IXYS

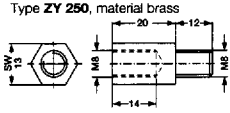
Diode Modules

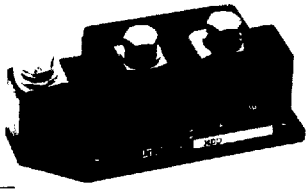
MDD220 I_{TAV} = 2 x 270 A

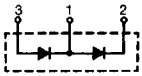
V_{RRM} = 600–1600 V

V_{RSM} V	V_{RRM} V	Type Version 1
700	600	MDD220-06N1
900	800	MDD220-08N1
1300	1200	MDD220-12N1
1500	1400	MDD220-14N1
1700	1600	MDD220-16N1

Threaded spacer for higher Anode/ Cathode construction:
Type **ZY 250**, material brass







MDD220
Version 1

Symbol	Test conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ}=T_{VJM}$		450	A
I_{FAVM}	T_C=100°C; (180°sin)		270	A
I_{FSM}	T_{VJ}=45°C	t = 10 ms (50Hz)	8500	A
	V_R=0	t = 8.3 ms (60Hz)	9000	A
	$T_{VJ}=T_{VJM}$	t = 10 ms (50Hz)	7500	A
	V_R=0	t = 8.3 ms (60Hz)	8000	A
$\int i^2dt$	T_{VJ}=45°C	t = 10 ms (50Hz)	360000	A^2s
	V_R=0	t = 8.3 ms (60Hz)	340000	A^2s
	$T_{VJ}=T_{VJM}$	t = 10 ms (50Hz)	280000	A^2s
	V_R=0	t = 8.3 ms (60Hz)	260000	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+125	°C
V_{ISOL}	50Hz, RMS	t = 1 min	2500	V~
	I_{ISO}=1mA	t = 1 s	3000	V~
M_d	Mounting torque		2.5-5.0	Nm
	Terminal connection torque		12-15	Nm
Weight	typ. incl. screws		320	g

Symbol	Test conditions		Characteristic values	
I_R	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$	≤	40	mA
V_F	I_F=600A; T_{VJ}=25°C	≤	1.4	V
V_{TO}	For power-loss calculations only		0.75	V
r_F	$T_{VJ}=T_{VJM}$		0.9	mΩ
R_{thJC} (DC)	per thyristor(diode); DC current	≤	0.129	K/W
	per module	≤	0.065	K/W
R_{thJK} (DC)	per thyristor(diode); DC current	≤	0.169	K/W
	per module	≤	0.0845	K/W
Q_S	T_{VJ}=125°C; I_F=400A; -di/dt=50A/µs	≤	760	µC
I_{RM}		≤	275	A
d_S	Creepage path	≥	12.7	mm
d_A	Strike	≥	9.6	mm

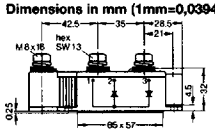
Standards: DIN/IEC 747-2

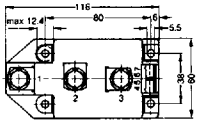
Features
- Glass passivated chips
- Direct copper bonded Al_2O_3-ceramic base plate
- Isolation voltage 2500 V (RMS)
- UL recognized, file no. E72873(M)
- International standard package, TO-240 AA

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 (1mm=0,0394")





MDD220

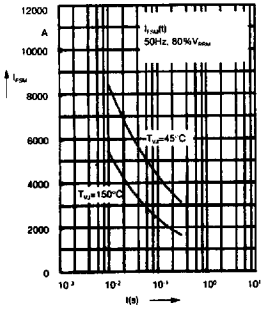


Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

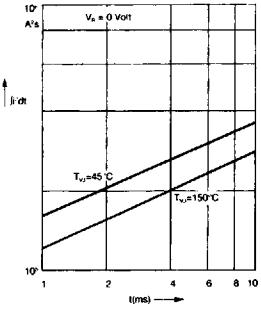


Fig. 2 $\int i^2dt$ versus time (1-10ms)

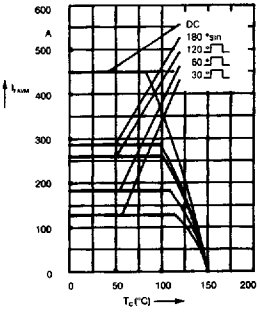


Fig. 2a Maximum forward current at case temperature

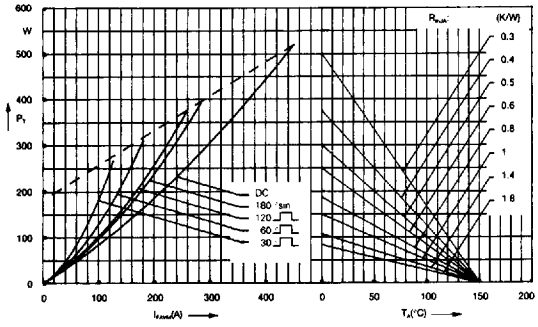


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

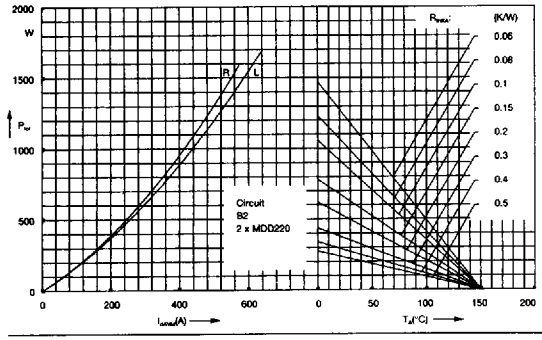


Fig. 4 Single phase rectifier bridge: Power dissipation versus direct output current and ambient temperature
R=resistive load
L=inductive load

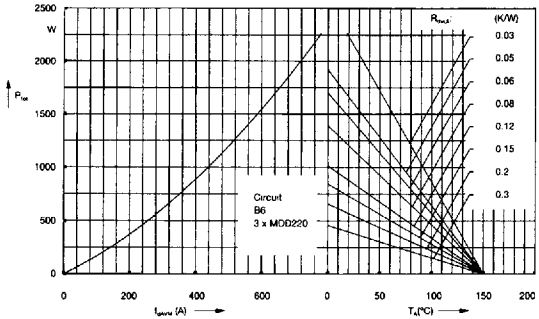


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

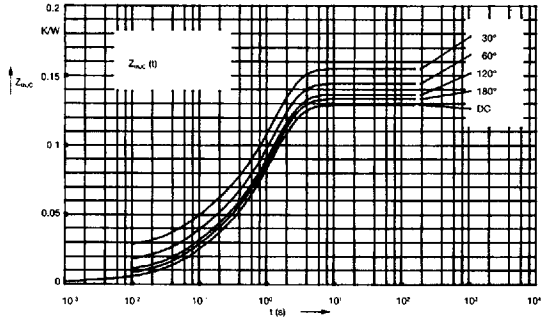


Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.129
180°	0.133
120°	0.136
60°	0.145
30°	0.159

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0026	0.00054
2	0.0201	0.099
3	0.1063	1.2

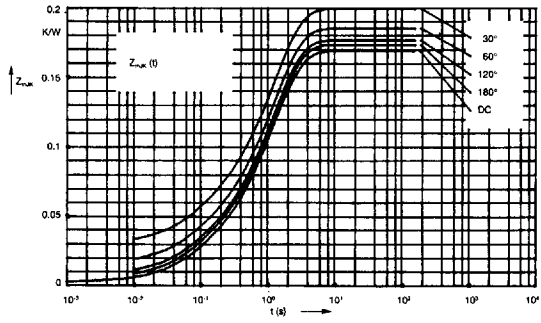


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

R_{thJK} for various conduction angles d:

d	R_{thJK} (K/W)
DC	0.169
180°	0.173
120°	0.176
60°	0.185
30°	0.199

Constants for Z_{thJK} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0026	0.00054
2	0.0201	0.099
3	0.1063	1.20
4	0.04	1.25