Standard Rectifier Module

V_{RRM}	$=$	$2 \times 1200\,V$
I_{FAV}	$=$	$110\,A$
V_F	$=$	$1.14\,V$

Phase leg

Part number

MDMA110P1200TG

Backside: isolated

E72873

2   1   3

Features / Advantages:

- Package with DCB ceramic
- Improved temperature and power cycling
- Planar passivated chips
- Very low forward voltage drop
- Very low leakage current

Applications:

- Diode for main rectification
- For single and three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: TO-240AA

- Isolation Voltage: 4800 V~
- Industry standard outline
- RoHS compliant
- Height: 30 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

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Rectifier | Ratings

Symbol	Definition	Conditions			min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage		$T_{VJ} = 25°C$				1300	V
V_{RRM}	max. repetitive reverse blocking voltage		$T_{VJ} = 25°C$				1200	V
I_R	reverse current	$V_R = 1200$ V	$T_{VJ} = 25°C$				100	μA
		$V_R = 1200$ V	$T_{VJ} = 150°C$				2	mA
V_F	forward voltage drop	$I_F = 110$ A	$T_{VJ} = 25°C$				1.21	V
		$I_F = 220$ A					1.44	V
		$I_F = 110$ A	$T_{VJ} = 125°C$				1.14	V
		$I_F = 220$ A					1.44	V
I_{FAV}	average forward current	$T_C = 100°C$	$T_{VJ} = 150°C$				110	A
		rectangular d = 0.5						
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150°C$				0.82	V
r_F	slope resistance						2.8	mΩ
R_{thJC}	thermal resistance junction to case						0.3	K/W
R_{thCH}	thermal resistance case to heatsink					0.2		K/W
P_{tot}	total power dissipation		$T_C = 25°C$				415	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$				2.00	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V				2.16	kA
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$				1.70	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V				1.84	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$				20.0	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V				19.4	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$				14.5	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V				14.0	kA²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$			73		pF

Package   TO-240AA

Symbol	Definition	Conditions		min.	typ.	max.	Unit
I$_{RMS}$	*RMS current*	per terminal				200	A
T$_{VJ}$	*virtual junction temperature*			-40		150	°C
T$_{op}$	*operation temperature*			-40		125	°C
T$_{stg}$	*storage temperature*			-40		125	°C
Weight					76		g
M$_{D}$	*mounting torque*			2.5		4	Nm
M$_{T}$	*terminal torque*			2.5		4	Nm
d$_{Spp/App}$	*creepage distance on surface | striking distance through air*	*terminal to terminal*	13.0	9.7			mm
d$_{Spb/Apb}$		*terminal to backside*	16.0	16.0			mm
V$_{ISOL}$	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I$_{ISOL}$ ≤ 1 mA	4800			V
		t = 1 minute		4000			V

The header "Ratings" spans the min./typ./max. columns.
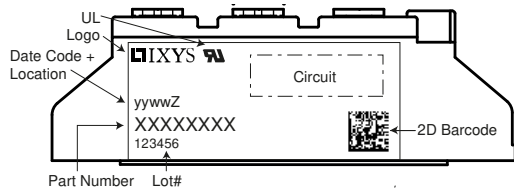
Part description

M = Module
D = Diode
M = Standard Rectifier
A = (up to 1800V)
110 = Current Rating [A]
P = Phase leg
1200 = Reverse Voltage [V]
TG = TO-240AA

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MDMA110P1200TG	MDMA110P1200TG	Box	36	514304

Equivalent Circuits for Simulation   ** on die level*   T$_{VJ}$ = 150°C

Rectifier

V$_{0\ max}$	*threshold voltage*	0.82	V
R$_{0\ max}$	*slope resistance **	1.6	mΩ

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20191202d

Outlines   TO-240AA

General tolerance: DIN ISO 2768 class „c"

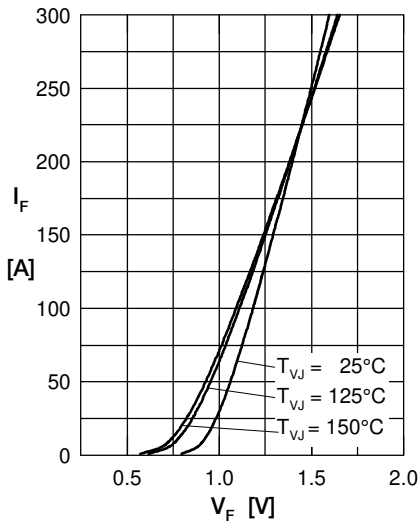## Rectifier

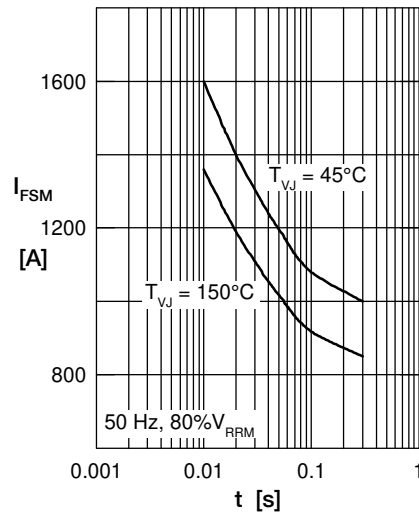Fig. 1 Forward current versus voltage drop per diode

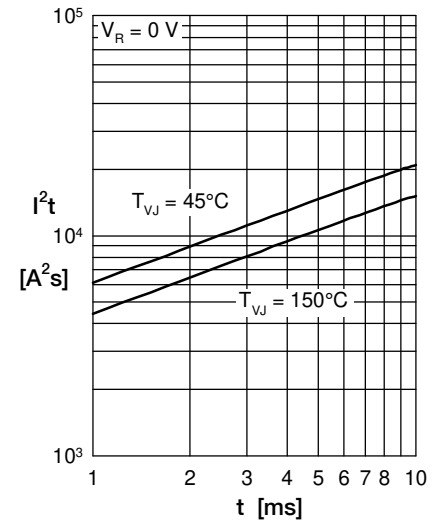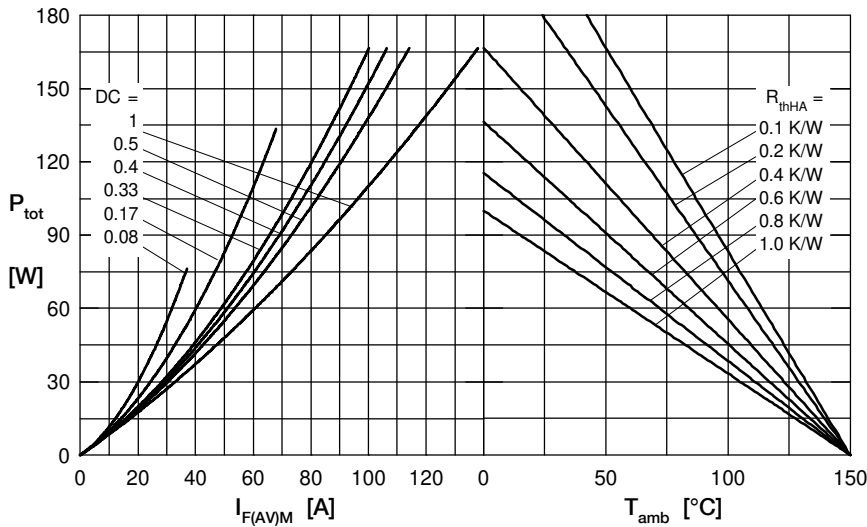Fig. 2 Surge overload current vs. time per diode

Fig. 3 I^2t versus time per diode

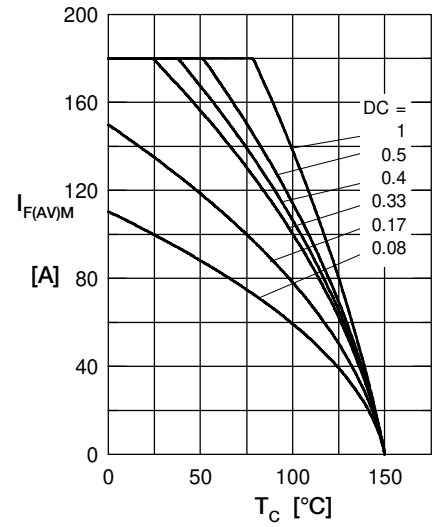Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

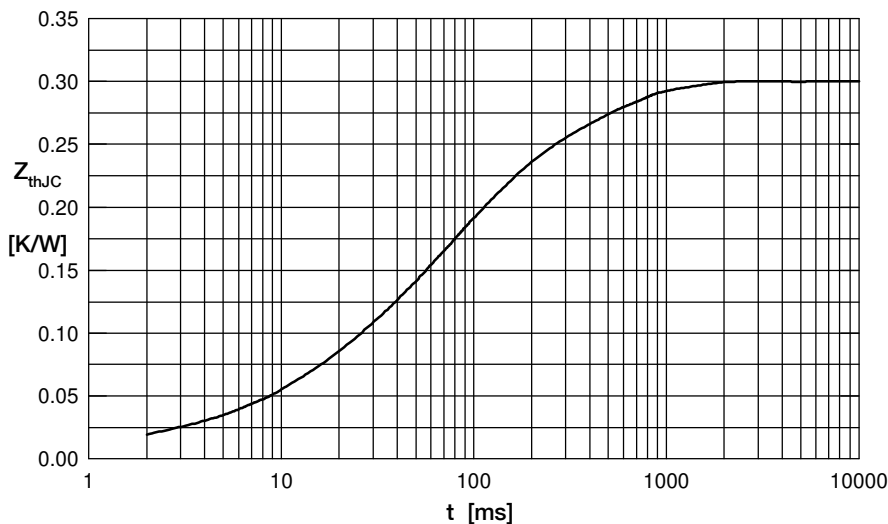Fig. 5 Max. forward current vs. case temperature per diode

Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.01	0.001
2	0.04	0.013
3	0.16	0.070
4	0.09	0.400

Data according to IEC 60747and per semiconductor unless otherwise specified   20191202d

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