IXYS

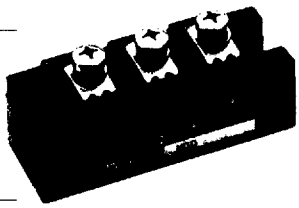
Diode Modules

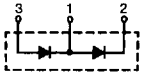
MDD142 I_{TAV} = 2 x 165 A

V_{RRM} = 600–1800 V

V_{RSM} V	V_{RRM} V	Type Version 1
700	600	MDD142-06N1
900	800	MDD142-08N1
1300	1200	MDD142-12N1
1500	1400	MDD142-14N1
1700	1600	MDD142-16N1
1900	1800*	MDD142-18N1

* on request





MDD142
Version 1

Symbol	Test conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ}=T_{VJM}$		300	A
I_{FAVM}	T_C=100°C; (180°sin)		165	A
I_{FSM}	T_{VJ}=45°C	t = 10 ms (50Hz)	4700	A
	V_R=0	t = 8.3 ms (60Hz)	5000	A
	$T_{VJ}=T_{VJM}$	t = 10 ms (50Hz)	4100	A
	V_R=0	t = 8.3 ms (60Hz)	4300	A
$\int i^2dt$	T_{VJ}=45°C	t = 10 ms (50Hz)	110000	A^2s
	V_R=0	t = 8.3 ms (60Hz)	104000	A^2s
	$T_{VJ}=T_{VJM}$	t = 10 ms (50Hz)	84000	A^2s
	V_R=0	t = 8.3 ms (60Hz)	77000	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		2.25-2.75	Nm
	Terminal connection torque		4.5–5.5	Nm
Weight	typ. incl. screws		150	g

Symbol	Test conditions		Characteristic values	
i_R	$T_{VJ}=T_{VJM}$; $V_R=V_{RRM}$	≤	20	mA
v_F	i_F=300A; T_{VJ}=25°C	≤	1.3	V
V_{T0}	For power-loss calculations only		0.8	V
r_F	$T_{VJ}=T_{VJM}$		1.3	mΩ
R_{thJC} (DC)	per thyristor(diode); DC current	≤	0.21	K/W
	per module	≤	0.105	K/W
R_{thJK} (DC)	per thyristor(diode); DC current	≤	0.31	K/W
	per module	≤	0.155	K/W
Q_s	T_{VJ}=125°C; I_F=300A; -di/dt=50A/µs	≤	550	µC
I_{RM}		≤	235	A
d_s	Creepage path	≥	12.7	mm
d_A	Strike	≥	9.6	mm

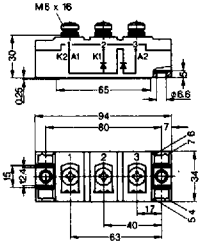
Standards: DIN/IEC 747-2

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")



MDD142

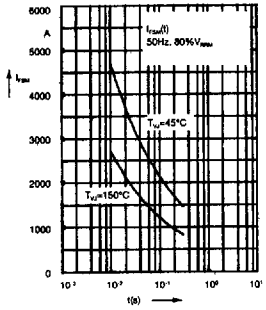


Fig. 1 Surge overload current
I_{FSM}: Crest value, t: duration

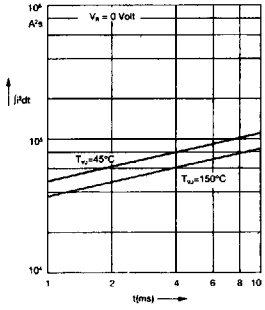


Fig. 2 $\int i^2dt$ versus time (1-10ms)

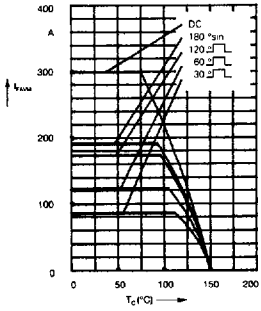


Fig. 2a Maximum forward current at case temperature

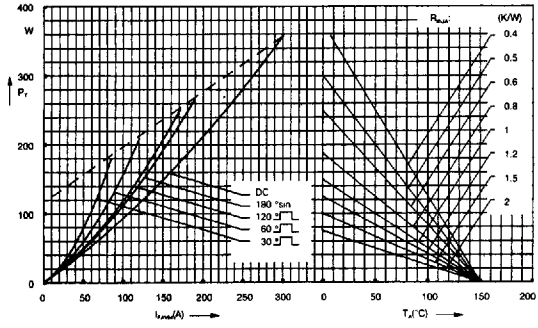


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

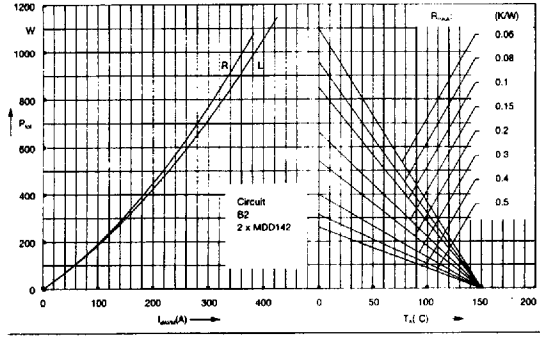


Fig. 4 Single phase rectifier bridge:
Power dissipation versus direct output current and ambient temperature
R=resistive load
L=inductive load

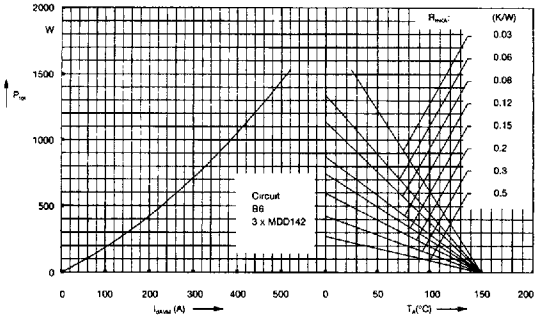


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

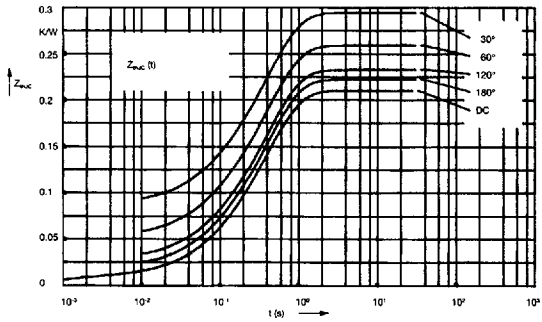


Fig. 6 Transient thermal impedance junction to case (per diode)

R_{thJC} for various conduction angles d:

d	R_{thJC} (K/W)
DC	0.210
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

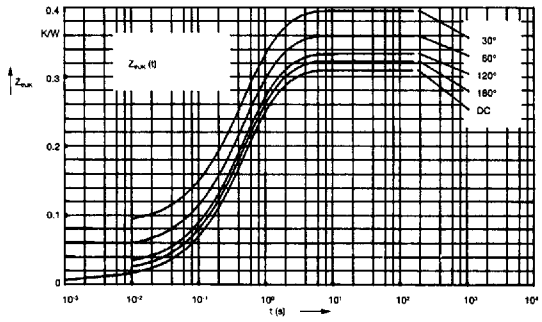


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

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