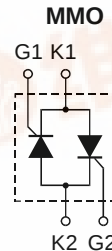
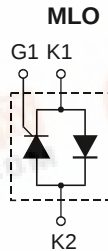


AC Controller Modules

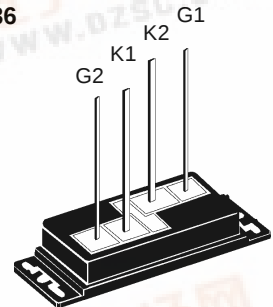
$$I_{RMS} = 39 \text{ A}$$

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

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



MMO 36



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}	$T_{VJ} = 45^\circ\text{C}$; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	360	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	390	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $V_R = 0$	$t = 10 \text{ ms}$ (50 Hz), sine	320	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	350	A
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $f = 50 \text{ Hz}$, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3 \text{ A}$ $di_G/dt = 0.3 \text{ A}/\mu\text{s}$	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)		1000	V/ μs
P_{GM}	$T_{VJ} = T_{VJM}$; $I_T = I_{TAVM}$	$t_p = 30 \mu\text{s}$	10	W
		$t_p = 300 \mu\text{s}$	5	W
P_{GAVM}			0.5	W
V_{RGM}			10	V
T_{VJ}			-40...+125	$^\circ\text{C}$
T_{VJM}			125	$^\circ\text{C}$
T_{stg}			-40...+125	$^\circ\text{C}$
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	$t = 1 \text{ min}$	3000	V~
		$t = 1 \text{ s}$	3600	V~
M_d	Mounting torque	(M3)	0.7 ± 0.1	Nm
		(UNF 4-32)	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

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 mΩ
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

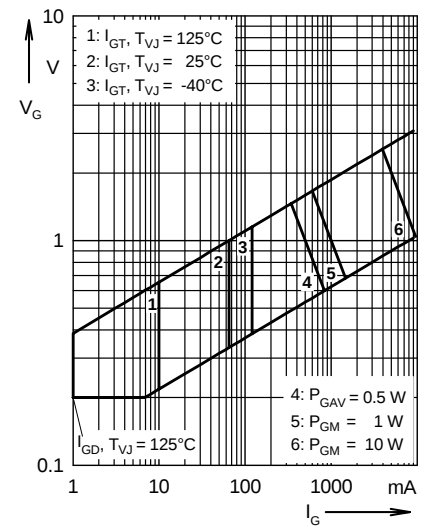


Fig. 1 Gate trigger characteristics

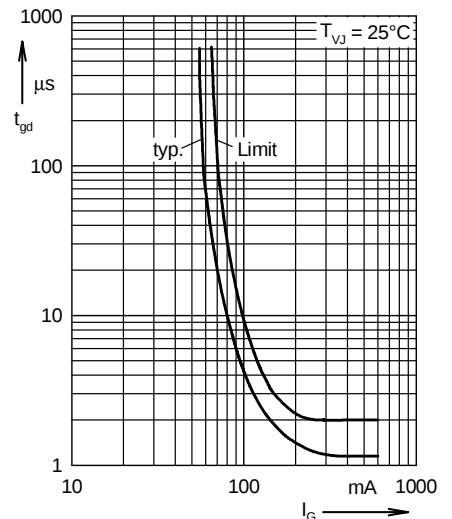
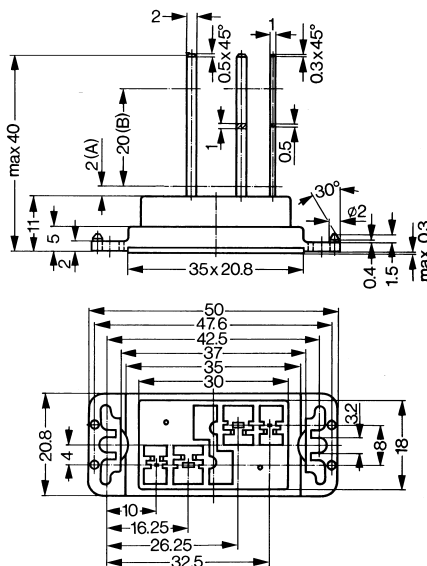


Fig. 2 Gate trigger delay time

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



MMO 36

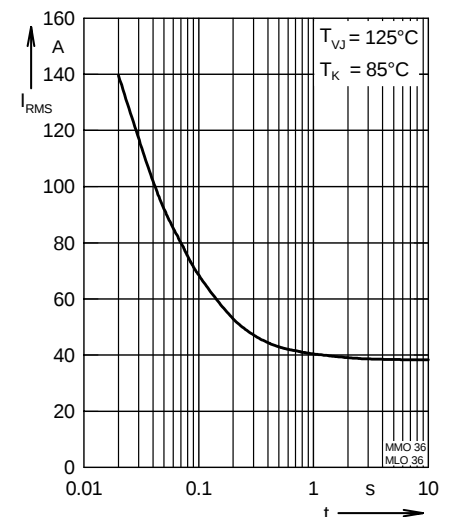
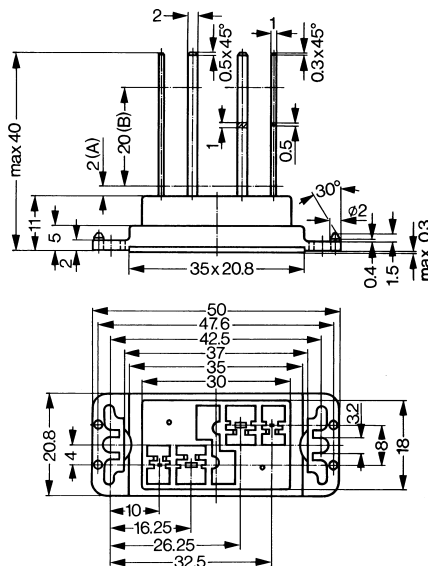


Fig. 3 Rated RMS current versus time (360° conduction)

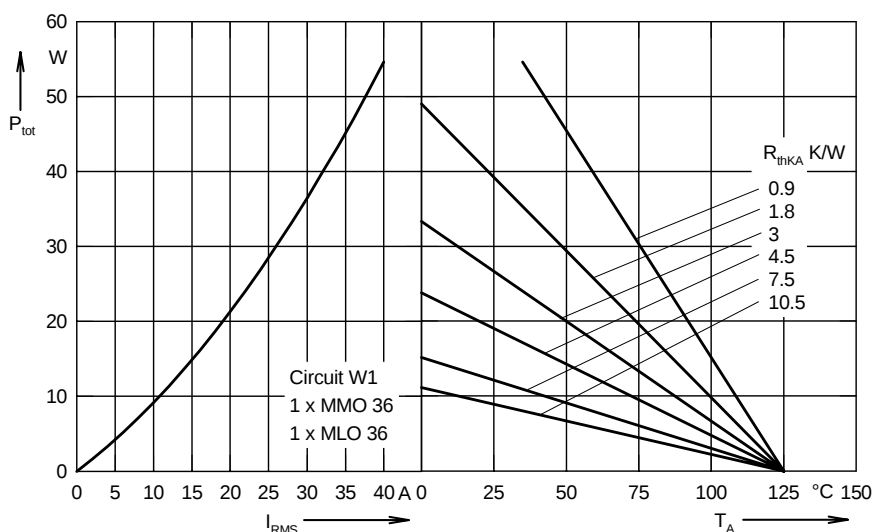


Fig. 4 Load current capability for single phase AC controller

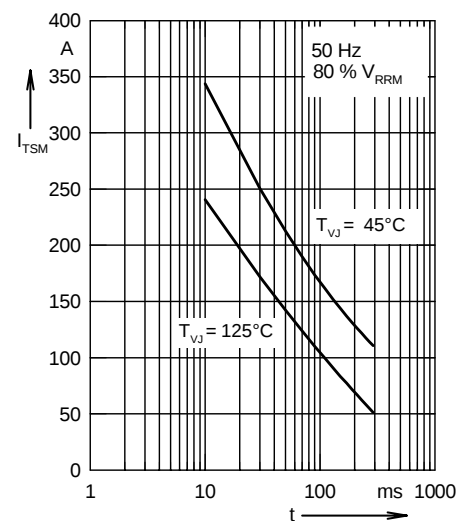


Fig. 5 Surge overload current
 I_{TSM}, I_{FSM} : Crest value, t : duration

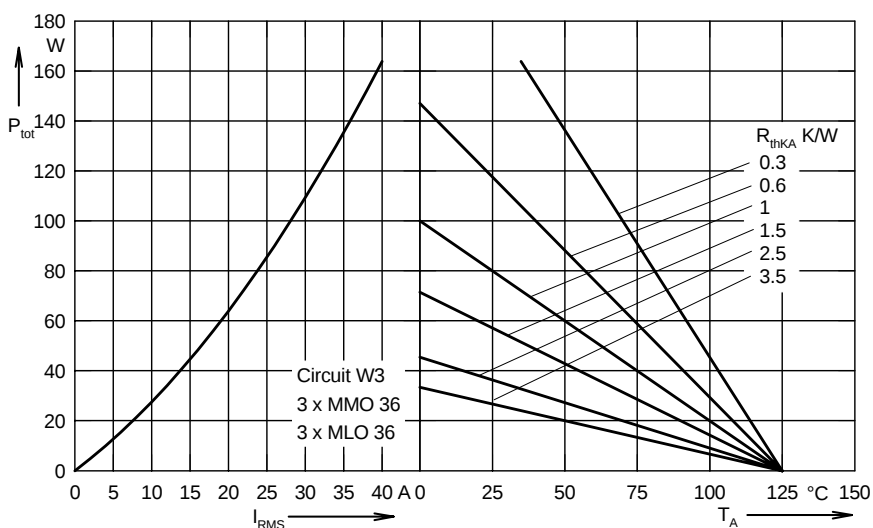


Fig. 6 Load current capability for three phase AC controller: 3xMMO 36/MLO 36

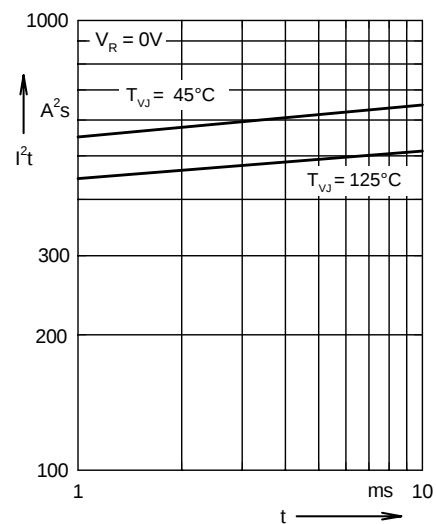


Fig. 7 I^2t versus time (1-10 ms)

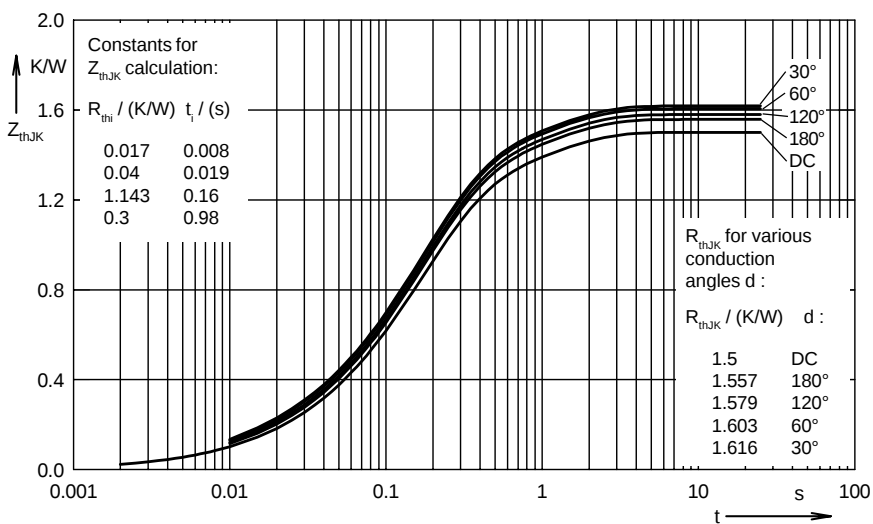


Fig. 8 Transient thermal impedance junction to heatsink (per thyristor or diode)

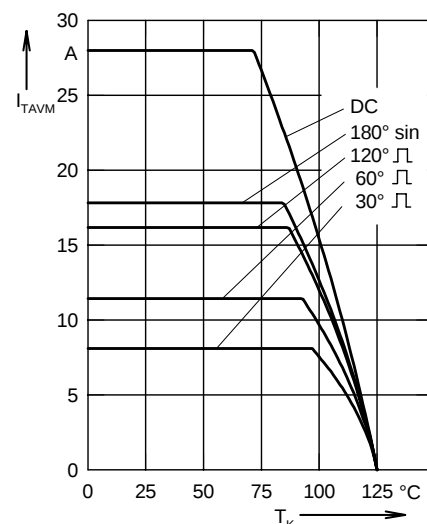


Fig. 9 Maximum on-state current versus heatsink temperature