

IXYS

Diode Modules

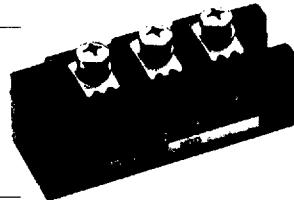
MDD142 $I_{TAV} = 2 \times 165 \text{ A}$ $V_{RRM} = 600\text{--}1800 \text{ V}$

V_{RRM} 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

Symbol	Test conditions	Maximum Ratings	
I_{FMAX}	$T_{Vd}=T_{V_{JM}}$	300	A
I_{FMAX}	$T_c=100^\circ\text{C}; (180^\circ\sin)$	165	A
I_{FIM}	$T_{Vd}=45^\circ\text{C}$ $V_R=0$	4700	A
	$t = 10 \text{ ms (50Hz)}$ $t = 8.3 \text{ ms (60Hz)}$	5000	A
I_{FIM}	$T_{Vd}=T_{V_{JM}}$ $V_R=0$	4100	A
	$t = 10 \text{ ms (50Hz)}$ $t = 8.3 \text{ ms (60Hz)}$	4300	A
$ Idt $	$T_{Vd}=45^\circ\text{C}$ $V_R=0$	110000	A ² s
	$t = 10 \text{ ms (50Hz)}$ $t = 8.3 \text{ ms (60Hz)}$	104000	A ² s
I_{FIM}	$T_{Vd}=T_{V_{JM}}$ $V_R=0$	84000	A ² s
	$t = 10 \text{ ms (50Hz)}$ $t = 8.3 \text{ ms (60Hz)}$	77000	A ² s
T_{Vd}		-40...+150	°C
$T_{V_{JM}}$		150	°C
T_{tag}		-40...+125	°C
V_{ISOL}	50Hz, RMS $I_{SO}=1 \text{ mA}$	2500	V-
	$t = 1 \text{ min}$ $t = 1 \text{ s}$	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_A	$T_{Vd}=T_{V_{JM}}; V_R=V_{RRM}$	≤ 20	mA
V_F	$i_F=300 \text{ A}; T_{Vd}=26^\circ\text{C}$	≤ 1.3	V
V_{FO}	For power-loss calculations only	0.8	V
r_F	$T_{Vd}=T_{V_{JM}}$	1.3	$\text{m}\Omega$
$R_{DUC(DC)}$	per thyristor(diode); DC current per module	≤ 0.21	K/W
$R_{DUC(DC)}$	per thyristor(diode); DC current per module	≤ 0.105	K/W
Q_S	$T_{Vd}=125^\circ\text{C}; I_F=300 \text{ A}; -di/dt=50 \text{ A}/\mu\text{s}$	≤ 550	μC
I_{RM}		≤ 235	A
d_L	Creepage path	≥ 12.7	mm
d_A	Strike	≥ 9.6	mm

Standards: DIN/IEC 747-2

MDD142
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

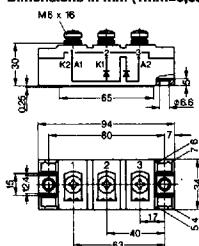
Applications

- 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")



MDD142

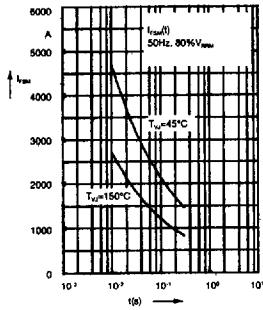


Fig. 1 Surge overload current
 I_{surge} : Crest value; t : duration

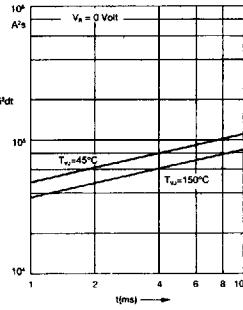


Fig. 2 j^2dt versus time (1-10ms)

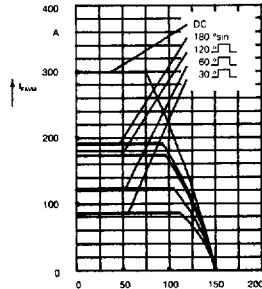


Fig. 2a Maximum forward current at case temperature

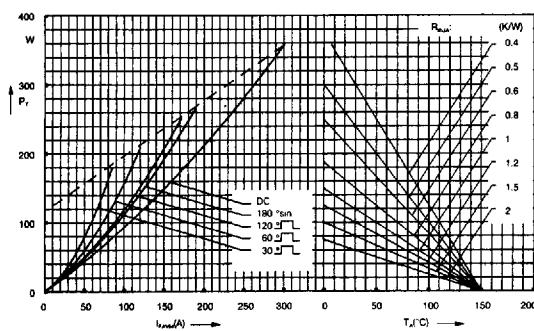


Fig. 3 Power dissipation versus forward current and ambient temperature (per diode)

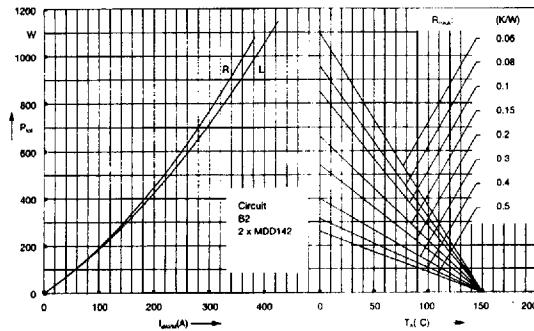


Fig. 4 Single phase rectifier bridge:
Power dissipation versus direct output current and ambient temperature
R=resistive load
L=inductive load

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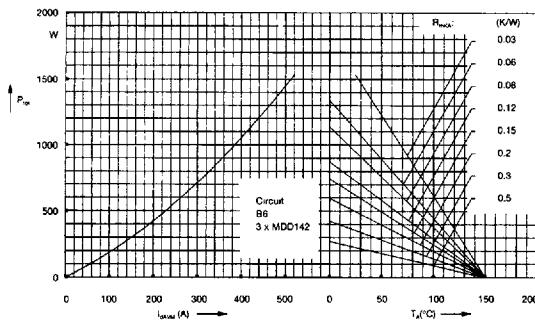


Fig. 5 Three phase rectifier bridge: Power dissipation versus direct output current and ambient temperature

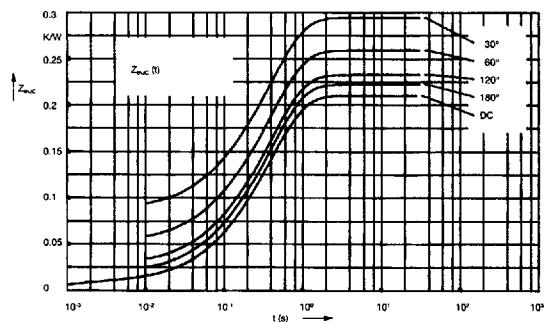


Fig. 6 Transient thermal impedance junction to case (per diode)

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_{th} (K/W)	t, (s)
1	0.0087	0.001
2	0.0163	0.065
3	0.185	0.4

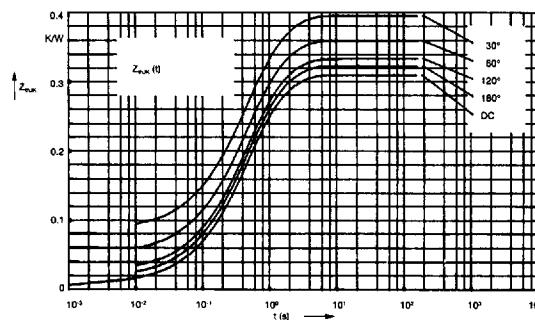


Fig. 7 Transient thermal impedance junction to heatsink (per diode)

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_{th} (K/W)	t, (s)
1	0.0087	0.001
2	0.0163	0.065
3	0.185	0.4
4	0.1	1.29