

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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Phase-out/Discontinued

THYRISTORS

8P2SMA, 8P4SMA

8 A RESIN MOLD TYPE SCR

<R> DESCRIPTION

The 8P2SMA and 8P4SMA are resin mold type SCRs with an average on-state current 8 A ($T_c = 88^\circ\text{C}$), repetitive peak off-state voltage 200 V and 400 V.

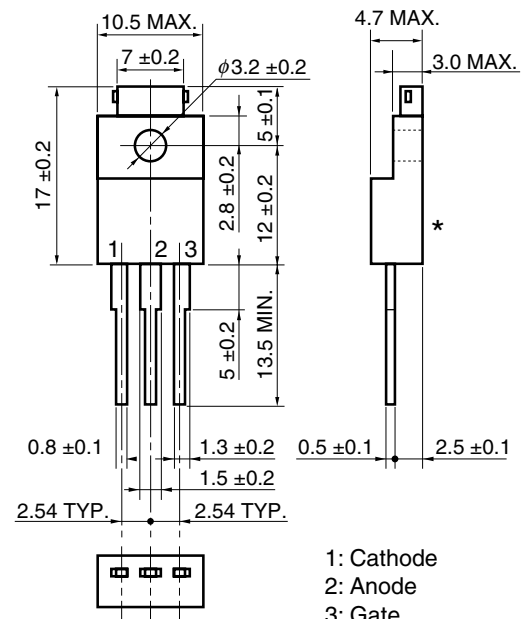
<R> FEATURES

- Can be replaced with TO-220AB package
- High allowable on-current when using a single unit

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.

<R> PACKAGE DRAWING (Unit: mm)



*: T_c test bench-mark

Standard weight: 2 g

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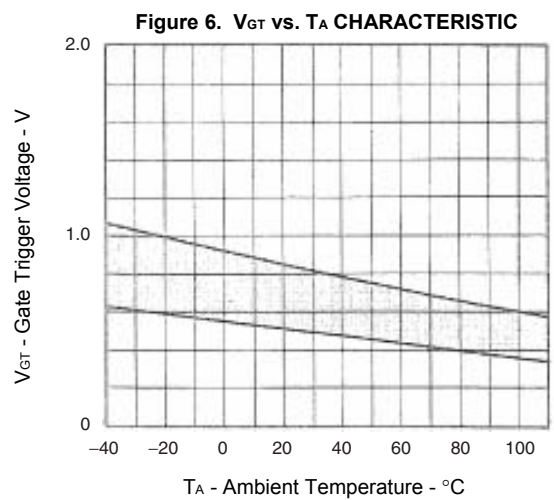
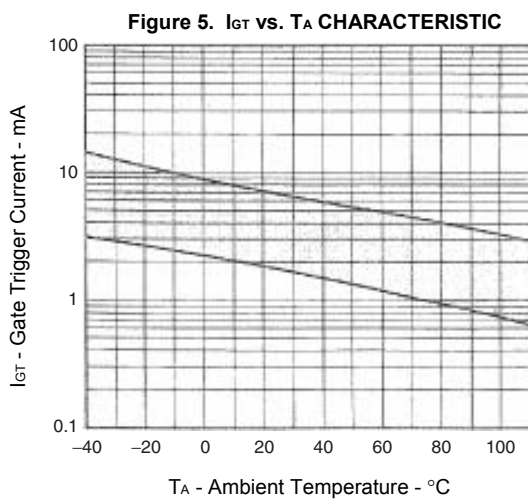
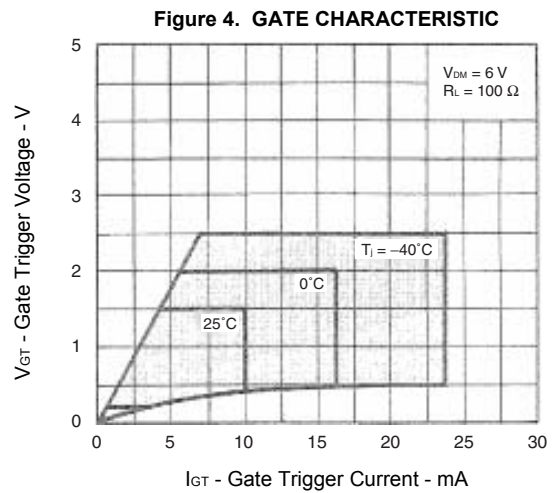
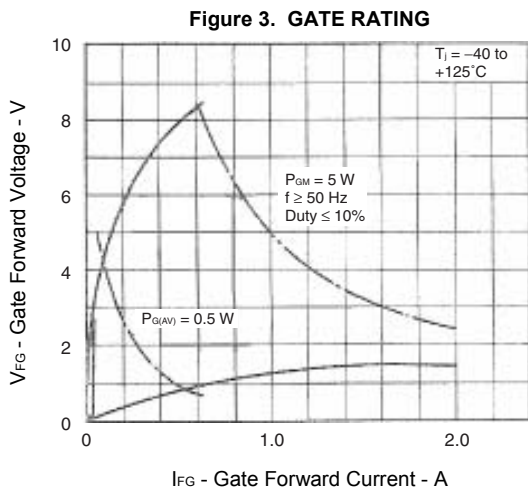
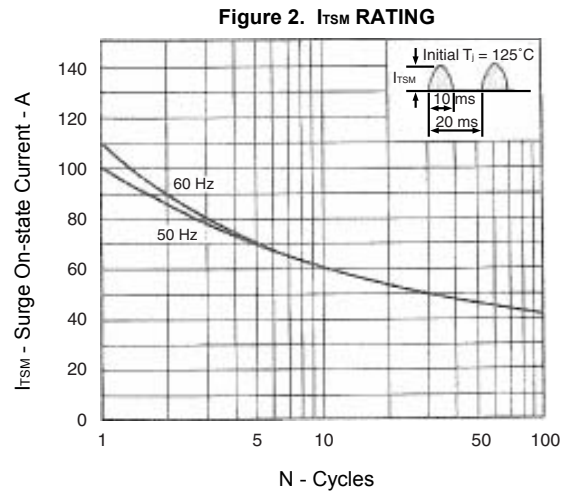
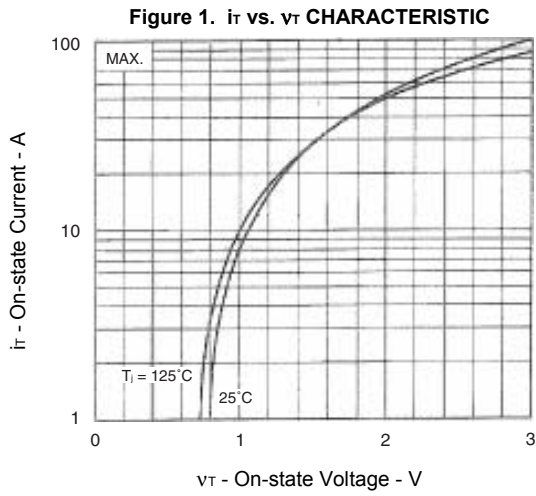
MAXIMUM RATINGS

Parameter	Symbol	8P2SMA	8P4SMA	Unit	Remarks
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 = 88°C, single phase half wave, θ = 180°)		A	Refer to Figure 11 and 12 .
Effective On-state Current	I _{T(RMS)}	12.6		A	
Surge On-state Current	I _{TSM}	100 (f = 50 Hz, sine half wave, 1 cycle) 110 (f = 60 Hz, sine half wave, 1 cycle)		A	Refer to Figure 2 .
Fusing Current	$\int i_t^2 dt$	45 (1 ms ≤ t ≤ 10 ms)		A ² s	–
Critical Rate Rise of On-state Current	dI _T /dt	50		A/μs	–
Peak Gate Power Dissipation	P _{GM}	5 (f ≥ 50 Hz, Duty ≤ 10%)		W	Refer to Figure 3 .
Average Gate Power Dissipation	P _{G(AV)}	0.5		W	
Peak Gate Forward Current	I _{FGM}	2 (f ≥ 50 Hz, Duty ≤ 10%)		A	–
Peak Gate Reverse Voltage	V _{RGM}	10		V	–
Junction Temperature	T _j	–40 to +125		°C	–
Storage Temperature	T _{stg}	–55 to +150		°C	–

ELECTRICAL CHARACTERISTICS (T_j = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Remarks	
Repetitive Peak Reverse Current	I _{RRM}	V _{RM} = V _{RRM}	T _j = 25°C	–	–	100	μA	–
			T _j = 125°C	–	–	2	mA	–
Repetitive Peak Off-state Current	I _{DRM}	V _{DM} = V _{DRM}	T _j = 25°C	–	–	100	μA	–
			T _j = 125°C	–	–	2	mA	–
On-state Voltage	V _{TM}	I _{TM} = 25 A	–	–	1.4	V	Refer to Figure 1 .	
Gate Trigger Current	I _{GT}	V _{DM} = 6 V, R _L = 100 Ω	–	–	10	mA	Refer to Figure 4 .	
Gate Trigger Voltage	V _{GT}	V _{DM} = 6 V, R _L = 100 Ω	–	–	1.5	V		
Gate Non-trigger Voltage	V _{GD}	T _j = 125°C, V _{DM} = $\frac{1}{2}$ V _{DRM}	0.2	–	–	V	–	
Holding Current	I _H	V _{DM} = 24 V, I _{TM} = 25 A	–	6	–	mA	–	
Critical Rate Rise of Off-state Voltage	dv/dt	T _j = 125°C, V _{DM} = $\frac{2}{3}$ V _{DRM}	–	40	–	V/μs	–	
Circuit Commuted Turn-off Time	t _q	T _j = 125°C, I _{TM} = 8 A di _r /dt = 15 A/μs, V _R ≥ 25 V, V _{DM} = $\frac{2}{3}$ V _{DRM} , dV _D /dt = 10 V/μs	–	100	–	μs	–	
Thermal Resistance ^{Note}	R _{th(j-c)}	Junction to case DC	–	–	3.7	°C/W	Refer to Figure 13 .	
	R _{th(j-a)}	Junction to ambient DC	–	–	60	°C/W		

TYPICAL CHARACTERISTICS



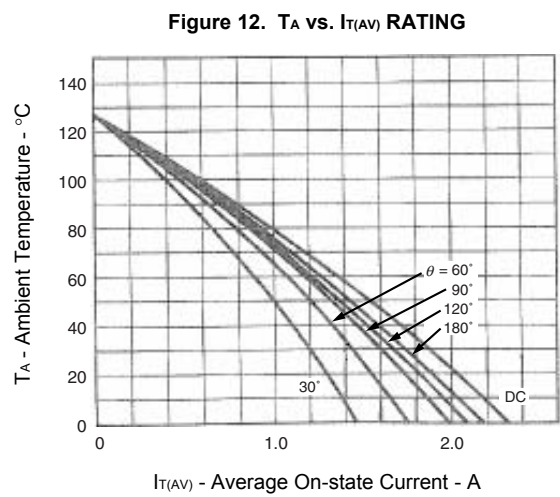
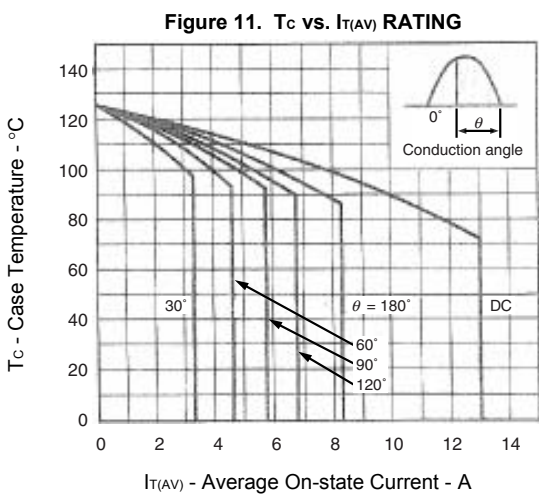
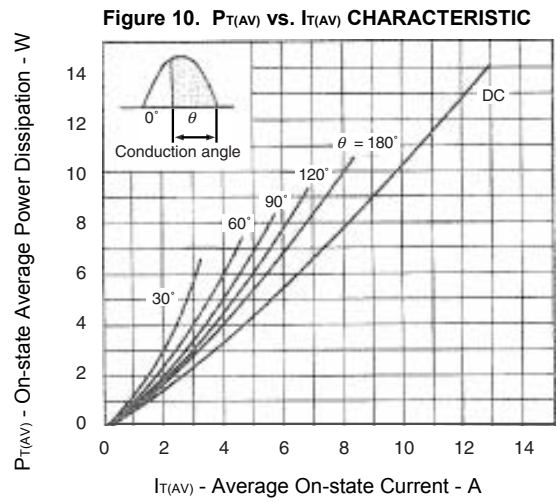
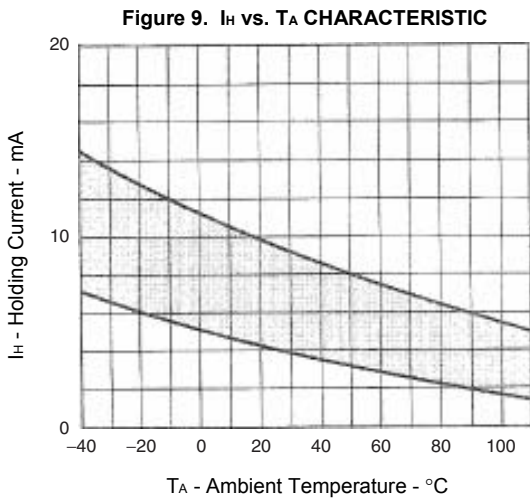
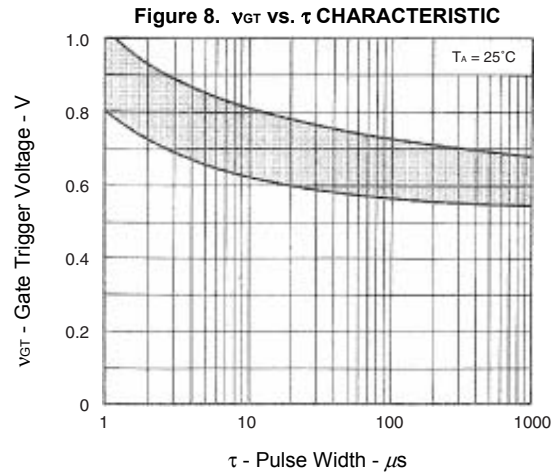
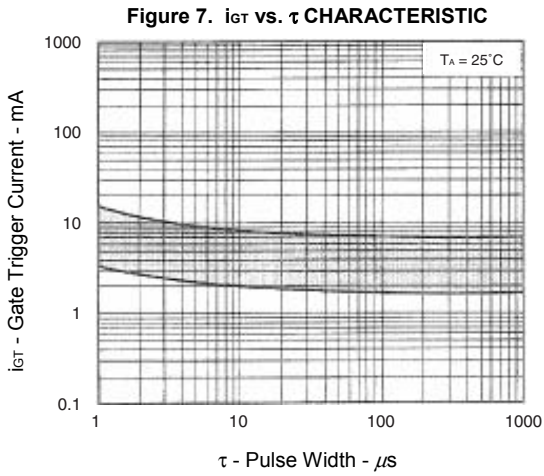
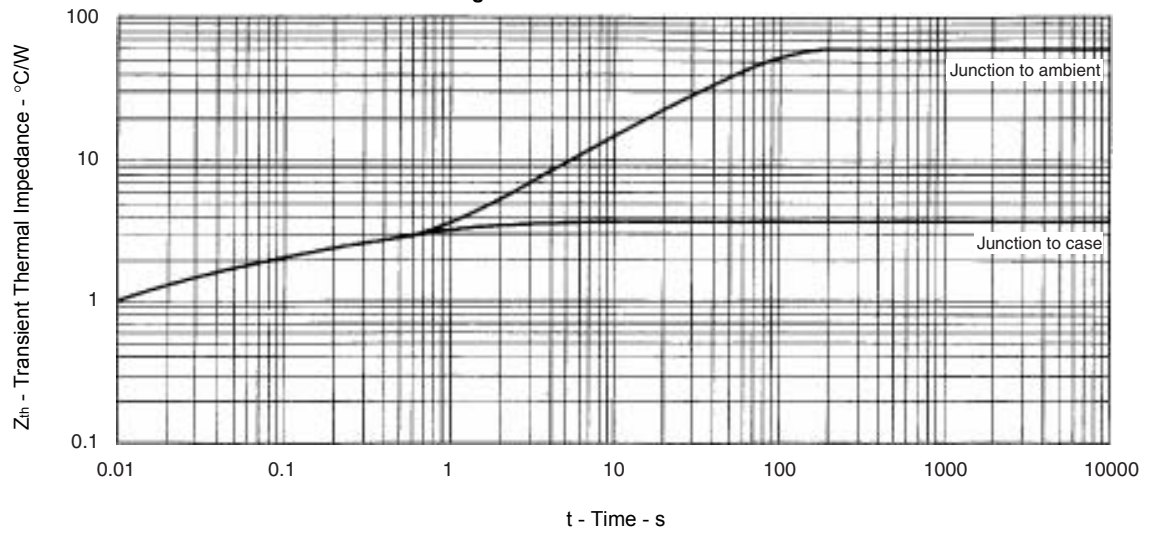


Figure 13. Z_{th} CHARACTERISTIC



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