

THYRISTOR MODULE

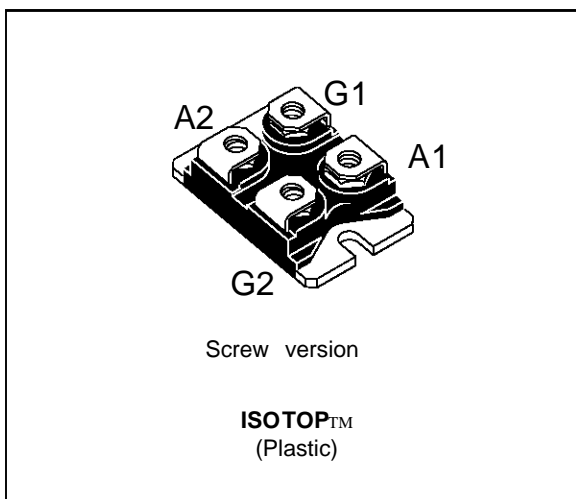
FEATURES

- $V_{DRM} = V_{RRM}$ UP TO 1400 V
- $I_{T(RMS)} = 70$ A
- HIGH SURGE CAPABILITY
- INSULATED PACKAGE :
INSULATING VOLTAGE 2500 V_(RMS)

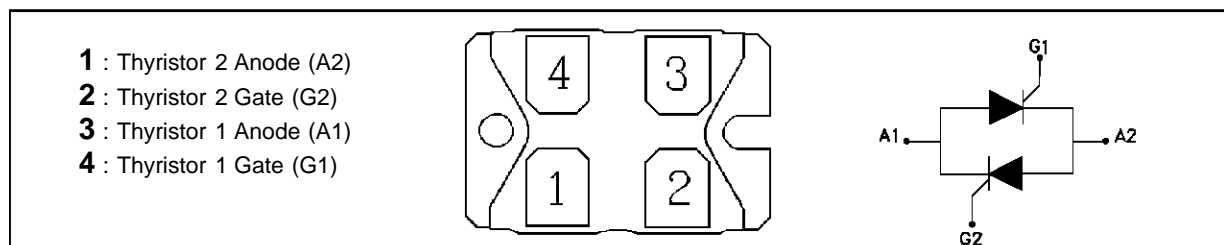
DESCRIPTION

The MSS50 family are constituted of two general purpose SCR. Suitable for AC switching and phase control on resistive and inductive load up to 400 Hz.

The small volume (7cm³) and weight (29g) of the isotop package are well adapted to new generation of medium size module market applications.



PIN CONNECTIONS



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|--------------------|---|--------------------------|--------------------------|------------------|
| $I_{T(RMS)}$ | RMS on-state current | $T_c = 80^\circ\text{C}$ | 70 | A |
| I_{TSM} | Non repetitive surge peak on-state current (T_j initial = 25°C) | $t_p = 8.3\text{ms}$ | 630 | A |
| | | $t_p = 10\text{ms}$ | 600 | |
| I^2t | I^2t value for fusing | $t_p = 10\text{ms}$ | 1800 | A ² s |
| di/dt | Critical rate of rise of on-state current Gate supply : $I_G = 800\text{mA}$ - $di_G/dt = 1\text{A}/\mu\text{s}$ | | 100 | A/ μs |
| T_{stg} T_j | Storage temperature range Operating junction temperature range | | - 40 + 150 - 40 + 125 | $^\circ\text{C}$ |

| Symbol | Parameter | MSS50 | | | Unit |
|------------------------|--|-------|-------|-------|------|
| | | -800 | -1200 | -1400 | |
| V_{DRM} V_{RRM} | Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$ | 800 | 1200 | 1400 | V |

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THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|-----------|--------------------------------|----|-------|------|
| Rth (j-c) | Junction to case | DC | 0.75 | °C/W |
| | | AC | 0.45 | |
| Rth (j-h) | Contact (case to heatsink) (4) | | 0.05 | °C/W |

(4) With contact grease utilisation

GATE CHARACTERISTICS (maximum values)
 $P_{GM} = 50 \text{ W}$ ($t_p = 20 \mu\text{s}$) $P_G (AV) = 1 \text{ W}$ $I_{FGM} = 4 \text{ A}$ ($t_p = 20 \mu\text{s}$) $V_{RGM} = 5 \text{ V}$.

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | Value | Unit | |
|------------------------|--|-------------------------|-------|------|------------------|
| I_{GT} | $V_D=12\text{V}$ (DC) $R_L=33\Omega$ | $T_j=25^\circ\text{C}$ | MAX | 50 | mA |
| V_{GT} | $V_D=12\text{V}$ (DC) $R_L=33\Omega$ | $T_j=25^\circ\text{C}$ | MAX | 1.5 | V |
| V_{GD} | $V_D=V_{DRM}$ $R_L=3.3\text{k}\Omega$ | $T_j=125^\circ\text{C}$ | MIN | 0.2 | V |
| tgt | $V_D=V_{DRM}$ $I_G = 500\text{mA}$ $di_G/dt = 3\text{A}/\mu\text{s}$ | $T_j=25^\circ\text{C}$ | TYP | 2 | μs |
| I_L | $I_G=1.2 I_{GT}$ | $T_j=25^\circ\text{C}$ | TYP | 60 | mA |
| | | | MAX | 120 | |
| I_H | $I_T= 0.5\text{A}$ gate open | $T_j=25^\circ\text{C}$ | TYP | 40 | mA |
| | | | MAX | 80 | |
| V_{TM} | $I_{TM}= 100\text{A}$ $t_p= 380\mu\text{s}$ | $T_j=25^\circ\text{C}$ | MAX | 1.7 | V |
| I_{DRM} I_{RRM} | V_{DRM} Rated V_{RRM} Rated | $T_j=25^\circ\text{C}$ | MAX | 0.05 | mA |
| | | $T_j=125^\circ\text{C}$ | MAX | 10 | |
| tq | $I_T= 100\text{A}$ $V_R=75\text{V}$ $V_D=67\%V_{DRM}$ $di/dt=30\text{A}/\mu\text{s}$ $dV/dt=20\text{V}/\mu\text{s}$ Gate open | $T_j=125^\circ\text{C}$ | TYP | 100 | μs |
| dV/dt * | Linear slope up to $V_D=67\%V_{DRM}$ gate open | $T_j=125^\circ\text{C}$ | MIN | 500 | V/ μs |

* For higher guaranteed values, please consult us.

Note : MSS50-1400

- I_{DRM} and I_{RRM} at $T_j = 125^\circ\text{C}$ is defined at 1200 V
- dV/dt at $T_j = 125^\circ\text{C}$ is defined at 67% of 1200 V

Fig. 1 : Maximum RMS power dissipation versus RMS on-state current.
(F= 50 Hz)

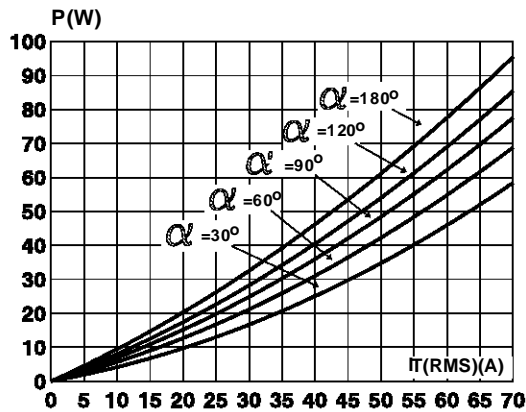


Fig. 3 : RMS on-state current versus case temperature.

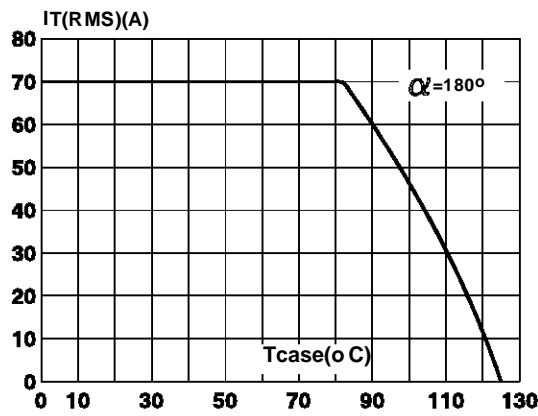


Fig. 5 : Relative variation of gate trigger and holding current versus junction temperature.

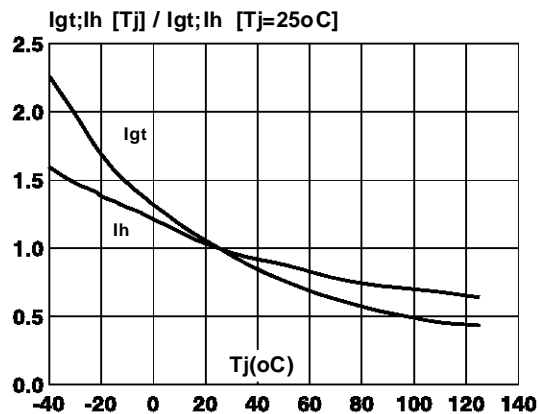


Fig. 2 : Correlation between maximum RMS power dissipation and maximum allowable temperature (Tamb) for different thermal resistances heatsink + contact.

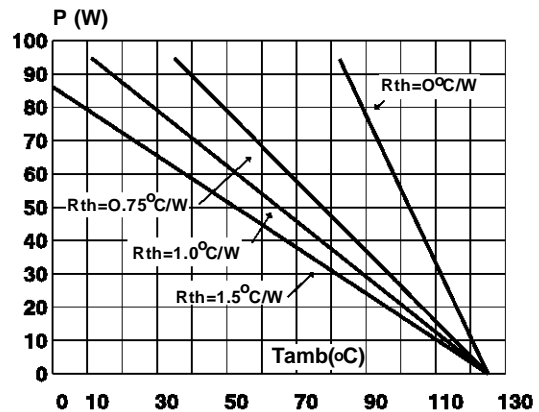


Fig. 4 : Thermal transient impedance junction to case versus pulse duration.

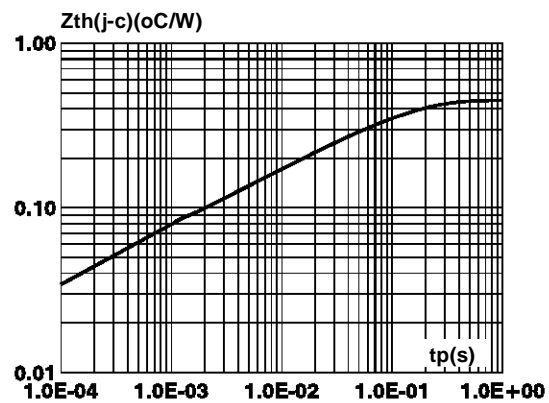


Fig. 6 : Non repetitive surge peak on-state current versus number of cycles.

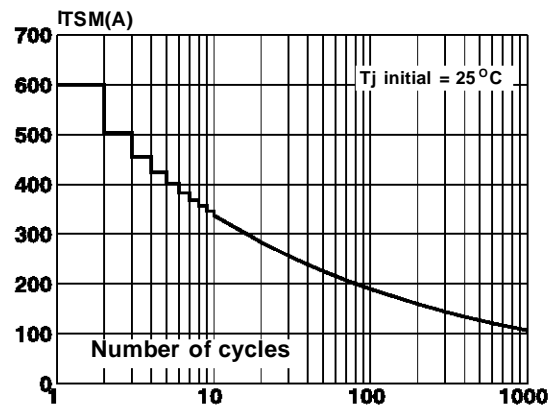


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t_p \leq 10$ ms and corresponding value of I^2t .

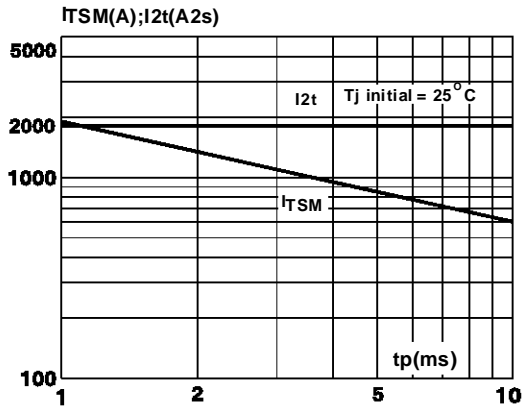
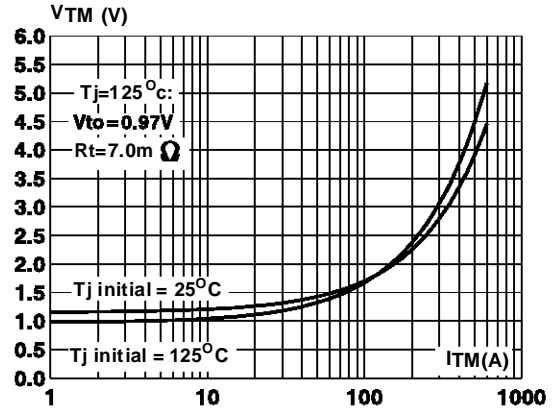
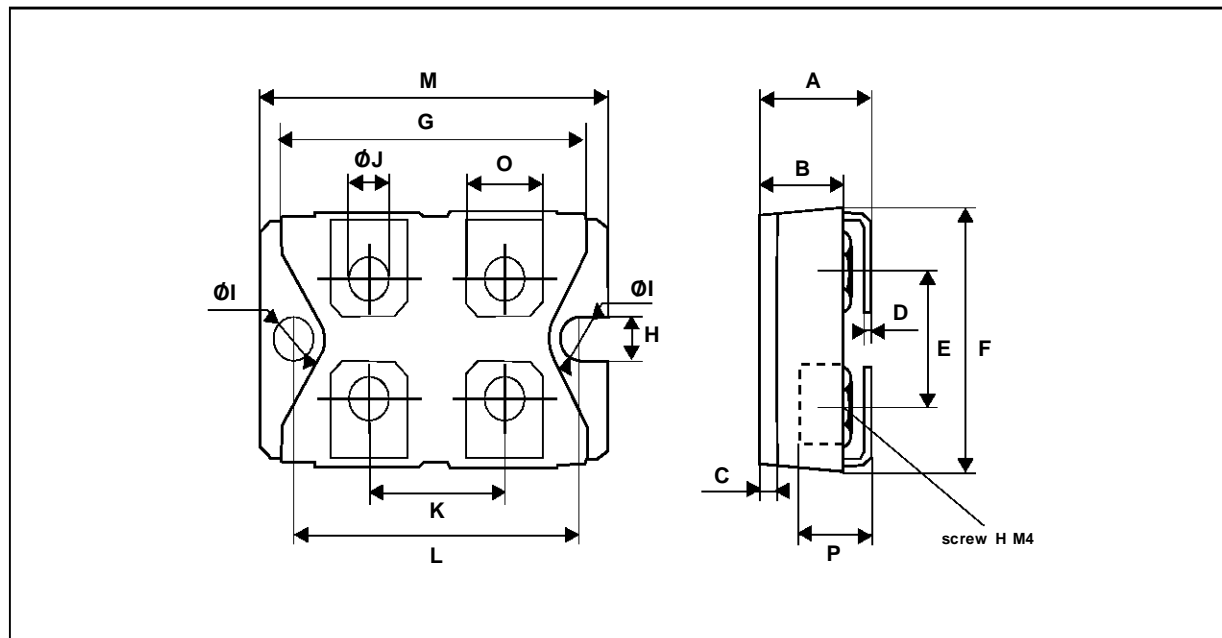


Fig. 8 : On-state characteristics .
(Maximum values)



PACKAGE MECHANICAL DATA

ISOTOP plastic : SCREW VERSION



| REF. | DIMENSIONS | | | |
|------|-------------|-------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 11.80 | 12.20 | 0.465 | 0.480 |
| B | 8.90 | 9.10 | 0.350 | 0.358 |
| C | 1.95 | 2.05 | 0.077 | 0.081 |
| D | 0.75 | 0.85 | 0.029 | 0.034 |
| E | 12.60 | 12.80 | 0.496 | 0.504 |
| F | 25.10 | 25.50 | 0.988 | 1.004 |
| G | 31.50 | 31.70 | 1.240 | 1.248 |
| H | 4.00 | | 0.157 | |
| I | 4.10 | 4.30 | 0.161 | 0.169 |
| J | 4.10 | 4.30 | 0.161 | 0.169 |
| K | 14.90 | 15.10 | 0.586 | 0.595 |
| L | 30.10 | 30.30 | 1.185 | 1.193 |
| M | 37.80 | 38.20 | 1.488 | 1.504 |
| O | 7.80 | 8.20 | 0.307 | 0.323 |
| P | 5.50 | | 0.216 | |

Cooling method : C
 Marking : Type number
 Weight : 28 g. (without screws)
 Electrical isolation : 2500V(RMS)
 Capacitance : < 45 pF
 Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (Max 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or others types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

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