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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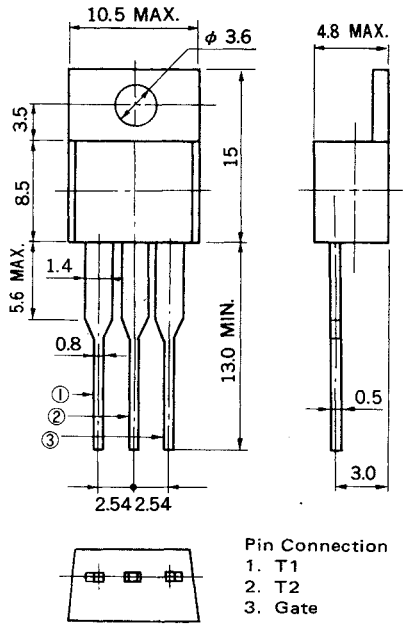
RENESAS

TRIACS

AC05DGM to AC05FGM

5 A MOLD TRIAC

PACKAGE DIMENSIONS (Unit: mm)



The AC05DGM to AC05FGM are all diffused mold type triac granted RMS On-state current 5 Amps, with rated voltages up to 600 volts.

FEATURES

- 50 A Surge current
- TO-220AB mold package
- Low cost

APPLICATIONS

- Motor speed control
- Lamp dimmer, Temperature controllers
- Various solid state switches, etc.

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	AC05DGM	AC05EGM	AC05FGM	UNIT	NOTE
Repetitive Peak off Voltage	V_{DRM}	400	500	600	V	
Non-repetitive Peak off Voltage	V_{DSM}	500	600	700	V	
RMS On-State Current	$I_{T\ (RMS)}$	5 (T_C = 107 °C)			A	See Fig. 11, 12
Peak Surge On-State Current	I_{TSM}	50 (50 Hz, Non-repetitive)			A	See Fig. 2
Fusing Current	$\int iT^2dt$	10 (1 ms ≦ t ≦ 10 ms)			A^2s	
Peak Gate Power Dissipation	P_{GM}	3 (f ≧ 50 Hz, Duty ≦ 10 %)			W	
Average Gate Power Dissipation	$P_{G\ (AV)}$	0.3			W	
Peak Gate Current	I_{FGM}	±3 (f ≧ 50 Hz, Duty ≦ 10 %)			A	
Junction Temperature	T_j	−40 to +125			°C	
Storage Temperature	T_{stg}	−40 to +125			°C	

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ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

CHARACTERISRIC		SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT	NOTE
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	–	–	10	mA	See Fig. 4
	II			–	–	–		
	III			–	–	10		
	IV			–	–	10		
Gate Trigger Voltage	Trigger Mode I	V_{GT}	V_{DM} = 12 V R_L = 30 Ω	–	–	1.5	V	See Fig. 4
	II			–	–	2.0		
	III			–	–	1.5		
	IV			–	–	1.5		
Gate Non-Trigger Voltage		V_{GD}	T_j = 125 °C, V_{DM} = ½V_{DRM}	0.2	–	–	V	
Commutating dv/dt		(dv/dt) C	T_j = 125 °C (di$_T$/dt) C = −2.7 A/ms V_D = 400 V	5	–	–	V/μs	
Holding Current		I_H	V_D = 24 V, I_{TM} = 5 A	–	10	–	mA	
Thermal Resistance		$R_{th\ (j-c)}$	Junction to Case	–	–	3.0	°C/W	See Fig. 13

Trigger Mode & Test Circuit

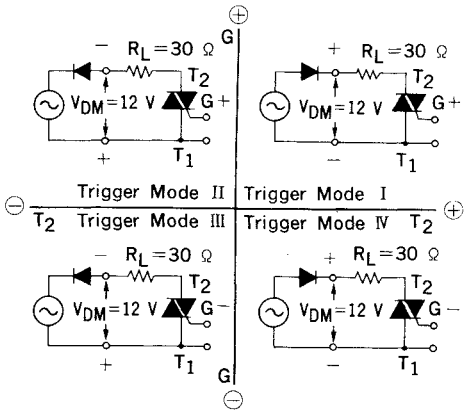


Fig. 1 $i_T - v_T$ CHARACTERISTIC

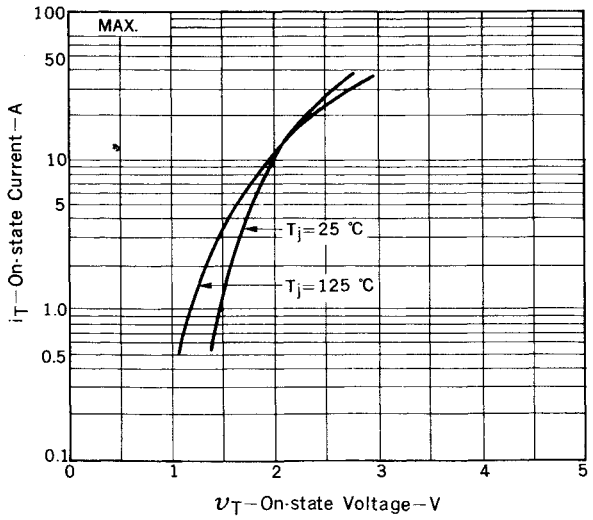


Fig. 2 I_{TSM} RATING

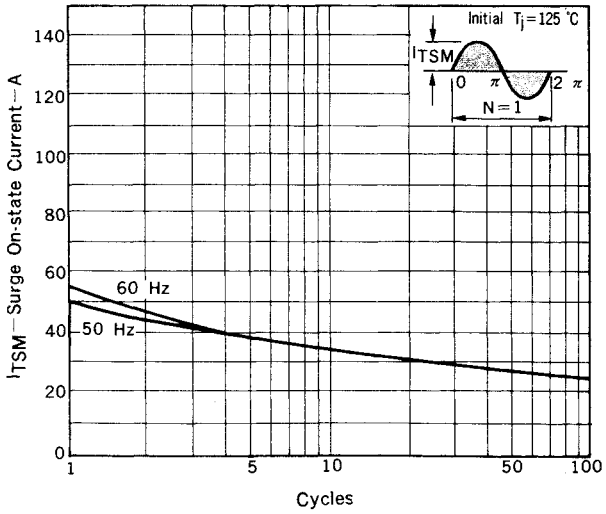


Fig. 3 $V_G - I_G$ RATING

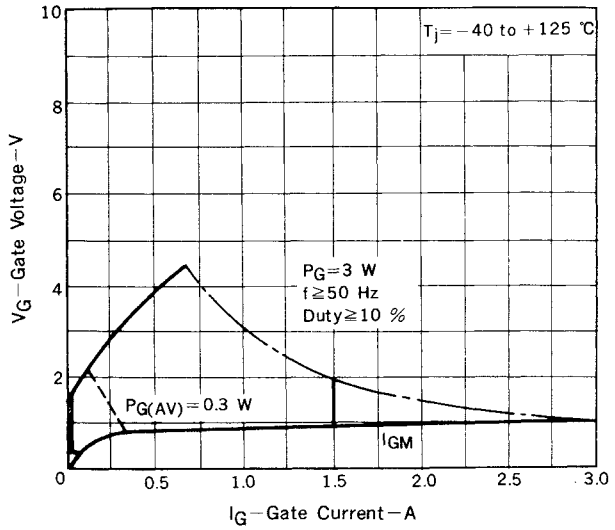


Fig. 4 $V_{GT} - I_{GT}$ CHARACTERISTIC

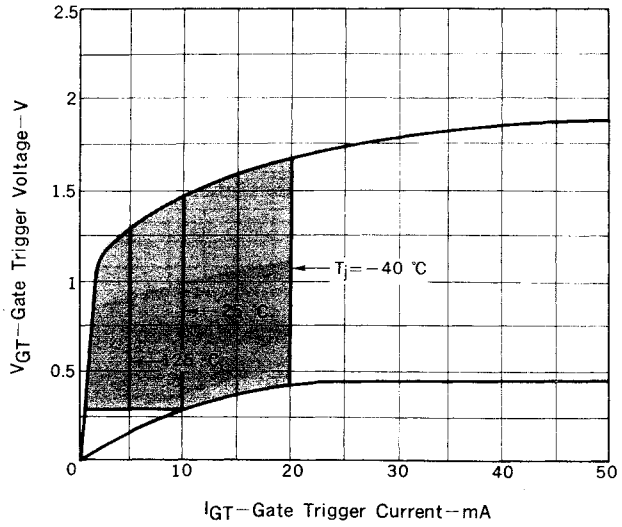


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

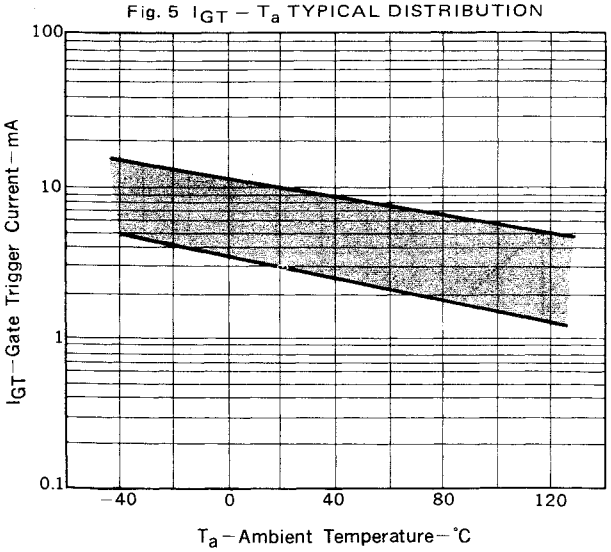


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

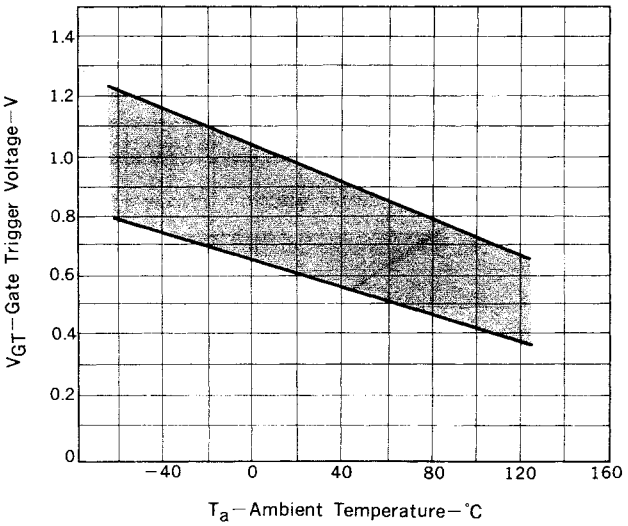


Fig. 7 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

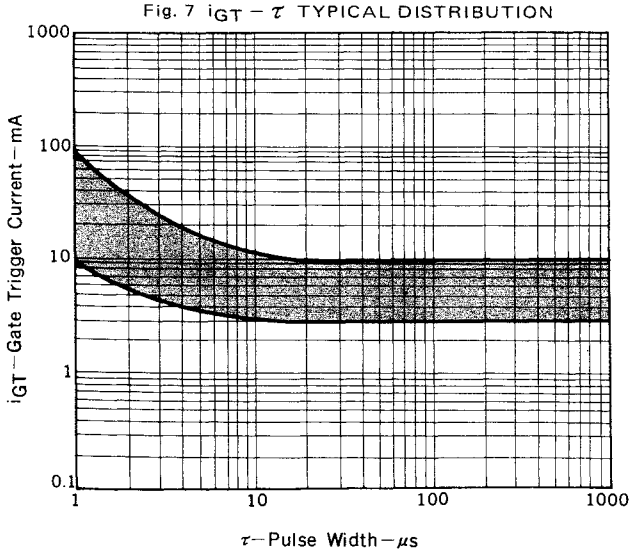


Fig. 8 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

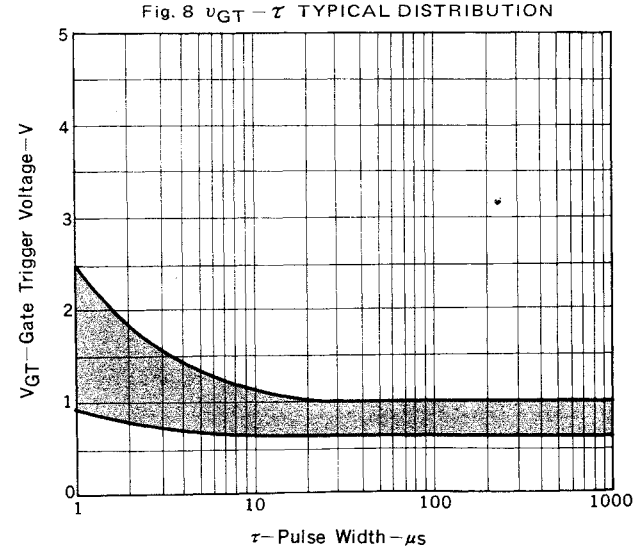


Fig. 9 $I_H - T_a$ TYPICAL DISTRIBUTION

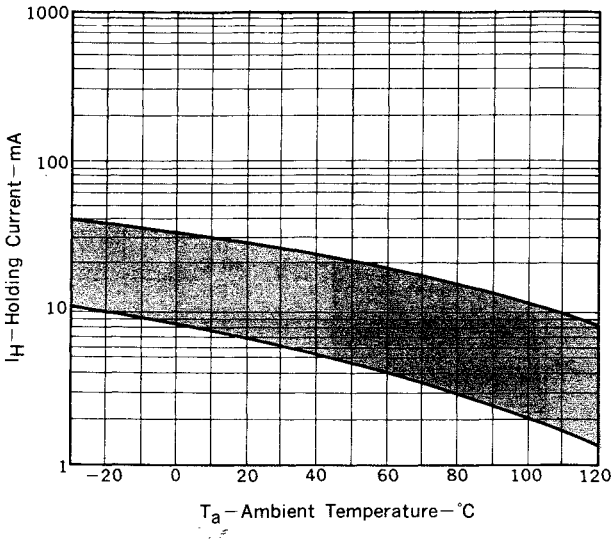


Fig. 10 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

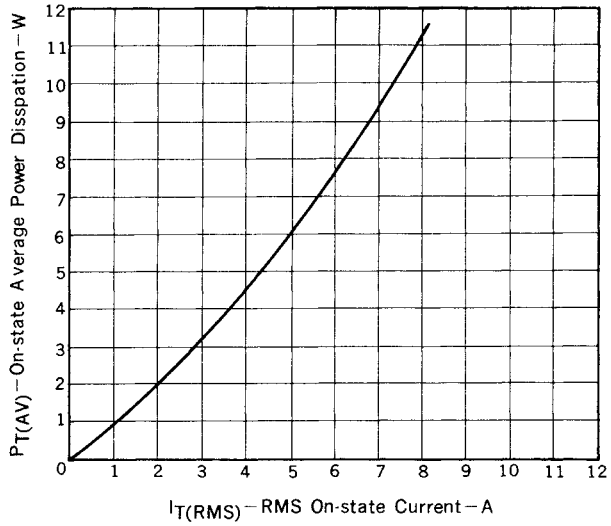


Fig. 11 $T_c - I_{T(RMS)}$ RATING

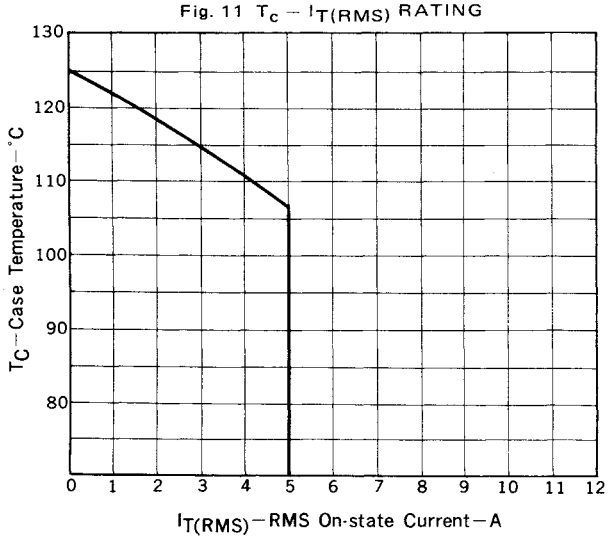


Fig. 12 $T_a - I_{T(RMS)}$ RATING

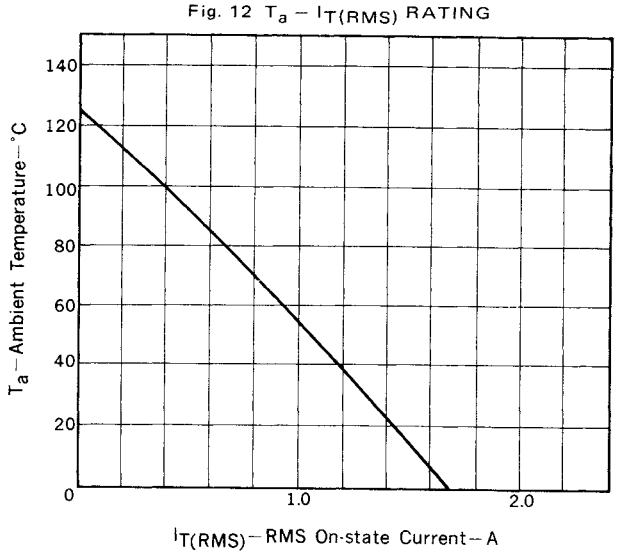
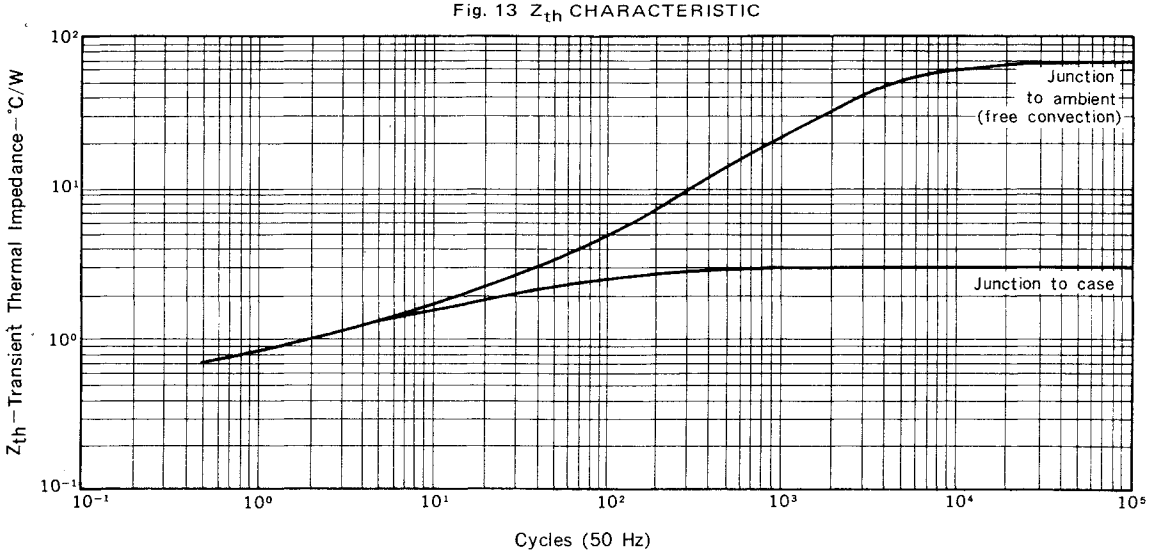


Fig. 13 Z_{th} CHARACTERISTIC



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