

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

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3 A MOLD SCR

The 3P4MH and 3P6MH are P-gate fully diffused mold SCRs with an average on-current of 3 A. The repeat peak off-voltages (and reverse voltages) are 400 V and 600 V.

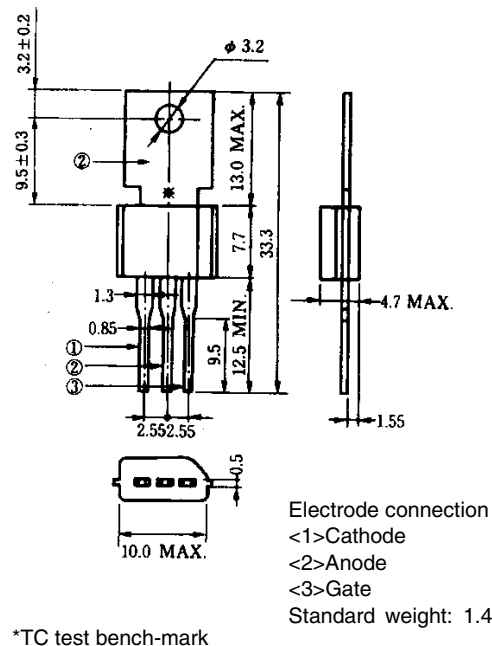
FEATURES

- This transistor features a small and lightweight package and is easy to handle even on the mounting surface due to its TO-202AA dimensions. Processing of lead wires and heatsink (tablet) using jigs is also possible.
- Employs flame-retardant epoxy resin (UL94V-0).

APPLICATIONS

Noncontact switches of consumer electronic equipments, electric equipments, audio equipments, and light industry equipments

PACKAGE DRAWING (UNIT: mm)



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	3P4MH	3P6MH	Ratings	Unit
Non-repetitive peak reverse voltage	$V_{RSM}$	500	700	V	$R_{GK} = 1 \text{ k}\Omega$
Non-repetitive peak off-state voltage	$V_{DSM}$	500	700	V	$R_{GK} = 1 \text{ k}\Omega$
Repetitive peak reverse voltage	$V_{RRM}$	400	600	V	$R_{GK} = 1 \text{ k}\Omega$
Repetitive peak off-voltage	$V_{DRM}$	400	600	V	$R_{GK} = 1 \text{ k}\Omega$
Average on-state current	$I_{T(AV)}$	3 (Tc = 87°C, Single half-wave, $\theta = 180^\circ$ )		A	Refer to Figure 11.
Effective on-state current	$I_{T(RMS)}$	4.7		A	—
Surge on-state current	$I_{TSM}$	65 (f = 50 Hz, Sine half-wave, 1 cycle) 70 (f = 60 Hz, Sine half-wave, 1 cycle)		A	Refer to Figure 2.
Fusing current	$\int I^2 dt$	20 (1 ms ≤ t ≤ 10 ms)		A <sup>2</sup> s	—
Critical rate of rise of on-state current	dlT/dt	50		A/μs	—
Peak gate power dissipation	$P_{GM}$	2 (f ≥ 50 Hz, Duty ≤ 10%)		W	Refer to Figure 3.
Average gate power dissipation	$P_{G(AV)}$	0.2		W	
Peak gate forward current	$I_{FGM}$	1 (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	—

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**ELECTRICAL CHARACTERISTICS (T<sub>j</sub> = 25°C, R<sub>GK</sub> = 1 kΩ)**

Parameter	Symbol	Conditions	Specifications			Unit	Remarks	
			MIN.	TYP.	MAX.			
Repeat peak reverse current	I <sub>RRM</sub>	V <sub>RM</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 25°C	-	-	100	μA	-
			T <sub>j</sub> = 125°C	-	-	2	mA	-
Repeat peak off-current	I <sub>DRM</sub>	V <sub>DM</sub> = V <sub>DRM</sub>	T <sub>j</sub> = 25°C	-	-	100	μA	-
			T <sub>j</sub> = 125°C	-	-	2	mA	-
Critical rate-of-rise of off-state voltage	dV/dt	T <sub>j</sub> = 125°C, V <sub>DM</sub> = $\frac{2}{3}$ V <sub>DRM</sub>	-	3	-	V/μs	-	
On-state voltage	V <sub>TM</sub>	I <sub>T</sub> = 10 A	-	-	1.6	V	Refer to Figure 1.	
Gate trigger current	I <sub>GT</sub>	V <sub>DM</sub> = 6 V, R <sub>L</sub> = 100 Ω	-	-	0.2	mA	Refer to Figure 14.	
Gate trigger voltage	V <sub>GT</sub>	V <sub>DM</sub> = 6 V, R <sub>L</sub> = 100 Ω	-	-	0.8	V		
Gate non-trigger voltage	V <sub>GD</sub>	T <sub>j</sub> = 125°C, V <sub>DM</sub> = $\frac{V_{DRM}}{2}$	0.2	-	-	V	-	
Holding current	I <sub>H</sub>	V <sub>DM</sub> = 24 V, I <sub>TM</sub> = 10 A	-	1	5	mA	-	
Commutating turn-off time	T <sub>q</sub>	T <sub>j</sub> = 125°C, I <sub>T</sub> = 3 A, di <sub>T</sub> /dt = 15 A/μs V <sub>R</sub> ≥ 25 V, V <sub>DM</sub> = $\frac{2}{3}$ V <sub>DRM</sub> dV <sub>D</sub> /dt = 1 V/μs	-	80	-	μs	-	
Thermal resistance	R <sub>th(j-c)</sub>	Junction-to-case DC	-	-	8	°C/W	Refer to Figure 13.	
	R <sub>th(j-a)</sub>	Junction-to-ambient DC	-	-	75			

**TYPICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)**

Figure 1. I<sub>T</sub> vs. v<sub>T</sub> Characteristics

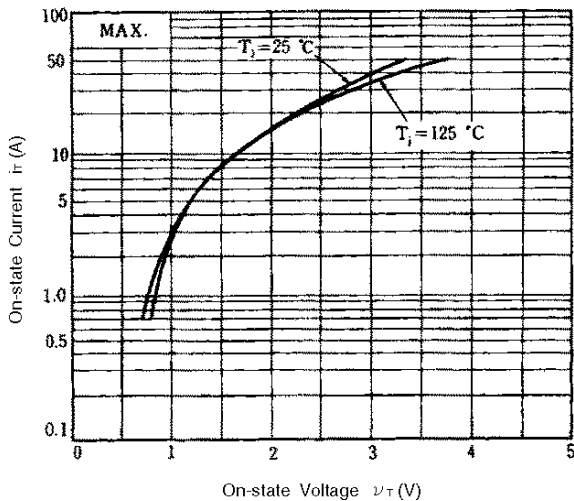


Figure 2. I<sub>TSM</sub> Rating

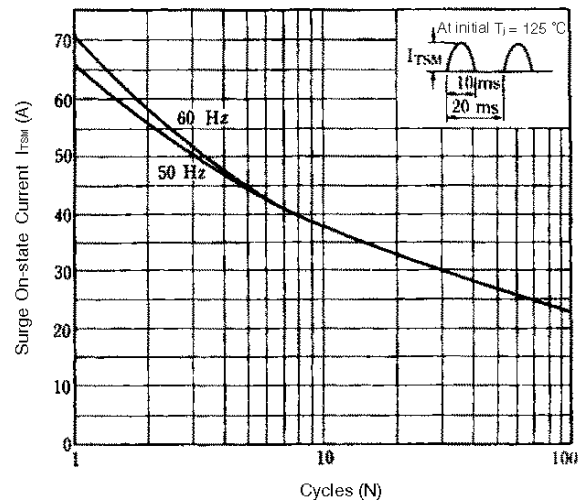


Figure 3. Gate Rating

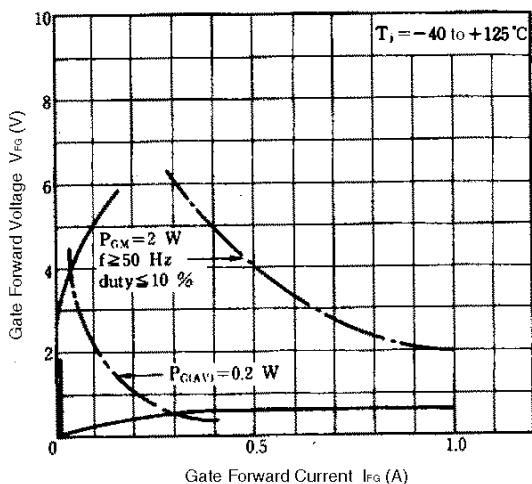


Figure 4. Example of Gate Characteristics

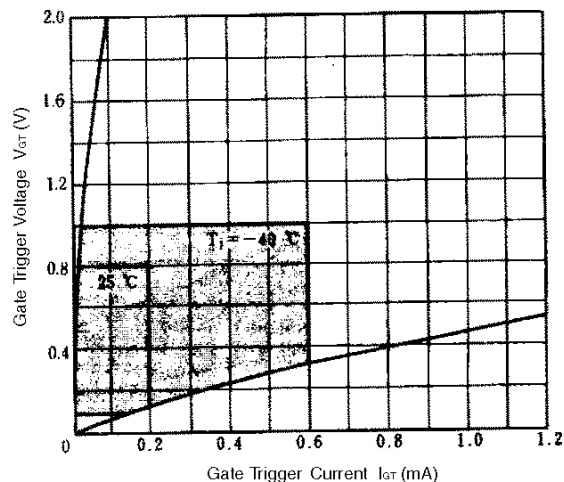


Figure 5.  $I_{GT}$  vs.  $T_A$  Example of Characteristics

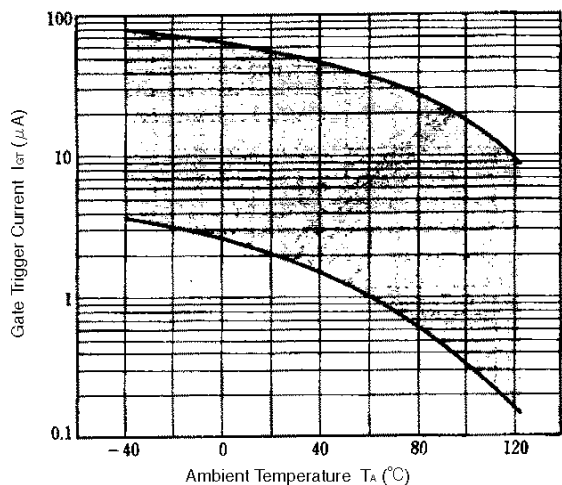


Figure 6.  $V_{GT}$  vs.  $T_A$  Example of Characteristics

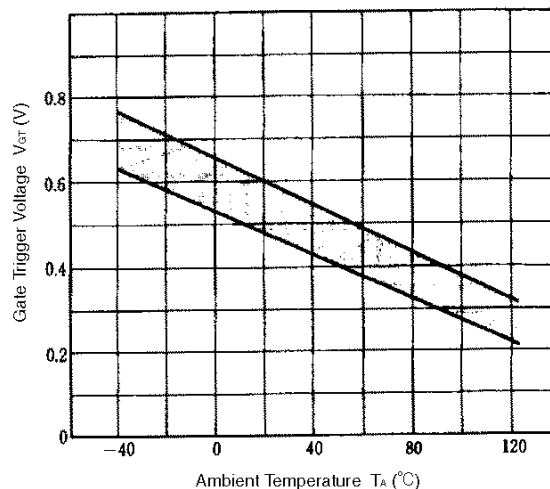


Figure 7.  $I_{GT}$  vs.  $\tau$  Example of Characteristics

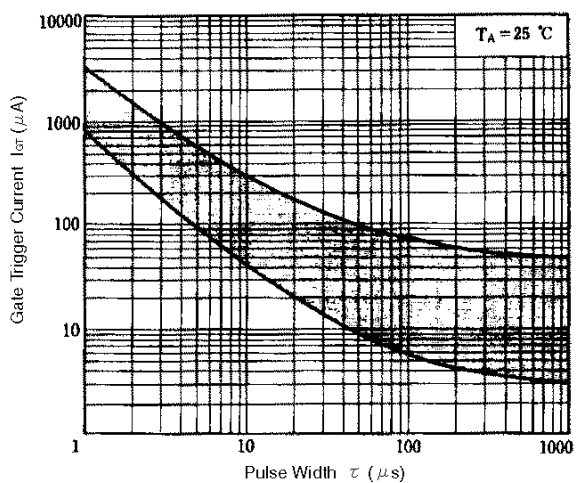


Figure 8.  $V_{GT}$  vs.  $\tau$  Example of Characteristics

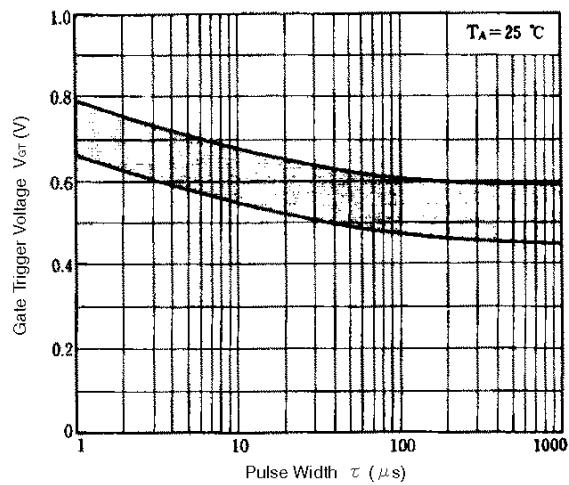


Figure 9.  $I_H$  vs.  $T_A$  Example of Characteristics

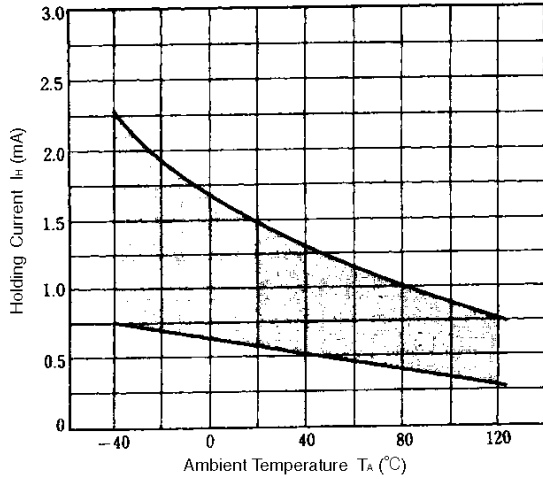


Figure 10.  $P_{T(AV)}$  vs.  $I_{T(AV)}$  Characteristics

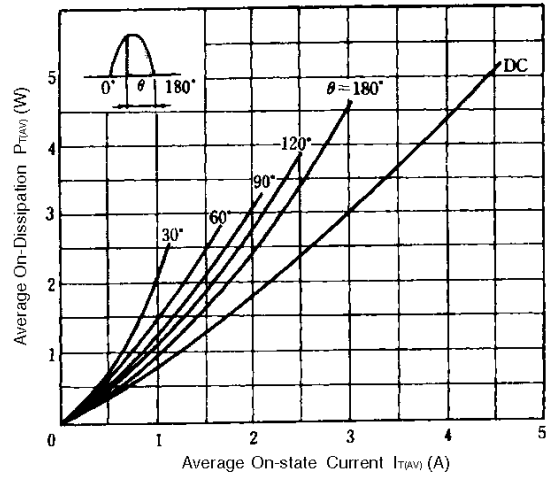


Figure 11.  $T_C$  vs.  $I_{T(AV)}$  Rating

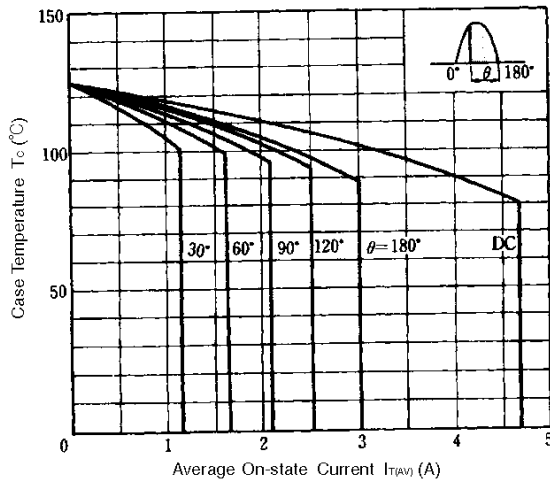


Figure 12.  $T_A$  vs.  $I_{T(AV)}$  Rating

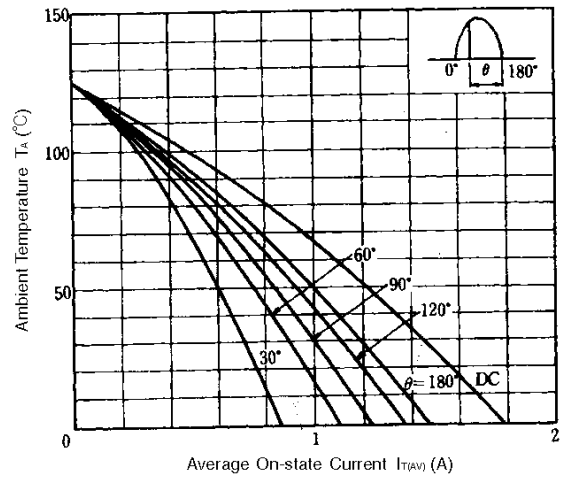
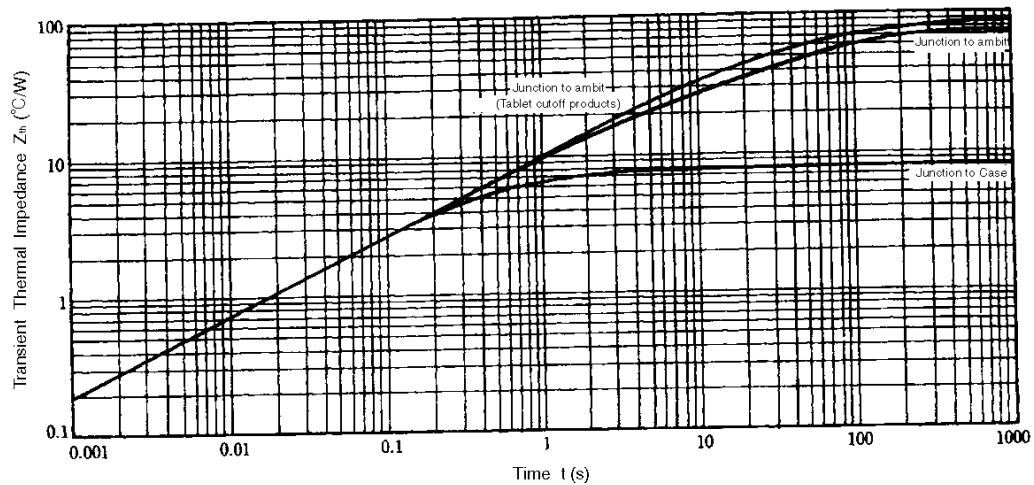


Figure 13.  $Z_{th}$  Characteristics



[MEMO]

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