Standard Rectifier Module

V_{RRM}	$=$	$2 \times 1200\,V$
I_{FAV}	$=$	$65\,A$
V_F	$=$	$1.11\,V$

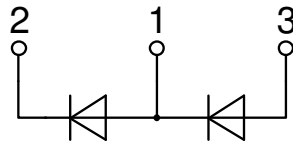## Phase leg

Part number

MDMA65P1200TG
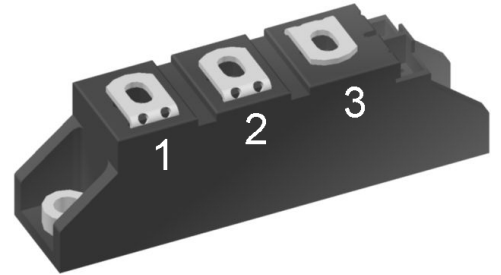
Backside: isolated

UL 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

Terms _Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend
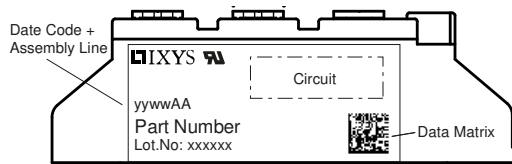- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.
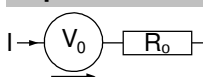
IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20161222c

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MDMA65P1200TG

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	$T_{VJ} = 25°C$			50	µA
		$V_R = 1200$ V	$T_{VJ} = 150°C$			2	mA
V_F	forward voltage drop	$I_F = 65$ A	$T_{VJ} = 25°C$			1.18	V
		$I_F = 130$ A				1.40	V
		$I_F = 65$ A	$T_{VJ} = 125°C$			1.11	V
		$I_F = 130$ A				1.39	V
I_{FAV}	average forward current	$T_C = 100°C$	$T_{VJ} = 150°C$			65	A
		rectangular d = 0.5					
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150°C$			0.81	V
r_F	slope resistance					4.3	mΩ
R_{thJC}	thermal resistance junction to case					0.5	K/W
R_{thCH}	thermal resistance case to heatsink				0.20		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			250	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			1.10	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			1.19	kA
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			935	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			1.01	kA
I²t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			6.05	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			5.89	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			4.37	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			4.25	kA²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$		37		pF

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		4800			V
		t = 1 minute, 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		4000			V

Date Code + Assembly Line

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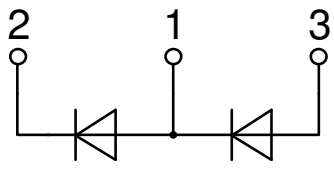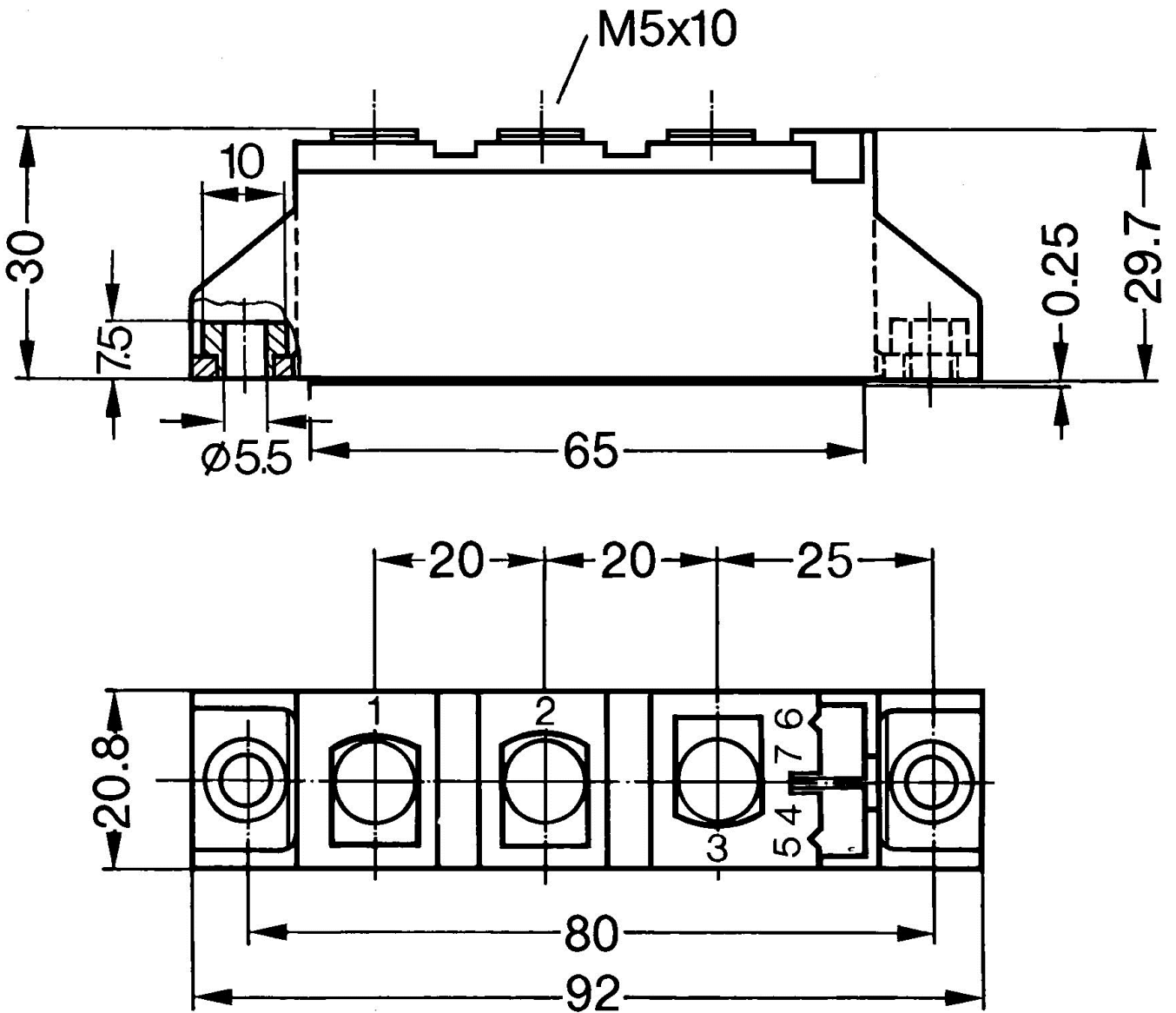Circuit

yywwAA
Part Number
Lot.No: xxxxxx

Data Matrix

Part description

M = Module
D = Diode
M = Standard Rectifier
A = (up to 1800V)
65 = 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	MDMA65P1200TG	MDMA65P1200TG	Box	36	515912

Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 150\,°C$

I → V_0 — R_0 —   **Rectifier**

$V_{0\ max}$	threshold voltage	0.81	V
$R_{0\ max}$	slope resistance *	3.1	mΩ

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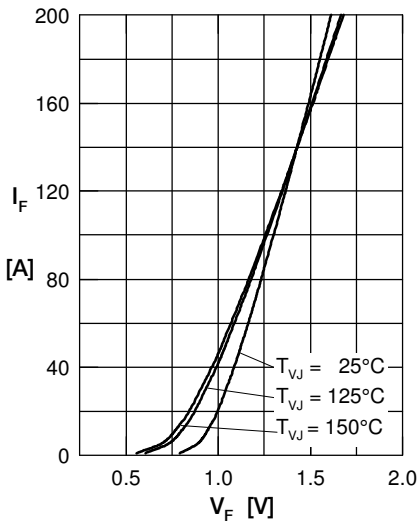**Outlines   TO-240AA**

Rectifier

Fig. 1 Forward current versus voltage drop per diode
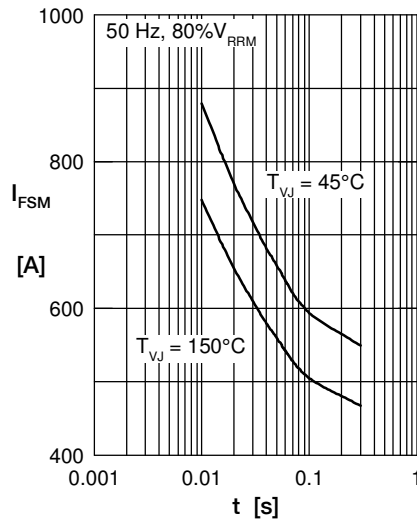

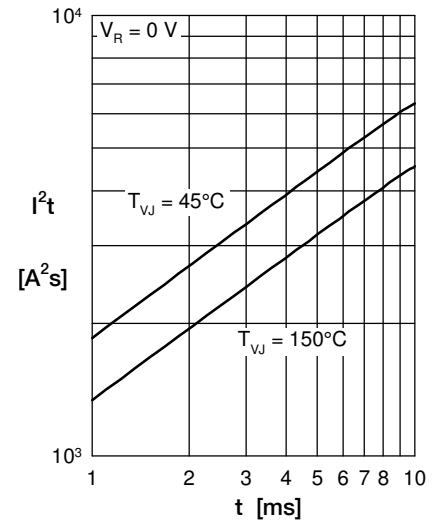Fig. 2 Surge overload current vs. time per diode

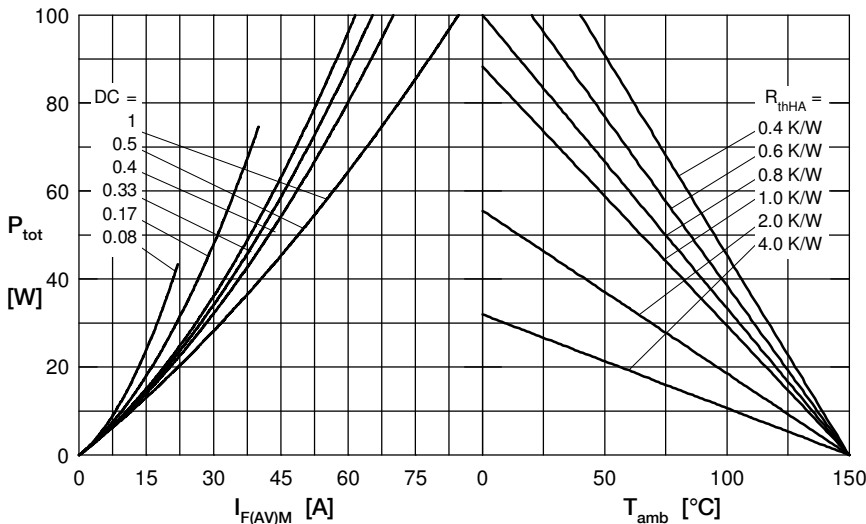Fig. 3 I^2t versus time per diode

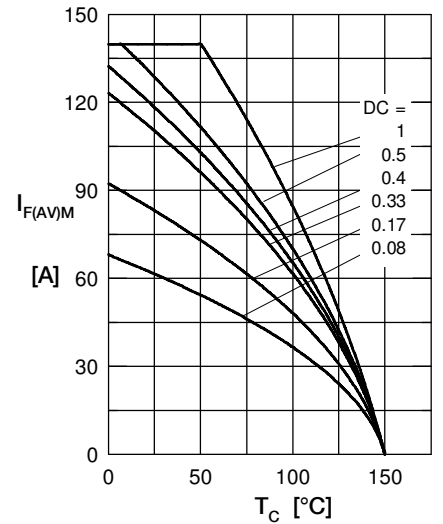Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

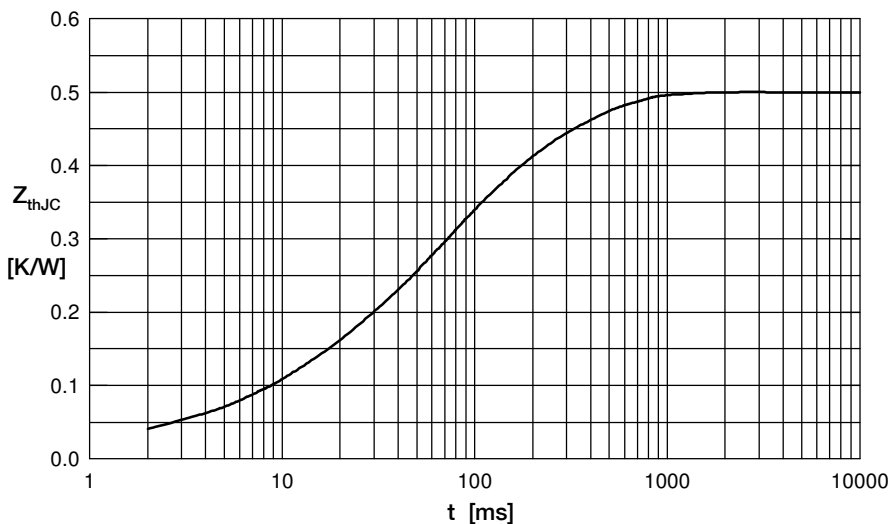Fig. 5 Max. forward current vs. case temperature per diode

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	0.022	0.001
2	0.068	0.010
3	0.245	0.060
4	0.165	0.270