

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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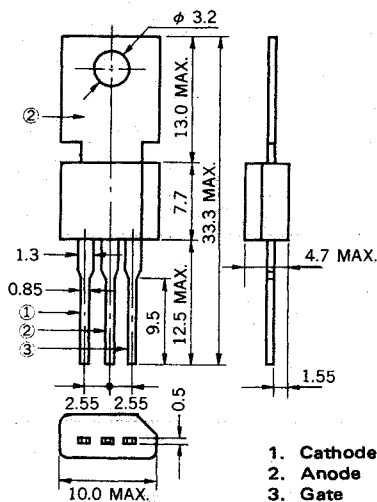
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## 2.5 A(4 A<sub>r.m.s.</sub>) PLASTIC MOLDED THYRISTOR

### PACKAGE DIMENSIONS

in millimeters



### DESCRIPTION

The 2V5P4M is P-gate all diffused plastic molded type SCR granted average on-state current 2.5 Amps ( $T_C = 86^\circ\text{C}$ ), with rated voltages 400 volts.

### FEATURES

- Easy installation by its miniature size and thin electrode leads.
- Less holding current distribution provides free application design.
- Low cost because of mass-production.

### 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.

### MAXIMUM RATINGS

ITEM	SYMBOL	2V5P4M	UNIT	NOTE
Non-Repetitive Peak Reverse Voltage *	$V_{RSM}$	500	V	
Non-Repetitive Peak-off Voltage *	$V_{DSM}$	500	V	
Repetitive Reverse Voltage *	$V_{RRM}$	400	V	
Repetitive Peak-off Voltage *	$V_{DRM}$	400	V	
On-state Current	$I_{T(AV)}$	2.5 ( $T_C = 86^\circ\text{C}$ , $\theta = 180^\circ$ Single Phase half wave)	A	Fig. 10
	$I_{T(RSM)}$	4.0		
Surge On-state Current	$I_{TSM}$	45	A	Fig. 2
Critical Rate-Rise of On-State Current	$di/dt$	50	A/ $\mu\text{s}$	
Gate Power Dissipation	$P_{GM}$	1 ( $f \geq 50\text{ Hz}$ , Duty $\leq 10\%$ )	W	
Gate Power Dissipation	$P_{G(AV)}$	0.2	W	
Gate Forward Current	$I_{FGM}$	0.5 ( $f \geq 50\text{ Hz}$ , Duty $\leq 10\%$ )	A	
Gate Reverse Voltage	$V_{RGM}$	6	V	
Junction Temperature	$T_j$	-40 to +125	$^\circ\text{C}$	
Storage Temperature	$T_{stg}$	-40 to +150	$^\circ\text{C}$	

\*Note: Insert a resistance below 1 k $\Omega$  between gate and cathode, because the items are guaranteed by connecting short resistance between gate and cathode ( $R_{GK} = 1\text{ k}\Omega$ ).

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

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Repetitive Peak Reverse Current*	$I_{RRM}$	$V_{RM} = 400\text{ V}$ , $T_j = 125^\circ\text{C}$ $R_{GK} = 1\text{ k}\Omega$	—	—	1	mA	
Repetitive Peak Off-state Current*	$I_{DRM}$	$V_{DM} = 400\text{ V}$ , $T_j = 125^\circ\text{C}$ $R_{GK} = 1\text{ k}\Omega$	—	—	1	mA	
On-state Voltage	$V_{TM}$	$I_{TM} = 4\text{ A}$	—	—	1.4	V	See Fig. 1
Gate-Trigger Current*	$I_{GT}$	$V_{DM} = 6\text{ V}$ , $R_L = 100\ \Omega$ $R_{GK} = 1\text{ k}\Omega$	—	—	100	$\mu\text{A}$	See Fig. 4, Fig. 6
Gate-Trigger Voltage*	$V_{GT}$	$V_{DM} = 6\text{ V}$ , $R_L = 100\ \Omega$ $R_{GK} = 1\text{ k}\Omega$	—	—	0.8	V	See Fig. 5, Fig. 7
Gate Non-Trigger Voltage*	$V_{GD}$	$V_{DM} = 200\text{ V}$ , $T_j = 125^\circ\text{C}$ $R_{GK} = 1\text{ k}\Omega$	0.2	—	—	V	
Critical Rate-of-Rise of Off-state Voltage	dv/dt	$V_{DM} = 270\text{ V}$ , $T_j = 125^\circ\text{C}$ $R_{GK} = 1\text{ k}\Omega$	—	10	—	V/ $\mu\text{S}$	
Holding Current*	$I_H$	$V_D = 24\text{ V}$ , $R_{GK} = 1\text{ k}\Omega$ $I_{TM} = 5\text{ A}$	—	—	5	mA	See Fig. 8
Thermal Resistance	$R_{th(j-c)}$	Junction to Case	—	—	10	$^\circ\text{C/W}$	See Fig. 12
	$R_{th(j-a)}$	Junction to Ambient	—	—	75		See Fig. 12

EXAMPLE OF  $R_{GK}$  INSERTION

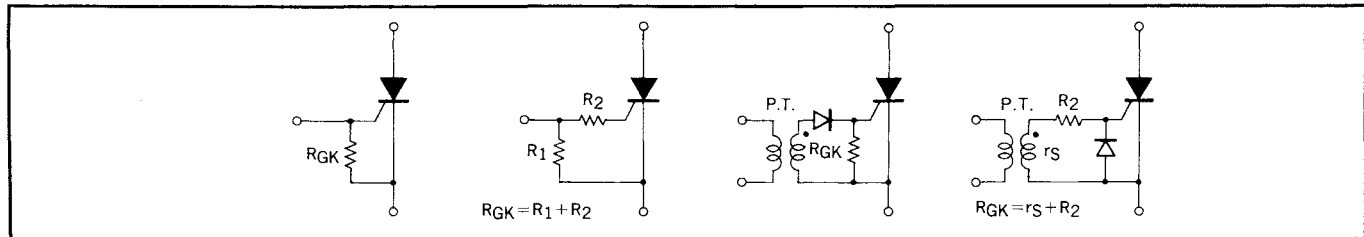


Fig. 1  $I_{TM}$ - $V_{TM}$  CHARACTERISTICS

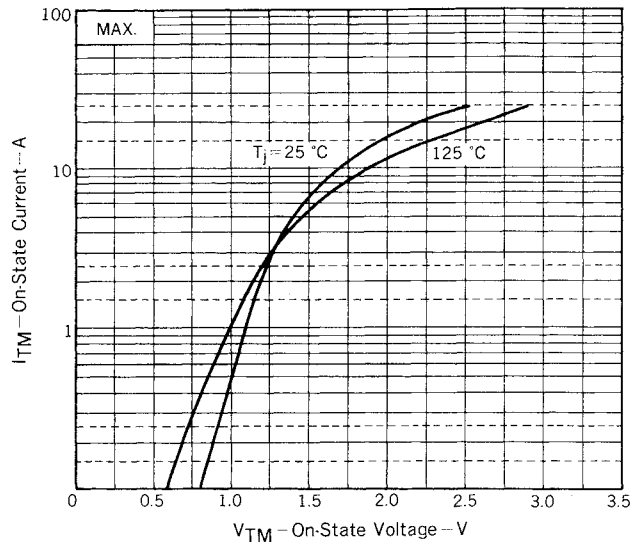


Fig. 2  $I_{TSM}$  RATING

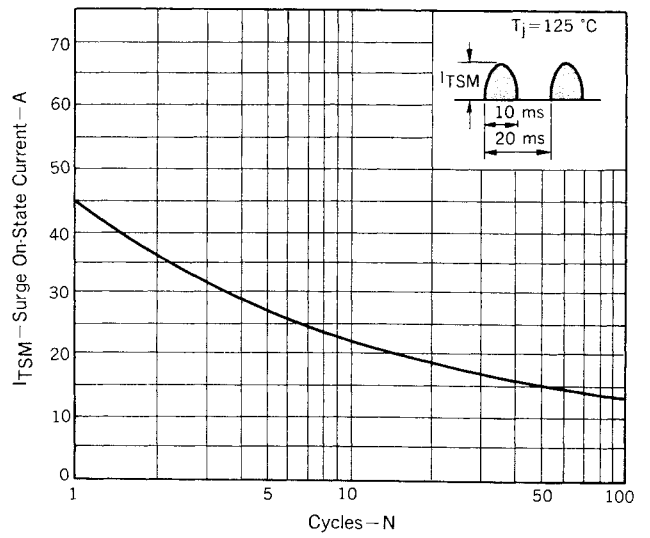


Fig. 3 GATE RATINGS, CHARACTERISTICS

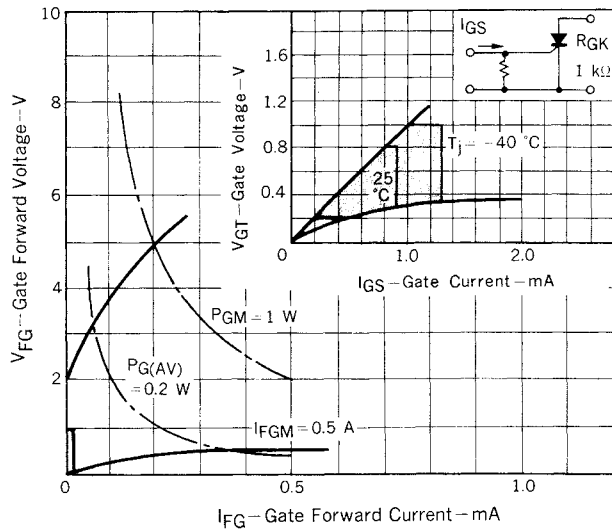


Fig. 4  $I_{GT}$ - $T_a$  TYPICAL DISTRIBUTION

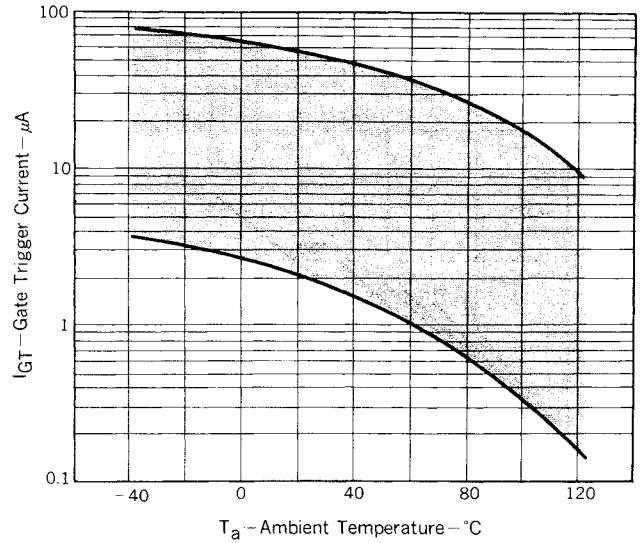


Fig. 5  $V_{GT}$ - $T_a$  TYPICAL DISTRIBUTION

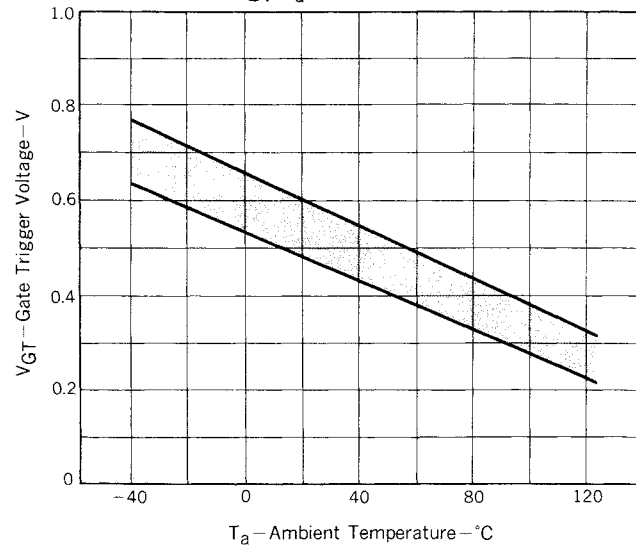


Fig. 6  $I_{GT}$ - $\tau_G$  TYPICAL DISTRIBUTION

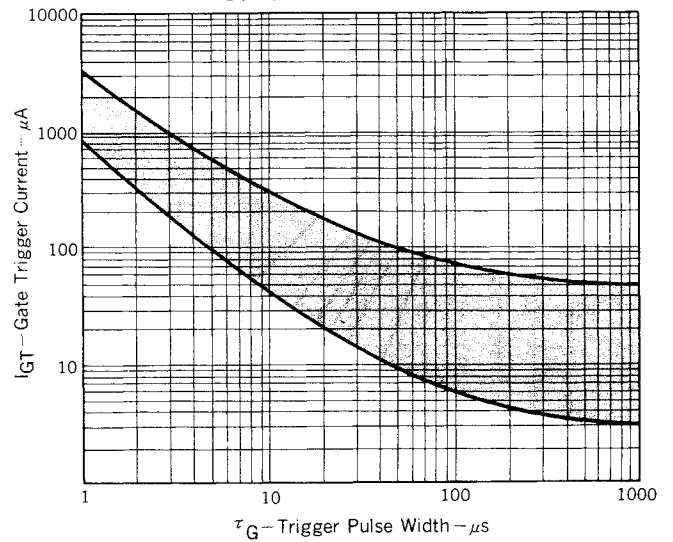


Fig. 7  $v_{GT}-\tau_G$  DISTRIBUTION

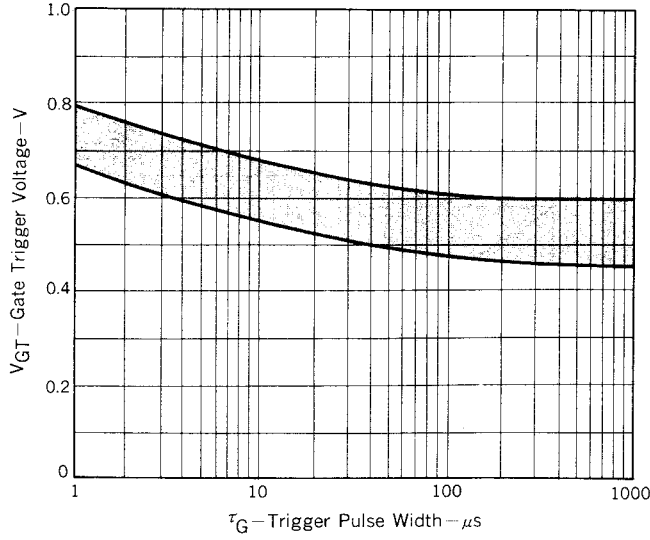


Fig. 8  $I_H-T_a$  TYPICAL DISTRIBUTION

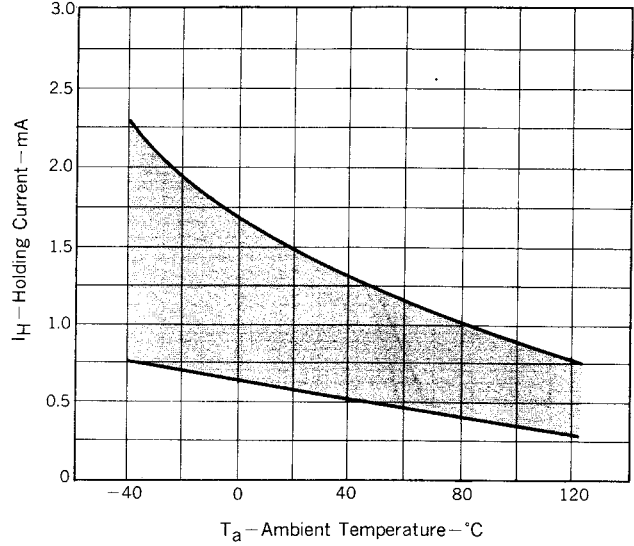


Fig. 9  $P_T(I_{T(AV)})$  CHARACTERISTIC

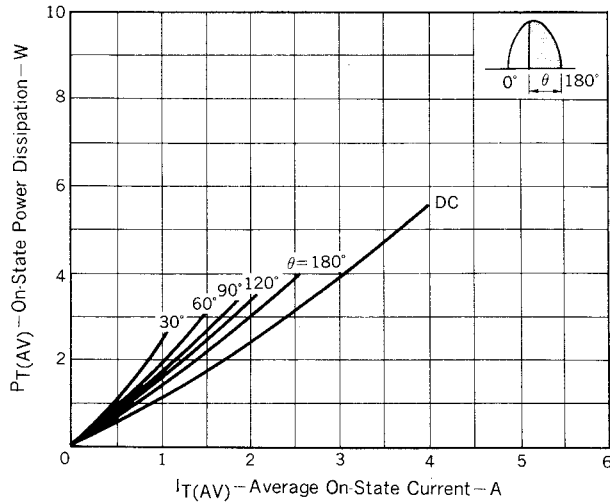


Fig. 10  $T_c-I_{T(AV)}$  RATING

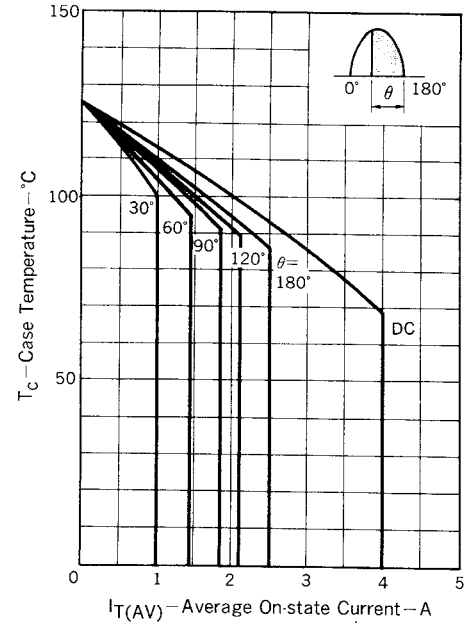


Fig. 11  $T_a-I_{T(AV)}$  RATING

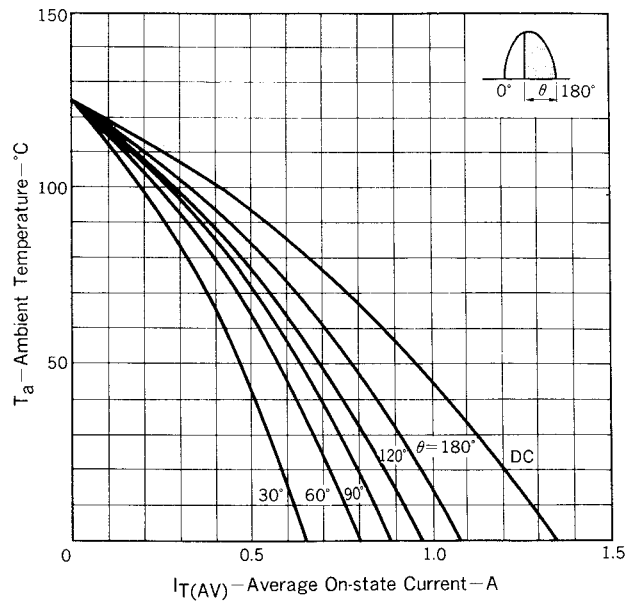


Fig. 12  $Z_{th}$  CHARACTERISTIC

