⌷IXYS

MMO 62

AC Controller Modules

I_{RMS} = 54 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM}	V_{RRM} V_{DRM}	Type
V	**V**	
1200	**1200**	**MMO 62-12io6**
1600	**1600**	**MMO 62-16io6**
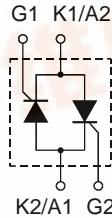
miniBLOC, SOT-227 B
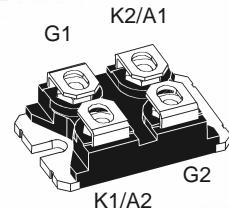
Symbol	Test Conditions		Maximum Ratings	
I_{RMS}	T_C = 110°C, 50 - 400 Hz, module		54	A
I_{TRMS}	T_{VJ} = T_{VJM}		39	A
I_{TAVM}	T_C = 110°C; (180° sine)		25	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	400	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	430	A
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	350	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	370	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	800	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	780	A^2s
	T_{VJ} = T_{VJM}	t = 10 ms (50 Hz), sine	610	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	570	A^2s
$(di/dt)_{cr}$	T_{VJ} = T_{VJM} f = 50 Hz, t_P = 200 μs V_D = 2/3 V_{DRM}	repetitive, I_T = 150 A	100	A/μs
	I_G = 0.3 A di_G/dt = 0.3 A/μs	non repetitive, I_T = I_{TAVM}	500	A/μs
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}; R_{GK} = ∞; method 1 (linear voltage rise)	V_{DR} = 2/3 V_{DRM}	1000	V/μs
P_{GM}	T_{VJ} = T_{VJM}	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...+150	°C
V_{ISOL}	50/60 Hz, RMS I_{ISOL} ≤ 1 mA		2500	V~
M_d	Mounting torque (M4)		1.1 - 1.5 / 9 - 13	Nm/lb.in.
	Terminal connection torque (M4)		1.1 - 1.5 / 9 - 13	Nm/lb.in.
Weight	typ.		30	g

Features

- Thyristor controller for AC (circuit W1C acc. to IEC) for mains frequency
- International standard package miniBLOC (ISOTOP compatible)
- Isolation voltage 2500 V~
- Planar passivated chips
- UL registered, E 72873

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.

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Symbol	Test Conditions	Characteristic Values		
I_R, I_D	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$	$\leq$	12	mA
V_T	$I_T = 45$ A; $T_{VJ} = 25°C$	$\leq$	1.57	V
V_{T0}	For power-loss calculations only		0.85	V
r_T			12	mΩ
V_{GT}	$V_D = 6$ V; $\quad T_{VJ} = 25°C$	$\leq$	1.5	V
	$\qquad\qquad T_{VJ} = -40°C$	$\leq$	1.6	V
I_{GT}	$V_D = 6$ V; $\quad T_{VJ} = 25°C$	$\leq$	100	mA
	$\qquad\qquad T_{VJ} = -40°C$	$\leq$	150	mA
V_{GD}	$T_{VJ} = T_{VJM}$; $\qquad V_D = 2/3\ V_{DRM}$	$\leq$	0.2	V
I_{GD}		$\leq$	5	mA
I_L	$T_{VJ} = 25°C$; $t_P = 10$ µs	$\leq$	250	mA
	$I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$	$\leq$	100	mA
t_{gd}	$T_{VJ} = 25°C$; $V_D = 1/2\ V_{DRM}$	$\leq$	2	µs
	$I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			
t_q	$T_{VJ} = T_{VJM}$; $I_T = 20$ A, $t_p = 200$ µs; $di/dt = -10$ A/µs	typ.	150	µs
	$V_R = 100$ V; $dv/dt = 15$ V/µs; $V_D = 2/3\ V_{DRM}$			
R_{thJC}	per thyristor; DC current		0.91	K/W
	per module		0.455	K/W
R_{thCH}	per thyristor; DC current	typ.	0.1	K/W
	per module	typ.	0.05	K/W
d_S	Creeping distance on surface		8	mm
d_A	Creepage distance in air		4	mm
a	Max. allowable acceleration		50	m/s²
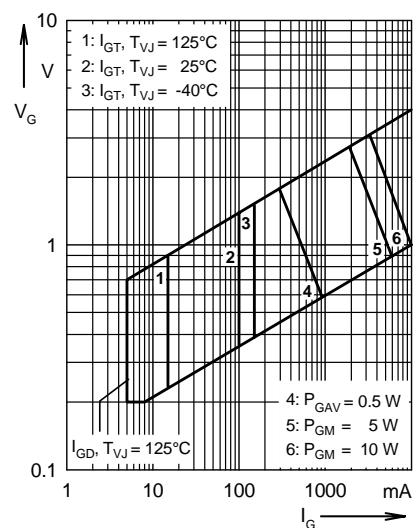
Fig. 1 Gate trigger characteristics

1: I_{GT}, $T_{VJ} = 125°C$
2: I_{GT}, $T_{VJ} = 25°C$
3: I_{GT}, $T_{VJ} = -40°C$
4: $P_{GAV} = 0.5$ W
5: $P_{GM} = 5$ W
6: $P_{GM} = 10$ W
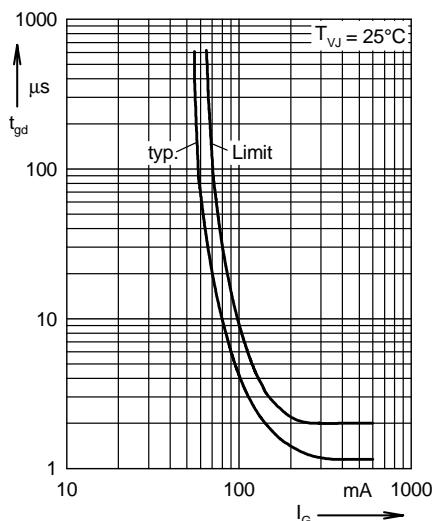
Fig. 2 Gate trigger delay time

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M4 screws (4x) supplied

| Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.30	4.57	0.130	0.180
W	0.780	0.830	19.81	21.08

Fig. 3 Forward current versus voltage drop per leg
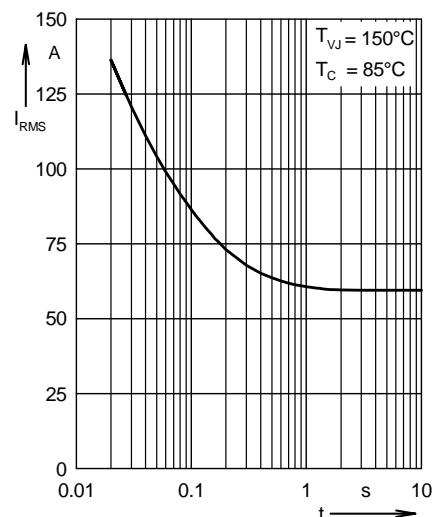
Fig. 4 Rated RMS current versus time (360° conduction)
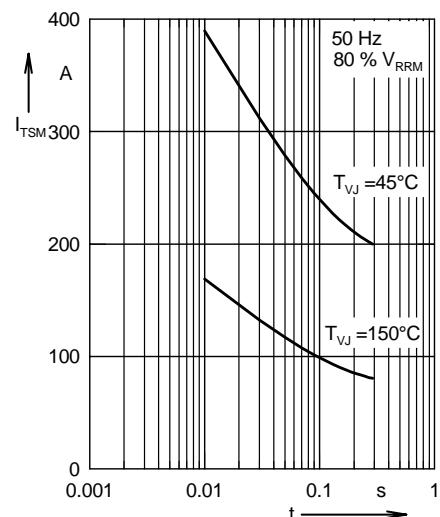
Fig. 5 Surge overload current
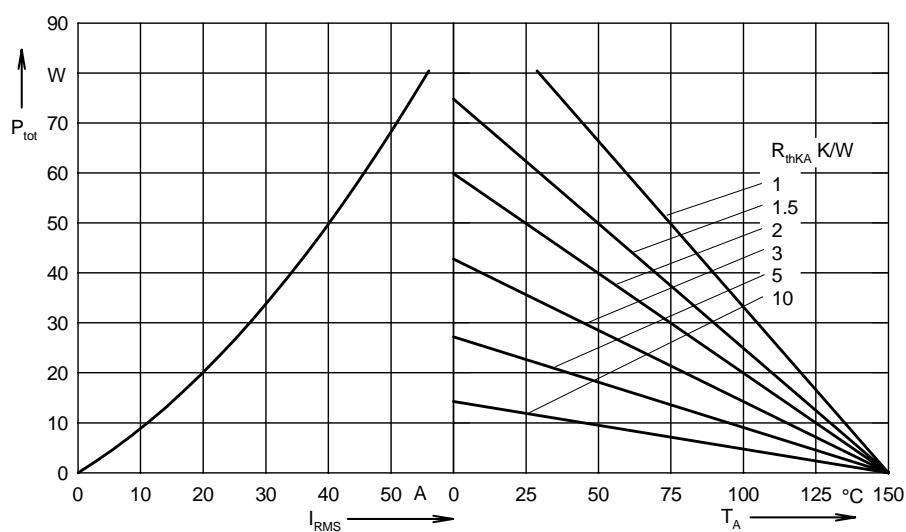
Fig. 6 Load current capability for single AC controller; 1 x MMO62
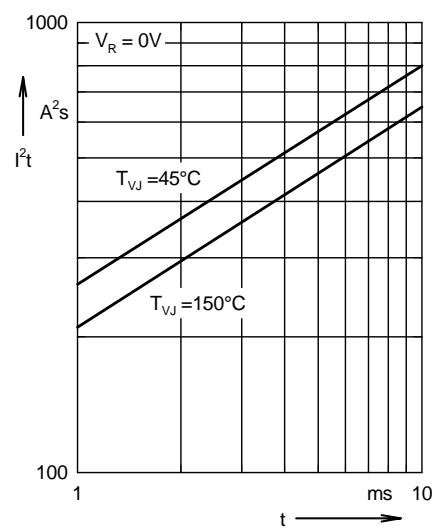
Fig. 7 I²t versus time (per thyristor)

Constants for Z_{thJC} calculation:

| R_{thi} / (K/W)	t_i / (s)
0.076	0.0005
0.138	0.019
0.48	0.124
0.238	0.45
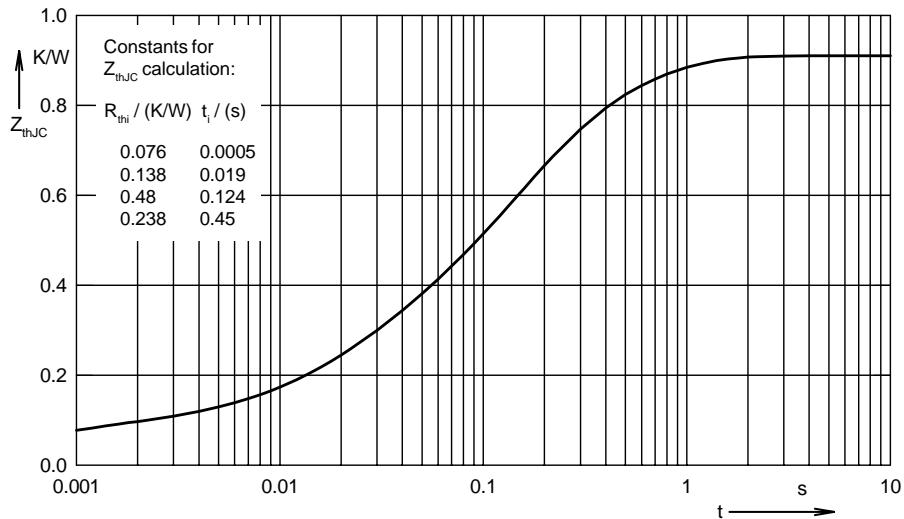
Fig. 8 Transient thermal impedance junction to case (per thyristor)
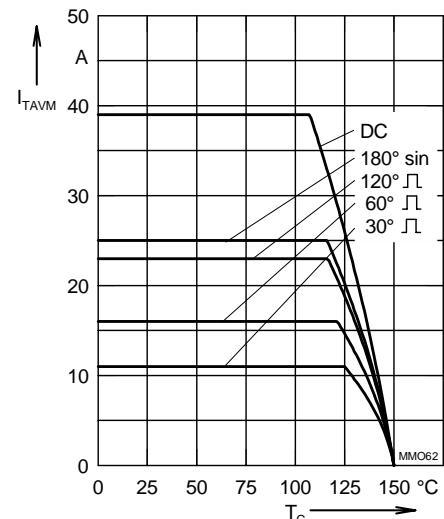
Fig. 9 Maximum forward current at case temperature