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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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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.

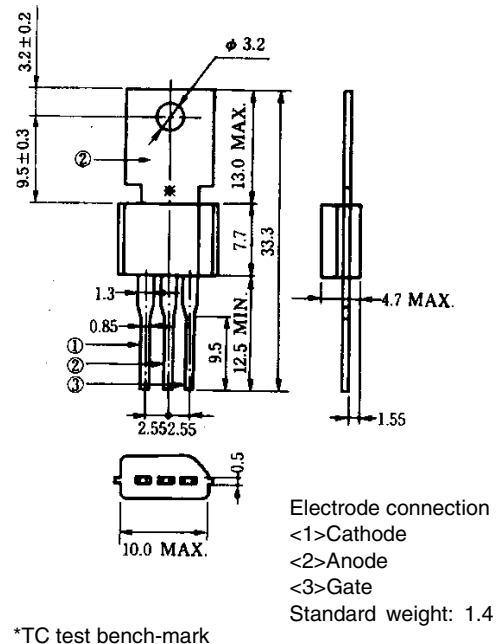
FEATURES

- 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 ² s	—
Critical rate of rise of on-state current	di_T/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_j = 25°C, R_{GK} = 1 kΩ)

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

TYPICAL CHARACTERISTICS (T_a = 25°C)

Figure 1. I_T vs. v_T Characteristics

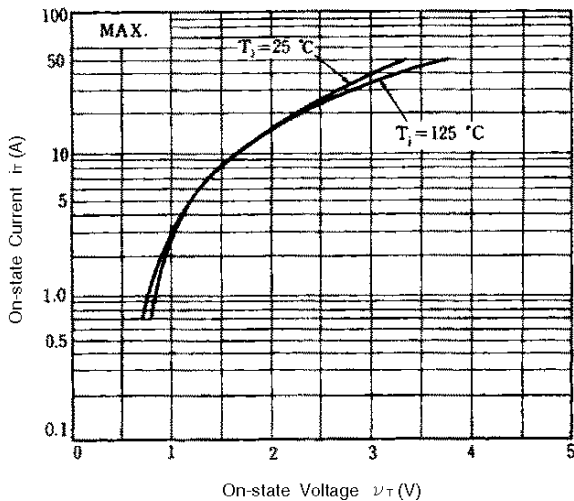


Figure 2. I_{TSM} Rating

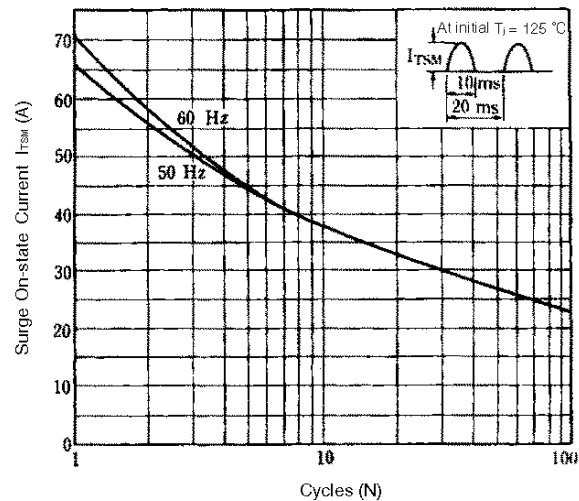


Figure 3. Gate Rating

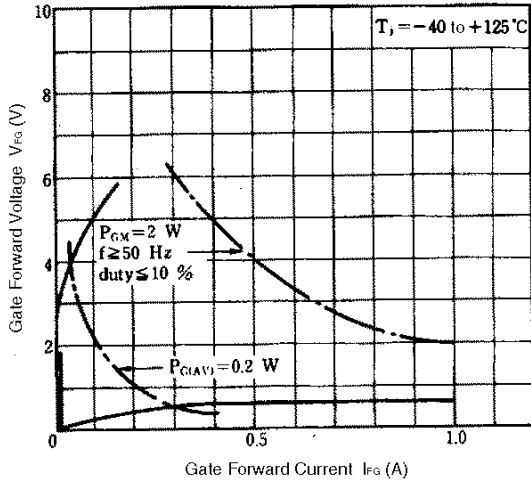


Figure 4. Example of Gate Characteristics

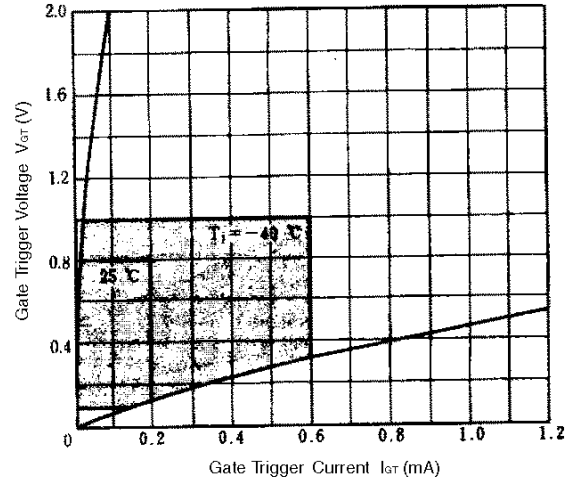


Figure 5. I_{GT} vs. T_A Example of Characteristics

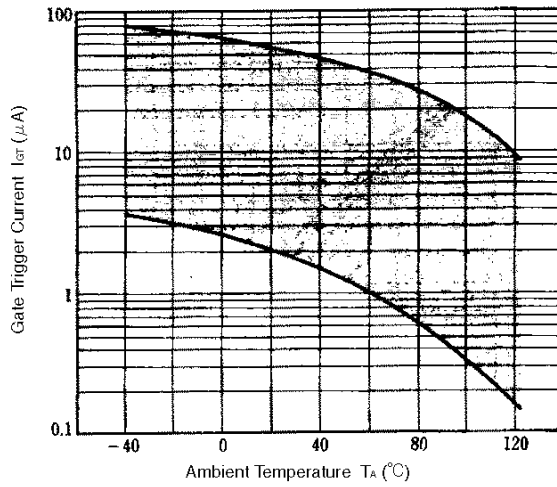


Figure 6. V_{GT} vs. T_A Example of Characteristics

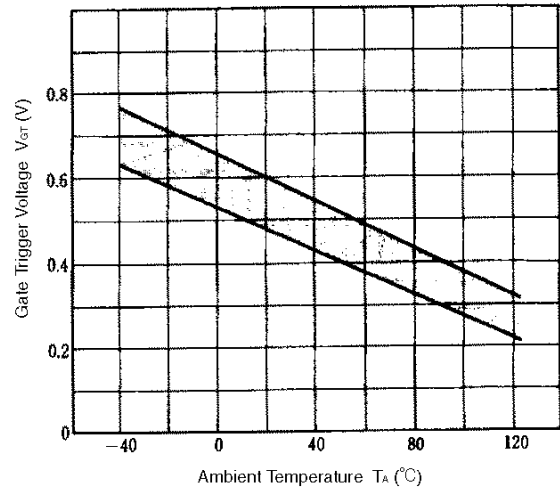


Figure 7. I_{GT} vs. τ Example of Characteristics

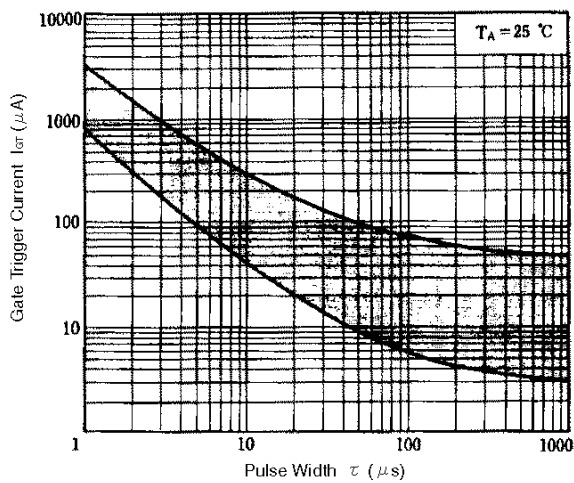


Figure 8. V_{GT} vs. τ Example of Characteristics

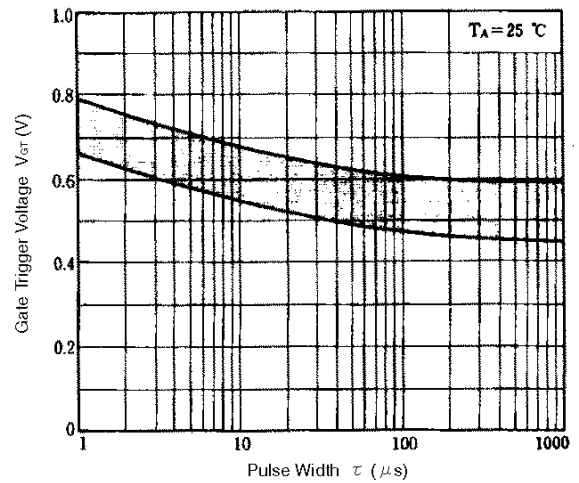


Figure 9. I_H vs. T_A Example of Characteristics

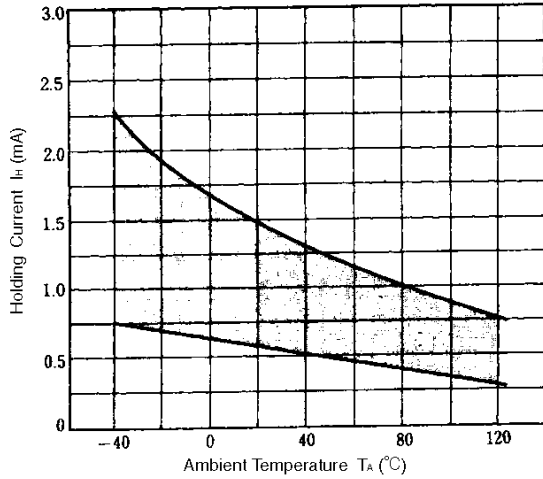


Figure 10. $P_{T(AV)}$ vs. $I_{T(AV)}$ Characteristics

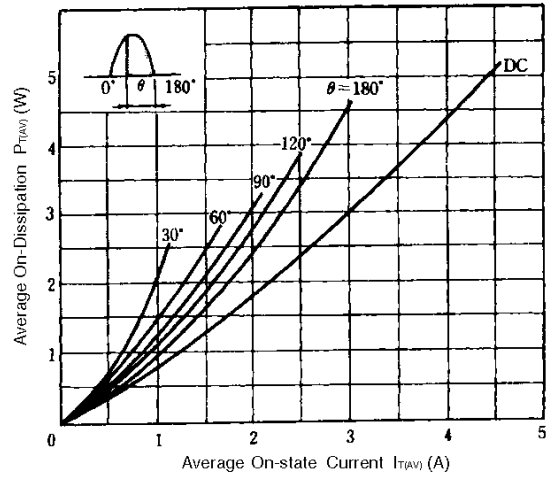


Figure 11. T_C vs. $I_{T(AV)}$ Rating

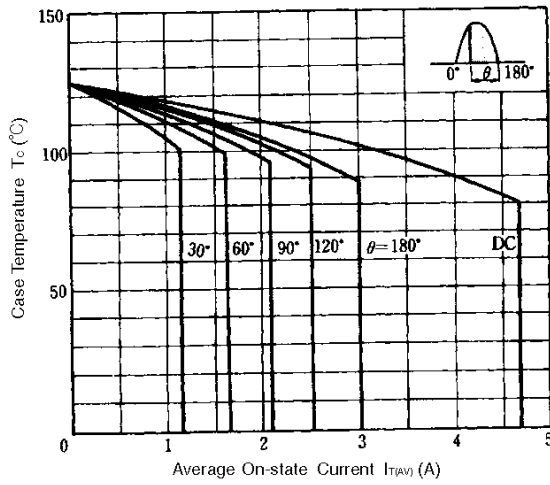


Figure 12. T_A vs. $I_{T(AV)}$ Rating

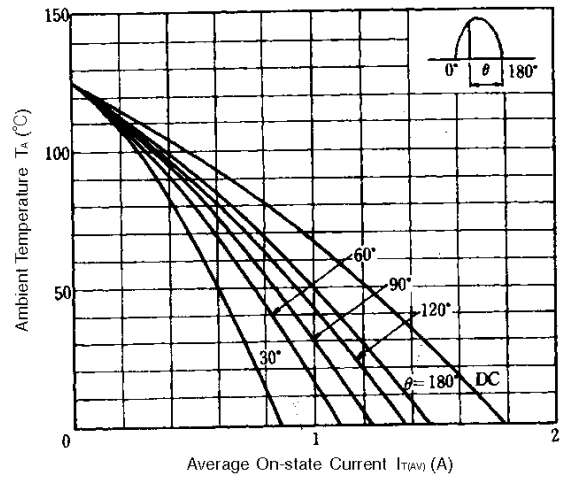
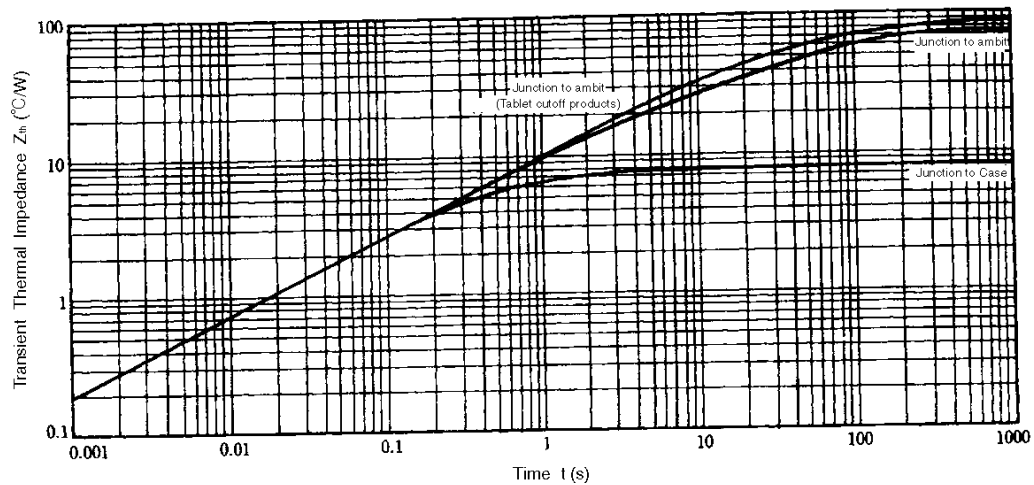


Figure 13. Z_{th} Characteristics



[MEMO]

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