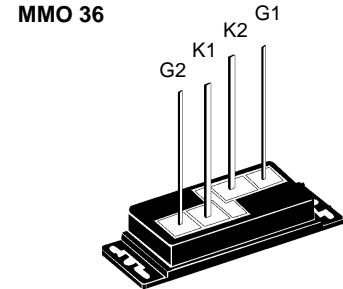
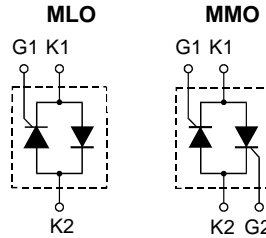


AC Controller Modules

$$I_{RMS} = 39 \text{ A}$$

$$V_{RRM} = 1200-1600 \text{ V}$$

| V_{RSM} | V_{RRM} | Type |
|-----------|-----------|--------------|
| V_{DSM} | V_{DRM} | |
| V | V | |
| 1200 | 1200 | MLO 36-12io1 |
| 1600 | 1600 | MLO 36-16io1 |



| Symbol | Test Conditions | Maximum Ratings |
|----------------|---|---|
| I_{RMS} | $T_K = 85^\circ\text{C}$, 50 - 400 Hz (for single controller) | 39 A |
| I_{TRMS} | $T_{VJ} = T_{VJM}$ | 28 A |
| I_{TAVM} | $T_K = 85^\circ\text{C}$; (180° sine) | 18 A |
| I_{TSM} | $T_{VJ} = 45^\circ\text{C}$; $V_R = 0$ | t = 10 ms (50 Hz), sine 360 A |
| | | t = 8.3 ms (60 Hz), sine 390 A |
| I^2t | $T_{VJ} = T_{VJM}$ | t = 10 ms (50 Hz), sine 320 A |
| | $V_R = 0$ | t = 8.3 ms (60 Hz), sine 350 A |
| I^2t | $T_{VJ} = 45^\circ\text{C}$ | t = 10 ms (50 Hz), sine 645 A ² s |
| | $V_R = 0$ | t = 8.3 ms (60 Hz), sine 630 A ² s |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ f = 50 Hz, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3 \text{ A}$ $di_G/dt = 0.3 \text{ A}/\mu\text{s}$ | repetitive, $I_T = 150 \text{ A}$ 100 A/ μs |
| | | non repetitive, $I_T = I_{TAVM}$ 500 A/ μs |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; method 1 (linear voltage rise) | $V_{DR} = 2/3 V_{DRM}$ 1000 V/ μs |
| P_{GM} | $T_{VJ} = T_{VJM}$ | $t_p = 30 \mu\text{s}$ 10 W |
| | $I_T = I_{TAVM}$ | $t_p = 300 \mu\text{s}$ 5 W |
| P_{GAVM} | | 0.5 W |
| V_{RGM} | | 10 V |
| T_{VJ} | | -40...+125 °C |
| T_{VJM} | | 125 °C |
| T_{stg} | | -40...+125 °C |
| V_{ISOL} | 50/60 Hz, RMS | t = 1 min 3000 V~ |
| | $I_{ISOL} \leq 1 \text{ mA}$ | t = 1 s 3600 V~ |
| M_d | Mounting torque (M3) (UNF 4-32) | 0.7 ± 0.1 Nm |
| | | 6 ± 0.9 lb.in. |
| Weight | typ. | 15 g |

K1 = Cathode 1, G1 = Gate 1
 K2 = Cathode 2, G2 = Gate 2
 (MLO 36 has no G2 lead)

Features

- Thyristor controller for AC (circuit W1C acc. to IEC) for mains frequency
- Direct copper bonded Al_2O_3 -ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- UL registered, E 72873
- Long wire leads suitable for PC board soldering

Applications

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

Advantages

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

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.

| Symbol | Test Conditions | Characteristic Values |
|------------|---|------------------------|
| I_R, I_D | $T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$ | ≤ 5 mA |
| V_T | $I_T = 45$ A; $T_{VJ} = 25^\circ\text{C}$ | ≤ 1.49 V |
| V_{T0} | For power-loss calculations only | 0.85 V |
| r_T | | 15 m Ω |
| V_{GT} | $V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ | ≤ 1.0 V |
| | $T_{VJ} = -40^\circ\text{C}$ | ≤ 1.15 V |
| I_{GT} | $V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ | ≤ 65 mA |
| | $T_{VJ} = -40^\circ\text{C}$ | ≤ 120 mA |
| I_{GM} | $t_p = 50$ μs , $f = 60$ Hz, $I_T = I_{TAVM}$ | 6 A |
| V_{GD} | $T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$ | ≤ 0.2 V |
| I_{GD} | | ≤ 1 mA |
| I_L | $T_{VJ} = 25^\circ\text{C}$; $t_p = 10$ μs , $V_D = 6$ V $I_G = 0.3$ A; $di_g/dt = 0.3$ A/ μs | ≤ 150 mA |
| I_H | $T_{VJ} = 25^\circ\text{C}$; $V_D = 6$ V; $R_{GK} = \infty$ | ≤ 100 mA |
| t_{gd} | $T_{VJ} = 25^\circ\text{C}$; $V_D = 1/2 V_{DRM}$ $I_G = 0.3$ A; $di_g/dt = 0.3$ A/ μs | ≤ 2 μs |
| t_q | $T_{VJ} = T_{VJM}$; $I_T = 11$ A, $t_p = 200$ μs ; $-di/dt = 10$ A/ μs $V_R = 100$ V; $dv/dt = 10$ V/ μs ; $V_D = 2/3 V_{DRM}$ | typ. 150 μs |
| R_{thJC} | per thyristor/diode; DC current per module | 1.3 K/W 0.65 K/W |
| R_{thJK} | per thyristor/diode; DC current per module | 1.5 K/W 0.75 K/W |
| d_S | Creeping distance on surface | 6 mm |
| d_A | Creepage distance in air | 6 mm |
| a | Max. allowable acceleration | 50 m/s ² |

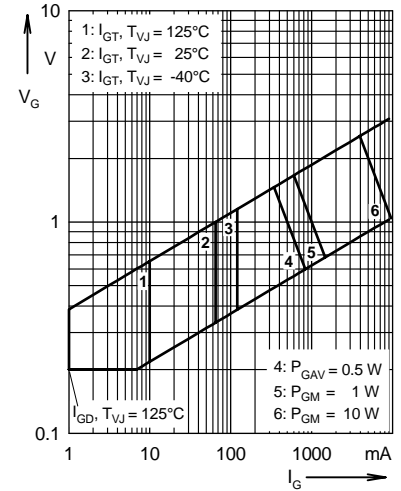


Fig. 1 Gate trigger characteristics

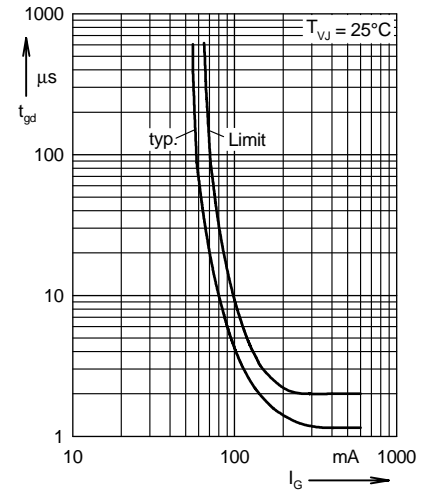


Fig. 2 Gate trigger delay time

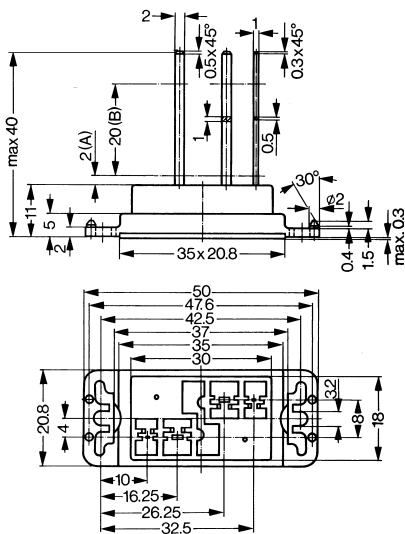
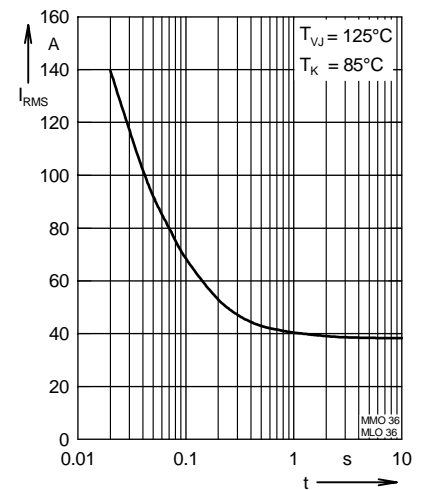
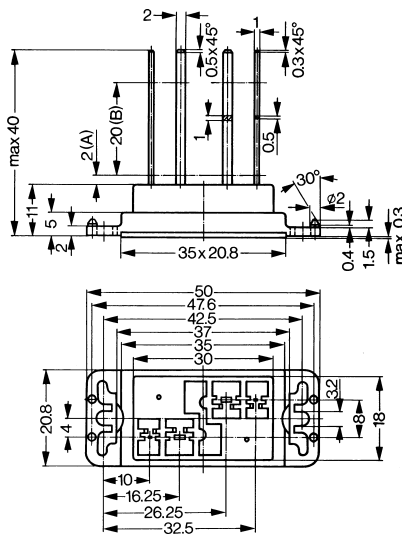
 Dimensions in mm (1 mm = 0.0394")
MLO 36

MMO 36


Fig. 3 Rated RMS current versus time (360° conduction)

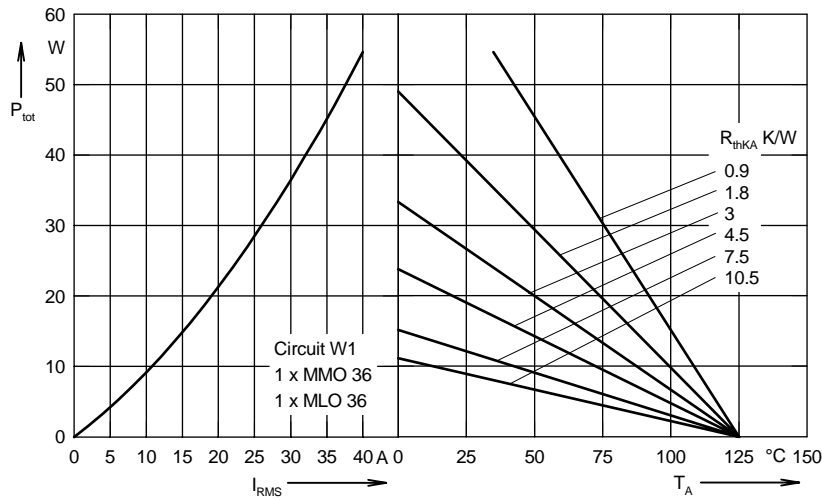


Fig. 4 Load current capability for single phase AC controller

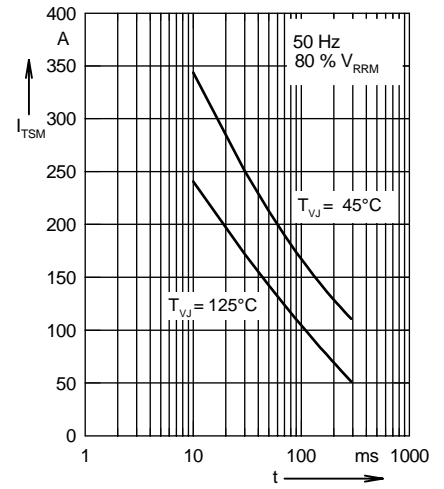


Fig. 5 Surge overload current
 I_{TSM}, I_{FSM} : Crest value, t: duration

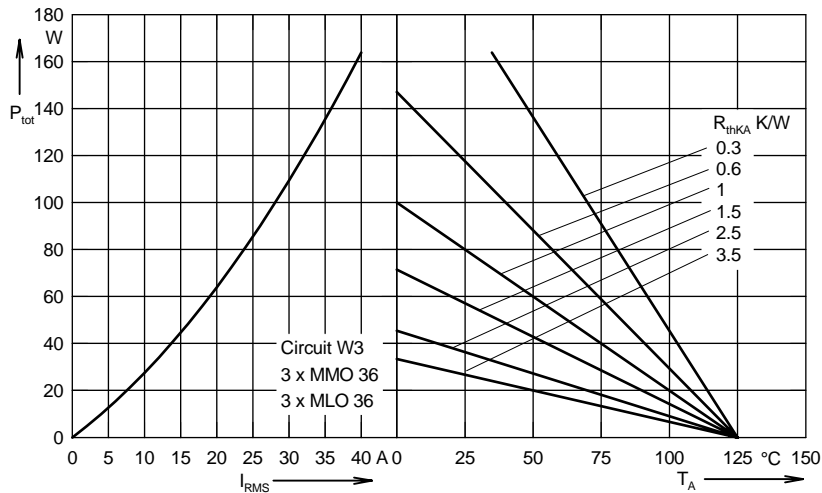


Fig. 6 Load current capability for three phase AC controller: 3xMMO 36/MLO 36

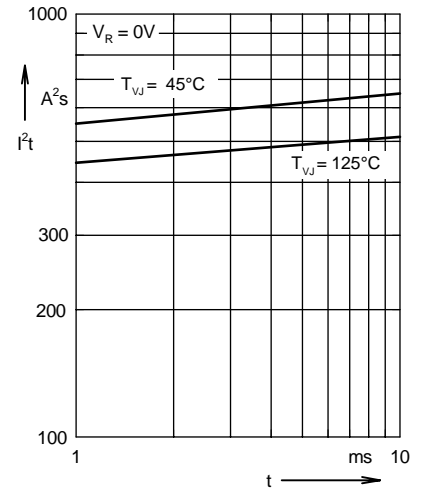


Fig. 7 I^2t versus time (1-10 ms)

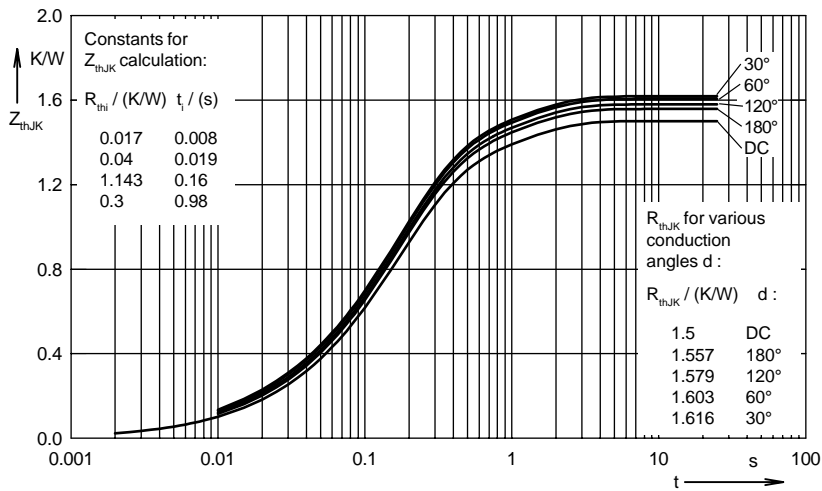


Fig. 8 Transient thermal impedance junction to heatsink (per thyristor or diode)

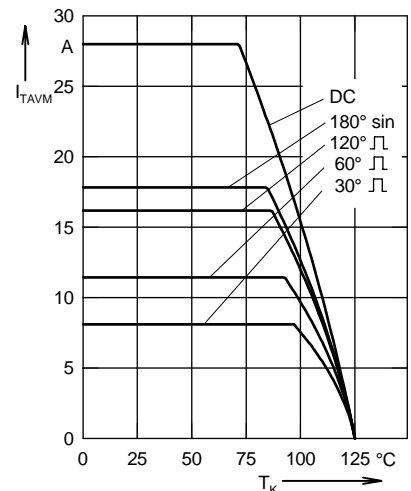


Fig. 9 Maximum on-state current versus heatsink temperature