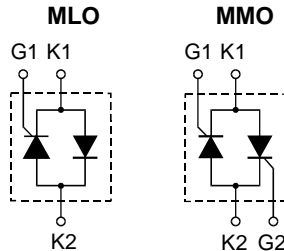
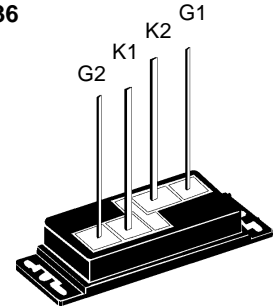


AC Controller Modules

$I_{RMS} = 39\text{ A}$
 $V_{RRM} = 1200\text{-}1600\text{ V}$

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


MMO 36


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

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
	$T_{VJ} = T_{VJM}$; $V_R = 0$	t = 10 ms (50 Hz), sine 320 A t = 8.3 ms (60 Hz), sine 350 A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $V_R = 0$	t = 10 ms (50 Hz), sine 645 A ² s t = 8.3 ms (60 Hz), sine 630 A ² s
	$T_{VJ} = T_{VJM}$; $V_R = 0$	t = 10 ms (50 Hz), sine 510 A ² s t = 8.3 ms (60 Hz), sine 510 A ² s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$; f = 50 Hz, $t_p = 200\ \mu\text{s}$ $V_D = 2/3 V_{DRM}$	repetitive, $I_T = 150\text{ A}$ 100 A/ μs
	$I_G = 0.3\text{ A}$; $di_G/dt = 0.3\text{ A}/\mu\text{s}$	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

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

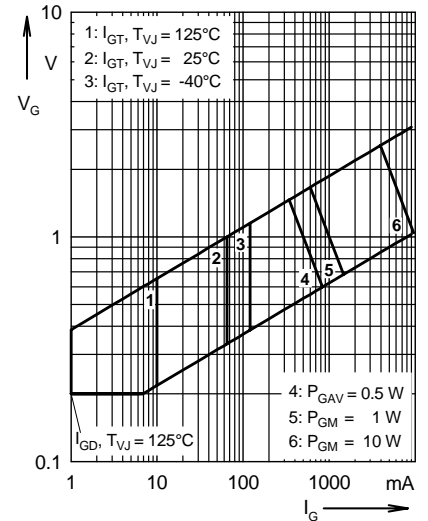


Fig. 1 Gate trigger characteristics

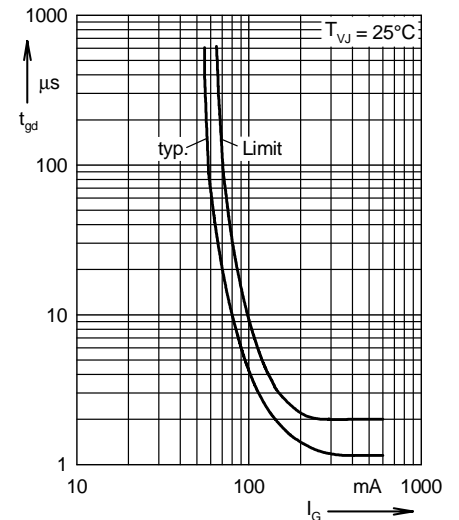


Fig. 2 Gate trigger delay time

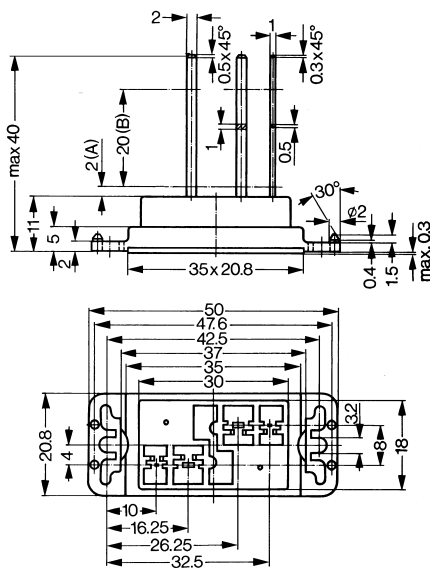
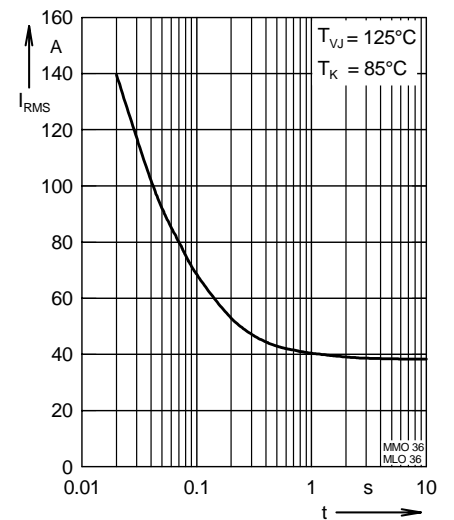
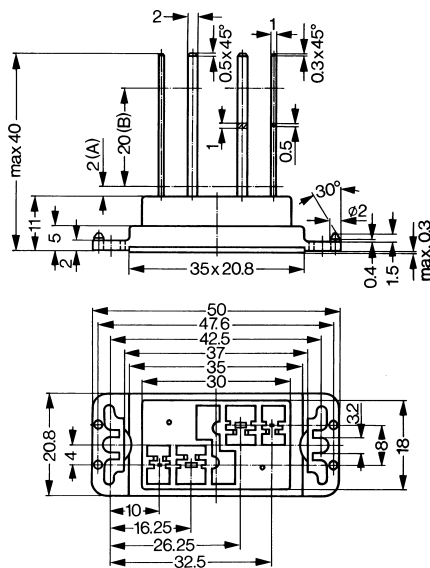
Dimensions in mm (1 mm = 0.0394")
MLO 36

MMO 36


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

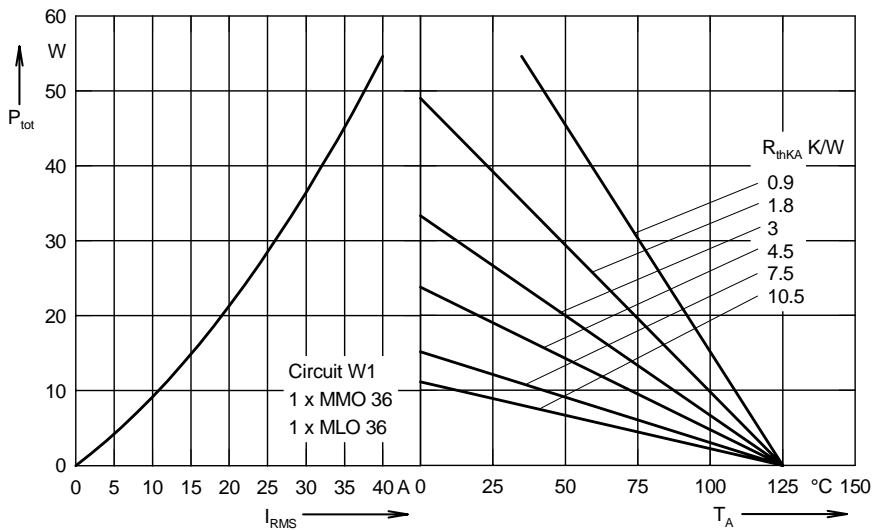


Fig. 4 Load current capability for single phase AC controller

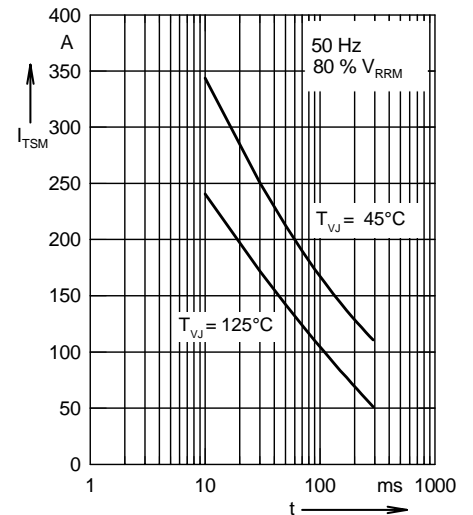


Fig. 5 Surge overload current
 I_{TSM} , I_{FSM} : Crest value, t: duration

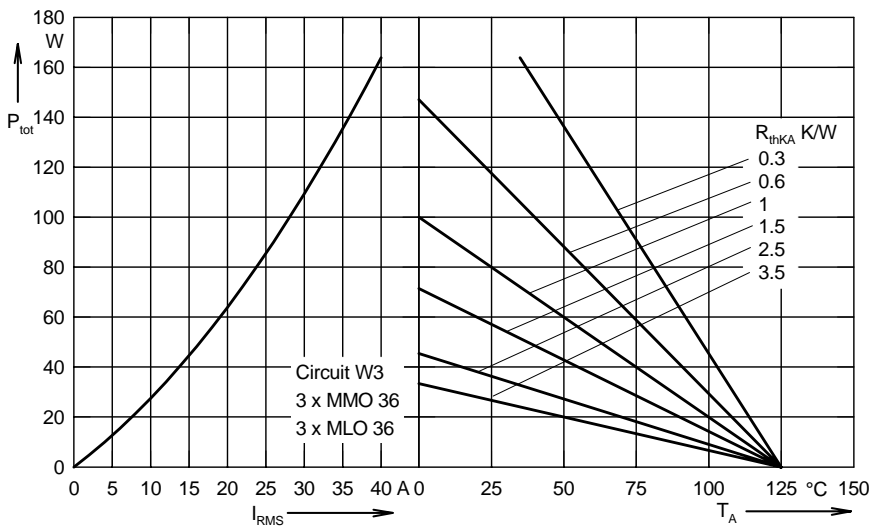


Fig. 6 Load current capability for three phase AC controller: 3xMMO 36/MLO 36

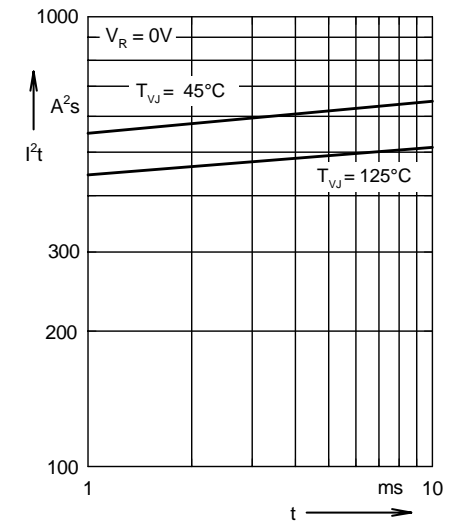


Fig. 7 I^2t versus time (1-10 ms)

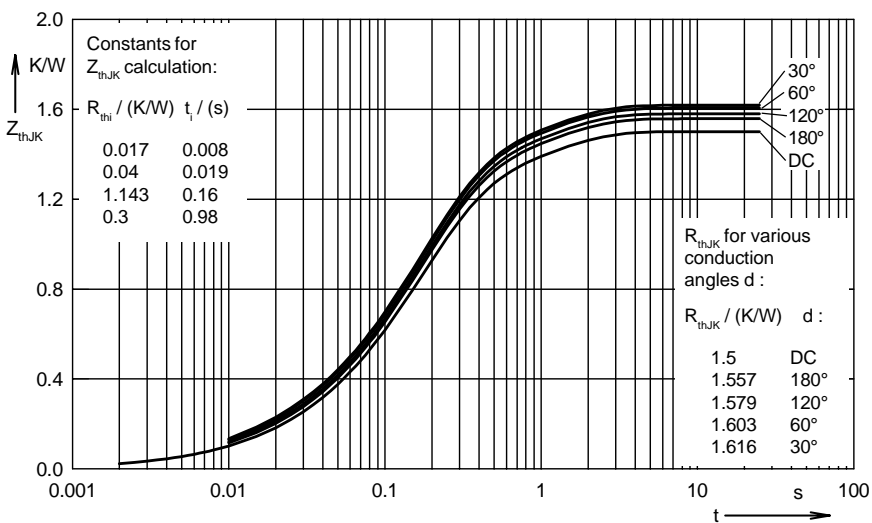


Fig. 8 Transient thermal impedance junction to heatsink (per thyristor or diode)

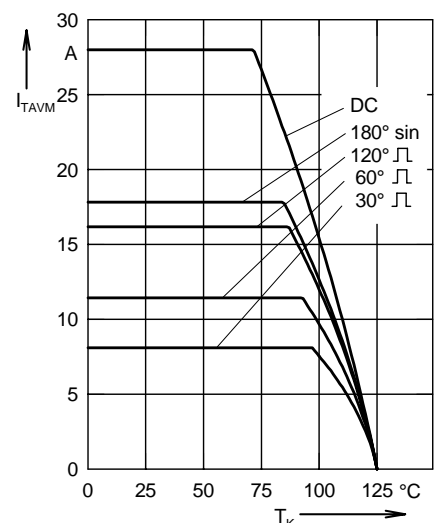


Fig. 9 Maximum on-state current versus heatsink temperature