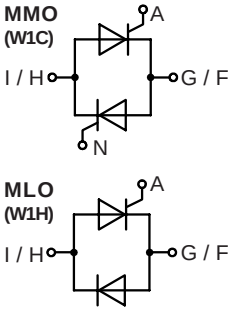
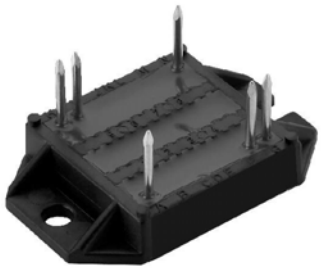
# AC Controller Modules

$I_{RMS}$ = 140 A
$V_{RRM}$ = 800-1600 V

Preliminary Data

| $V_{RSM}$ $V_{DSM}$ V | $V_{RRM}$ $V_{DRM}$ V | Type | |
|---|---|---|---|
| 800 | 800 | MMO 140-08io7 | MLO 140-08io7 |
| 1200 | 1200 | MMO 140-12io7 | MLO 140-12io7 |
| 1600 | 1600 | MMO 140-16io7 | MLO 140-16io7 |



| Symbol | Conditions | | Maximum Ratings | |
|---|---|---|---|---|
| $I_{RMS}$ | $T_C$ = 85°C, 50 - 400 Hz, (per single controller) | | 130 | A |
| $I_{TRMS}$ | | | 90 | A |
| $I_{TAVM}$ | $T_C$ = 85°C; 180° sine, per Thyristor | | 58 | A |
| $I_{TSM}$ | $T_{VJ}$ = 45°C | t = 10 ms (50 Hz), sine | 1150 | A |
| | $V_R$ = 0 | t = 8.3 ms (60 Hz), sine | 1230 | A |
| | $T_{VJ}$ = 125°C | t = 10 ms (50 Hz), sine | 1000 | A |
| | $V_R$ = 0 | t = 8.3 ms (60 Hz), sine | 1070 | A |
| $I^2t$ | $T_{VJ}$ = 45°C | t = 10 ms (50 Hz), sine | 6600 | $A^2s$ |
| | $V_R$ = 0 | t = 8.3 ms (60 Hz), sine | 6280 | $A^2s$ |
| | $T_{VJ}$ = 125°C | t = 10 ms (50 Hz), sine | 5000 | $A^2s$ |
| | $V_R$ = 0 | t = 8.3 ms (60 Hz), sine | 4750 | $A^2s$ |
| $(di/dt)_{cr}$ | $T_{VJ}$ = 125°C<br>f = 50 Hz, $t_P$ = 200 µs | repetitive, $I_T$ = 60 A | 150 | A/µs |
| | $V_D$ = $^2/_3$ $V_{DRM}$<br>$I_G$ = 0.45 A<br>$di_G/dt$ = 0.45 A/µs | non repetitive, $I_T$ = $I_{TAVM}$ | 500 | A/µs |
| $(dv/dt)_{cr}$ | $T_{VJ}$ = 125°C; $V_{DR}$ = $^2/_3$ $V_{DRM}$<br>$R_{GK}$ = ∞; method 1 (linear voltage rise) | | 1000 | V/µs |
| $P_{GM}$ | $T_{VJ}$ = 125°C | $t_p$ = 30 µs | 10 | W |
| | $I_T$ = $I_{TAVM}$ | $t_p$ = 300 µs | 5 | W |
| $P_{GAVM}$ | | | 0.5 | W |
| $V_{RGM}$ | | | 10 | V |
| $T_{VJ}$ | | | -40...+150 | °C |
| $T_{VJM}$ | | | 150 | °C |
| $T_{stg}$ | | | -40...+125 | °C |
| $V_{ISOL}$ | 50/60 Hz, RMS | t = 1 min | 2500 | V~ |
| | $I_{ISOL}$ ≤ 1 mA | t = 1 s | 3000 | V~ |
| $M_d$ | Mounting torque (M4) | | 1.5...2.0/14...18 | Nm/lb.in. |
| Weight | typ. | | 18 | g |

### Features

- Thyristor controller for AC (circuit W1C acc. to IEC) for mains frequency
- Isolation voltage 3000 V~
- Planar glass passivated chips
- Low forward voltage drop
- Lead suitable for PC board solering

### Applications

- Switching and control of single and three phase AC circuits
- Light and temperature control
- Softstart AC motor controller
- Solid state switches

### Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling
- High power density
- Small and light weight

Data according to IEC 60747 and to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions.

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| Symbol | Conditions | | Characteristic Values | | |
|---|---|---|---|---|---|
| $I_D$, $I_R$ | $T_{VJ}$ = 125°C; $V_R = V_{RRM}$; $V_D = V_{DRM}$ | | ≤ | 5 | mA |
| $V_T$ | $I_T$ = 200 A; $T_{VJ}$ = 25°C | | ≤ | 1.75 | V |
| $V_{T0}$ | For power-loss calculations only | | | 0.85 | V |
| $r_T$ | | | | 5.2 | mΩ |
| $V_{GT}$ | $V_D$ = 6 V | $T_{VJ}$ = 25°C | ≤ | 1.5 | V |
| | | $T_{VJ}$ = -40°C | ≤ | 1.6 | V |
| $I_{GT}$ | $V_D$ = 6 V | $T_{VJ}$ = 25°C | ≤ | 100 | mA |
| | | $T_{VJ}$ = -40°C | ≤ | 200 | mA |
| $V_{GD}$ | $T_{VJ}$ = 125°C; $V_D = {}^2/_3 V_{DRM}$ | | ≤ | 0.2 | V |
| $I_{GD}$ | | | ≤ | 10 | mA |
| $I_L$ | $T_{VJ}$ = 25°C; $t_P$ = 10 µs<br>$I_G$ = 0.45 A; $di_G/dt$ = 0.45 A/µs | | ≤ | 450 | mA |
| $I_H$ | $T_{VJ}$ = 25°C; $V_D$ = 6 V; $R_{GK}$ = ∞ | | ≤ | 200 | mA |
| $t_{gd}$ | $T_{VJ}$ = 25°C; $V_D$ = ½ $V_{DRM}$<br>$I_G$ = 0.45 A; $di_G/dt$ = 0.45 A/µs | | ≤ | 2 | µs |
| $R_{thJC}$ | per thyristor; DC | | | 0.7 | K/W |
| | per module | | | 0.35 | K/W |
| $R_{thCH}$ | per thyristor; sine 180° el | | typ. | 0.12 | K/W |
| | per module | | typ. | 0.06 | K/W |
| $d_S$ | Creeping distance on surface | | | 11.2 | mm |
| $d_A$ | Creepage distance in air | | | 17.0 | mm |
| a | Max. allowable acceleration | | | 50 | $m/s^2$ |

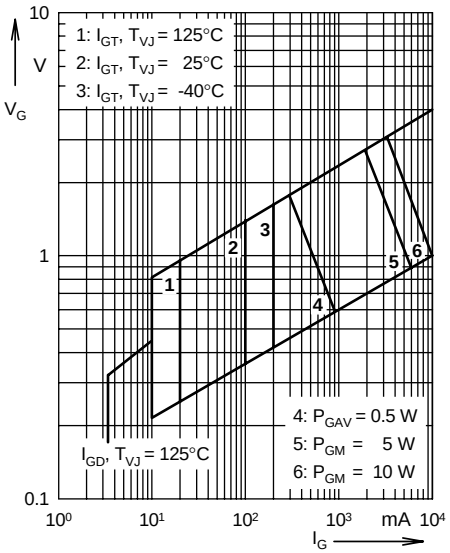



Fig. 1 Gate trigger characteristics

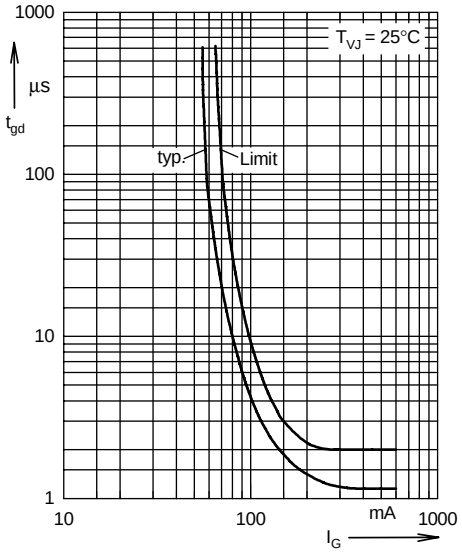
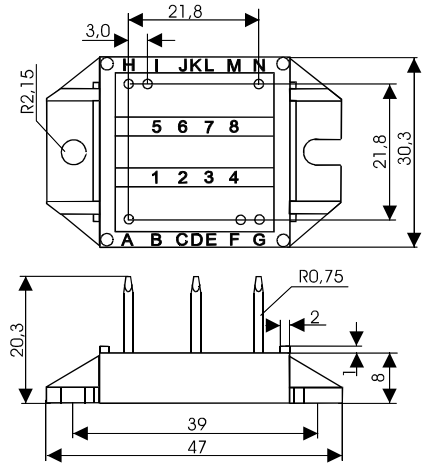



Fig. 2 Gate trigger delay time

**Dimensions in mm (1 mm = 0.0394")**




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