IXYS

High Power Single Thyristor Modules

I_{FRMS} = 880 A
I_{FAVM} = 560 A
V_{RRM} = 1200-1800 V

V_{RSM} V	V_{RRM} V	Type
1300	1200	MCO 500-12io1
1500	1400	MCO 500-14io1
1700	1600	MCO 500-16io1
1900	1800	MCO 500-18io1
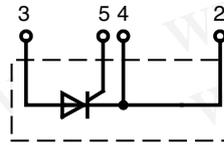
勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

E72873

Symbol	Conditions		Maximum Ratings	
I_{TRMS}	$T_{VJ} = T_{VJM}$	$T_C = 25°C$	880	A
$I_{T(AV)M}$	180° sine	$T_C = 85°C$	560	A
I_{TSM}	$T_{VJ} = 45°C$; t = 10 ms (50 Hz)		17000	A
	$V_R = 0$ t = 8.3 ms (60 Hz)		16000	A
	$T_{VJ} = T_{VJM}$; t = 10 ms (50 Hz)		13000	A
	$V_R = 0$ t = 8.3 ms (60 Hz)		14400	A
I^2t	$T_{VJ} = 45°C$; t = 10 ms (50 Hz)		1 445 000	A^2s
	$V_R = 0$ t = 8.3 ms (60 Hz)		1 062 000	A^2s
	$T_{VJ} = T_{VJM}$; t = 10 ms (50 Hz)		845 000	A^2s
	$V_R = 0$ t = 8.3 ms (60 Hz)		813 000	A^2s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$; f = 50 Hz; $t_p = 200$ µs;	repetitive, $I_T = 960$ A	100	A/µs
	$V_D = {}^2/_3 V_{DRM}$; $I_G = 1$ A; $di_G/dt = 1$ A/µs	non repetitive, $I_T = I_{TAVM}$	500	A/µs
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$; $V_D = {}^2/_3 V_{DRM}$; $R_{GK} = \infty$; method 1 (linear voltage rise)		1000	V/µs
P_{GM}	$T_{VJ} = T_{VJM}$; $t_p = 30$ µs		120	W
	$I_T = I_{T(AV)M}$; $t_p = 500$ µs		60	W
P_{GAV}			30	W
V_{RGM}			10	V
T_{VJ}			-40...+140	°C
T_{VJM}			140	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS t = 1 min		3000	V~
	$I_{ISOL} \leq 1$ mA t = 1 s		3600	V~
M_d	Mounting torque (M6)		4.5 - 7	Nm
	Terminal connection torque (M8)		11-13	Nm
Weight	Typical including screws		650	g

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

Features

- Direct Copper Bonded Al_2O_3 ceramic with copper base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered
- Keyed gate/cathode twin pins

Applications

- Motor control, soft starter
- Power converter
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- L

Advantages

- Improved temperature & power cycling
- Reduced protection circuits

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

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Symbol	Conditions		Characteristic Values		
			typ.	max.	
I_{RRM}	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$		40	mA
V_T	$I_T = 1200$ A	$T_{VJ} = 25°C$		1.3	V
V_{T0}	For power-loss calculations only			0.8	V
r_t		$T_{VJ} = T_{VJM}$		0.38	mΩ
V_{GT}	$V_D = 6$ V	$T_{VJ} = 25°C$		2	V
		$T_{VJ} = -40°C$		3	V
I_{GT}	$V_D = 6$ V	$T_{VJ} = 25°C$		300	mA
		$T_{VJ} = -40°C$		400	mA
V_{GD}	$V_D = {}^2/_3\ V_{DRM}$;	$T_{VJ} = T_{VJM}$		0.25	V
I_{GD}				10	mA
I_L	$t_p = 30$ μs; $V_D = 6$ V $I_G = 1$ A; $di_G/dt = 1$ A/μs	$T_{VJ} = 25°C$		400	mA
I_H	$V_D = 6$ V; $R_{GK} = ∞$;	$T_{VJ} = 25°C$		300	mA
t_{gd}	$V_D = ½V_{DRM}$ $I_G = 1$ A; $di_G/dt = 1$ A/μs	$T_{VJ} = 25°C$		2	μs
t_q	$V_D = {}^2/_3\ V_{DRM}$ $dv/dt = 50$ V/μs; $-di/dt = 10$ A/μs $I_T = 500$ A; $V_R = 100$ V; $t_p = 200$ μs	$T_{VJ} = T_{VJM}$	350		μs
R_{thJC}	DC current			0.072	K/W
R_{thJK}	DC current			0.096	K/W
d_S	Creeping distance on surface			12.7	mm
d_A	Creepage distance in air			9.6	mm
a	Maximum allowable acceleration			50	m/s²
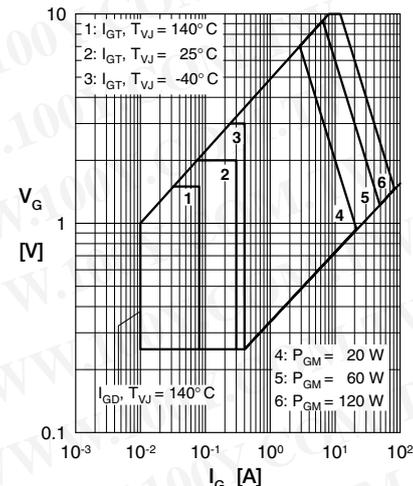
Fig. 1 Gate trigger characteristics
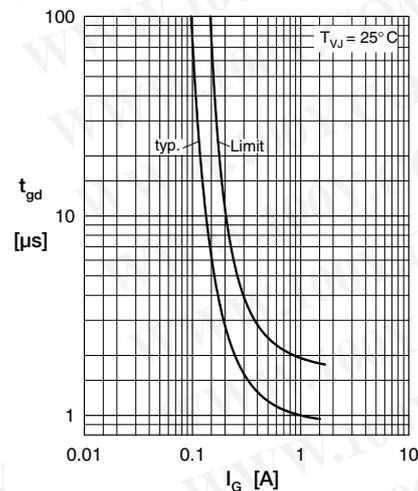
Fig. 2 Gate trigger delay time

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Dimensions in mm (1 mm = 0.0394")

M8 x20

$52 \, ^{+0}_{-1,4}$ 49

43

22.5 35 28.5

50

4 5 6 7

38

5

2 3

6.2

80

92
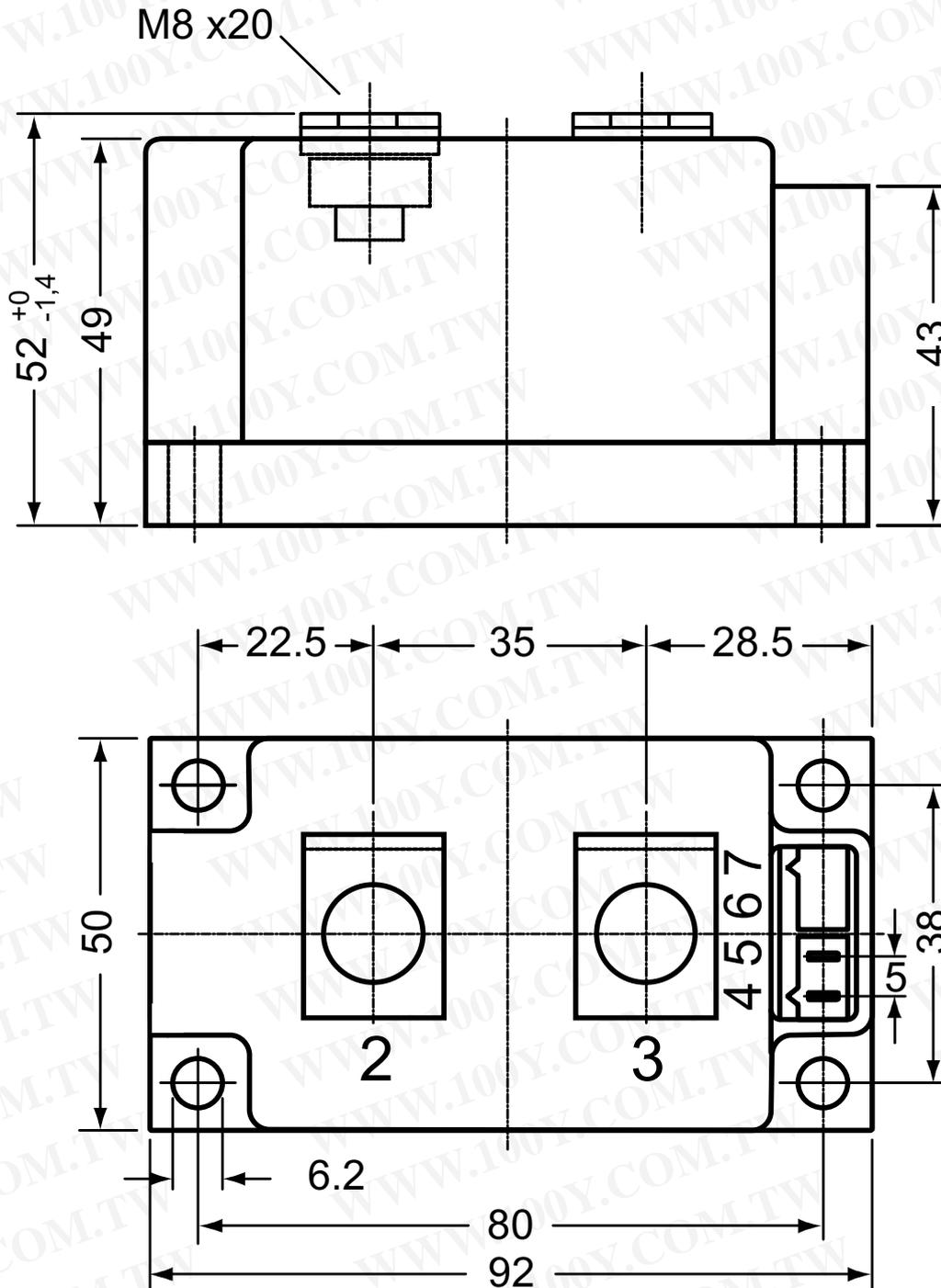
Optional accessories for modules
Keyed gate/cathode twin plugs with wire length = 350 mm, gate = white, cathode = red
Type ZY 180L (L = Left for pin pair 4/5) ⎫
Type ZY 180R (R = Right for pin pair 6/7) ⎬ UL 758, style 3751

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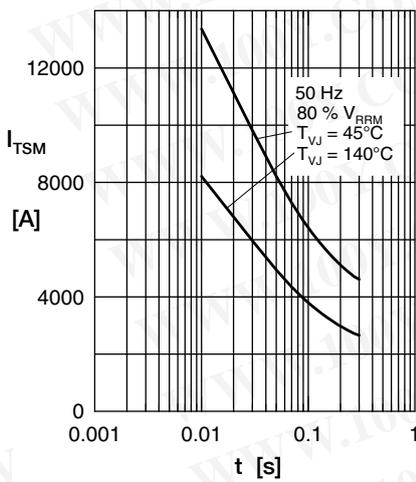
Fig. 3 Surge overload current
I_{TSM} : Crest value, t: duration
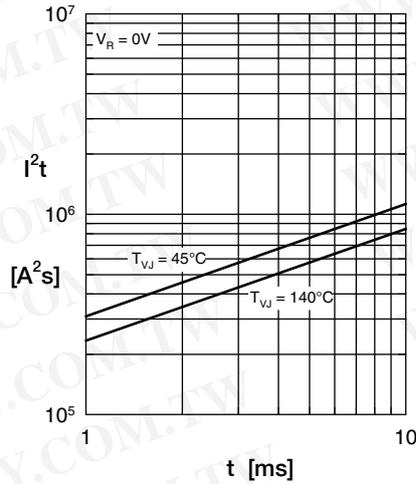
Fig. 4 I^2t versus time (1-10 ms)
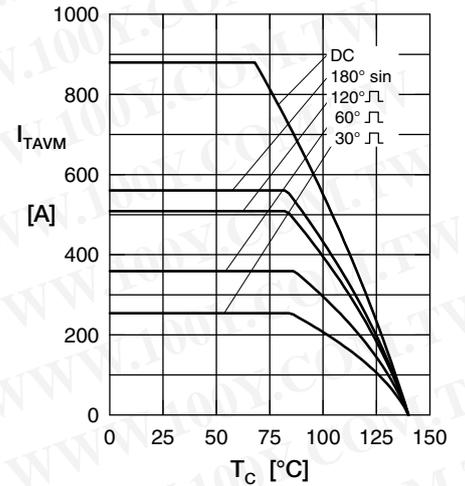

Fig. 5 Maximum forward current
at case temperature

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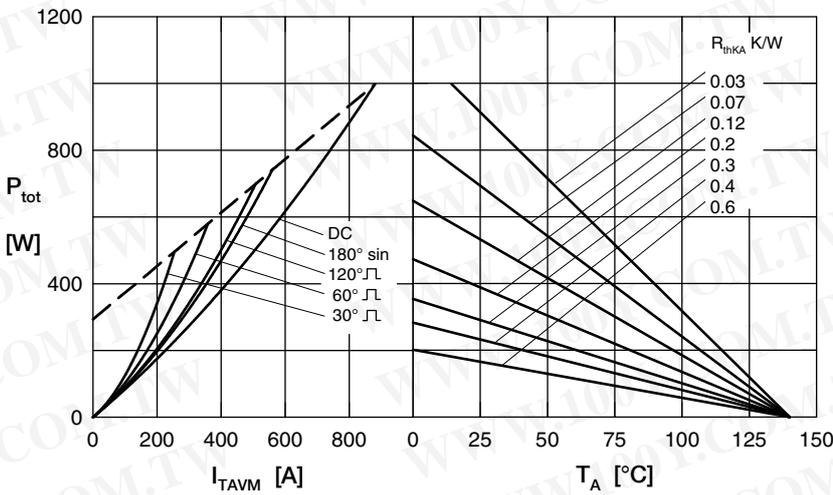
Fig. 6 Power dissipation versus on-state current & ambient temperature
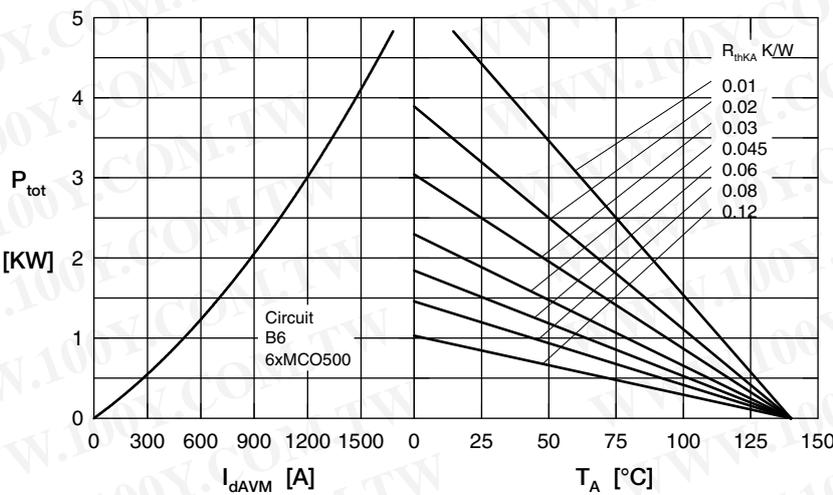
Fig. 7 Three phase rectifier bridge: Power dissipation versus
direct output current and ambient temperature

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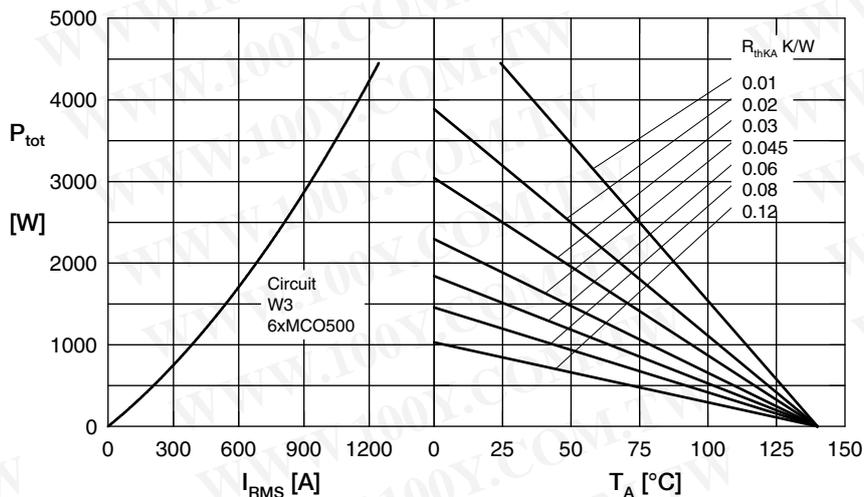
Fig. 8　Three phase AC-controller: Power dissipation versus RMS output current and ambient temperatur
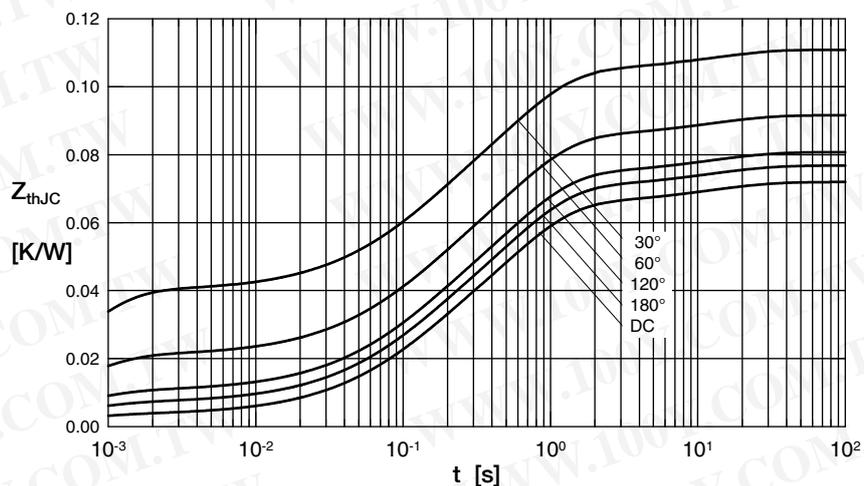
Fig. 9　Transient thermal impedance junction to case

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.072
180°	0.0768
120°	0.081
60°	0.092
30°	0.111

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0035	0.00054
2	0.0186	0.098
3	0.0432	0.54
4	0.0067	12
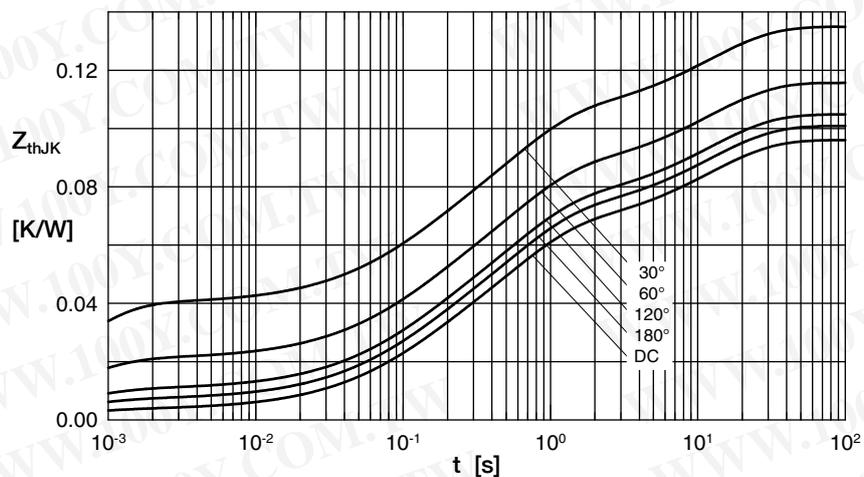
Fig.10　Transient thermal impedance junction to heatsink

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.096
180°	0.1
120°	0.105
60°	0.116
30°	0.135

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0035	0.0054
2	0.0186	0.098
3	0.0432	0.54
4	0.0067	12
5	0.024	12

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