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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RENESAS

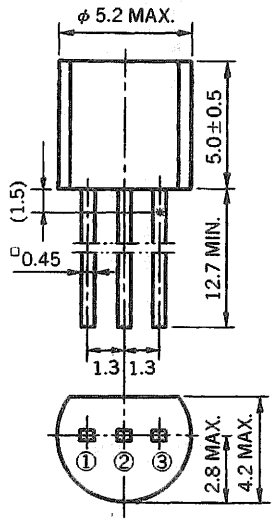
TRIAC

AC01DGM

1 A MOLD TRIAC

PACKAGE DIMENSIONS

(Unit : mm)



Pin Connection

1. T_1 Terminal
2. Gate
3. T_2 Terminal

* Measure point of Case Temperature

DESCRIPTION

The AC01DGM 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 AC01DGM offers sensitive gate specs of 3 and 5 mA, in all for quadrants.
- You can fill the gap between microprocessor controls and the power-output requirements.
- This is housed in the popular TO-92 package.
- The package features excellent environmental stress and temperature cycling.

APPLICATIONS

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

MAXIMUM RATINGS

ITEM	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 = 49 °C)	A	Fig. 11
Peak Surge On-State Current	I_{TSM}	9 (50 Hz), 10 (60 Hz)	A	Fig. 2
Fusing Current	$\int i^2 T dt$	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	

ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

ITEM		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	Fig. 1
DC Gate Trigger Current	MODE I	I_{GT}	V_{DM} = 12 V, R_L = 100 Ω	G; Positive, T_2; Positive	–	–	3	mA	Fig. 5, 7
	II			G; Negative, T_2; Positive	–	–	5		
	III			G; Negative, T_2; Negative	–	–	3		
	IV			G; Positive, T_2; Negative	–	–	3		
DC Gate Trigger Voltage	MODE I	V_{GT}	V_{DM} = 12 V, R_L = 100 Ω	G; Positive, T_2; Positive	–	–	1.0	V	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, $V_{DM} = \frac{1}{2} V_{DRM}$		0.1	–	–	V	
DC Holding Current		I_H	V_D = 24 V, I_{TM} = 1 A		–	2	5	mA	
Critical Rate of Rise of Off-State Voltage		dv/dt	T_j = 125 °C, $V_{DM} = \frac{2}{3} V_{DRM}$ Gate Open Circuited Exponential Waveform		–	50	–	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		–	–	65	°C/W	Fig. 13
Thermal Resistance		$R_{th(j-a)}$	Junction to Ambient		–	–	150	°C/W	

CHARACTERISTICS

Fig. 1 $i_T - V_T$ CHARACTERISTIC

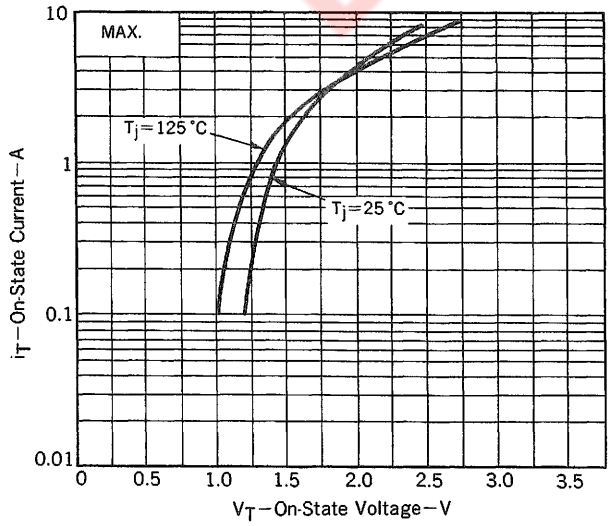


Fig. 2 I_{TSM} RATING

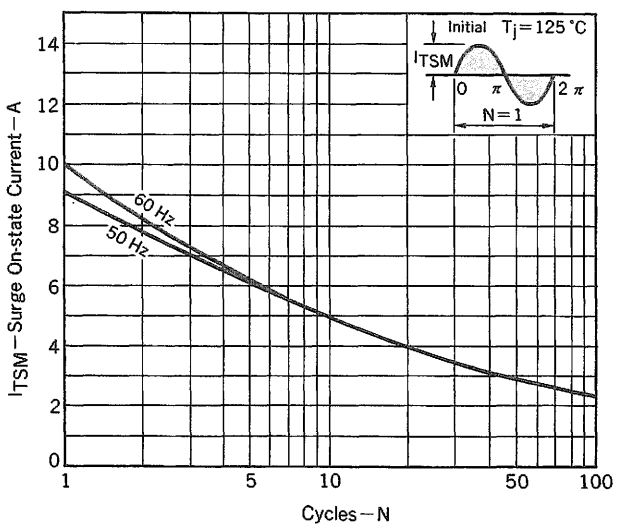


Fig. 3 $V_G - I_G$ RATING

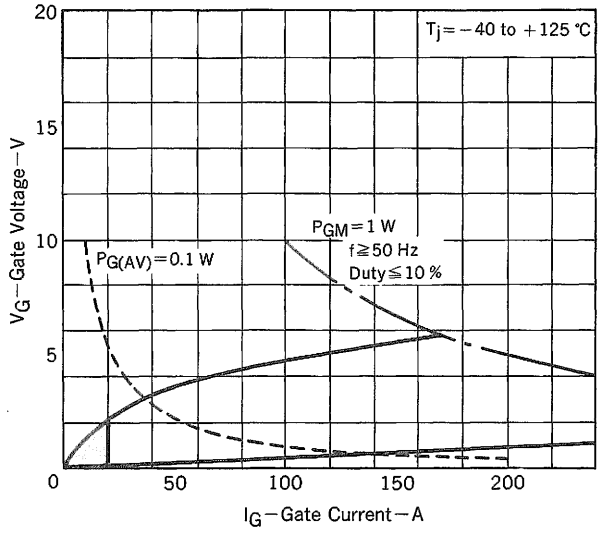


Fig. 4 GATE CHARACTERISTIC

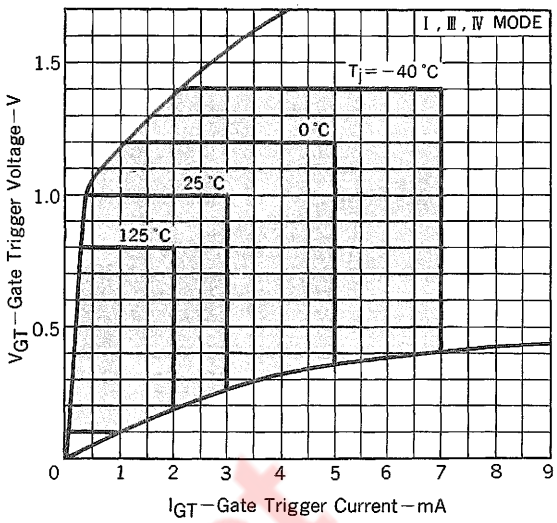


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

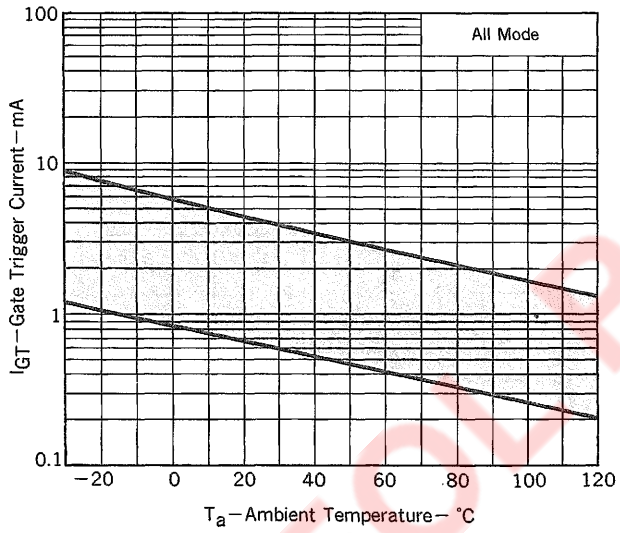


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

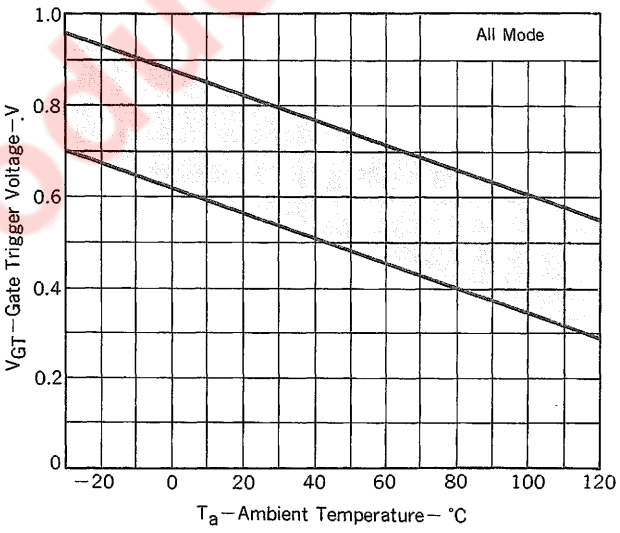


Fig. 7 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

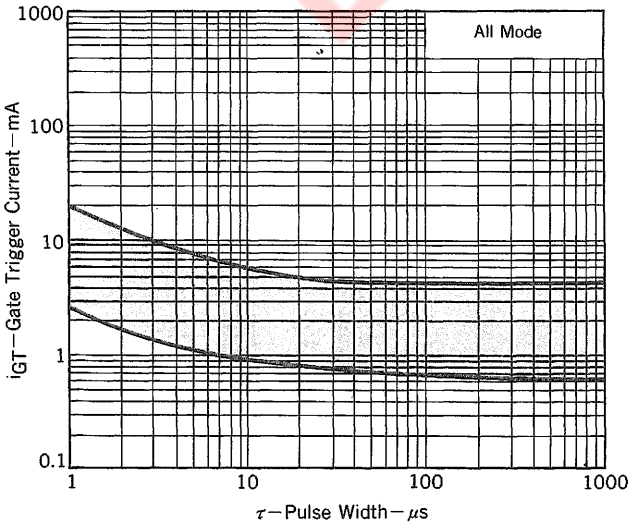


Fig. 8 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

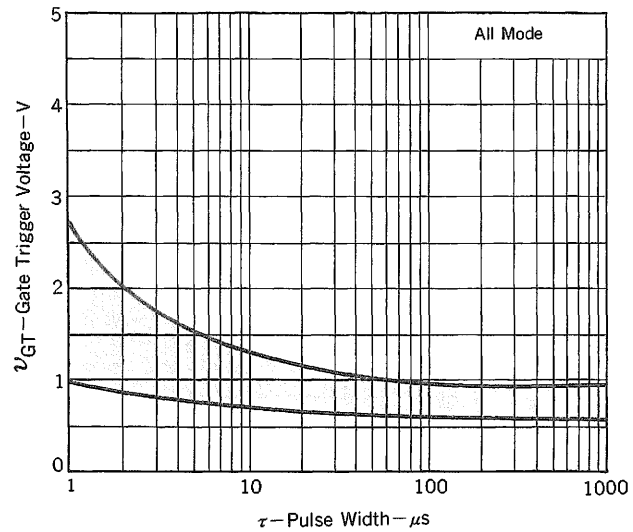


Fig. 9 $I_H - T_a$ TYPICAL DISTRIBUTION

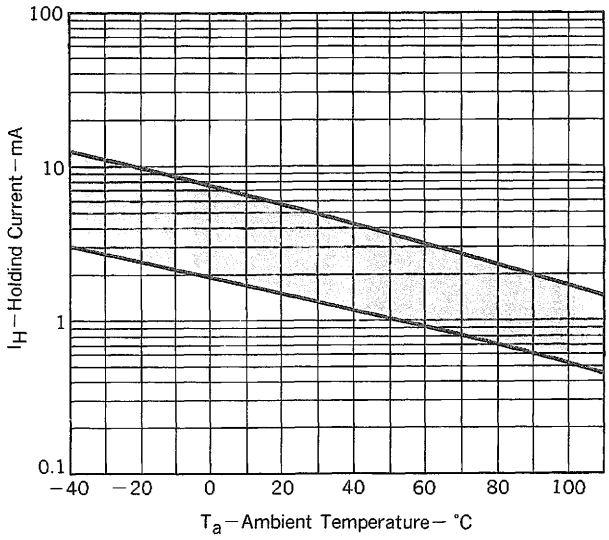


Fig. 10 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

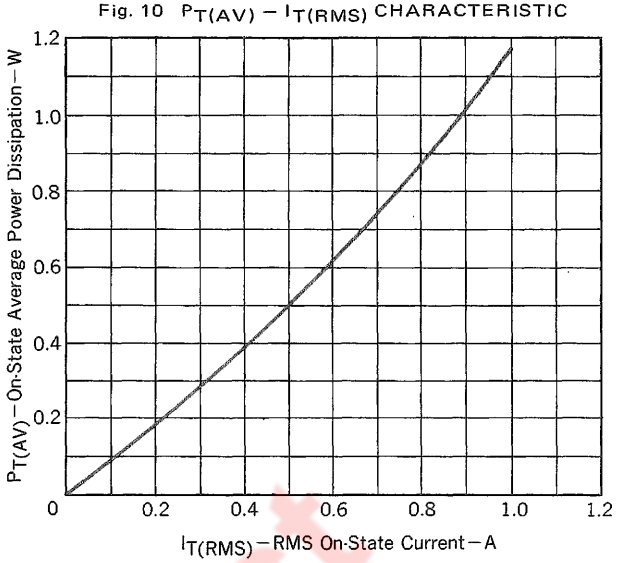


Fig. 11 $T_c - I_{T(RMS)}$ RATING

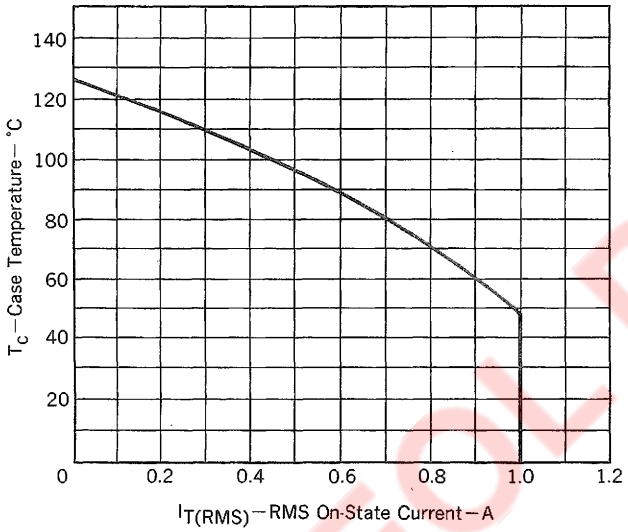


Fig. 12 $T_a - I_{T(RMS)}$ RATING

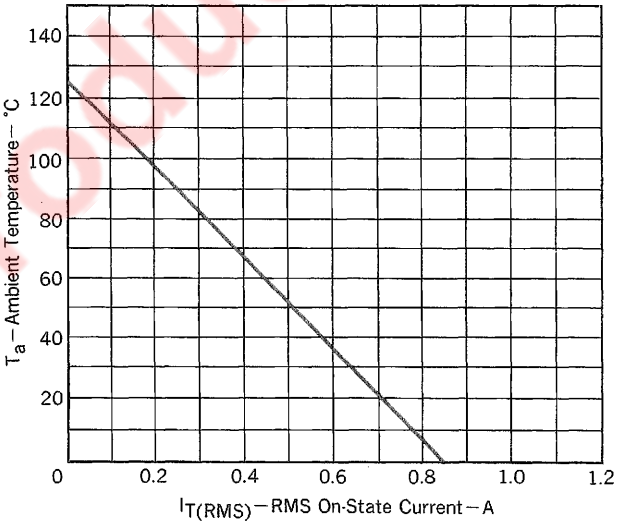
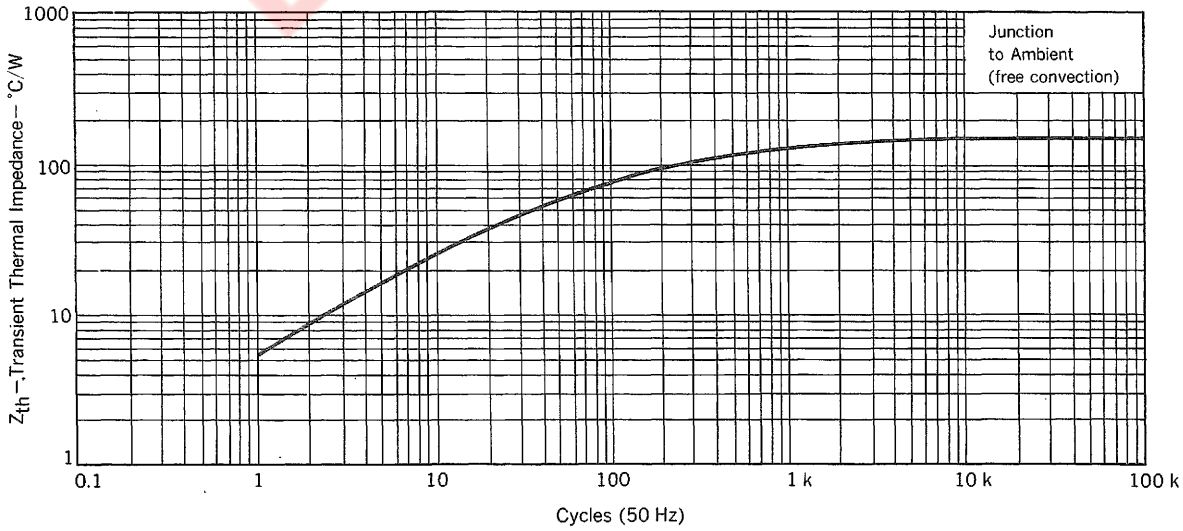


Fig. 13 Z_{th} CHARACTERISTIC



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