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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DATA SHEET

NEC

THYRISTORS
2P4M,2P6M

2 A (4 Ar.m.s.) THYRISTOR

<R> **DESCRIPTION**

The 2P4M and 2P6M are a P gate all diffused mold type Thyristor granted 2 A On-state Average Current (T_C = 77°C), with rated voltages up to 600 V.

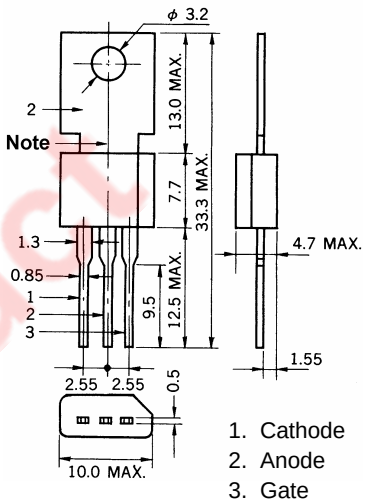
FEATURES

- Easy installation by TO-202AA package.
- Less holding current distribution provides free application design.

APPLICATIONS

- Electric blanket, Electronic jar, Various temperature control.
- Electric sewing machine, Speed control of miniature type motor.
- Light display equipment, Lamp dimmer such as a display for entertainment.
- Automatic gas lighter, Battery charger.
- Solid state static switches etc.

<R> **PACKAGE DRAWING (Unit: mm)**



1. Cathode
2. Anode
3. Gate

Standard weight : 1.4g

Note T_C test point

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(Previous No. SC-1031B)
Date Published July 2006 NS CP(K)
Printed in Japan

The mark <R> shows major revised points.
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

<R> MAXIMUM RATINGS

CHARACTERISTICS	SYMBOL	2P4M	2P6M	UNIT	REMARK
Non-repetitive Peak Reverse Voltage Note	V_{RSM}	500	700	V	R_{GK} = 1 kΩ
Non-repetitive Peak Off-state Voltage Note	V_{DSM}	500	700	V	R_{GK} = 1 kΩ
Repetitive Peak Reverse Voltage Note	V_{RRM}	400	600	V	R_{GK} = 1 kΩ
Repetitive Peak Off-state Voltage Note	V_{DRM}	400	600	V	R_{GK} = 1 kΩ
On-state Current	$I_{T(AV)}$	2 (T_C = 77°C, θ = 180°, Single phase half wave)		A	See Fig. 3, Fig. 4
Effective On-state Current	$I_{T(RMS)}$	4		A	–
Surge Non-repetitive On-state Current	I_{TSM}	20 (f = 50 Hz, sin half wave, 1 cycle)		A	See Fig. 10
Fusing Current	$\int i_T^2 dt$	1.6 (1 ms ≤ t ≤ 10 ms)		A^2s	–
Critical Rate Rise of On-state Current	dI_T/dt	50		A/μs	–
Peak Gate Power Dissipation	P_{GM}	0.5 (f ≥ 50 Hz, Duty ≤ 10%)		W	–
Average Gate Power Dissipation	$P_{G(AV)}$	0.1		W	–
Peak Gate Forward Current	I_{FGM}	0.2 (f ≥ 50 Hz, Duty ≤ 10%)		A	–
Peak Gate Reverse Voltage	V_{RGM}	6		V	–
Junction Temperature	T_j	–40 to +125		°C	–
Storage Temperature	T_{stg}	–55 to +150		°C	–

Note T_C: Case Temperature is measured at 1.5 mm from the neck of Tablet.

<R> ELECTRICAL CHARACTERISTICS (T_A = 25°C, R_{GK} = 1 kΩ)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT	REMARK
Repetitive Peak Reverse Current Note	I_{RRM}	V_{RM} = V_{RRM},	T_j = 25°C	–	–	10	μA	–
			T_j = 125°C	–	–	100		–
Repetitive Peak Off-state Current Note	I_{DRM}	V_{DM} = V_{DRM},	T_j = 25°C	–	–	10	μA	–
			T_j = 125°C	–	–	100		–
Critical Rate Rise of Off-state Voltage	dV_D/dt	T_j = 125°C, V_{DM} = 2/3 V_{DRM}		10	–	–	V/μs	2P4M
				–	10	–		2P6M
On-state Voltage	V_{TM}	I_{TM} = 4 A		–	–	2.2	V	See Fig. 1
Gate-trigger Current Note	I_{GT}	V_{DM} = 6 V, R_L = 100 Ω,		–	–	200	μA	See Fig. 5, Fig. 7
Gate-trigger Voltage Note	V_{GT}	V_{DM} = 6 V, R_L = 100 Ω,		–	–	0.8	V	See Fig. 6, Fig. 8
Gate Non-trigger Voltage Note	V_{GD}	V_{DM} = 1/2 V_{DRM}, T_j = 125°C,		0.2	–	–	V	–
Holding Current Note	I_H	V_{DM} = 24 V, I_{TM} = 4 A		–	1	3	mA	See Fig. 9
Circuit Commuted Turn-off Time	t_q	T_j = 125°C, I_{TM} = 500 mA, di_R/dt = 15 A/μs, V_R ≥ 25 V, V_{DM} = 2/3 V_{DRM}, dV_D/dt = 10 V/μs		–	30	–	μs	–
Thermal Resistance	$R_{th(j-c)}$	Junction to case DC		–	–	10	°C/W	See Fig. 11
	$R_{th(j-a)}$	Junction to ambient DC		–	–	75		

Note Insert a resistance less than 1 kΩ between gate and cathode, because the items indicated are guaranteed by connecting short resistance between gate and cathode (R_{GK} = 1 kΩ).

TYPICAL CHARACTERISTICS (T_A = 25°C)

Fig. 1 I_{TM}-V_{TM} CHARACTERISTICS

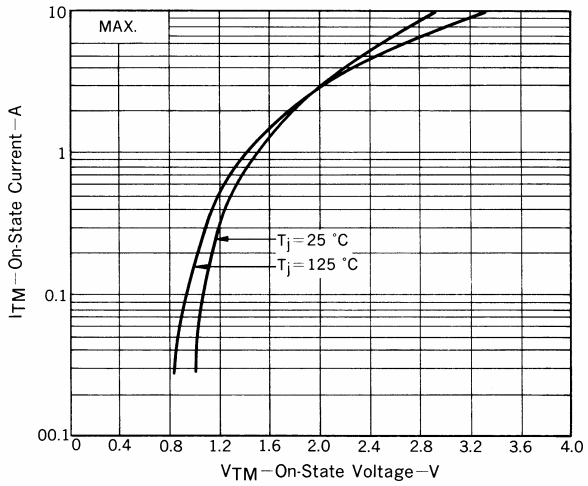


Fig. 2 $P_{T(AV)}$-$I_{T(AV)}$ CHARACTERISTICS

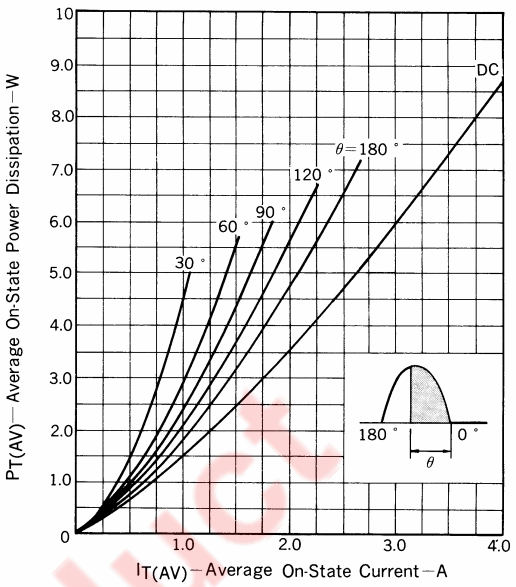


Fig. 3 $I_{T(AV)}$-T_C RATINGS

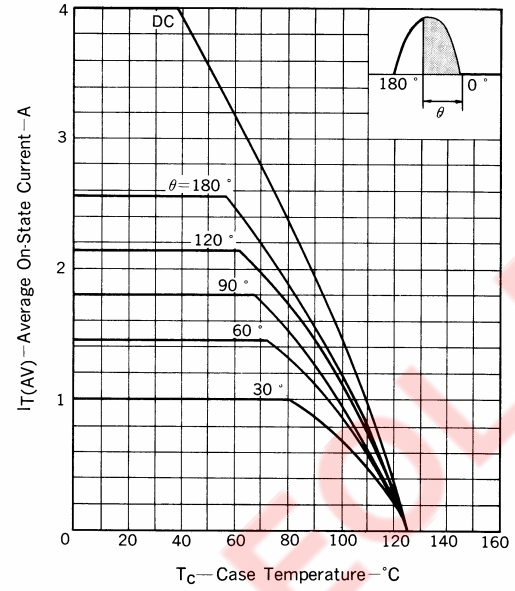


Fig. 4 T_a-$I_{T(AV)}$ RATINGS

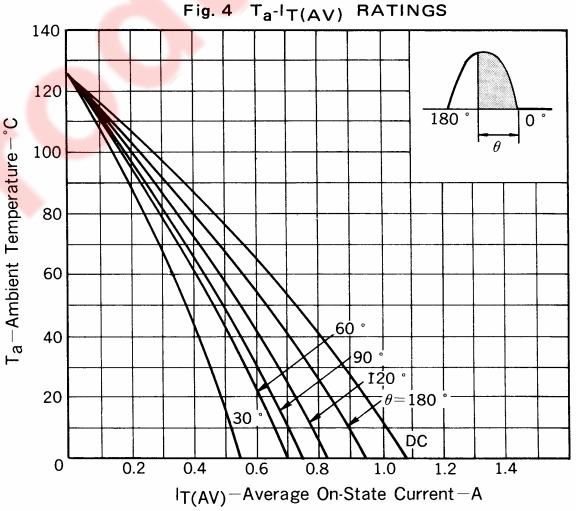


Fig. 5 I_{GT}-T_a TYPICAL DISTRIBUTION

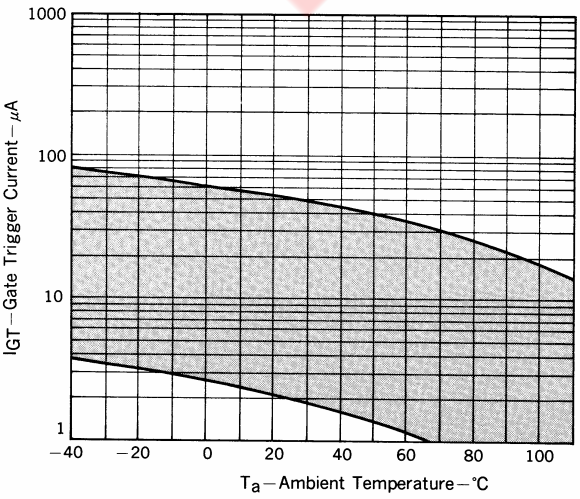


Fig. 6 V_{GT}-T_a TYPICAL DISTRIBUTION

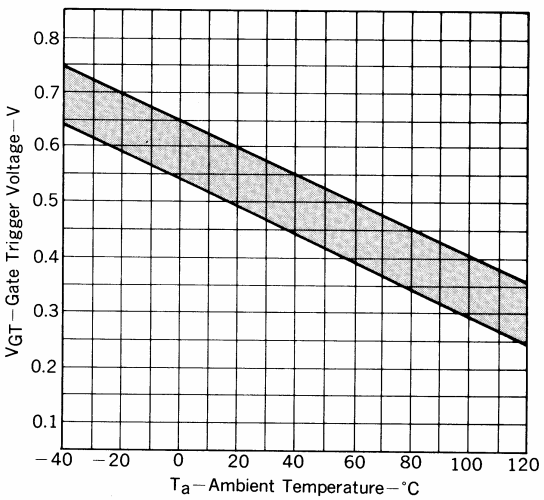


Fig. 7 I_{GT}-τ_G TYPICAL DISTRIBUTION

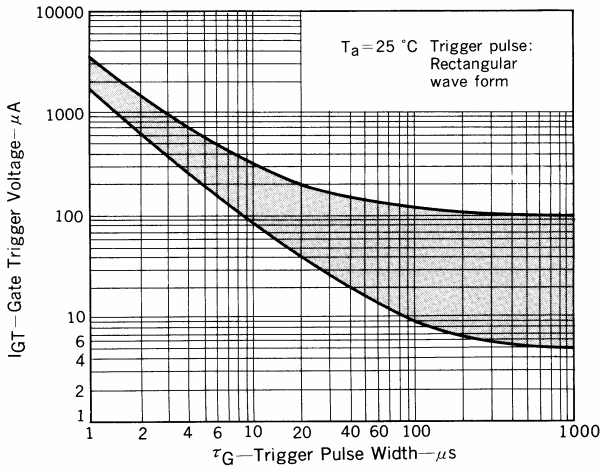


Fig. 8 V_{GT}-τ_G TYPICAL DISTRIBUTION

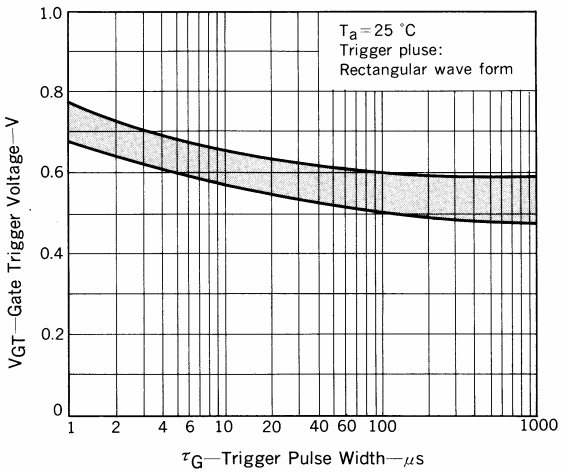


Fig. 9 I_H-T_a TYPICAL DISTRIBUTION

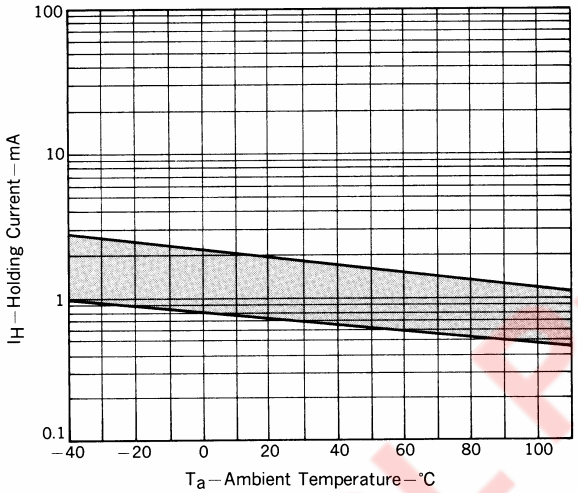


Fig. 10 I_{TSM} RATINGS

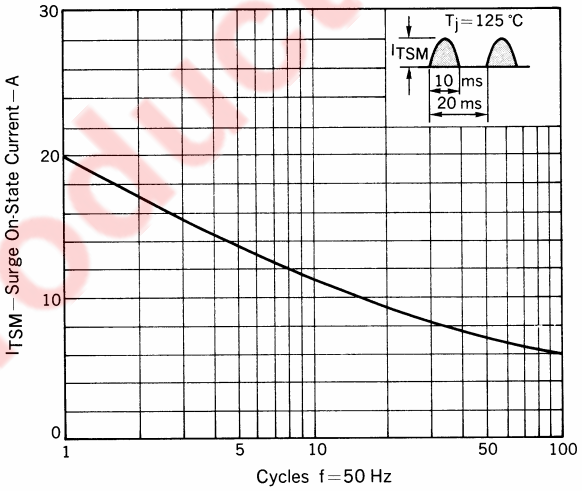
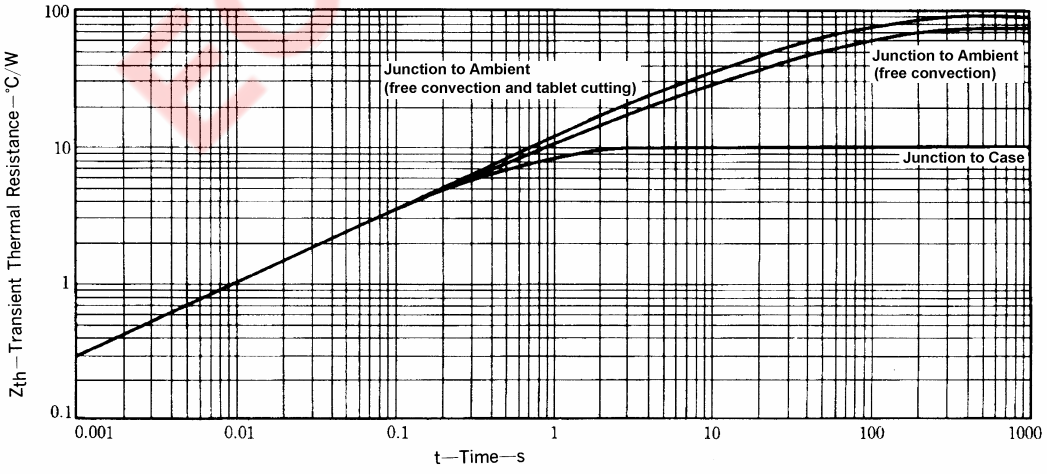


Fig. 11 Z_{th} CHARACTERISTICS



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