



Diode Modules

MDD172 I_{TAV} = 2 x 190 A

V_{RRM} = 600–1800 V

V _{RRM} V	V _{RRM} V	Type Version 1
700	600	MDD172-06N1
900	800	MDD172-08N1
1300	1200	MDD172-12N1
1500	1400	MDD172-14N1
1700	1600	MDD172-16N1
1900	1800*	MDD172-18N1

* on request

Symbol	Test conditions	Maximum Ratings
I _{FRMS}	T _{VJ} =T _{VJM} T _C =100°C; (180°sin)	300 A 190 A
I _{FRM}	T _{VJ} =45°C V _R =0 t = 10 ms (50Hz) t = 8.3 ms (60Hz)	5900 A 6300 A
	T _{VJ} =T _{VJM} V _R =0 t = 10 ms (50Hz) t = 8.3 ms (60Hz)	5200 A 5600 A
i _{pdt}	T _{VJ} =45°C V _R =0 t = 10 ms (50Hz) t = 8.3 ms (60Hz)	174000 A ² s 164000 A ² s
	T _{VJ} =T _{VJM} V _R =0 t = 10 ms (50Hz) t = 8.3 ms (60Hz)	135000 A ² s 130000 A ² s
T _{VJ}		-40...+150 °C
T _{VJM}		150 °C
T _{MJ}		-40...+125 °C
V _{ROV}	50Hz, RMS t = 1 min I _{SO} =1mA t = 1 s	2500 V- 3000 V-
M _d	Mounting torque Terminal connection torque	2.25-2.75 Nm 4.5-5.5 Nm
Weight	typ. incl. screws	150 g
Symbol	Test conditions	Characteristic values
I _n	T _{VJ} =T _{VJM} ; V _R =V _{RRM}	≤ 20 mA
V _r	I _s =300A; T _{VJ} =25°C	≤ 1.15 V
V _{TO}	For power-loss calculations only	0.8 V
r _F	T _{VJ} =T _{VJM}	0.8 mΩ
R _{thJC} (DC)	per thyristor(diode); DC current per module	≤ 0.21 K/W ≤ 0.105 K/W
R _{thAK} (DC)	per thyristor(diode); DC current per module	≤ 0.31 K/W ≤ 0.155 K/W
Q _g	T _{VJ} =125°C; I _p =300A; -di/dt=50A/μs	≤ 550 μC
I _{RM}		≤ 235 A
d _s	Creepage path	≥ 12.7 mm
d _A	Strike	≥ 9.6 mm

Standards: DIN/IEC 747-2



MDD172
Version 1



Features

- Glass passivated chips
- Direct copper bonded Al₂O₃-ceramic base plate
- Isolation voltage 2500 V (RMS)
- UL recognized, file no. E72873(M)
- International standard package, TO-240 AA

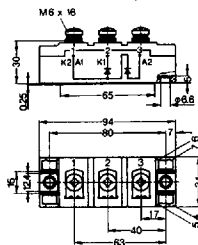
Applications

- 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")



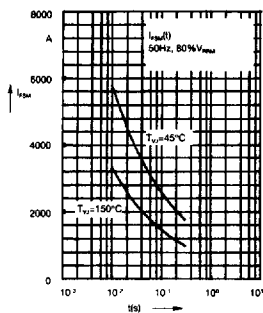


Fig. 1 Surge overload current I_{max} . Crest value, t: duration

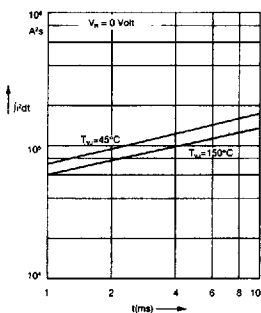


Fig. 2 $\int Idt$ versus time (1-10ms)

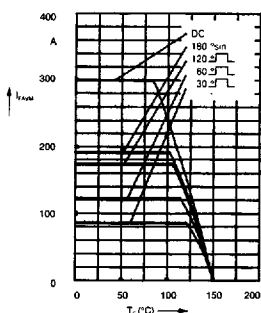


Fig. 2a Maximum forward current at case temperature

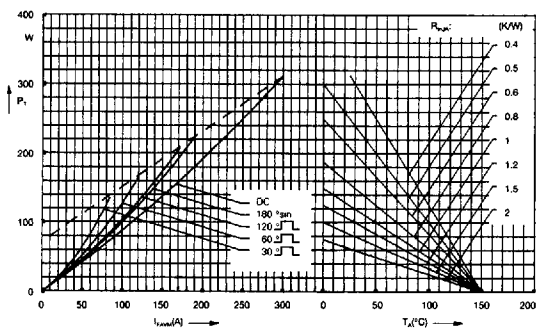


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

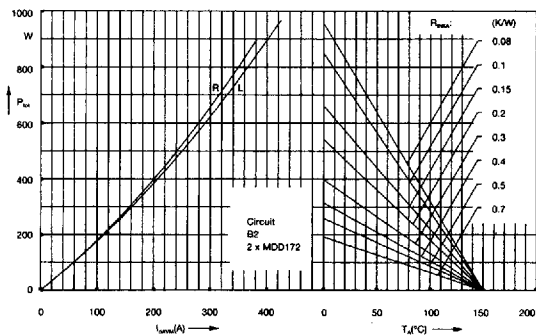


Fig. 4 Single phase rectifier bridge: Power dissipation versus direct output current and ambient temperature
R=resistive load
L=inductive load

MDD172

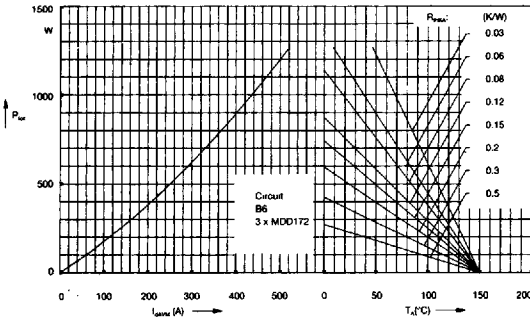


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

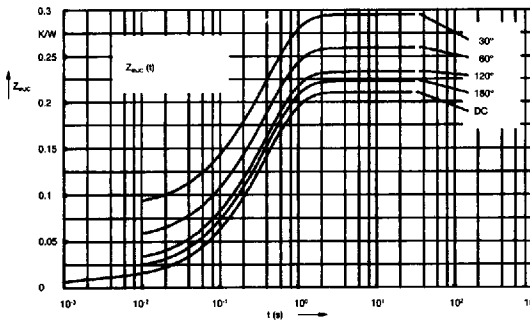


Fig. 6 Transient thermal impedance junction to case (per diode)

$R_{\theta JC}$ for various conduction angles d :

d	$R_{\theta JC}$ (K/W)
DC	0.21
180°	0.223
120°	0.233
60°	0.260
30°	0.295

Constants for $Z_{\theta JC}$ calculation:

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

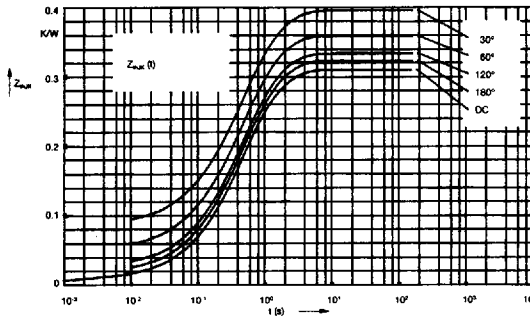


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

$R_{\theta JK}$ for various conduction angles d :

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

Constants for $Z_{\theta JK}$ calculation:

i	$R_{\theta i}$ (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