

IXYS

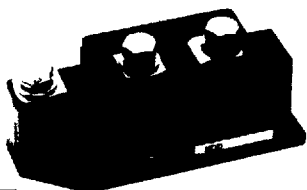
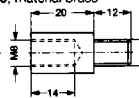
Diode Modules

MDD250 $I_{TAV} = 2 \times 290 \text{ A}$

$$V_{\text{BBM}} = 600\text{--}1600 \text{ V}$$

V _{nom}	V _{nom}	Type
V	V	Version 1
700	800	MDD250-06N1
900	900	MDD250-08N1
1200	1200	MDD250-12N1
1500	1400	MDD250-14N1
1700	1600	MDD250-16N1

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



Symbol	Test conditions		Maximum Ratings	
I_{RMS}	$T_{V_{CE}}=T_{V_{CEM}}$		450	A
I_{RMS}	$T_C=100^{\circ}\text{C}; (180^{\circ}\sin)$		290	A
I_{RMS}	$T_{V_{CE}}=45^{\circ}\text{C}$ $V_{CE}=0$	$t = 10 \text{ ms (50Hz)}$	11000	A
		$t = 8.3 \text{ ms (60Hz)}$	11700	A
I_{RMS}	$T_{V_{CE}}=T_{V_{CEM}}$ $V_{CE}=0$	$t = 10 \text{ ms (50Hz)}$	9000	A
		$t = 8.3 \text{ ms (60Hz)}$	9600	A
$ P_{DIT}$	$T_{V_{CE}}=45^{\circ}\text{C}$ $V_{CE}=0$	$t = 10 \text{ ms (50Hz)}$	805000	A ² s
		$t = 8.3 \text{ ms (60Hz)}$	560000	A ² s
$ P_{DIT}$	$T_{V_{CE}}=T_{V_{CEM}}$ $V_{CE}=0$	$t = 10 \text{ ms (50Hz)}$	405000	A ² s
		$t = 8.3 \text{ ms (60Hz)}$	380000	A ² s
$T_{V_{CE}}$			-40...+150	$^{\circ}\text{C}$
$T_{V_{CEM}}$			150	$^{\circ}\text{C}$
T_{amb}			-40...+125	$^{\circ}\text{C}$

V_{ISO}	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_n	$T_{vj}=T_{vjM}; V_R=V_{RPM}$	$\leq$	40	mA

$$V_F \quad I_F=600A; T_{VJ}=25^{\circ}C \quad \leq \quad 1.3 \quad V$$

V_{T0}	For power-loss calculations only	0.75	V
r_F	$T_{VJ}=T_{VJM}$	0.75	mΩ

R_{thJC} (DC)	per thyristor(diode); DC current	$\leq$	0.129	K/W
	per module	$\leq$	0.065	K/W
R_{thJK} (DC)	per thyristor(diode); DC current	$\leq$	0.169	K/W
	per module	$\leq$	0.0845	K/W

Q_s	$T_{vj}=125^{\circ}\text{C}; I_F=400\text{A}; -di/dt=50\text{A}/\mu\text{s}$	$\leq$	760	μC
I_{RM}		$\leq$	275	A

d_s	Creepage path	$\geq$	12.7	mm
d_A	Strike	$\geq$	9.6	mm

Standards: DIN/IEC 747-2

MDD250
Version 1



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

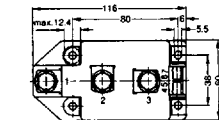
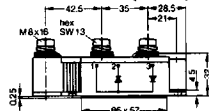
Applications

- 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")



MDD250

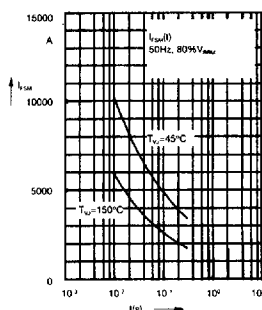


Fig. 1 Surge overload current
 I_{TSM} : Crest value, t : duration

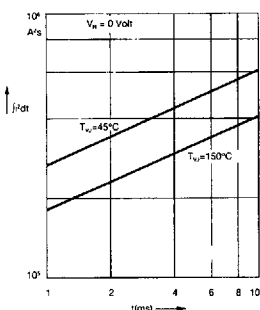


Fig. 2 $\int I^2 dt$ versus time (1-10ms)

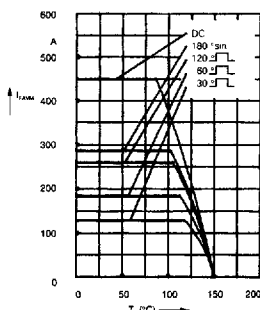


Fig. 2a Maximum forward current at case temperature

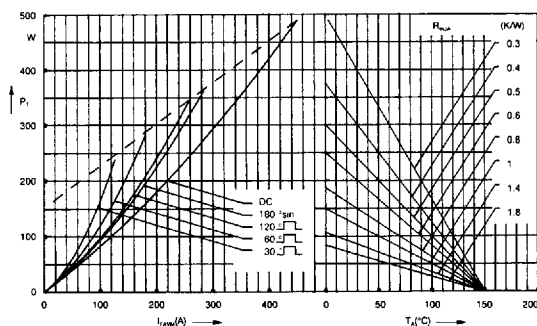


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

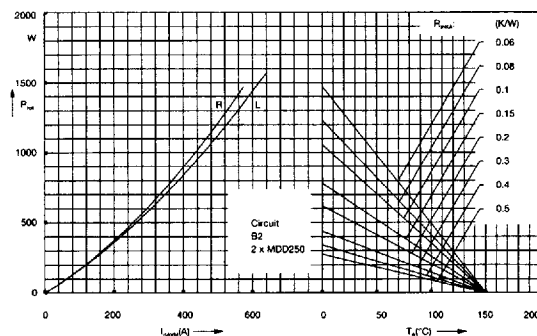


Fig. 4 Single phase rectifier bridge:
Power dissipation versus direct output current and ambient temperature
 R : resistive load
 L : inductive load

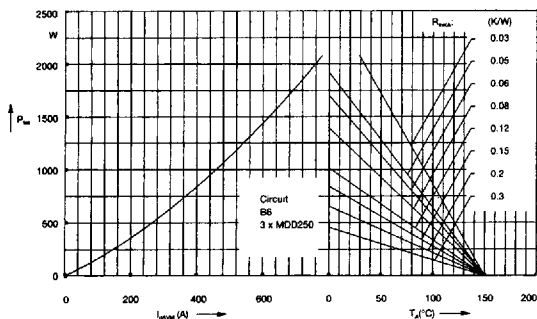


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

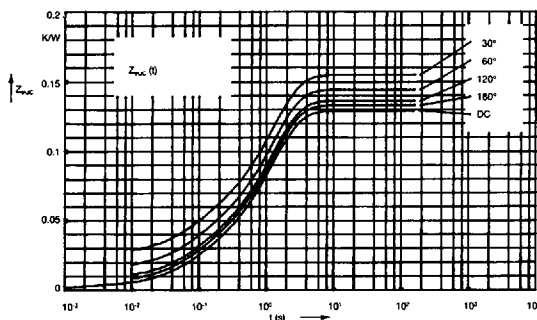


Fig. 6 Transient thermal impedance junction to case (per diode)

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_{th} (K/W)	t_i (s)
1	0.0026	0.00054
2	0.0201	0.099
3	0.1063	1.2

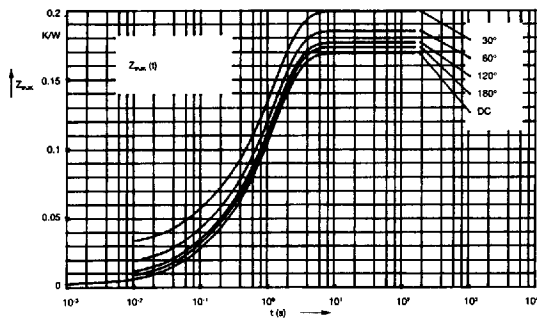


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

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_{th} (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