

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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## 8 A MOLD THYRISTOR

## DESCRIPTION

The 8P4J and 8P4J-Z are P-gate all diffused mold type THYRISTOR granted average on-state current 8 Amps ( $T_C = 90^\circ\text{C}$ ), with rated voltages up to 400 Volts.

## FEATURES

- Small and Surface Mount package.
- High junction temperature provides free application design.
- 80 A surge current.

## APPLICATIONS

Automotive application such as regulator, Speed control of motor.  
Various temperature control, Electronic jar.  
Various solid state relay etc.

## MAXIMUM RATINGS

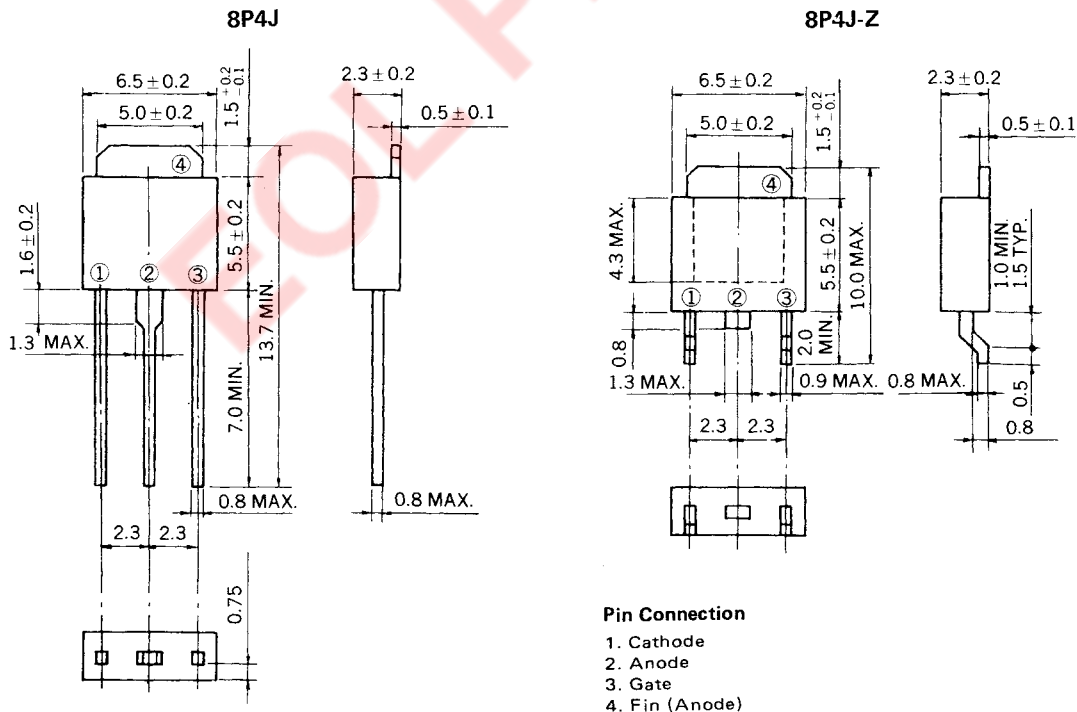
ITEM	SYMBOL	MAXIMUM RATINGS	UNIT	NOTE
Non-Repetitive Peak Reverse Voltage	$V_{RSM}$	500	V	
Non-Repetitive Peak-off Voltage	$V_{DSM}$	500	V	
Repetitive Reverse Voltage	$V_{RRM}$	400	V	
Repetitive Peak-off Voltage	$V_{DRM}$	400	V	
On-state Current	$I_{T(AV)}$	8 ( $T_C = 90^\circ\text{C}$ , $\theta = 180^\circ$ Single Phase half wave)	A	Fig. 11
	$I_{T(RSM)}$	12.6		
Surge On-state Current	$I_{TSM}$	80	A	Fig. 2
Critical Rate-Rise of On-State Current	$di/dt$	50	A/ $\mu\text{s}$	
Gate Power Dissipation	$P_{GM}$	5 ( $f \geq 50\text{ Hz}$ , $\text{Duty} \leq 10\%$ )	W	Fig. 3
Gate Power Dissipation	$P_{G(AV)}$	0.5	W	
Gate Forward Current	$I_{FGM}$	2 ( $f \geq 50\text{ Hz}$ , $\text{Duty} \leq 10\%$ )	A	
Gate Reverse Voltage	$V_{RGM}$	10	V	
Junction Temperature	$T_j$	-40 to +125	$^\circ\text{C}$	
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Repetitive Peak Reverse Current	$I_{RRM}$	$V_{RM} = 400\text{ V}$ , $T_j = 125^\circ\text{C}$ $R_{GK} = 1\text{ k}\Omega$	—	—	2	mA	
Repetitive Peak Off-state Current	$I_{DRM}$	$V_{DM} = 400\text{ V}$ , $T_j = 125^\circ\text{C}$ $R_{GK} = 1\text{ k}\Omega$	—	—	2	mA	
On-state Voltage	$V_{TM}$	$I_{TM} = 10\text{ A}$	—	—	1.4	V	See Fig. 1
Gate-Trigger Current	$I_{GT}$	$V_{DM} = 6\text{ V}$ , $R_L = 100\ \Omega$	—	—	10	mA	See Fig. 5 Fig. 7
Gate-Trigger Voltage	$V_{GT}$	$V_{DM} = 6\text{ V}$ , $R_L = 100\ \Omega$	—	—	1.5	V	See Fig. 6 Fig. 8
Gate Non-Trigger Voltage	$V_{GD}$	$V_{DM} = 200\text{ V}$ , $T_j = 125^\circ\text{C}$	0.2	—	—	V	
Critical Rate-of-Rise of Off-state Voltage	$dv/dt$	$V_{DM} = 270\text{ V}$ , $T_j = 125^\circ\text{C}$	—	40	—	V/ $\mu\text{S}$	
Holding Current*	$I_H$	$V_D = 24\text{ V}$ , $I_{TM} = 10\text{ A}$	—	6	—	mA	See Fig. 9
Thermal Resistance	$R_{th(j-c)}$	Junction to Case	—	—	2.3	$^\circ\text{C/W}$	See Fig. 13
	$R_{th(j-a)}$	Junction to Ambient*	—	—	62.5		

\* Mount on  $7.5\text{ cm}^2 \times 0.7\text{ mm}$  ceramic substrate

PACKAGE DIMENSIONS (in millimeters)



CHARACTERISTIC

Fig. 1  $I_T - v_T$  CHARACTERISTIC

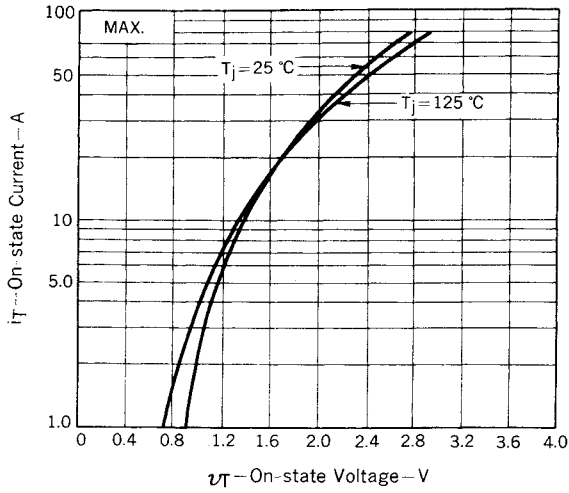


Fig. 2  $I_{TSM}$  RATING

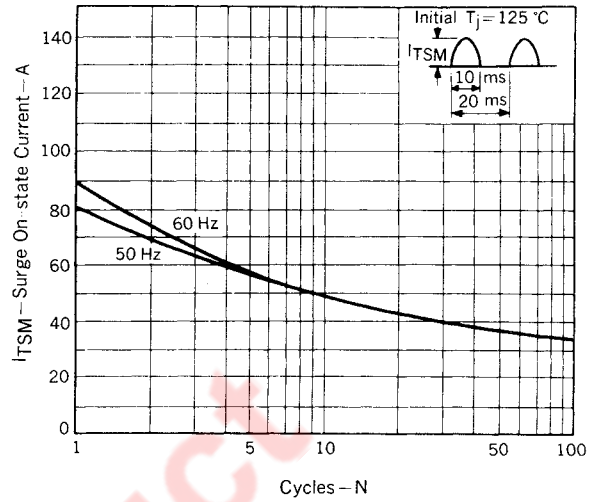


Fig. 3 GATE POWER RATINGS

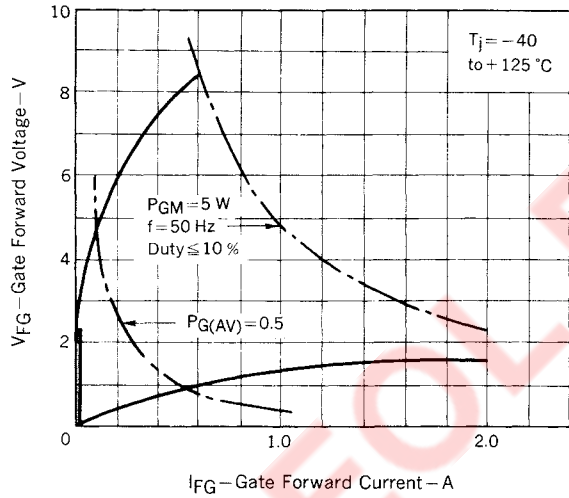


Fig. 4 GATE CHARACTERISTIC

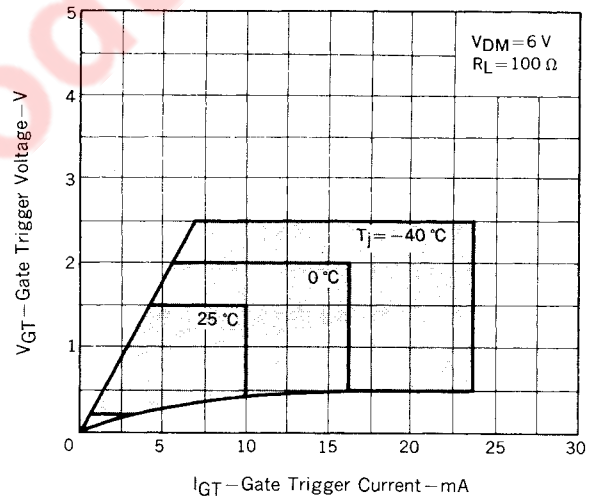


Fig. 5  $I_{GT} - T_a$  TYPICAL DISTRIBUTION

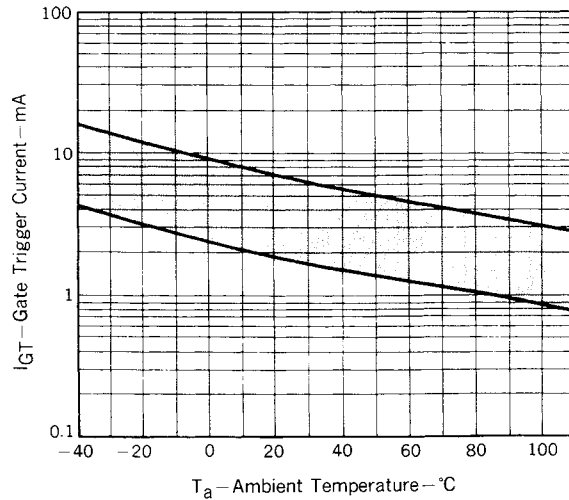


Fig. 6  $V_{GT} - T_a$  TYPICAL DISTRIBUTION

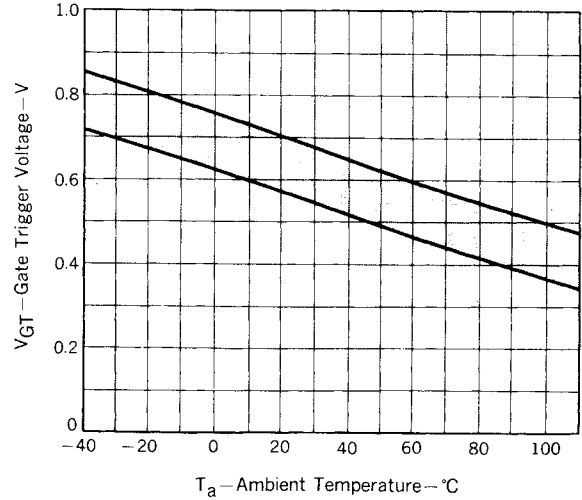


Fig. 7  $I_{GT} - \tau_G$  TYPICAL DISTRIBUTION

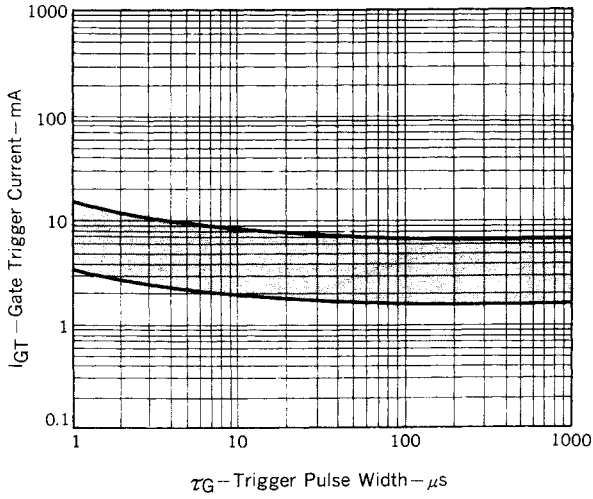


Fig. 8  $v_{GT} - \tau_G$  TYPICAL DISTRIBUTION

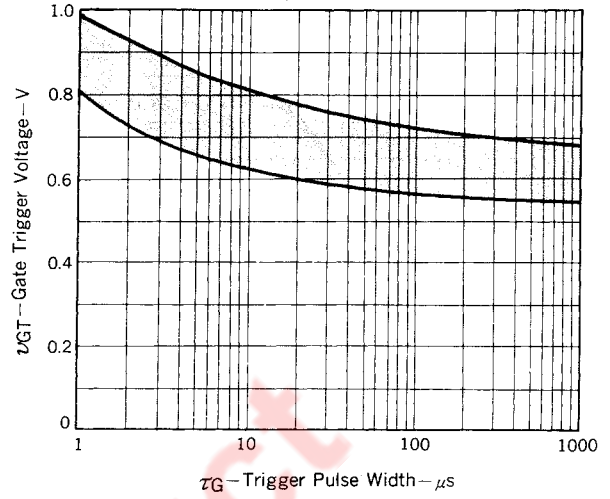


Fig. 9  $I_H - T_a$  TYPICAL DISTRIBUTION

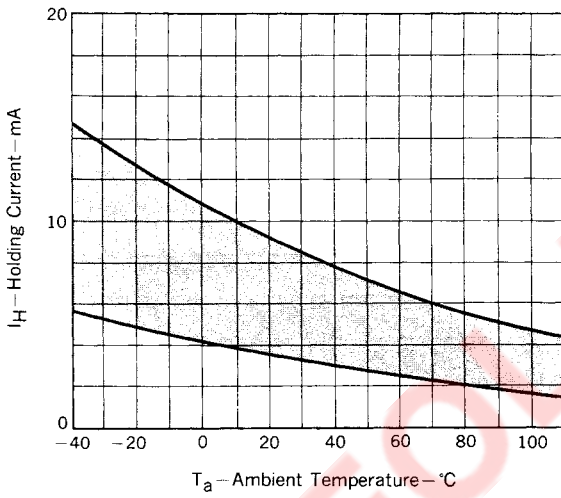


Fig. 10  $P_{T(AV)} - I_{T(AV)}$  CHARACTERISTIC

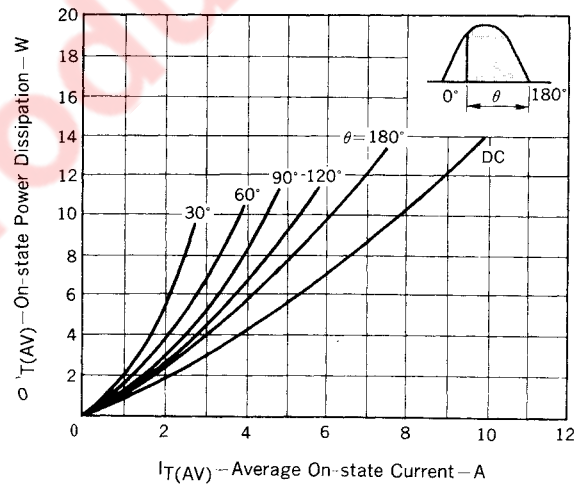


Fig. 11  $T_c - I_{T(AV)}$  RATING

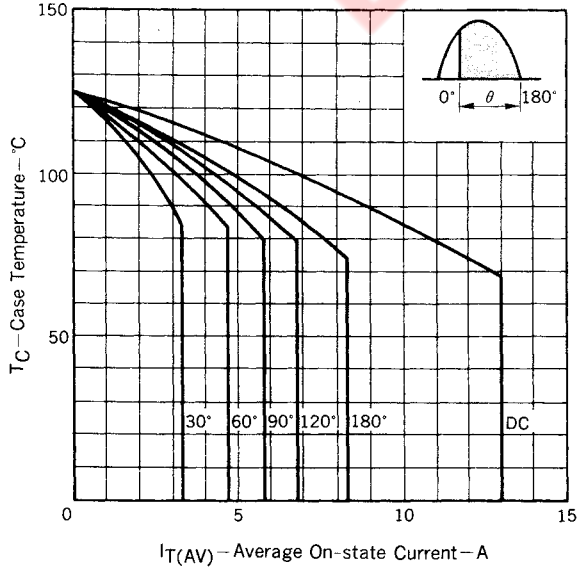


Fig. 12  $T_a - I_{T(AV)}$  RATING

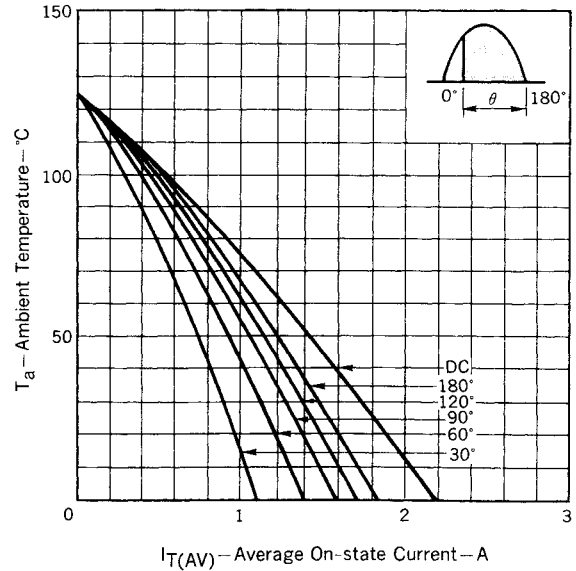
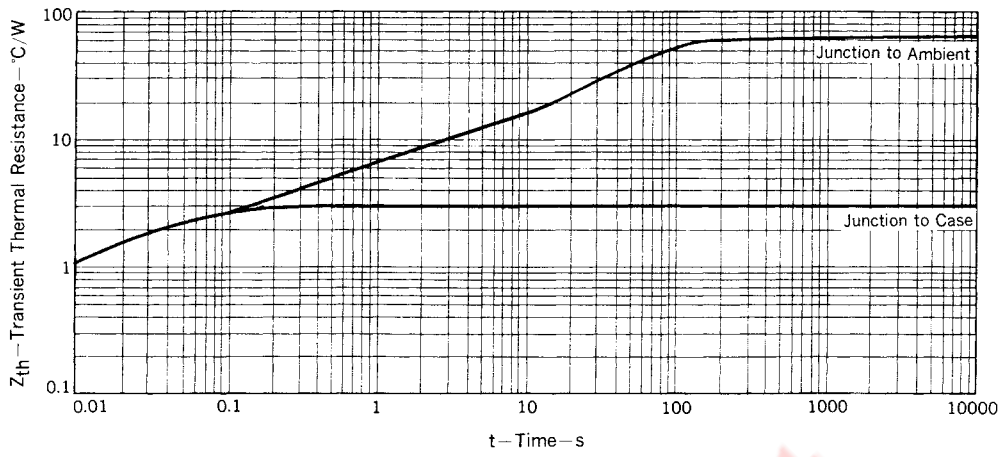


Fig. 13  $Z_{th}$  CHARACTERISTIC



EOL Product

EOL Product