

AC Controller Modules

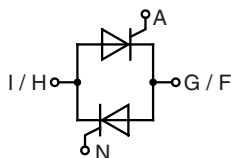
Preliminary Data

$$I_{RMS} = 140 \text{ A}$$

$$I_{TAVM} = 58 \text{ A}$$

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

V_{RSM}	V_{RRM}	
V_{DSM}	V_{DRM}	Typ
V	V	
1300	1200	MMO 140-12io7
1700	1600	MMO 140-16io7



Symbol	Conditions	Maximum Ratings	
I_{RMS}	$T_C = 85^\circ\text{C}; 50\text{-}400 \text{ Hz (per single controller)}$	130	A
I_{TRMS}		90	A
I_{TAVM}	$T_C = 85^\circ\text{C}; 180^\circ \text{ sine, per Thyristor}$	58	A
I_{TSM}	$T_{VJ} = 45^\circ\text{C}; t = 10 \text{ ms (50 Hz)}$	1150	A
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	1230	A
	$T_{VJ} = 125^\circ\text{C}; t = 10 \text{ ms (50 Hz)}$	1000	A
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	1070	A
I^2t	$T_{VJ} = 45^\circ\text{C}; t = 10 \text{ ms (50 Hz)}$	6600	A ² s
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	6280	A ² s
	$T_{VJ} = 125^\circ\text{C}; t = 10 \text{ ms (50 Hz)}$	5000	A ² s
	$V_R = 0; t = 8.3 \text{ ms (60 Hz)}$	4750	A ² s
$(di/dt)_{cr}$	$T_{VJ} = 125^\circ\text{C}; f = 50 \text{ Hz}; t_p = 200 \mu\text{s};$ repetitive, $I_T = 60 \text{ A}$	150	A/ μs
	$V_D = 2/3 V_{DRM}; I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$ non repetitive, $I_T = I_{TAVM}$	500	A/ μs
$(dv/dt)_{cr}$	$T_{VJ} = 125^\circ\text{C}; V_D = 2/3 V_{DRM}; R_{GK} = \infty; \text{method 1 (linear voltage rise)}$	1000	V/ μs
P_{GM}	$T_{VJ} = 125^\circ\text{C}; t_p = 30 \text{ ms}$	10	W
	$I_T = I_{T(AV)M}; t_p = 300 \text{ ms}$	5	W
P_{GAVM}		0.5	W
V_{RGM}		10	V
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+125	°C
V_{ISOL}	50/60 Hz, RMS $t = 1 \text{ min}$	2500	V~
	$I_{ISOL} \leq 1 \text{ mA} \quad t = 1 \text{ s}$	3000	V~
M_d	Mounting torque (M4)	1.5 - 2.0	Nm
		14 - 18	lb.in.
Weight	Typical including screws	18	g

Data according to IEC 60747 and refer to a single diode unless otherwise stated.

Features

- Thyristor controller for AC (circuit W1C acc. to IEC) for mains frequency
- Isolation voltage 3000 V~
- Planar glass passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

Applications

- Switching and control of single and three phase AC circuits
- Light and temperature control
- Softstart AC motor controller
- Solid state switches

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling
- High power density
- Small and light weight

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_D, I_R	$V_R / V_D = V_{RRM} / V_{DRM}$ $T_{VJ} = 125^\circ\text{C}$		5 mA
V_T	$I_T = 200 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$		1.75 V
V_{T0}	For power-loss calculations only		0.85 V
r_t			5.20 mΩ
V_{GT}	$V_D = 6 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$		1.5 V
I_{GT}	$V_D = 6 \text{ V}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$		1.6 V 100 mA 200 mA
V_{GD}	$V_D = 2/3 V_{DRM}$ $T_{VJ} = 125^\circ\text{C}$		0.2 V
I_{GD}			10 mA
I_L	$t_p = 10 \mu\text{s}$; $I_G = 0.45 \text{ A}$; $di_G/dt = 0.45 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$		450 mA
I_H	$V_D = 6 \text{ V}$; $R_{GK} = \infty$; $T_{VJ} = 25^\circ\text{C}$		200 mA
t_{gd}	$V_D = 1/2 V_{DRM}$ $I_G = 0.45 \text{ A}$; $di_G/dt = 0.45 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$		2 μs
R_{thJC}	per thyristor; DC current	0.12	0.70 K/W
R_{thCH}			K/W
R_{thJC}	per module	0.06	0.35 K/W
R_{thCH}			K/W
d_s	Creeping distance on surface		11.2 mm
d_A	Creepage distance in air		17.0 mm
a	Maximum allowable acceleration		50 m/s ²

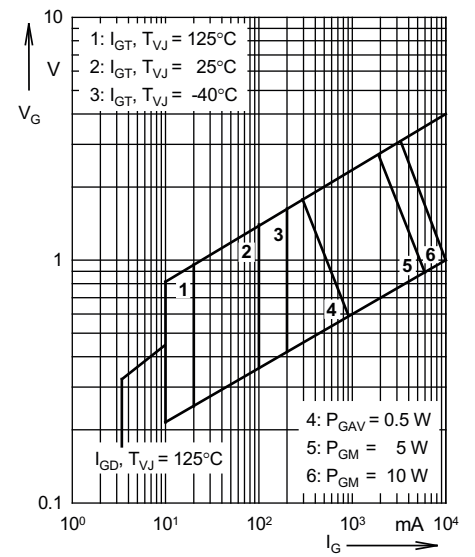


Fig. 1 Gate trigger characteristics

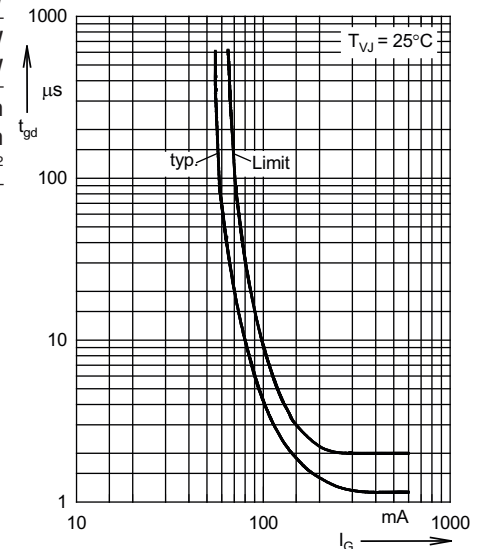
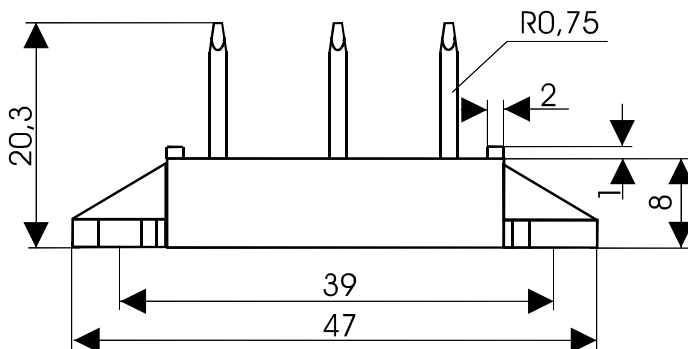
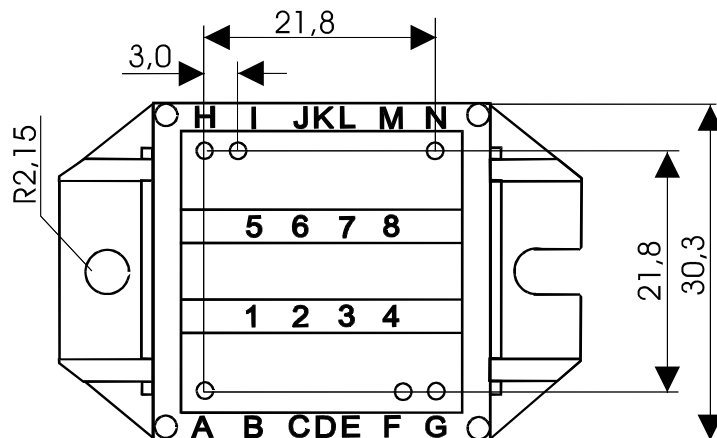


Fig. 2 Gate trigger delay time

Dimensions in mm (1 mm = 0.0394")



IXYS reserves the right to change limits, test conditions and dimensions.

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