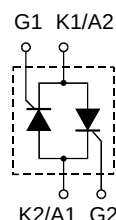


AC Controller Modules

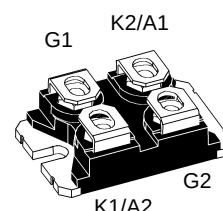
$$I_{RMS} = 90 \text{ A}$$

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

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}	$T_C = 110^{\circ}\text{C}$, 50 - 400 Hz, module		90	A
I_{TRMS}	$T_{VJ} = T_{VJM}$		65	A
I_{TAVM}	$T_C = 110^{\circ}\text{C}$; (180° sine)		41	A
I_{TSM}	$T_{VJ} = 45^{\circ}\text{C}$;	$t = 10\text{ ms}$ (50 Hz), sine	800	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	860	A
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	700	A
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	750	A
I^2t	$T_{VJ} = 45^{\circ}\text{C}$	$t = 10\text{ ms}$ (50 Hz), sine	3200	A^2s
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	3110	A^2s
	$T_{VJ} = T_{VJM}$	$t = 10\text{ ms}$ (50 Hz), sine	2450	A^2s
	$V_R = 0$	$t = 8.3\text{ ms}$ (60 Hz), sine	2360	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ $f = 50\text{ Hz}$, $t_p = 200\text{ }\mu\text{s}$	repetitive, $I_T = 150\text{ A}$	100	$\text{A}/\mu\text{s}$
	$V_D = \frac{2}{3} V_{DRM}$ $I_G = 0.3\text{ A}$ $di_G/dt = 0.3\text{ A}/\mu\text{s}$	non repetitive, $I_T = I_{TAVM}$	500	$\text{A}/\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; method 1 (linear voltage rise)	$V_{DR} = \frac{2}{3} V_{DRM}$	1000	$\text{V}/\mu\text{s}$
P_{GM}	$T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$	$t_p = 30\text{ }\mu\text{s}$	10	W
		$t_p = 300\text{ }\mu\text{s}$	5	W
P_{GAVM}			0.5	W
V_{RGM}			10	V
T_{VJ}			-40...+150	$^{\circ}\text{C}$
T_{VJM}			150	$^{\circ}\text{C}$
T_{stg}			-40...+150	$^{\circ}\text{C}$
V_{ISOL}	50/60 Hz, RMS;	$I_{ISOL} \leq 1\text{ mA}$	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.

Symbol	Test Conditions	Characteristic Values
I_D	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	≤ 20 mA
V_T	$I_T = 80; T_{VJ} = 25^\circ\text{C}$	≤ 1.43 V
V_{T0}	For power-loss calculations only	0.9 V
r_T		5.8 m Ω
V_{GT}	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$	≤ 1.5 V
	$T_{VJ} = -40^\circ\text{C}$	≤ 1.6 V
I_{GT}	$V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$	≤ 100 mA
	$T_{VJ} = -40^\circ\text{C}$	≤ 200 mA
V_{GD}	$T_{VJ} = T_{VJM}; V_D = \frac{2}{3} V_{DRM}$	≤ 0.2 V
I_{GD}		≤ 5 mA
I_L	$T_{VJ} = 25^\circ\text{C}; t_p = 10$ μs $I_G = 0.3$ A; $di_G/dt = 0.3$ A/ μs	≤ 250 mA
I_H	$T_{VJ} = 25^\circ\text{C}; V_D = 6$ V; $R_{GK} = \infty$	≤ 100 mA
t_{gd}	$T_{VJ} = 25^\circ\text{C}; V_D = \frac{1}{2} V_{DRM}$ $I_G = 0.3$ 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 ; $V_D = \frac{2}{3} V_{DRM}$	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

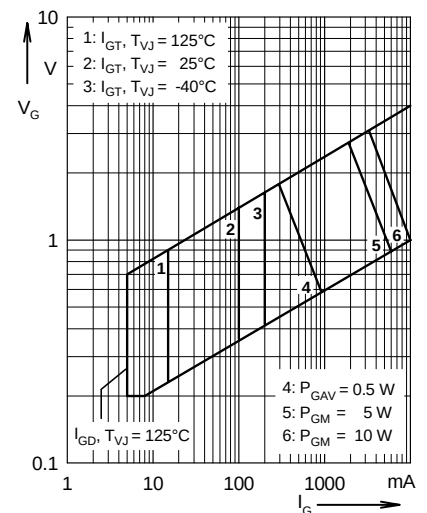


Fig. 1 Gate trigger characteristics

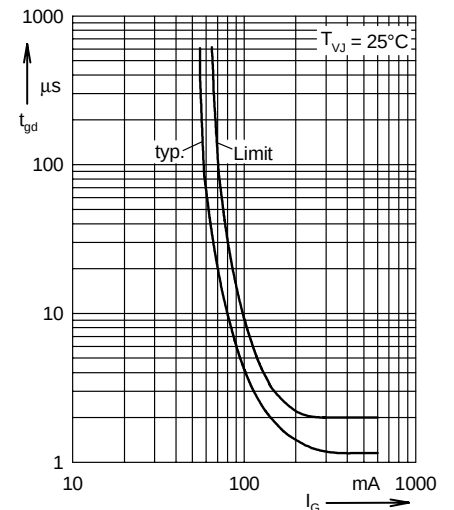
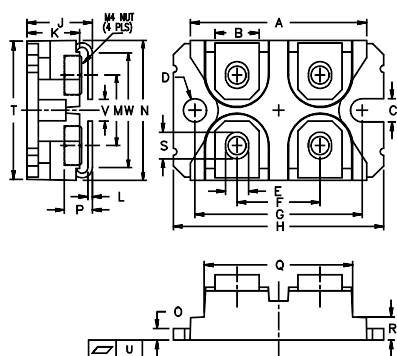


Fig. 2 Gate trigger delay time

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M4 screws (4x) supplied

Dim.	Millimeter		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	0.031	0.033

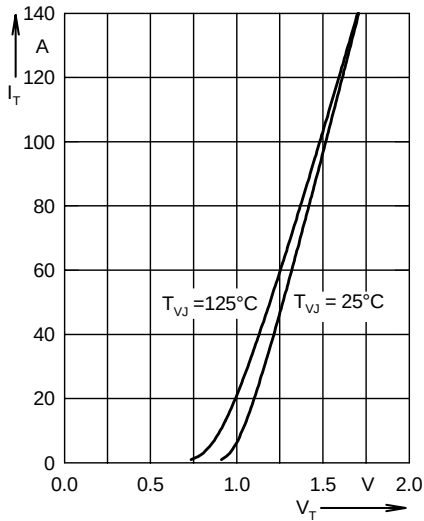


Fig. 3 Forward current versus voltage drop per leg

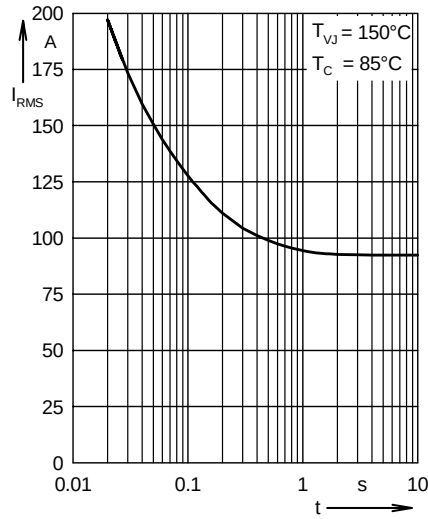


Fig. 4 Rated RMS current versus time (360° conduction)

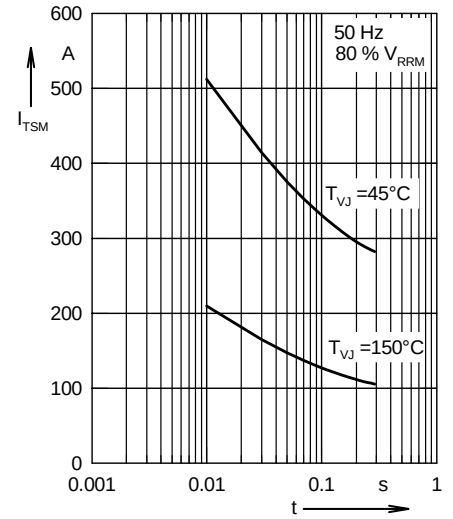


Fig. 5 Surge overload current

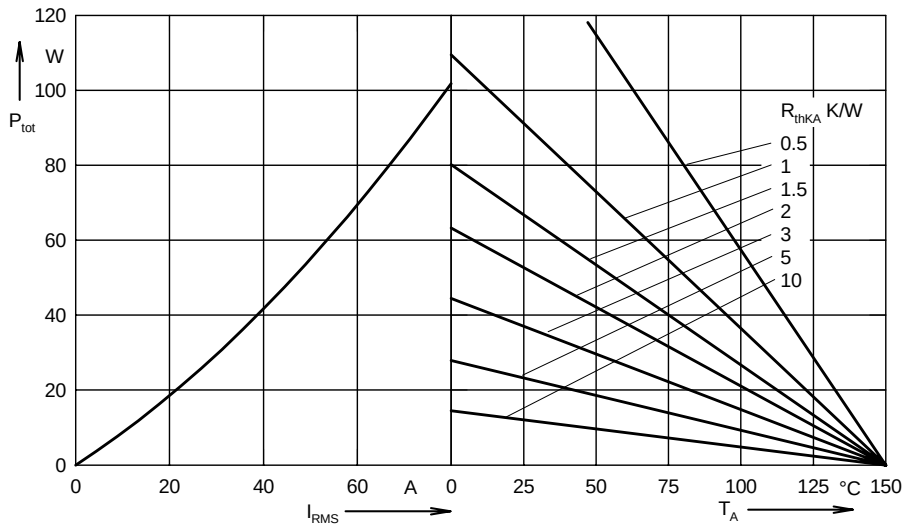


Fig. 6 Load current capability for single AC controller; 1 x MMO 90

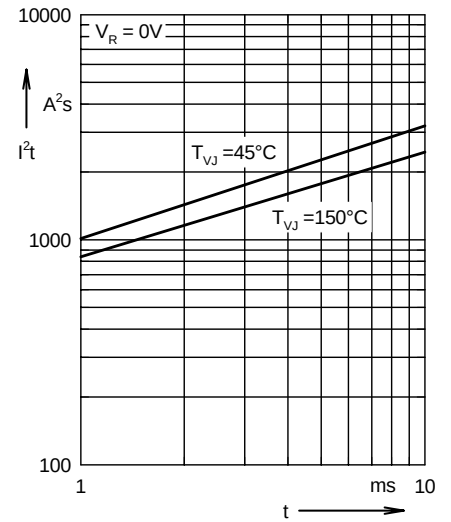


Fig. 7 I^2t versus time (per thyristor)

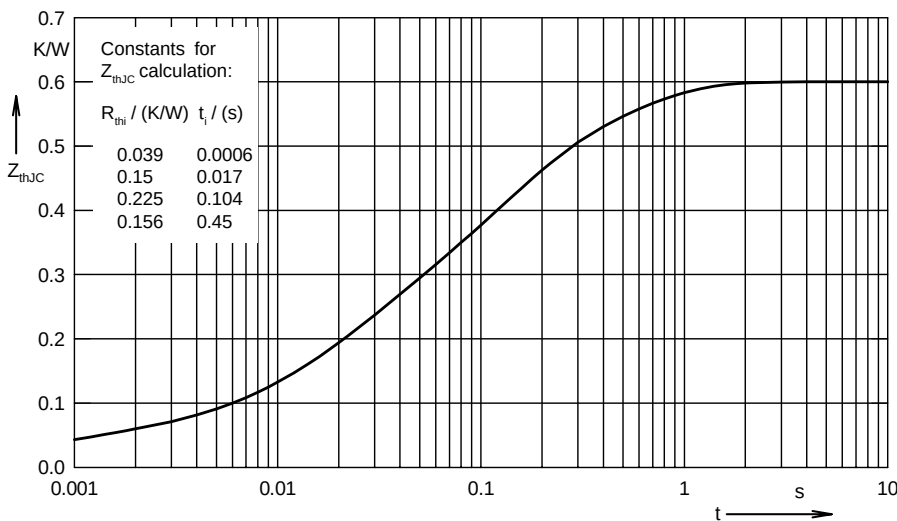


Fig. 8 Transient thermal impedance junction to case (per thyristor)

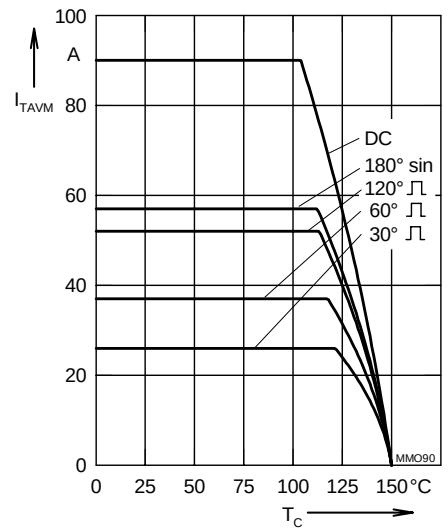


Fig. 9 Maximum forward current at case temperature