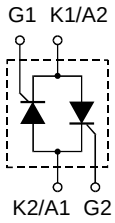
AC Controller Modules

I_{RMS} = 90 A
V_{RRM} = 1200-1600 V

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
1200	1200	MMO 90-12io6
1600	1600	MMO 90-16io6



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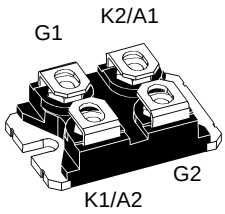

Symbol	Test Conditions		Maximum Ratings	
I_{RMS}	T_C = 110°C, 50 - 400 Hz, module		90	A
I_{TRMS}	$T_{VJ} = T_{VJM}$		65	A
I_{TAVM}	T_C = 110°C; (180° sine)		41	A
I_{TSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	800	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	860	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	700	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	750	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	3200	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	3110	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	2450	A^2s
	V_R = 0	t = 8.3 ms (60 Hz), sine	2360	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$; f =50 Hz, t_P =200 µs	repetitive, I_T = 150 A	100	A/µs
	$V_D = {}^2/_3 V_{DRM}$; I_G = 0.3 A; di_G/dt = 0.3 A/µs	non repetitive, $I_T = I_{TAVM}$	500	A/µs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; 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;	$I_{ISOL} \leq$ 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_D	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$		≤	20	mA
V_T	I_T = 80; T_{VJ} = 25°C		≤	1.43	V
V_{T0}	For power-loss calculations only			0.9	V
r_T				5.8	mΩ
V_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	1.5	V
		T_{VJ} = -40°C	≤	1.6	V
I_{GT}	V_D = 6 V;	T_{VJ} = 25°C	≤	100	mA
		T_{VJ} = -40°C	≤	200	mA
V_{GD}	$T_{VJ} = T_{VJM}$;	$V_D = {}^2/_3\ V_{DRM}$	≤	0.2	V
I_{GD}			≤	5	mA
I_L	T_{VJ} = 25°C; t_P = 10 µs I_G = 0.3 A; di_G/dt = 0.3 A/µs		≤	250	mA
I_H	T_{VJ} = 25°C; V_D = 6 V; R_{GK} = ∞		≤	100	mA
t_{gd}	T_{VJ} = 25°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 = 20 A, t_P = 200 µs; di/dt = -10 A/µs V_R = 100 V; dv/dt = 15 V/µs; $V_D = {}^2/_3\ V_{DRM}$		typ.	150	µs
R_{thJC}	per thyristor; DC current			0.6	K/W
	per module			0.3	K/W
R_{thCH}	per thyristor; DC current			0.1	K/W
	per module			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/s^2

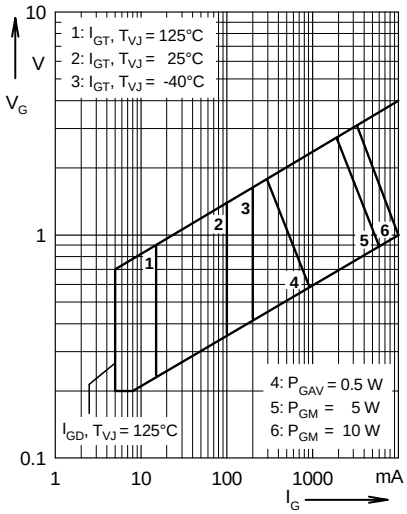

Fig. 1 Gate trigger characteristics

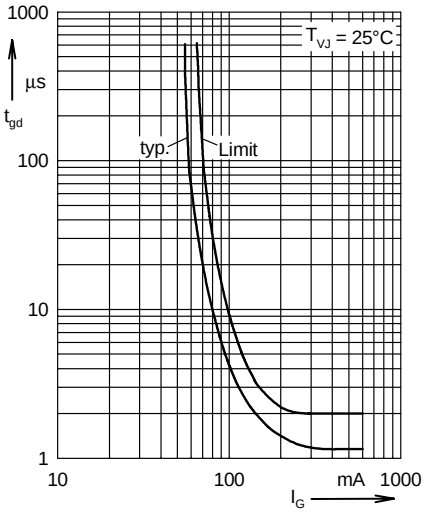

Fig. 2 Gate trigger delay time

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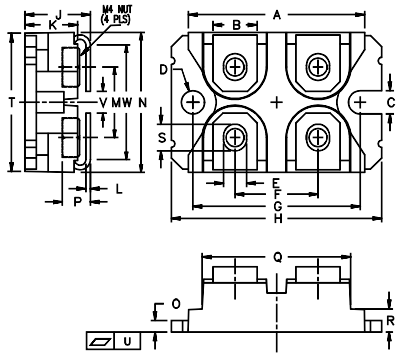

M4 screws (4x) supplied

Dim.	Millimeter Min.	Millimeter Max.	Inches Min.	Inches 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

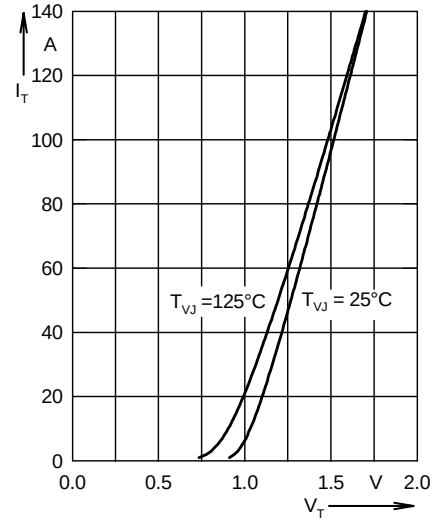

Fig. 3 Forward current versus voltage drop per leg

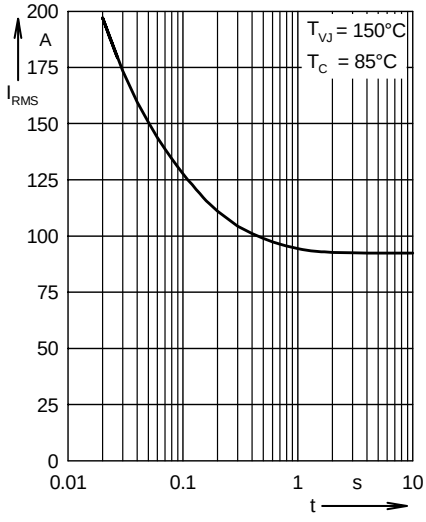

Fig. 4 Rated RMS current versus time (360° conduction)

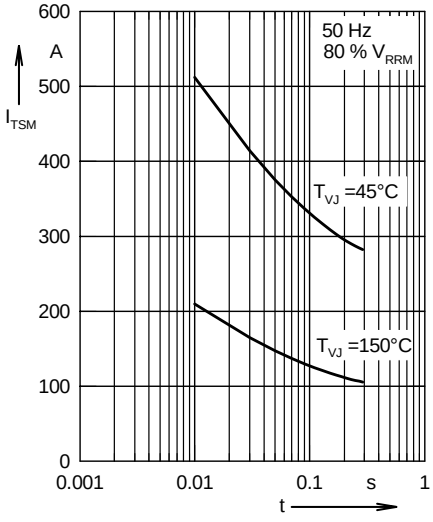

Fig. 5 Surge overload current

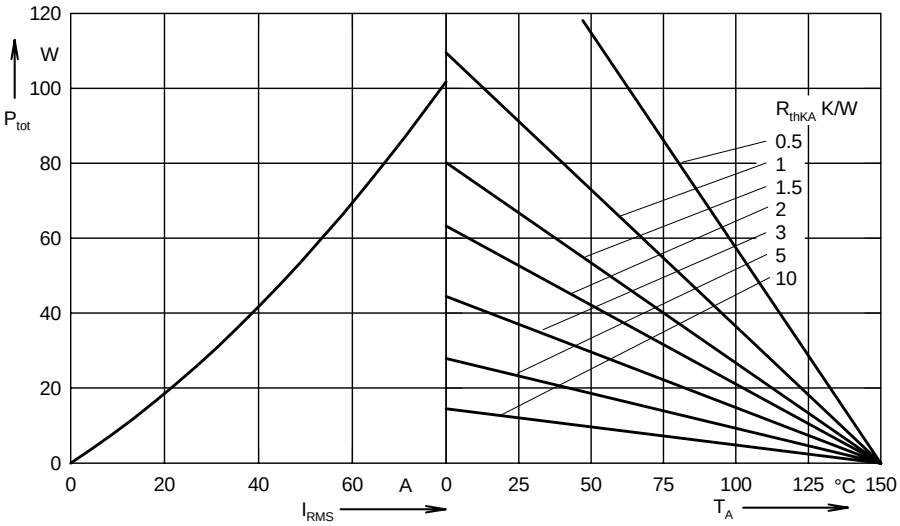

Fig. 6 Load current capability for single AC controller; 1 x MMO 90

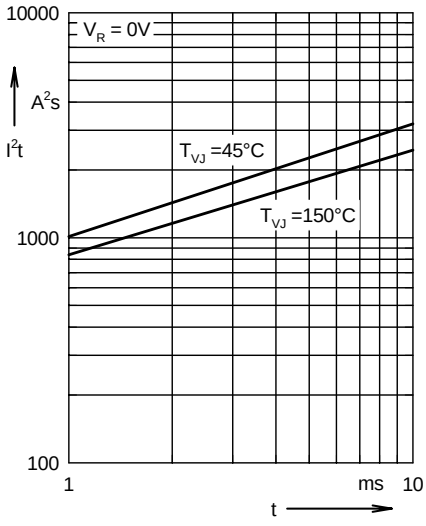

Fig. 7 I²t versus time (per thyristor)

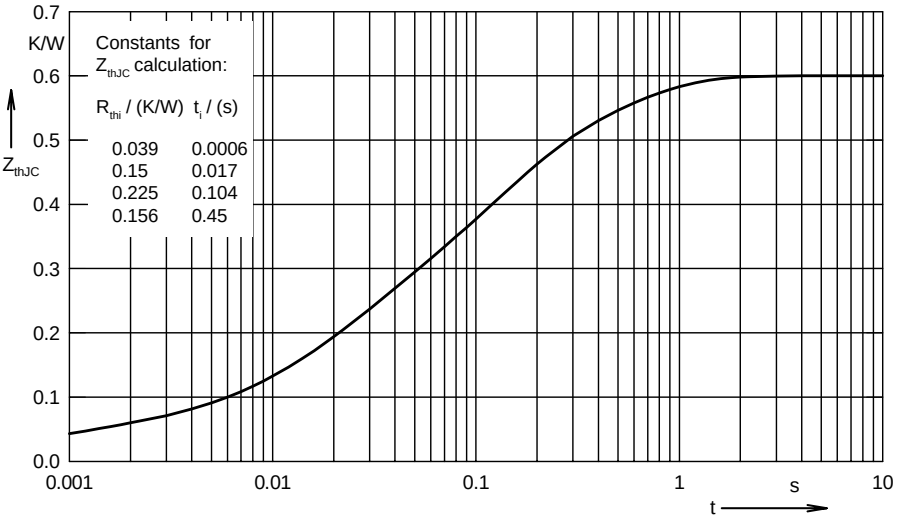

Fig. 8 Transient thermal impedance junction to case (per thyristor)

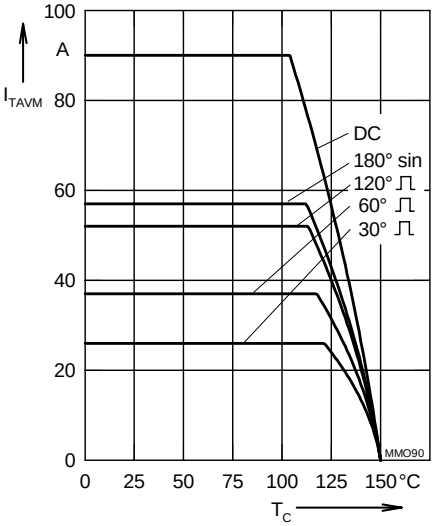

Fig. 9 Maximum forward current at case temperature