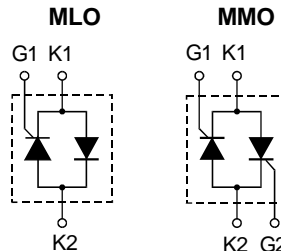
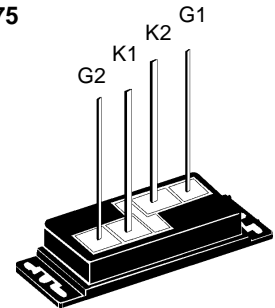


# AC Controller Modules

**$I_{RMS} = 86 \text{ A}$**   
 **$V_{RRM} = 1200-1600 \text{ V}$**

$V_{RSM}$	$V_{RRM}$	Type	
$V_{DSM}$	$V_{DRM}$		
V	V		
1200	1200	MLO 75-12io1	MMO 75-12io1
1600	1600	MLO 75-16io1	MMO 75-16io1


**MMO 75**


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)	86	A
$I_{TRMS}$	$T_{VJ} = T_{VJM}$	62	A
$I_{TAVM}$	$T_K = 85^\circ\text{C}$ ; (180° sine)	39	A
$I_{TSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	t = 10 ms (50 Hz), sine	1150 A
		t = 8.3 ms (60 Hz), sine	1230 A
$I_{\rho t}$	$T_{VJ} = 45^\circ\text{C}$ ; $V_R = 0$	t = 10 ms (50 Hz), sine	6600 A <sup>2</sup> s
		t = 8.3 ms (60 Hz), sine	6280 A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ f = 50 Hz, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.45 \text{ A}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	repetitive, $I_T = 150 \text{ A}$	100 A/ $\mu\text{s}$
		non repetitive, $I_T = I_{TAVM}$	500 A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $R_{GK} = \infty$ ; method 1 (linear voltage rise)	$V_{DR} = 2/3 V_{DRM}$	1000 V/ $\mu\text{s}$
$P_{GM}$	$T_{VJ} = T_{VJM}$	$t_p = 30 \mu\text{s}$	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)	$0.7 \pm 0.1 \text{ Nm}$
		(UNF 4-32)	$6 \pm 0.9 \text{ lb.in.}$
Weight	typ.		15 g

### Features

- Thyristor controller for AC (circuit W1C acc. to IEC) for mains frequency
- Direct copper bonded  $\text{Al}_2\text{O}_3$  -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
$I_R, I_D$	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	$\leq 5$ mA
$V_T$	$I_T = 100$ A; $T_{VJ} = 25^\circ\text{C}$	$\leq 1.4$ V
$V_{T0}$	For power-loss calculations only	0.85 V
$r_T$		5.0 m $\Omega$
$V_{GT}$	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$	$\leq 1.5$ V
	$T_{VJ} = -40^\circ\text{C}$	$\leq 1.6$ V
$I_{GT}$	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$	$\leq 150$ mA
	$T_{VJ} = -40^\circ\text{C}$	$\leq 200$ mA
$I_{GM}$	$t_p = 50$ $\mu\text{s}$ , $f = 60$ Hz, $I_T = I_{TAVM}$	6 A
$V_{GD}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	$\leq 0.25$ V
$I_{GD}$		$\leq 5$ mA
$I_L$	$T_{VJ} = 25^\circ\text{C}$ ; $t_p = 10$ $\mu\text{s}$ , $V_D = 6$ V $I_G = 0.45$ A; $di_G/dt = 0.45$ A/ $\mu\text{s}$	$\leq 300$ mA
$I_H$	$T_{VJ} = 25^\circ\text{C}$ ; $V_D = 6$ V; $R_{GK} = \infty$	$\leq 100$ mA
$t_{gd}$	$T_{VJ} = 25^\circ\text{C}$ ; $V_D = 1/2 V_{DRM}$ $I_G = 0.45$ A; $di_G/dt = 0.45$ A/ $\mu\text{s}$	$\leq 2$ $\mu\text{s}$
$t_q$	$T_{VJ} = T_{VJM}; I_T = 50$ A, $t_p = 200$ $\mu\text{s}$ ; $-di/dt = 10$ A/ $\mu\text{s}$ $V_R = 100$ V; $dv/dt = 15$ V/ $\mu\text{s}$ ; $V_D = 2/3 V_{DRM}$	typ. 150 $\mu\text{s}$
$R_{thJC}$	per thyristor/diode; DC current per module	0.55 K/W 0.275 K/W
$R_{thJK}$	per thyristor/diode; DC current per module	0.75 K/W 0.375 K/W
$d_s$	Creeping distance on surface	4.5 mm
$d_A$	Creepage distance in air	4.5 mm
$a$	Max. allowable acceleration	50 m/s <sup>2</sup>

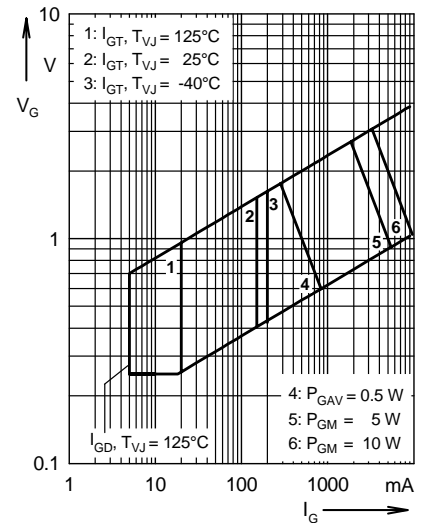


Fig. 1 Gate trigger characteristics

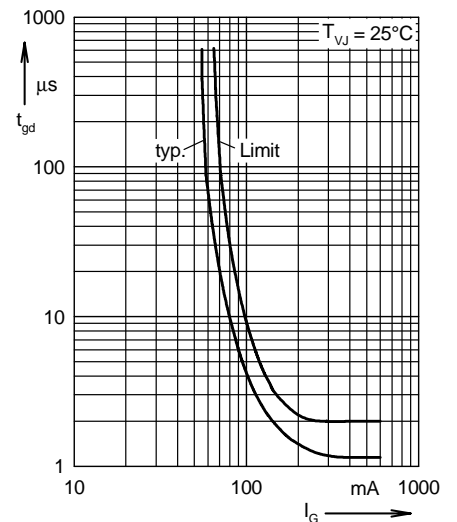
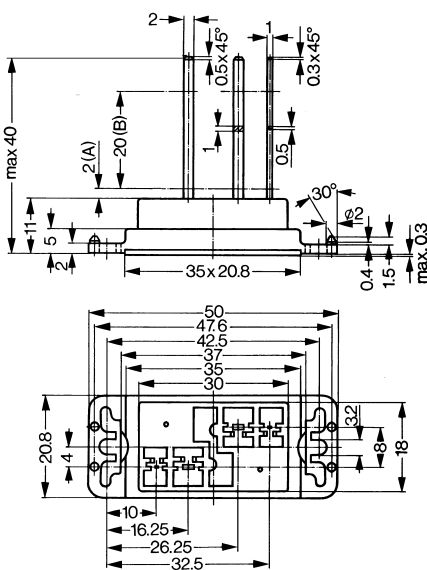


Fig. 2 Gate trigger delay time

### Dimensions in mm (1 mm = 0.0394") MLO 75



### MMO 75

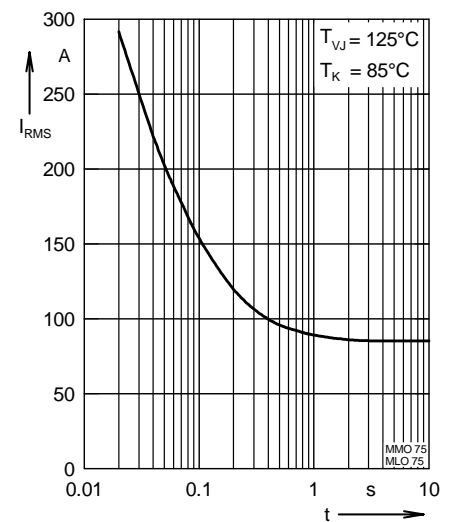
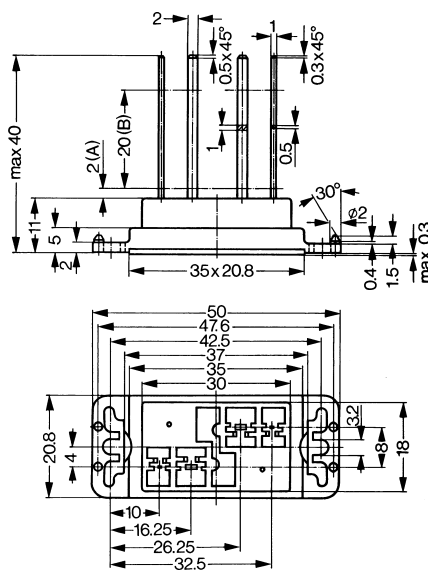


Fig. 3 Rated RMS current versus time (360° conduction)

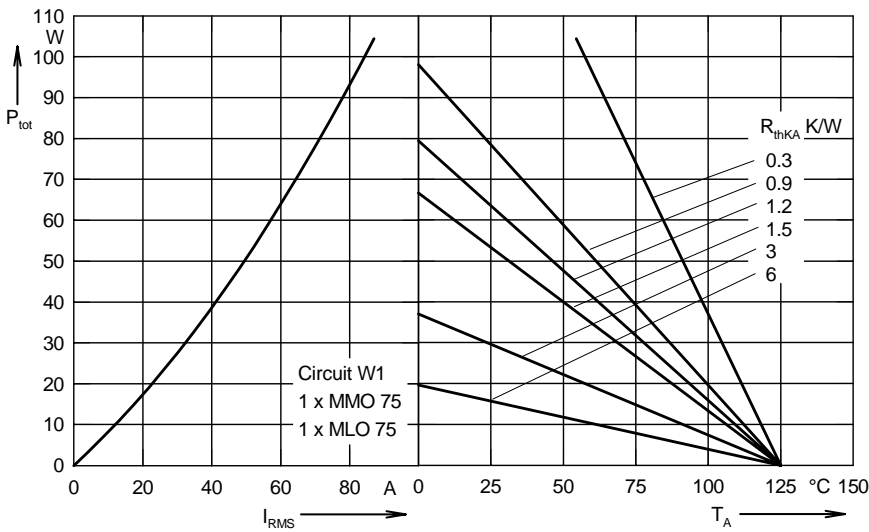


Fig. 4 Load current capability for single phase AC controller

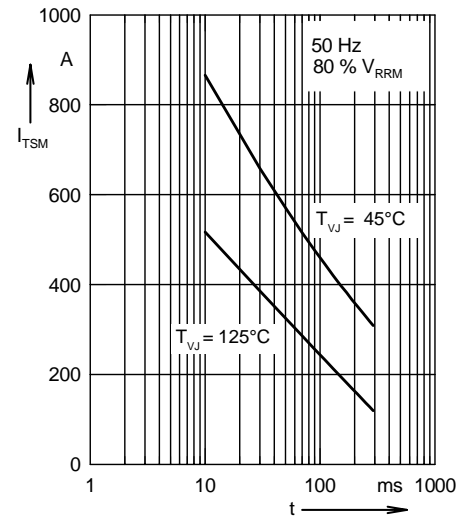


Fig. 5 Surge overload current  
 $I_{TSM}$ ,  $I_{FSM}$ : Crest value,  $t$ : duration

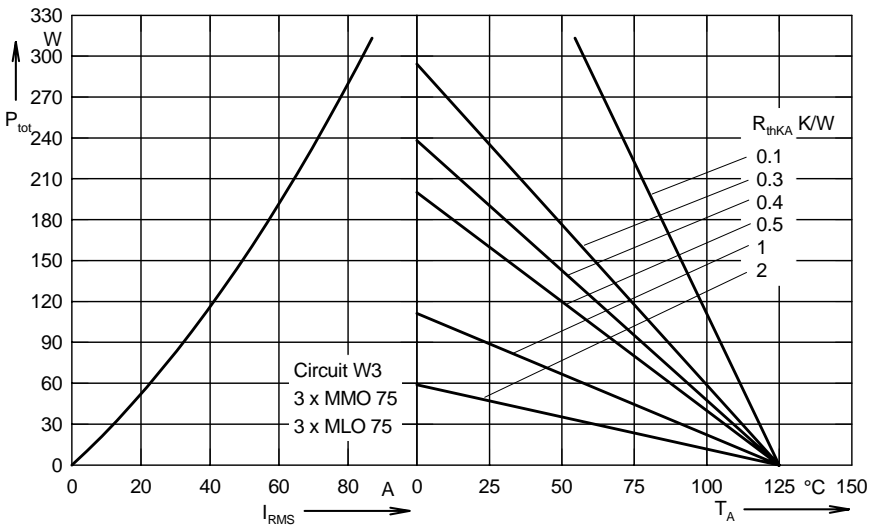


Fig. 6 Load current capability for three phase AC controller: 3xMMO 75/MLO 75

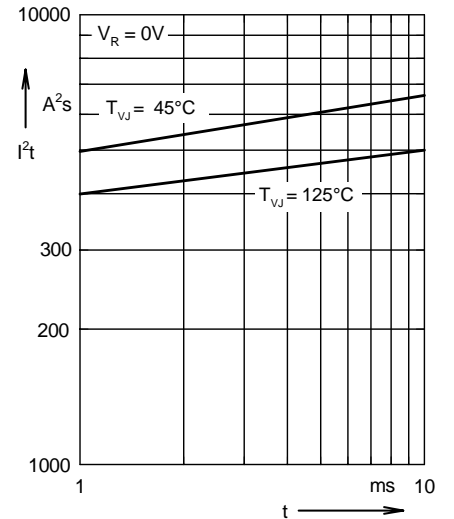


Fig. 7  $I^2t$  versus time (1-10 ms)

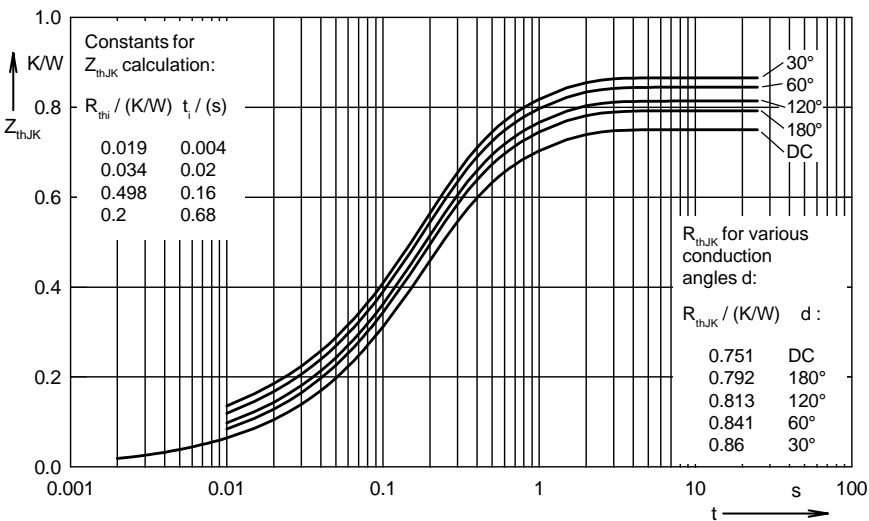


Fig. 8 Transient thermal impedance junction to heatsink (per thyristor or diode)

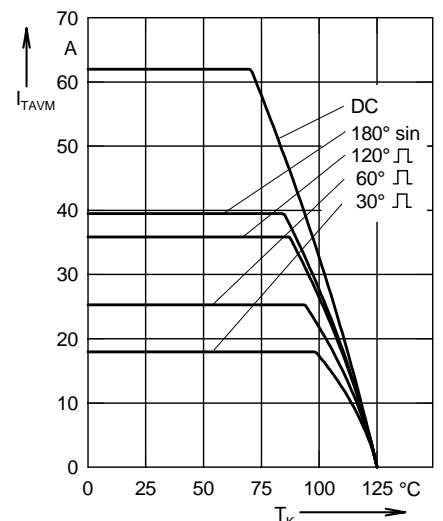


Fig. 9 Maximum on-state current versus heatsink temperature