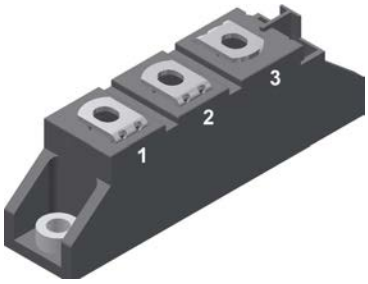
Standard Rectifier Module

V_{RRM} = 2x 1600 V
I_{FAV} = 110 A
V_F = 1,14 V

Phase leg

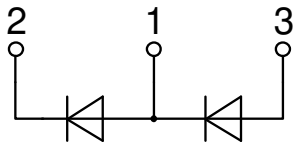
Part number

MDMA110P1600TG



Backside: isolated

E72873



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

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

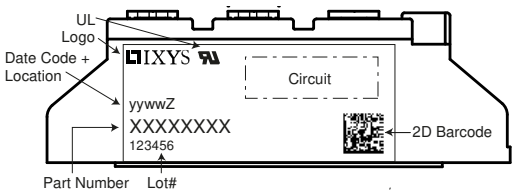
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Rectifier

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1700	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1600	V
I_R	*reverse current*	V_R = 1600 V	T_{VJ} = 25°C			100	µA
		V_R = 1600 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

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Package TO-240AA					Ratings			
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



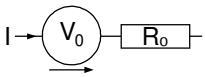
Part description

M = Module
D = Diode
M = Standard Rectifier
A = (up to 1800V)
110 = Current Rating [A]
P = Phase leg
1600 = Reverse Voltage [V]
TG = TO-240AA

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	MDMA110P1600TG	MDMA110P1600TG	Box	36	514311

Equivalent Circuits for Simulation

** on die level* T_{VJ} = 150°C

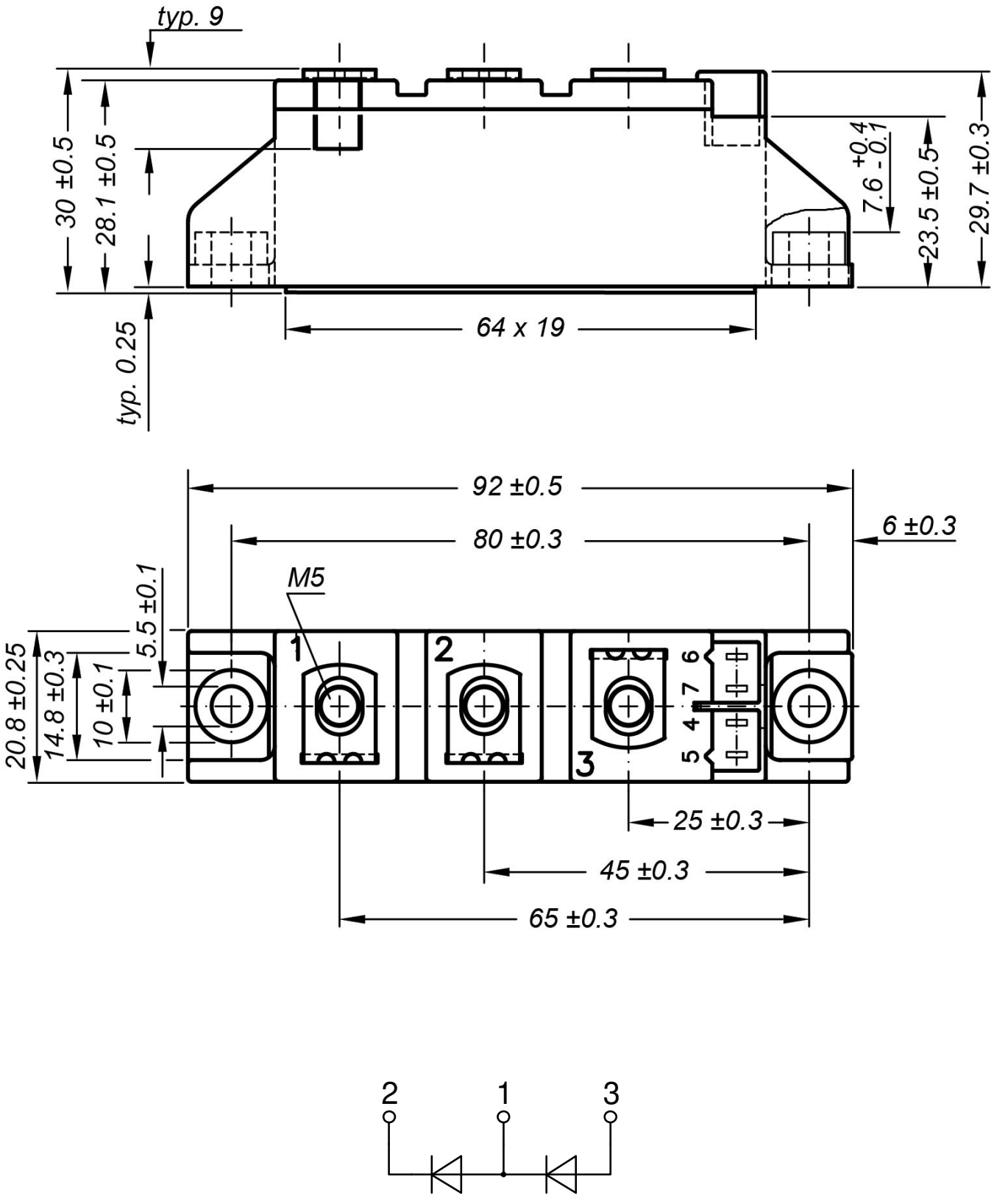


Rectifier

$V_{0\ max}$	*threshold voltage*	0,82	V
$R_{0\ max}$	*slope resistance **	1,6	mΩ

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Outlines TO-240AA



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Rectifier

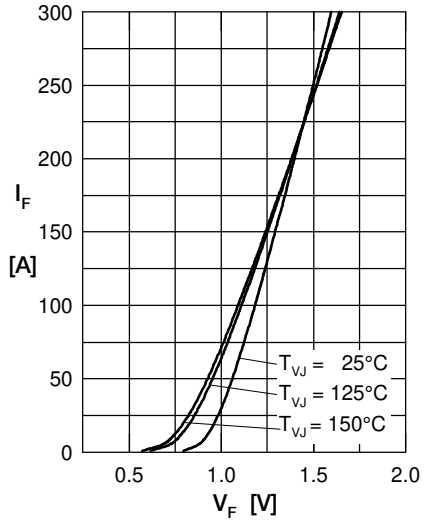


Fig. 1 Forward current versus voltage drop per diode

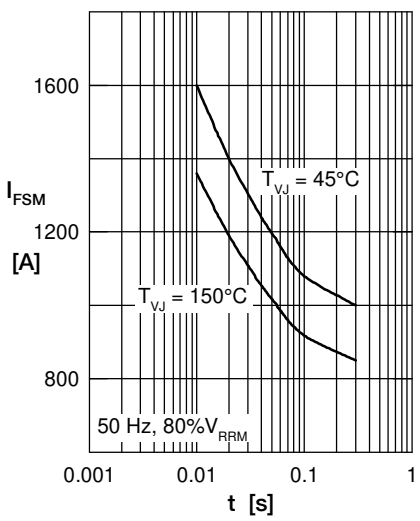


Fig. 2 Surge overload current vs. time per diode

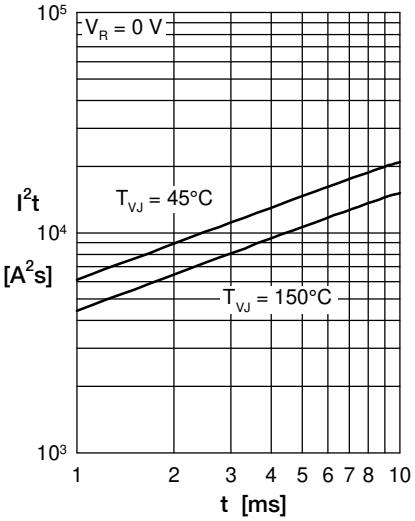


Fig. 3 I^2t versus time per diode

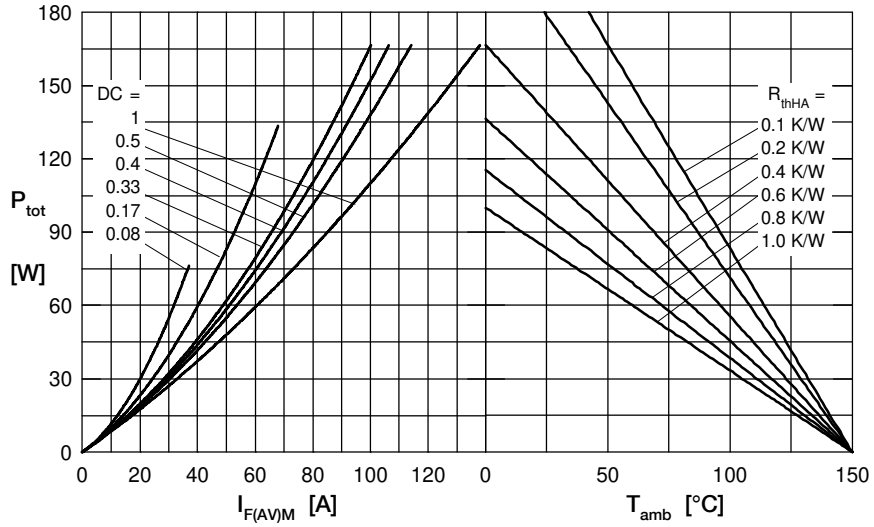


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

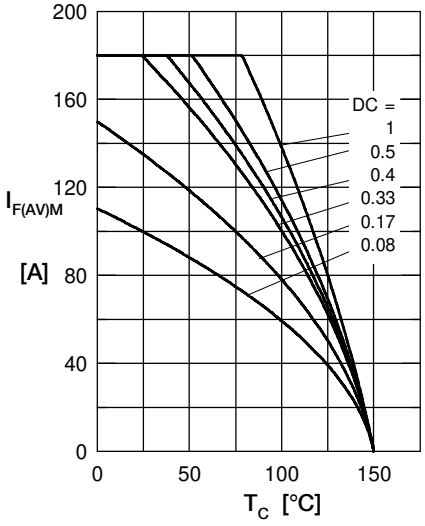


Fig. 5 Max. forward current vs. case temperature per diode

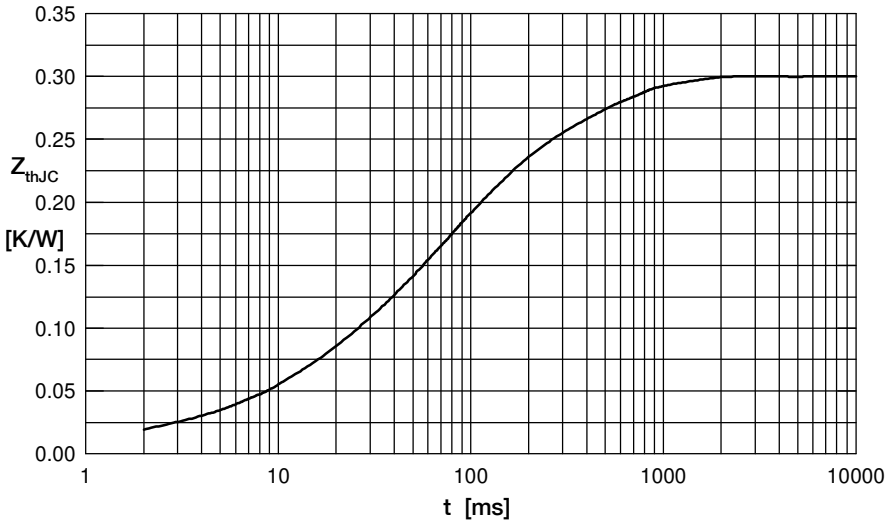


Fig. 6 Transient thermal impedance junction to case vs. time per diode

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

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