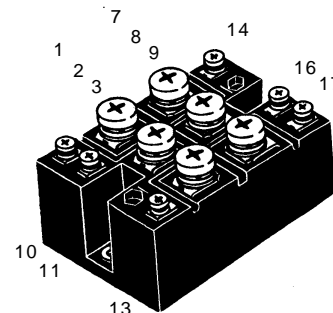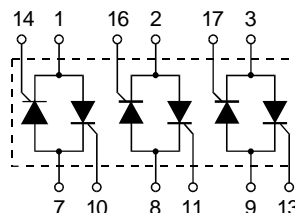# IXYS

VWO 40

Three Phase AC Controller Modules

$I_{RMS} = 40 \text{ A}$
$V_{RRM} = 800\text{-}1600 \text{ V}$

Preliminary data

V_{RSM} V_{DSM} V	V_{RRM} V_{DRM} V	Type
800	800	VWO 40-08io7
1200	1200	VWO 40-12io7
1400	1400	VWO 40-14io7
1600	1600	VWO 40-16io7

Symbol	Test Conditions		Maximum Ratings	
I_{RMS}	$T_C = 85°C$, 50 - 400 Hz (per phase)		40	A
I_{TRMS}	$T_{VJ} = T_{VJM}$		29	A
I_{TAVM}	$T_C = 85°C$; (180° sine)		18	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	450	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	360	A
	$V_R = 0$	t = 8.3 ms (60 Hz), sine	390	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	850	A^2s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	650	A^2s
	$V_R = 0$	t = 8.3 ms (60 Hz), sine	640	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
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $R_{GK} = \infty$; 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...+125	°C
T_{VJM}			125	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	2500	V~
	$I_{ISOL} \leq 1$ mA	t = 1 s	3000	V~
M_d	Mounting torque (M5)		5/44±15 %	Nm/lb.in.
	Terminal connection torque (M3; M5)		1.5/13±15 %	Nm/lb.in.
Weight	typ.		180	g

Features

• Thyristor controller for AC (circuit W3C acc. to IEC) for mains frequency
• Package with metal base plate
• Isolation voltage 3000 V~
• Planar passivated chips
• UL applied

Applications

• Switching and control of three phase AC circuits
• 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 refer to a single thyristor/diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions

IXYS

Symbol	Test Conditions	Characteristic Values		
I_D, I_R	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$; $V_D = V_{DRM}$	$\leq$	5	mA
V_T	I_T = 80 A; $T_{VJ} = 25°C$	$\leq$	1.65	V
V_{T0}	For power-loss calculations only		0.85	V
r_T			15	mΩ
V_{GT}	$V_D = 6$ V; $\quad$ $T_{VJ} = 25°C$	$\leq$	1.0	V
	$\quad\quad\quad\quad$ $T_{VJ} = -40°C$	$\leq$	1.6	V
I_{GT}	$V_D = 6$ V; $\quad$ $T_{VJ} = 25°C$	$\leq$	100	mA
	$\quad\quad\quad\quad$ $T_{VJ} = -40°C$	$\leq$	150	mA
V_{GD}	$T_{VJ} = T_{VJM}$; $\quad$ $V_D = 2/3\ V_{DRM}$	$\leq$	0.2	V
I_{GD}		$\leq$	5	mA
I_L	$T_{VJ} = 25°C$; $t_P = 10$ µs	$\leq$	200	mA
	$I_G = 0.3$ A; $di_G/dt = 0.3$ A/µs			
I_H	$T_{VJ} = 25°C$; $V_D = 6$ V; $R_{GK} = \infty$	$\leq$	150	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; sine 180°el		1.43	K/W
	per module		0.238	K/W
R_{thJK}	per thyristor; sine 180°el		1.53	K/W
	per module		0.255	K/W
d_S	Creeping distance on surface		8.0	mm
d_A	Creepage distance in air		4.5	mm
a	Max. allowable acceleration		50	m/s^2

Dimensions in mm (1 mm = 0.0394")