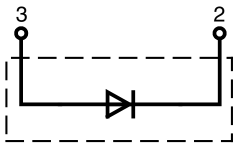
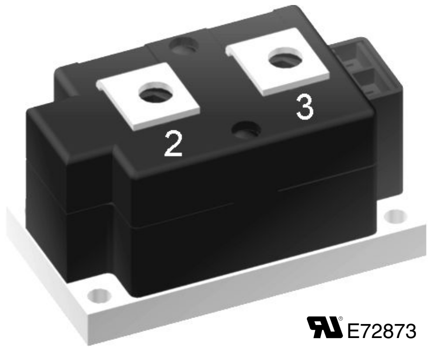
High Power Diode Modules

I_{FRMS} = 880 A
I_{FAVM} = 560 A
V_{RRM} = 1200-2200 V

V_{RSM} V	V_{RRM} V	Type
1300	1200	MDO 500-12N1
1500	1400	MDO 500-14N1
1700	1600	MDO 500-16N1
1900	1800	MDO 500-18N1
2100	2000	MDO 500-20N1
2300	2200	MDO 500-22N1





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Symbol	Conditions			Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$			880	A
I_{FAVM}	T_C = 85°C; 180° sine			560	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms	(50 Hz)	15000	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)	1125000	A^2s
	V_R = 0	t = 8.3 ms	(60 Hz)	1062000	A^2s
	$T_{VJ} = T_{VJM}$;	t = 10 ms	(50 Hz)	845000	A^2s
	V_R = 0	t = 8.3 ms	(60 Hz)	813000	A^2s
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

Symbol	Conditions		Characteristic Values		
			typ.	max.	
I_{RRM}	$V_R = V_{RRM}$	$T_{VJ} = T_{VJM}$		30	mA
V_F	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
R_{thJC}	DC current			0.072	K/W
R_{thJK}	DC current			0.096	K/W
d_S	Creeping distance on surface			21.7	mm
d_A	Creepage distance in air			9.6	mm
a	Maximum allowable acceleration			50	m/s^2

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

Features

- International standard package
- **D**irect **C**opper **B**onded Al_2O_3-ceramic base plate
- Planar passivated chips
- Isolation voltage 3600 V~
- UL registered, E 72873

Applications

- Supplies for DC power equipment
- DC supply for PWM inverter
- Field supply for DC motors
- Battery DC power supplies

Advantages

- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

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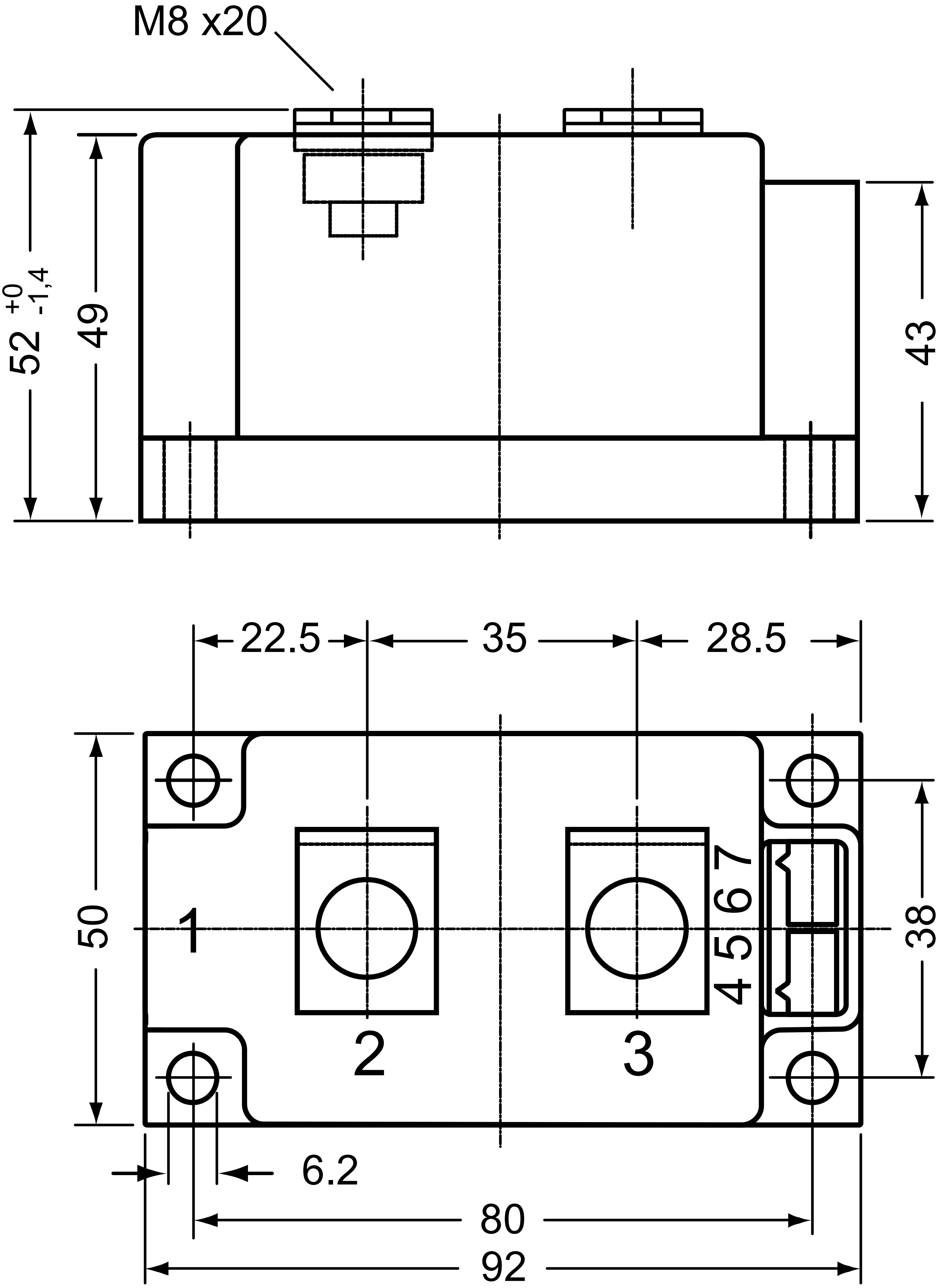
Dimensions in mm (1 mm = 0.0394")



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

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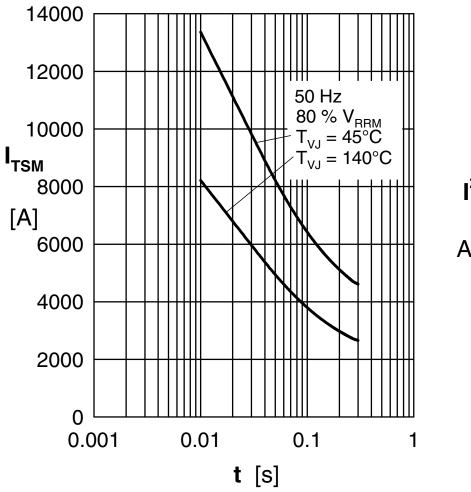

Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

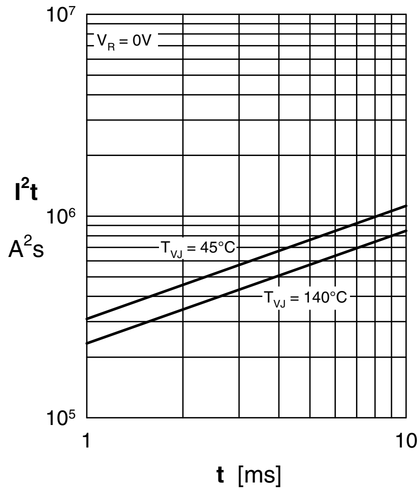

Fig. 2 I^2t versus time (1-10 ms)

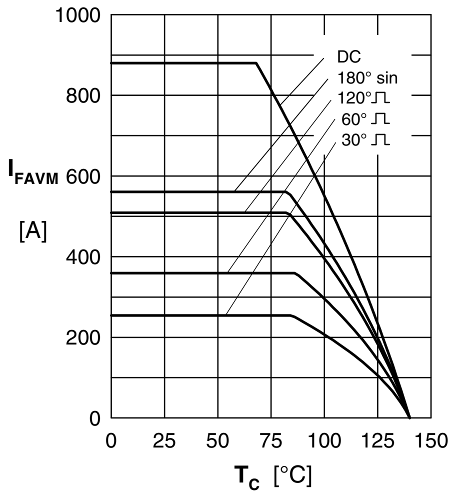

Fig. 3 Maximum forward current
at case temperature

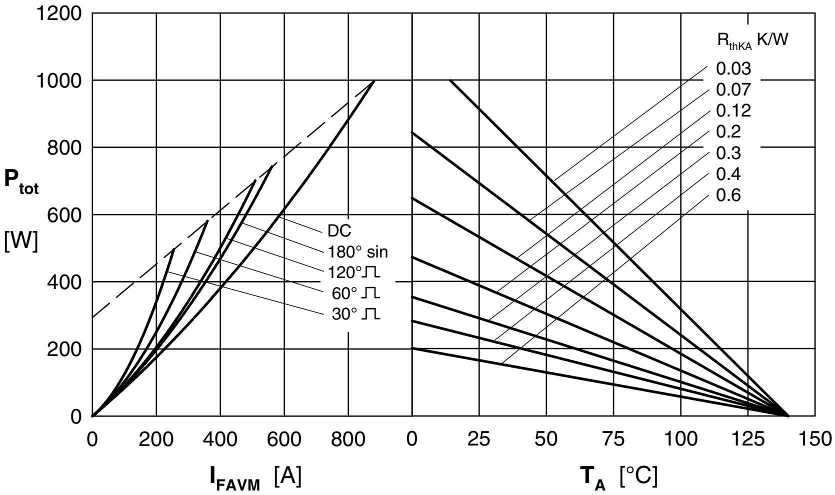

Fig. 4 Power dissipation vs. forward current and ambient temperature

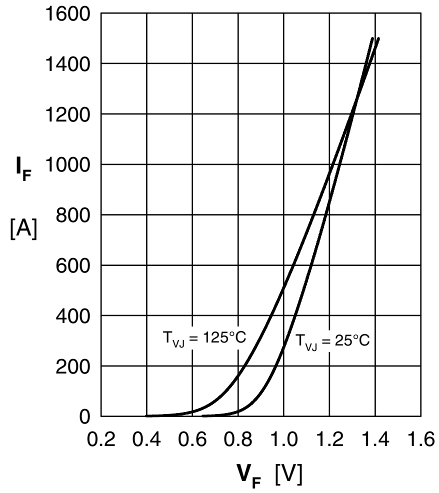

Fig. 5 Forward current
I_F versus V_F

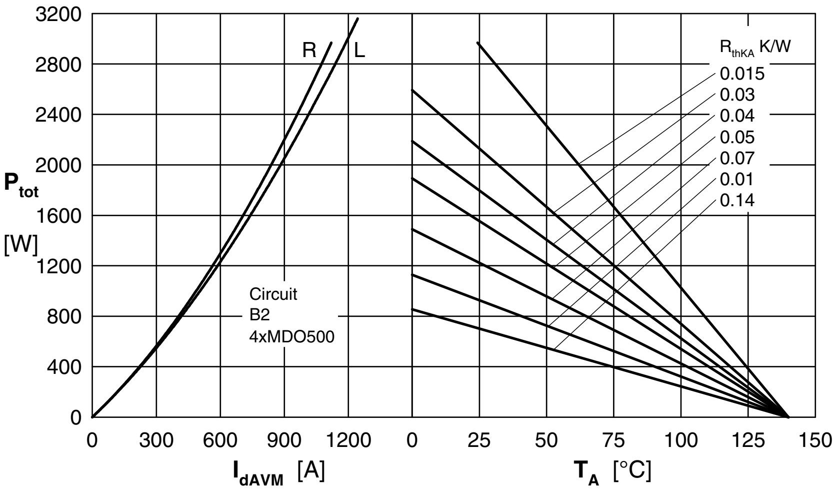

Fig. 6 Single phase rectifier bridge: Power dissipation vs. direct output current
and ambient temperature. R = resistive load, L = inductive load

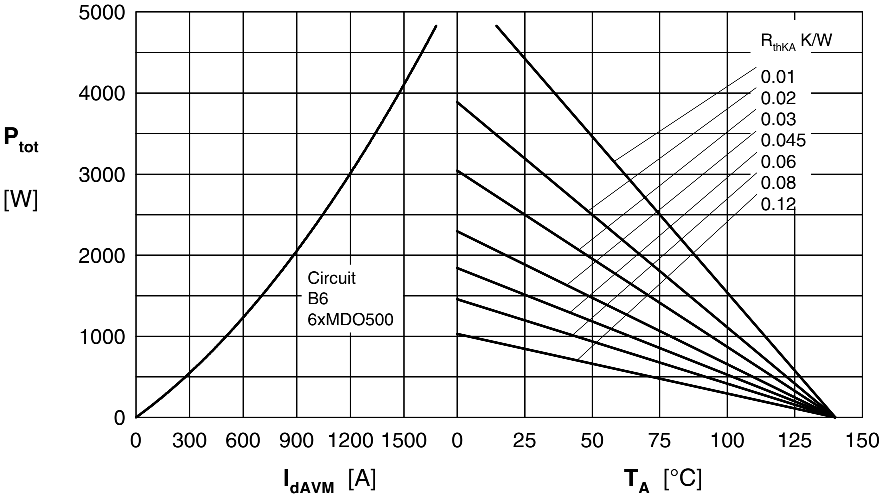

Fig. 6 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

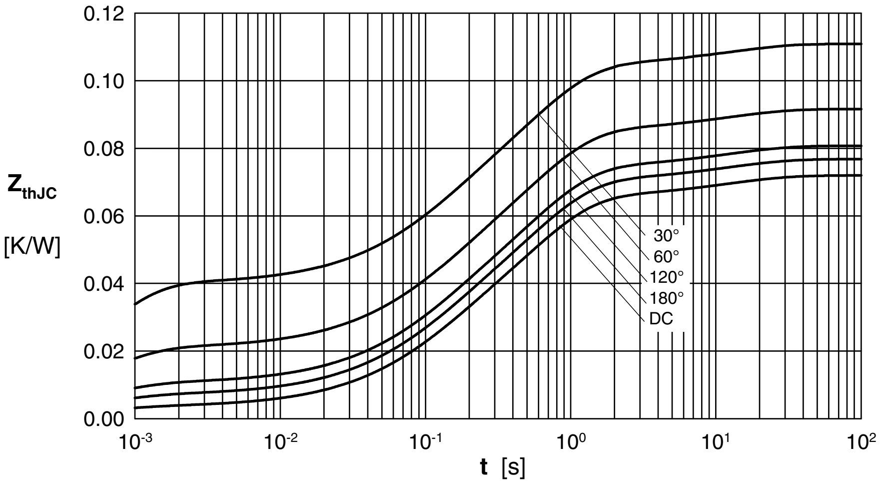

Fig. 7 Transient thermal impedance junction to case

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	0.0054
2	0.0186	0.098
3	0.0432	0.54
4	0.0067	12

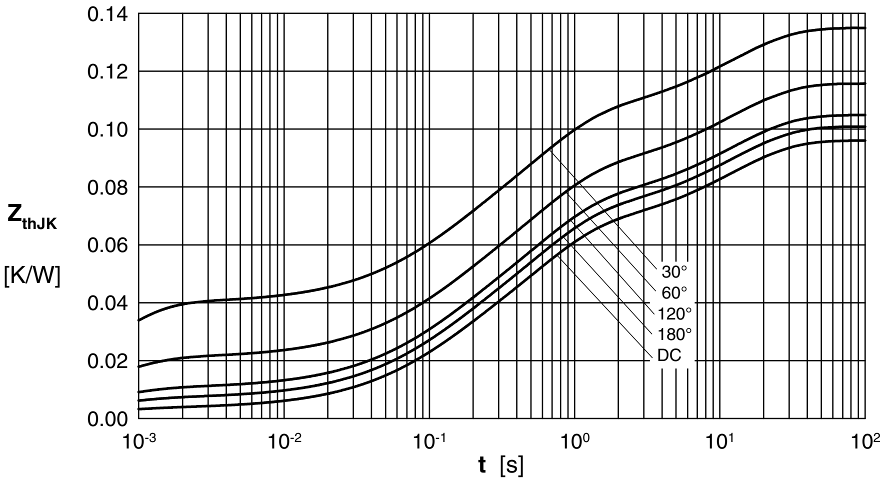

Fig. 8 Transient thermal impedance junction to heatsink

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