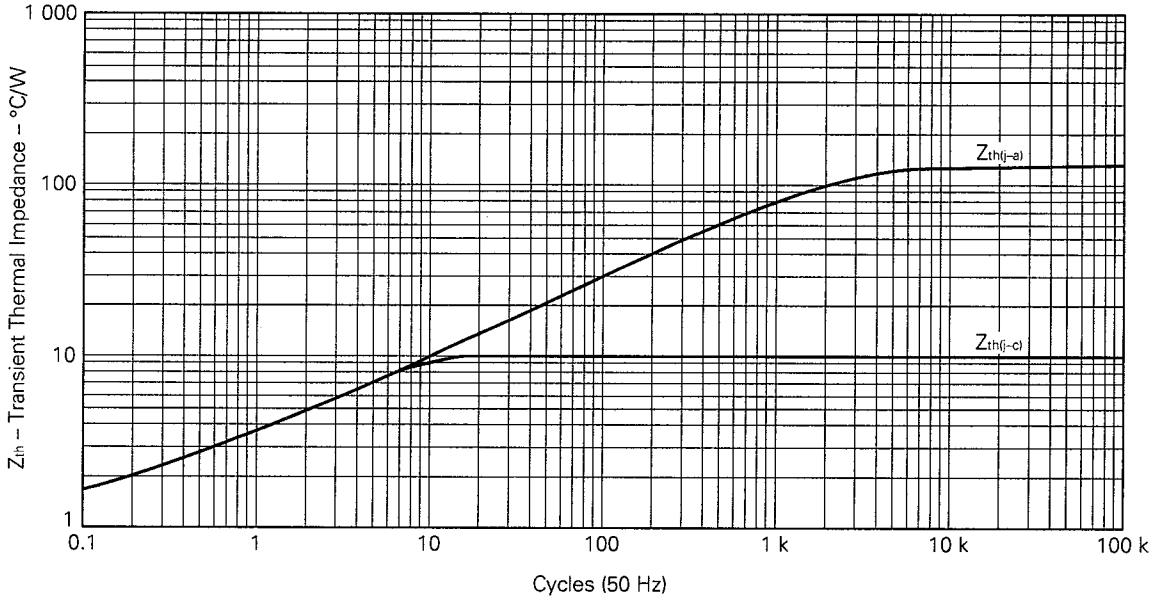


Fig. 14 Z_{th} CHARACTERISTIC



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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