

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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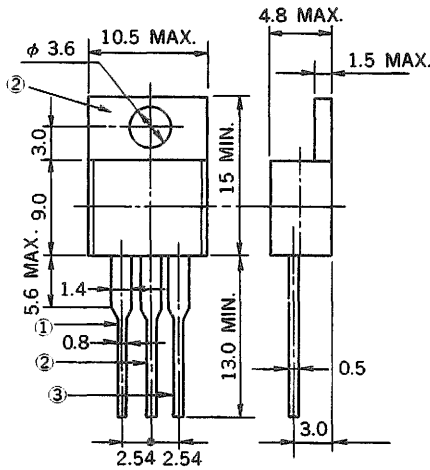
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8 A(12 A_{r.m.s.}) THYRISTOR

PACKAGE DIMENSIONS
in millimeters



Pin Connection

- ① Cathode
- ② Anode
- ③ Gate

The 8P2M and 8P4M are P gate all diffused mold type Thyristor granted 8 Amp On-state Average Current ($T_c = 90^\circ\text{C}$), with voltages up to 400 volts.

FEATURES

- Easy installation by TO-220 AB package.
- 100 A surge current.
- High Voltage.
 - : $V_{DRM}, V_{RRM} = 200\text{ V}$ (8P2M)
 - : $V_{DRM}, V_{RRM} = 400\text{ V}$ (8P4M)

APPLICATIONS

- Motor speed control for household appliance.
- Temperature control for heater and constant temperature box.
- Constant voltage power source and battery charger.
- Automotive application such as regulator.
- Various solid state relay etc.

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	8P2M	8P4M	UNIT	NOTE
Non-Repetitive Peak Reverse Voltage	V_{RSM}	300	500	V	
Non-Repetitive Peak Off-State Voltage	V_{DSM}	300	500	V	
Repetitive Peak Reverse Voltage	V_{RRM}	200	400	V	
Repetitive Peak Off-State Voltage	V_{DRM}	200	400	V	
Average On-State Current	$I_{T(AV)}$	8 ($T_c = 90^\circ\text{C}, \theta = 180^\circ$ Single phase half wave)		A	See Fig. 11
Surge On-State Current	I_{TSM}	100		A	See Fig. 2
Fusing Current	$\int i_T^2 dt$	45 ($1\text{ ms} \leq t \leq 10\text{ ms}$)		A^2s	
Peak Gate Power Dissipation	P_{GM}	5 ($f \geq 50\text{ Hz}, \text{Duty} \leq 10\%$)		W	See Fig. 3
Average Gate Power Dissipation	$P_{G(AV)}$	0.5		W	
Peak Gate Forward Current	I_{FGM}	2 ($f \geq 50\text{ Hz}, \text{Duty} \leq 10\%$)		A	
Peak Gate Reverse Voltage	V_{RGM}	10		V	
Junction Temperature	T_j	-40 to +125		$^\circ\text{C}$	
Storage Temperature	T_{stg}	-55 to +150		$^\circ\text{C}$	
Weight		2		g	

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Repetitive Peak Reverse Current	I_{RRM}	$V_{RM} = V_{RRM}, T_j = 125^\circ\text{C}$	—	—	2	mA	
Repetitive Peak Off-State Current	I_{DRM}	$V_{DM} = V_{DRM}, T_j = 125^\circ\text{C}$	—	—	2	mA	
On-State Voltage	V_{TM}	$I_{TM} = 25\text{ A}$	—	—	1.4	V	See Fig. 1
Gate-Trigger Current	I_{GT}	$V_{DM} = 6\text{ V}, R_L = 100\ \Omega$	—	—	10	mA	See Fig. 4
Gate-Trigger Voltage	V_{GT}	$V_{DM} = 6\text{ V}, R_L = 100\ \Omega$	—	—	1.5	V	
Gate Non-Trigger Voltage	V_{GD}	$V_{DM} = 1/2 V_{DRM}, T_j = 125^\circ\text{C}$	0.2	—	—	V	
Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{DM} = V_{DRM}, T_j = 125^\circ\text{C}$	—	40	—	V/ μs	
Holding Current	I_H	$V_D = 24\text{ V}$	—	6	—	mA	
Circuit Commuted Turn-Off Time	t_d	$I_{TM} = 5\text{ A}, V_R \geq 25\text{ V}$ $V_{DM} = 2/3 V_{DRM}, diR/dt = 15\text{ A}/\mu\text{s}$ $dv/dt = 10\text{ V}/\mu\text{s}, T_j = 125^\circ\text{C}$	—	100	—	μs	
Thermal Resistance	R_{th}	Junction to case	—	—	3	$^\circ\text{C}/\text{W}$	See Fig. 13

Fig. 1 $i_T - V_T$ CHARACTERISTIC

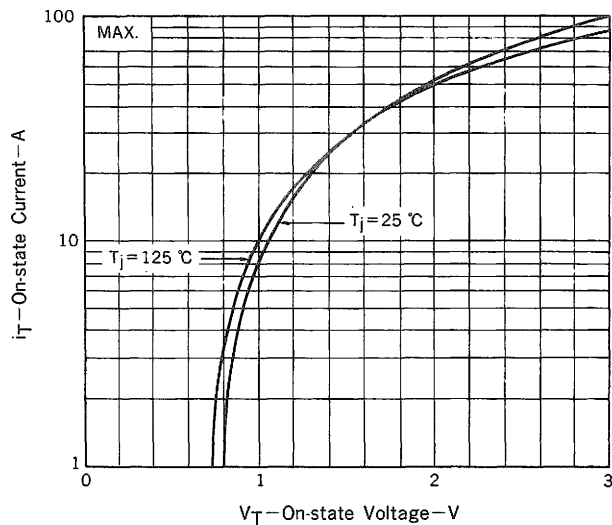


Fig. 2 I_{TSM} RATING

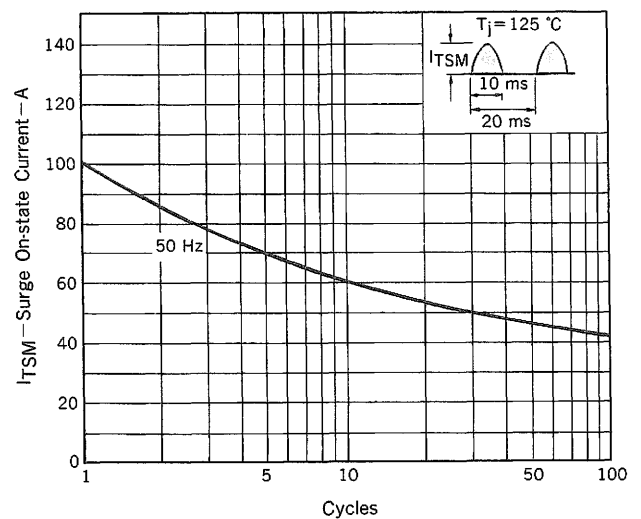


Fig. 3 GATE POWER RATING

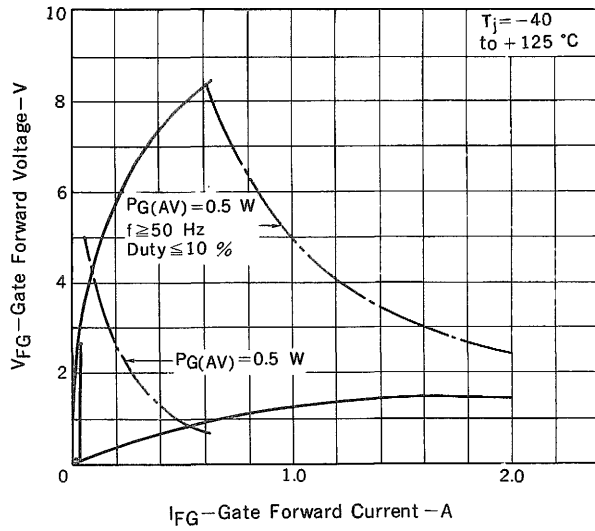


Fig. 4 $I_{GT} - V_{GT}$ DISTRIBUTION

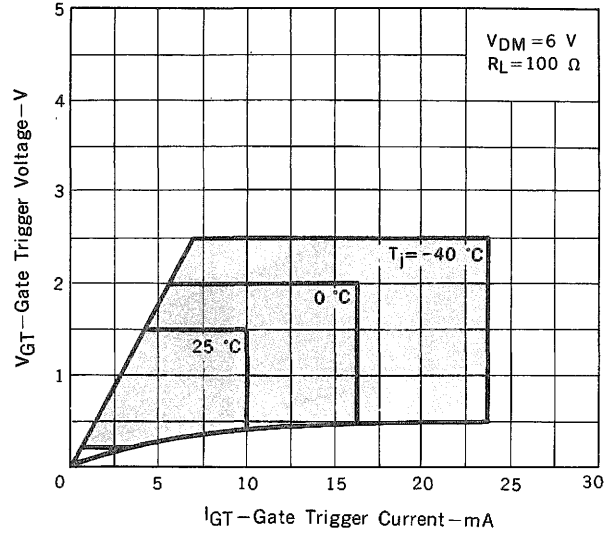


Fig. 5 $I_{GT} - T_a$ TYPICAL DISTRIBUTION

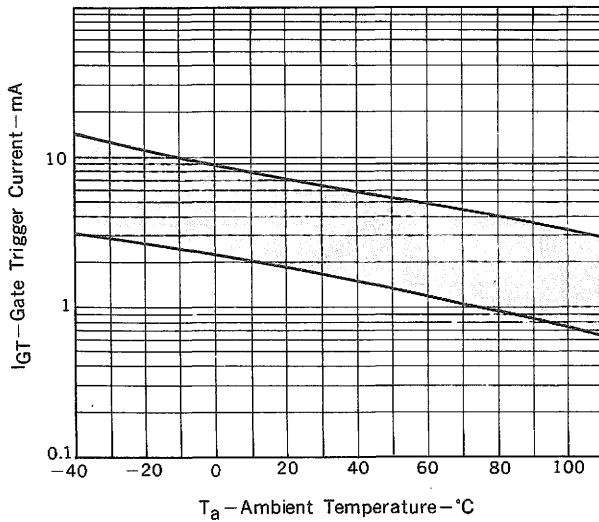


Fig. 6 $V_{GT} - T_a$ TYPICAL DISTRIBUTION

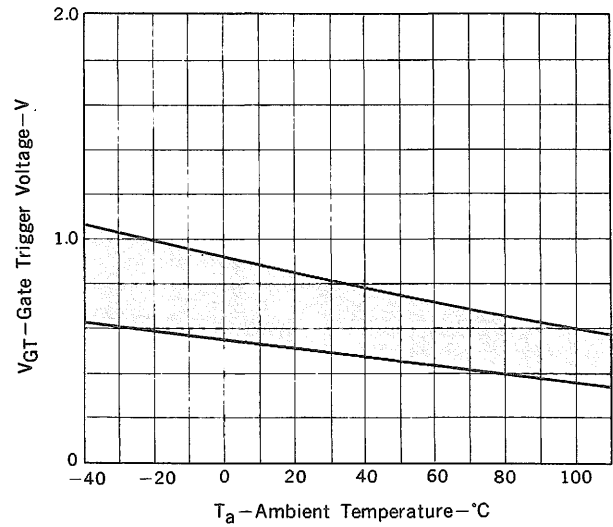


Fig. 7 $i_{GS} - \tau_G$ TYPICAL DISTRIBUTION

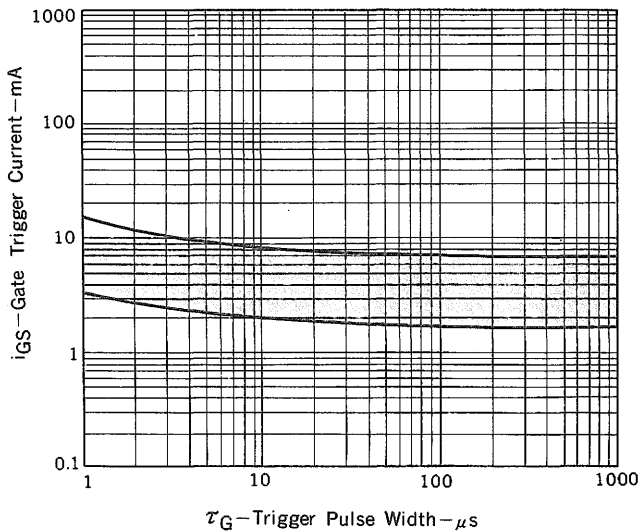


Fig. 8 $V_{GT} - \tau_G$ TYPICAL DISTRIBUTION

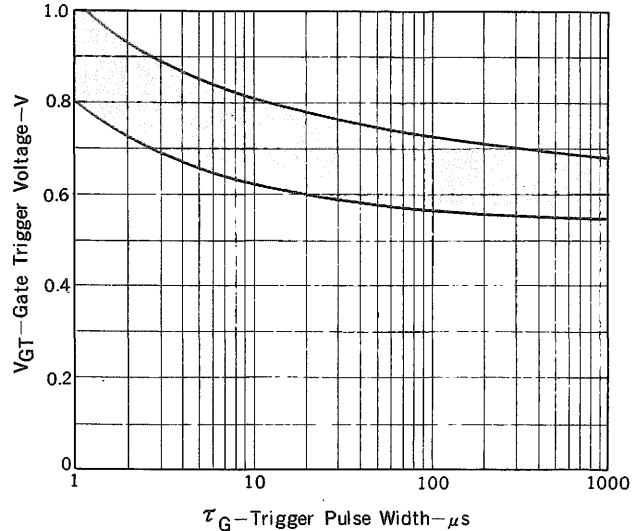


Fig. 9 $I_H - T_a$ TYPICAL DISTRIBUTION

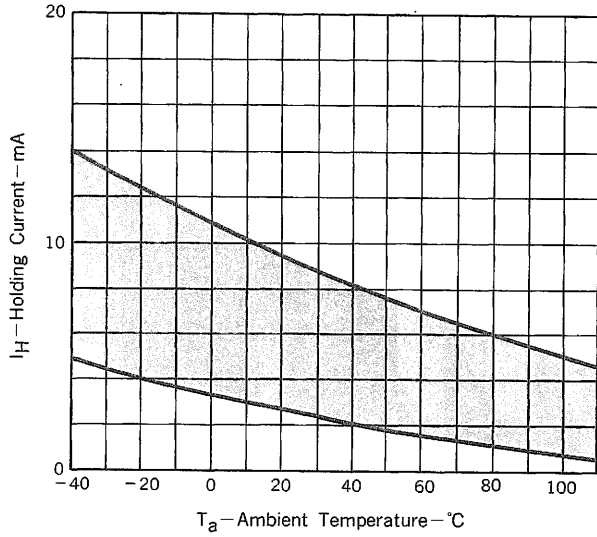


Fig. 10 $P_{T(AV)} - I_{T(AV)}$ CHARACTERISTICS

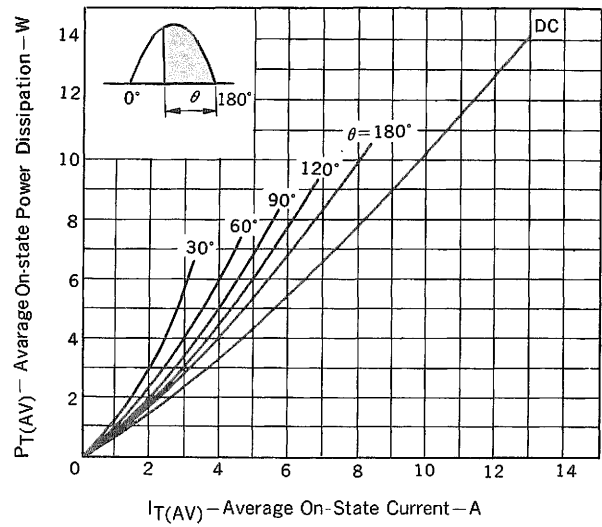


Fig. 11 $T_c - I_{T(AV)}$ RATING

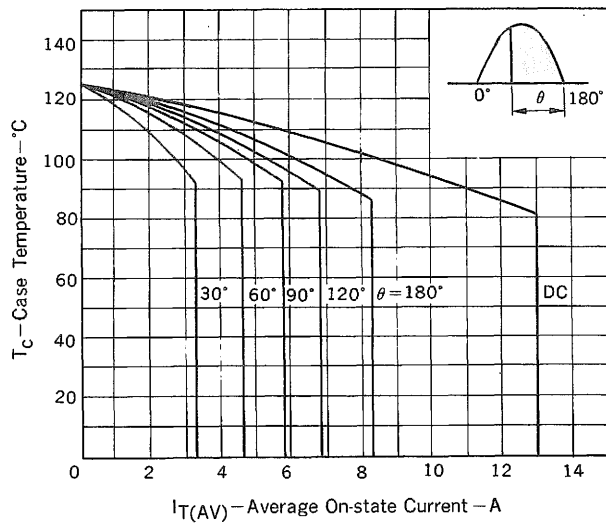


Fig. 12 $T_a - I_{T(AV)}$ RATING

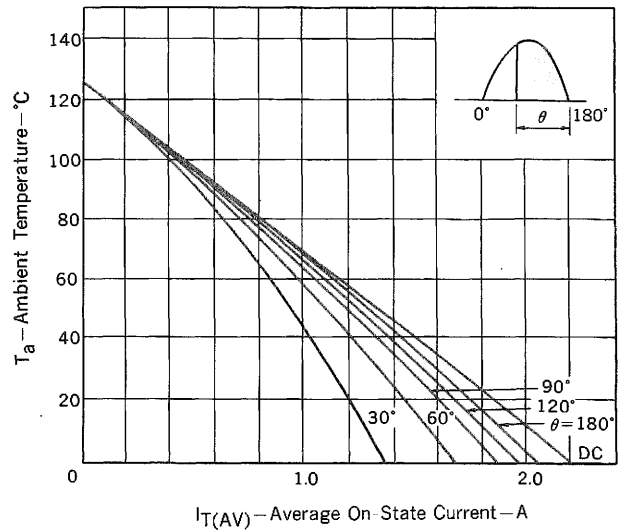


Fig. 13 Z_{th} CHARACTERISTICS

