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IXYS Corporation
MDD172-12N1

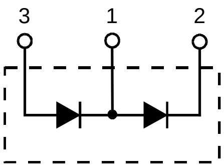
For any questions, you can email us directly:
sales@integrated-circuit.com

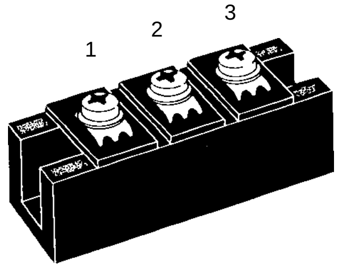
IXYS **MDD 172**

High Power Diode Modules

I_{FRMS} = 2x 300 A
I_{FAVM} = 2x 190 A
V_{RRM} = 800-1800 V

V_{RSM} V	V_{RRM} V	Type
900	800	MDD 172-08N1
1300	1200	MDD 172-12N1
1500	1400	MDD 172-14N1
1700	1600	MDD 172-16N1
1900	1800	MDD 172-18N1





Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$		300	A
I_{FAVM}	T_C = 100°C; 180° sine		190	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	6600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	7290	A
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	5600	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	6200	A
∫i²dt	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	218 000	A²s
	V_R = 0	t = 8.3 ms (60 Hz), sine	221 000	A²s
	$T_{VJ} = T_{VJM}$	t = 10 ms (50 Hz), sine	157 000	A²s
	V_R = 0	t = 8.3 ms (60 Hz), sine	160 000	A²s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50/60 Hz, RMS	t = 1 min	3000	V~
	I_{ISOL} ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M6)		2.25-2.75/20-25	Nm/lb.in.
	Terminal connection torque (M6)		4.5-5.5/40-48	Nm/lb.in.
Weight	Typical including screws		120	g

Symbol	Test Conditions		Characteristic Values	
I_R	$T_{VJ} = T_{VJM}$; $V_R = V_{RRM}$		20	mA
V_F	I_F = 300 A; T_{VJ} = 25°C		1.15	V
V_{T0}	For power-loss calculations only		0.8	V
r_T	$T_{VJ} = T_{VJM}$		0.8	mΩ
Q_S	T_{VJ} = 125°C; I_F = 300 A, -di/dt = 50 A/µs		550	µC
I_{RM}			235	A
R_{thJC}	per diode; DC current	other values	0.21	K/W
	per module	see Fig. 6/7	0.105	K/W
R_{thJK}	per diode; DC current		0.31	K/W
	per module		0.155	K/W
d_S	Creepage distance on surface		12.7	mm
d_A	Strike distance through air		9.6	mm
a	Maximum allowable acceleration		50	m/s²

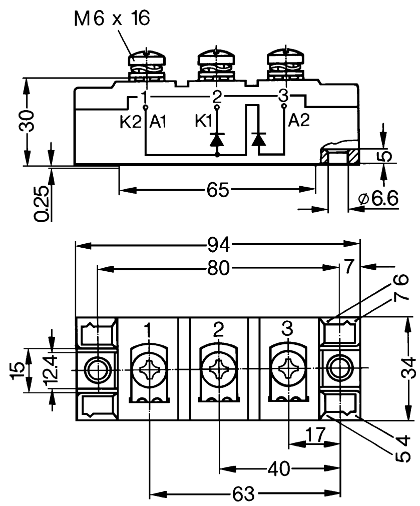
Data according to IEC 60747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions

Features
- International standard package
- Direct copper bonded 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
- Space and weight savings
- Simple mounting
- Improved temperature and power cycling
- Reduced protection circuits

Dimensions in mm (1 mm = 0.0394")



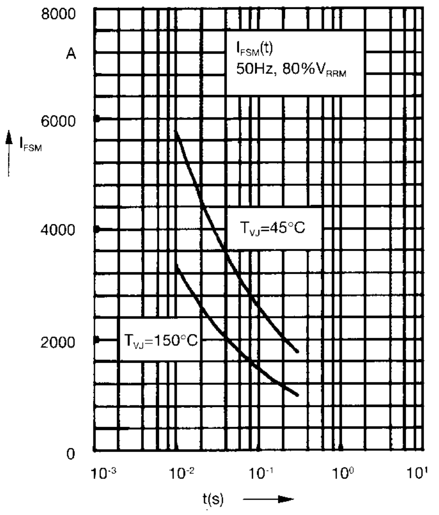


Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

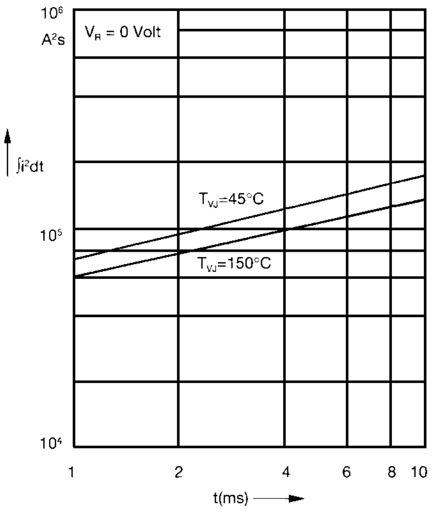


Fig. 2 ∫i²dt versus time (1-10 ms)

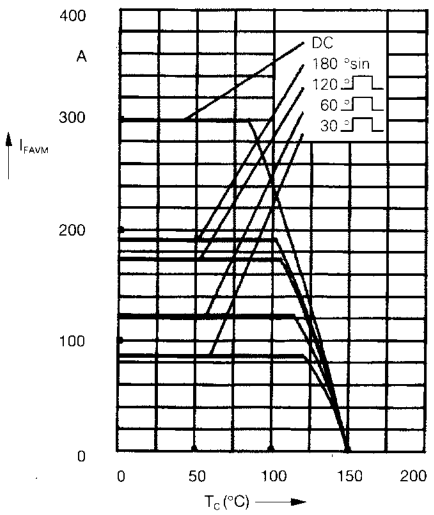


Fig. 2a Maximum forward current at case temperature

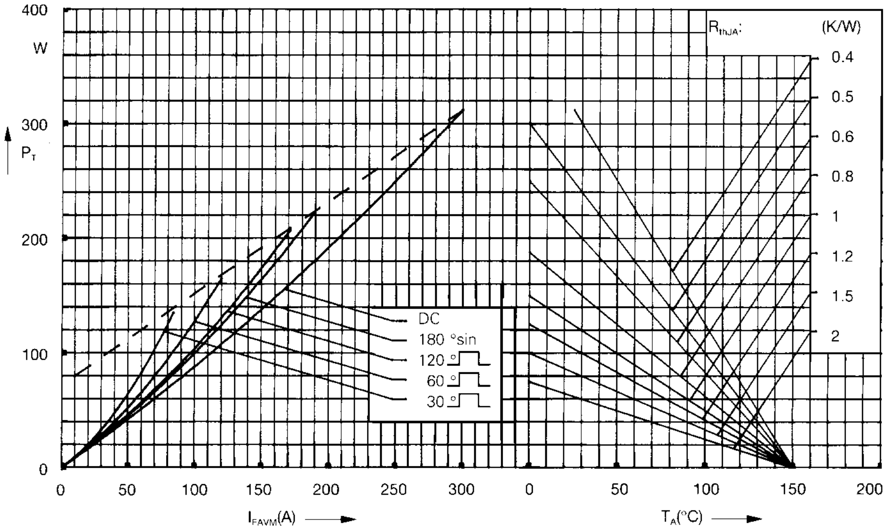


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

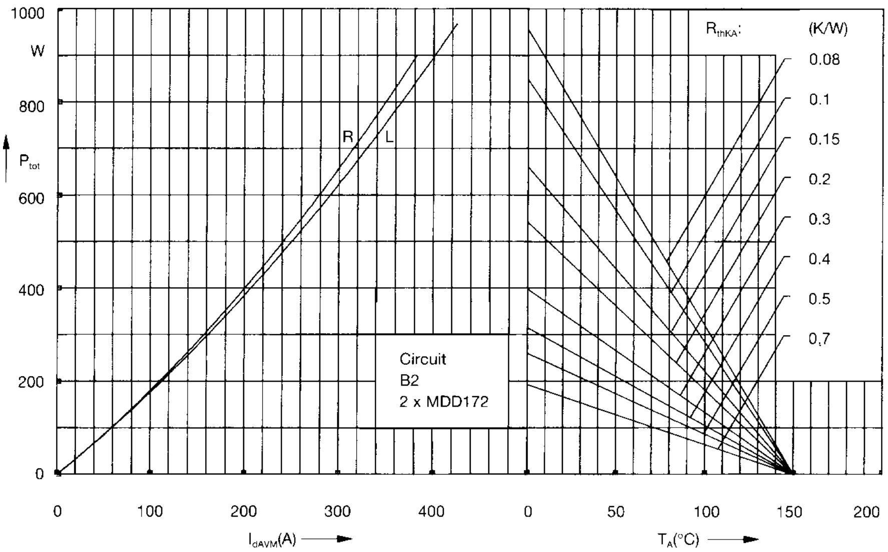


Fig. 4 Single phase rectifier bridge: Power dissipation versus direct output current and ambient temperature
R = resistive load
L = inductive load

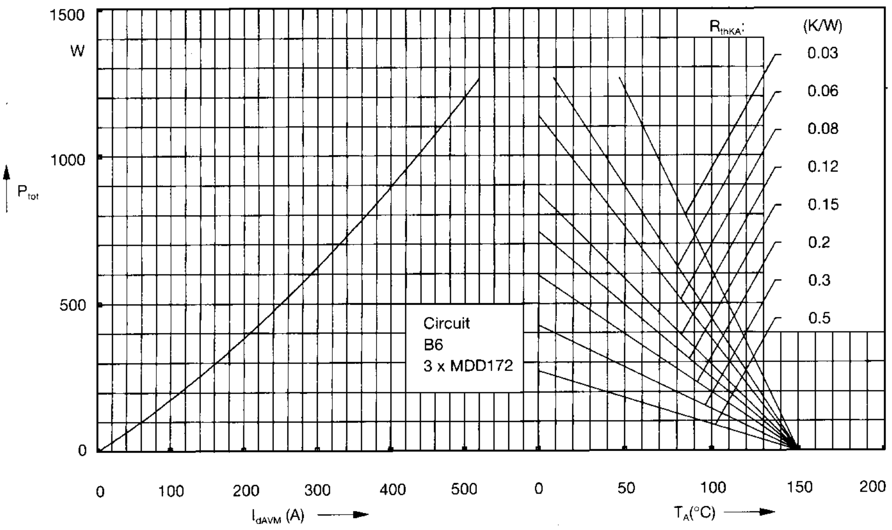


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

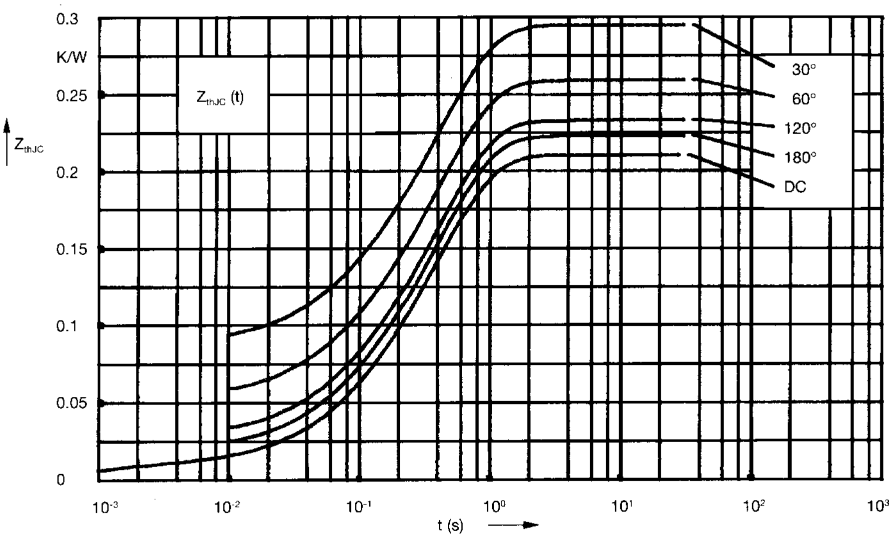


Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.210
180°	0.223
120°	0.233
60°	0.260
30°	0.295

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0087	0.001
2	0.0163	0.065
3	0.185	0.4

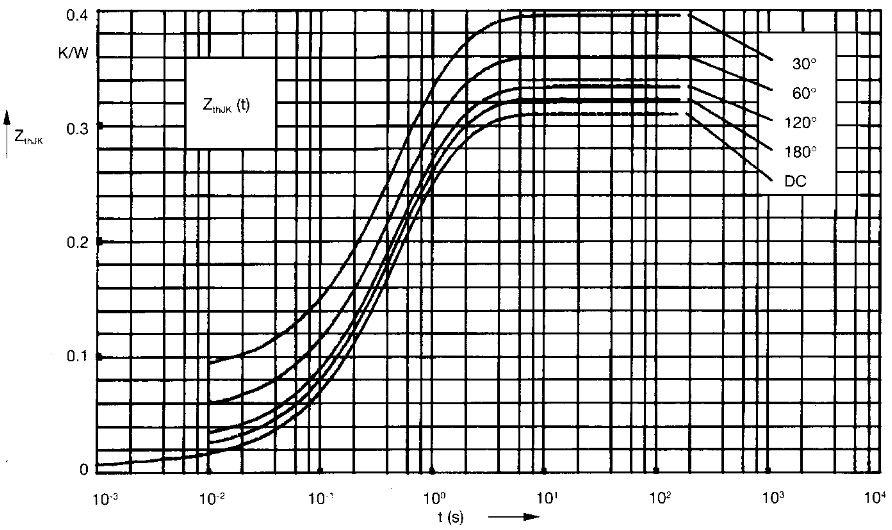


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.31
180°	0.323
120°	0.333
60°	0.360
30°	0.395

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0087	0.001
2	0.0163	0.065
3	0.185	0.4
4	0.1	1.29