

HIGH SPEED SWITCHING 2A(4Arms)MOLD THYRISTOR **2S2M, 2S3M, 2S4M**

The 2S2M ~ 2S4M are P-gate all diffused mold type SCR granted RMS on-state current 4 Amps and repetitive peak on-state current 15 Amps ($T_C=65^\circ\text{C}$, $f=10\text{KPPS}$, $t_p=10\mu\text{s}$).

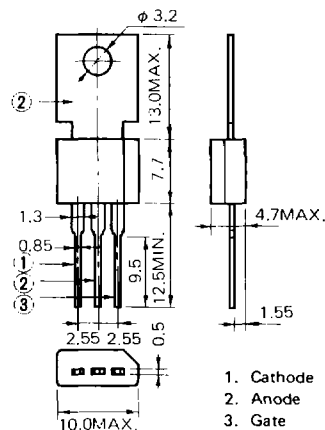
FEATURES

- Designed for Inverter, Pulse modulator, and other high frequency applications.
- Insured turn-off time of less than $15\mu\text{s}$.
- $300\mu\text{A}$ gate sensitivity
- 200 through 400 V selection

APPLICATIONS

- Automatic gas lighter
- Speed control of miniature type motor
- Electric sewing machine
- Battery charger
- TV
- Solenoid operation
- Inverter

OUTLINE DRAWING (Unit: mm)



MAXIMUM RATINGS

Item	Symbol	2S2M	2S3M	2S4M	Unit	Note
Non-Repetitive Peak Reverse Voltage	V_{RSM}	300	400	500	V	$R_{GK}=1k\Omega$
Non-Repetitive Peak Off-State Voltage	V_{DSM}	300	400	500	V	$R_{GK}=1k\Omega$
Repetitive Peak Reverse Voltage	V_{RRM}	200	300	400	V	$R_{GK}=1k\Omega$
Repetitive Peak Off-State Voltage	V_{DRM}	200	300	400	V	$R_{GK}=1k\Omega$
On-State Current	$I_T(AV)$	2 ($T_C=54^\circ\text{C}$, $\theta=180^\circ$ Single phase 1/2 wave)			A	See Fig. 3, Fig. 4
Repetitive Peak On-State Current	I_{TM}	15 ($T_C=65^\circ\text{C}$, $f=10\text{KPPS}$, $t_p=10\mu\text{s}$)			A	See Fig. 3, Fig. 4
Surge Non-Repetitive On-State Current	I_{TSM}	20			A	See Fig. 2
Peak Gate Power Dissipation	P_{GM}	0.5 ($f \geq 50\text{ Hz}$, duty $\leq 10\%$)			W	
Average Gate Power Dissipation	$P_{G(AV)}$	0.1			W	
Peak Gate Forward Current	I_{FGM}	0.2 ($f \geq 50\text{ Hz}$, duty $\leq 10\%$)			A	
Peak Gate Reverse Voltage	V_{RGM}	6			V	
Junction Temperature	T_j	$-40 \sim +110$			$^\circ\text{C}$	
Storage Temperature	T_{stg}	$-40 \sim +150$			$^\circ\text{C}$	
Weight		1.4			g	

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

CHARACTERISTICS (Tj=25°C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Repetitive Peak Reverse Current	I_{RRM}	$V_{RM}=V_{RRM}$, $T_j=110^{\circ}\text{C}$ $R_{GK}=1\text{k}\Omega$	—	—	100	μA	
Repetitive Peak Off-State Current	I_{DRM}	$V_{DM}=V_{DRM}$, $T_j=110^{\circ}\text{C}$ $R_{GK}=1\text{k}\Omega$	—	—	100	μA	
On-State Voltage	V_{TM}	$I_{TM}=4\text{A}$	—	—	2.2	V	See Fig. 1
Gate Trigger Current	I_{GT}	$V_{DM}=6\text{V}$, $R_L=100\Omega$ $R_{GK}=1\text{k}\Omega$	—	—	300	μA	See Fig. 8
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. 9
Gate Non-Trigger Voltage	V_{GD}	$V_{DM}=\frac{1}{2}V_{DRM}$, $T_j=110^{\circ}\text{C}$ $R_L=100\Omega$, $R_{GK}=1\text{k}\Omega$	0.2	—	—	V	
Critical Rate-of-Rise of Off-State Voltage	dv/dt	$V_{DM}=2/3V_{DRM}$, $T_j=110^{\circ}\text{C}$ $R_{GK}=1\text{k}\Omega$	10	—	—	$\text{V}/\mu\text{s}$	
Holding Current	I_H	$V_D=24\text{V}$, $R_{GK}=1\text{k}\Omega$	—	—	10	mA	See Fig. 10
Circuit Commutated Turn-Off Time	t_q	$V_{DM}=2/3V_{DRM}$, $T_j=110^{\circ}\text{C}$ $dv/dt=10\text{V}/\mu\text{s}$, $V_R=50\text{V}$ $I_T=2\text{A}$, $R_{GK}=1\text{k}\Omega$	—	—	15	μs	
Turn-On Time	t_{gt}	$V_{DM}=2/3V_{DRM}$, $I_{TM}=30\text{A}$ $I_G=5\text{mA}$, $t_{IG}=5\mu\text{s}$	—	—	2	μs	
Thermal Resistance	$R_{th(j-c)}$	Junction to Case	—	—	10	$^{\circ}\text{C}/\text{W}$	See Fig. 11
	$R_{th(j-a)}$	Junction to Ambient	—	—	75	$^{\circ}\text{C}/\text{W}$	See Fig. 11

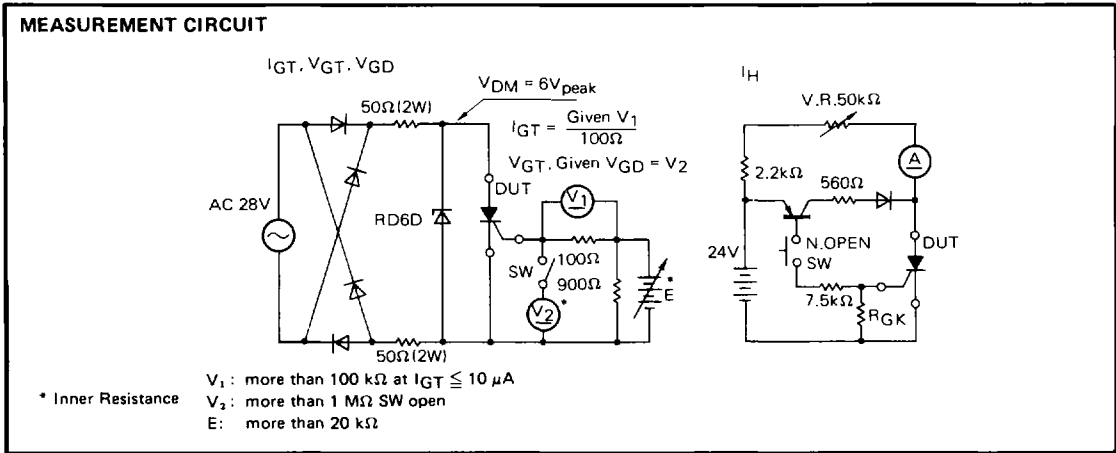
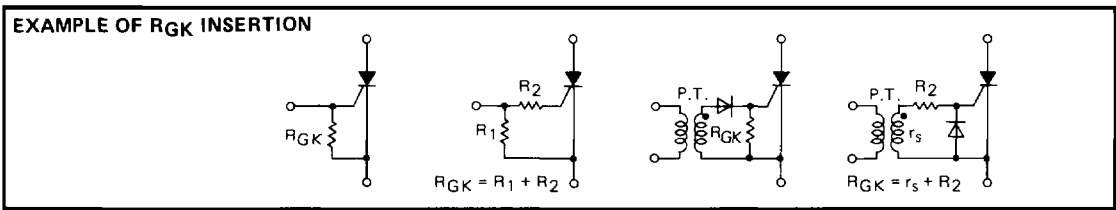


Fig. 1 I_{TM} - V_{TM} Characteristics

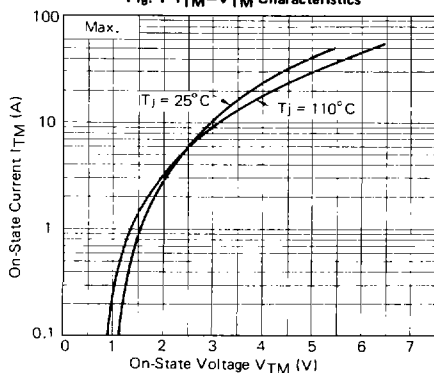


Fig. 2 I_{TSM} Rating

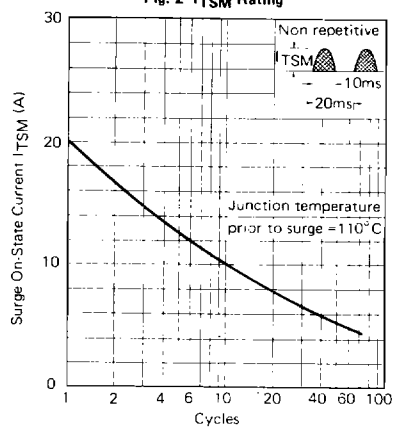


Fig. 3 I_{TM} - t_p Ratings

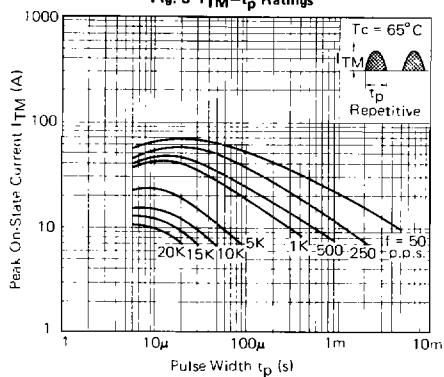


Fig. 4 I_{TM} - t_p Ratings

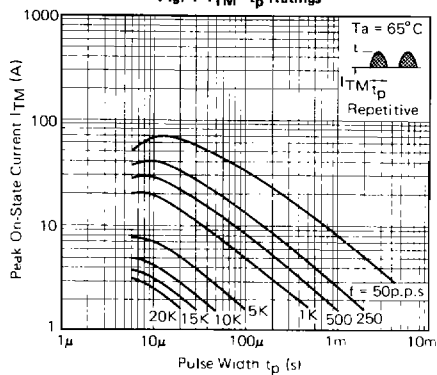


Fig. 5 $P_T(AV)$ - $I_T(AV)$ Characteristics

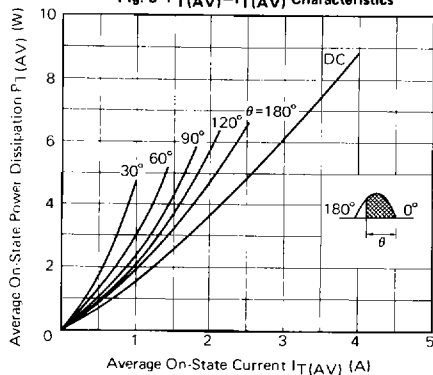
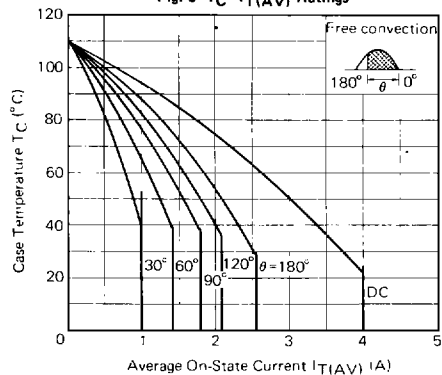
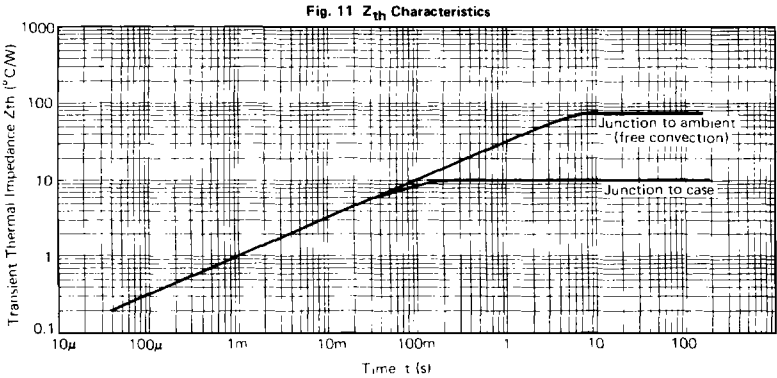
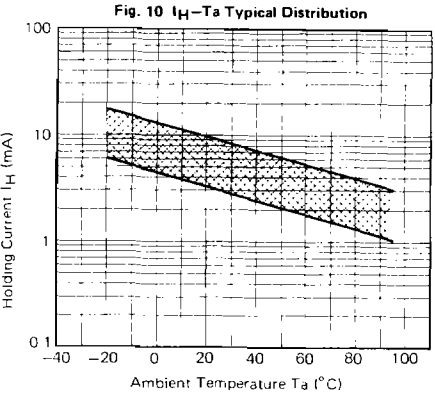
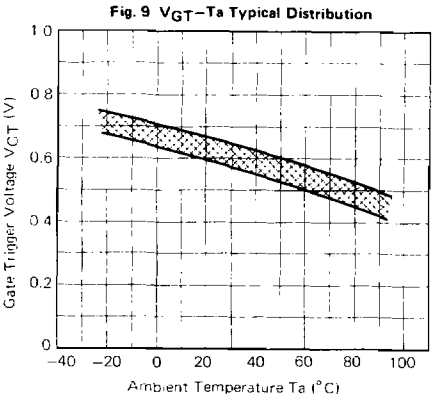
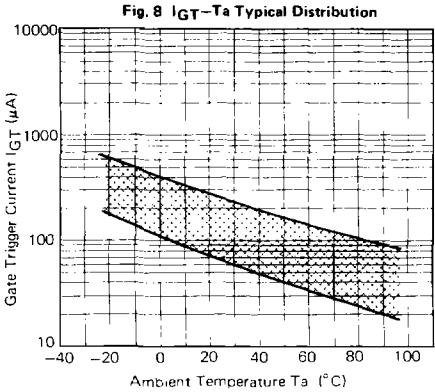
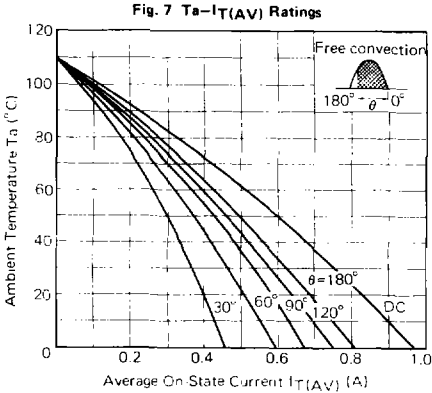


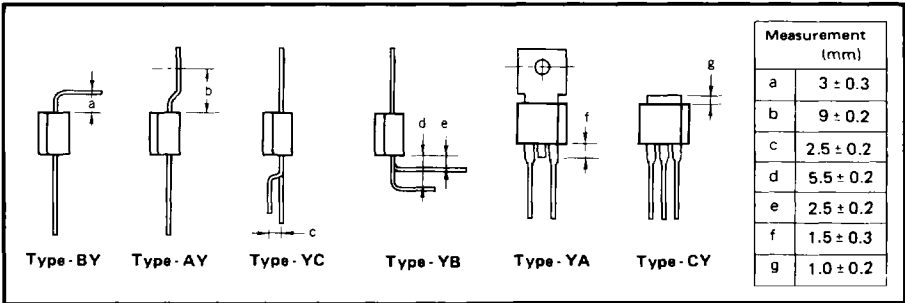
Fig. 6 T_C - $I_T(AV)$ Ratings





NOTICE FOR INSTALLATION

- 1. Electrode leads (especially heat sink tablet) are not granted to be bent because of wet-proof. However in case it is required inevitably, a mechanical stress should not be put on mold. Fix tightly between the mold case and the area to be formed or bent.
- 2. Electrode leads should not to be bent more than twice over 90°. Avoid the bending within 1.5 mm from the neck of mold case.
- 3. Special lead and heat tab formings as indicated below are available at an additional cost.



- 4. The surface of heat sink for thermal radiator is to be smooth without any foreign matter.
- 5. Suitable torque value is 4 ~ 5 kg.cm.
- 6. Soldering
 - Recommended solder: PbSu (4 : 6)
Melting point 180°C
 - Dimension from the neck of leads to dipping points 4 ~ 6 mm
 - Soldering temperature and period
 - 250°C less than 5 μsec.
 - 230°C less than 10 μsec.