Standard Rectifier

|		
V_{RRM}	=	$2 \times 1600\,V$
I_{FAV}	=	$10\,A$
V_F	=	$1.21\,V$

Phase leg

Part number

DMA10P1600PZ
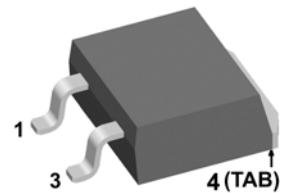
Backside: anode/cathode
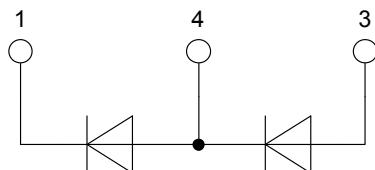
Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:
- Diode for main rectification
- For single and three phase bridge configurations

Package: TO-263 (D2Pak-HV)
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- High creepage distance between terminals

Data according to IEC 60747and per semiconductor unless otherwise specified   20130108b

Rectifier				Ratings			
Symbol	Definition	Conditions		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, drain current	V_R = 1600 V	T_{VJ} = 25°C			10	µA
		V_R = 1600 V	T_{VJ} = 150°C			0.2	mA
V_F	forward voltage drop	I_F = 10 A	T_{VJ} = 25°C			1.26	V
		I_F = 20 A				1.53	V
		I_F = 10 A	T_{VJ} = 150 °C			1.21	V
		I_F = 20 A				1.57	V
I_{FAV}	average forward current	T_C = 150°C	T_{VJ} = 175°C			10	A
		rectangular d = 0.5					
V_{F0}	threshold voltage	T_{VJ} = 175°C				0.82	V
r_F	slope resistance } for power loss calculation only					37	mΩ
R_{thJC}	thermal resistance junction to case					1.5	K/W
R_{thCH}	thermal resistance case to heatsink				0.25		K/W
P_{tot}	total power dissipation	T_C = 25°C				100	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			120	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			130	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			100	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			110	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			72	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			70	A²s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			50	A²s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			50	A²s
C_J	junction capacitance	V_R = 400 V f = 1 MHz	T_{VJ} = 25°C		4		pF

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20130108b

Package	TO-263 (D2Pak-HV)		Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			25	A
T_{stg}	storage temperature		-55		150	°C
T_{VJ}	virtual junction temperature		-55		175	°C
Weight				1.5		g
F_C	mounting force with clip		20		60	N
$d_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal	4.2			mm
$d_{Spb/Apb}$		terminal to backside	4.9			mm

Product Marking

Part No. → XXXXXXXXX

Logo → IXYS yyww z

Date Code
Assembly Line → 000000
Assembly Code
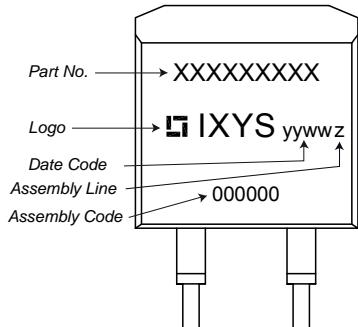
Part number

D = Diode
M = Standard Rectifier
A = (up to 1800V)
10 = Current Rating [A]
P = Phase leg
1600 = Reverse Voltage [V]
PZ = TO-263AB (D2Pak) (2HV)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA10P1600PZ	DMA10P1600PZ	Tape & Reel	800	513688

## Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 175°C$

Rectifier

		Rectifier	
$V_{0\,max}$	threshold voltage	0.82	V
$R_{0\,max}$	slope resistance *	34	mΩ

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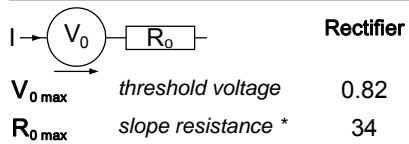
Outlines   TO-263 (D2Pak-HV)
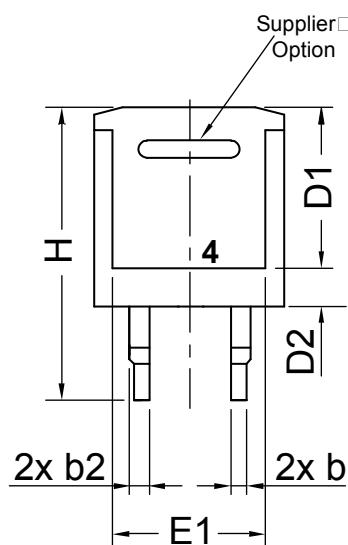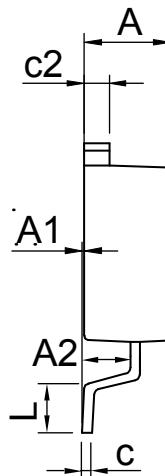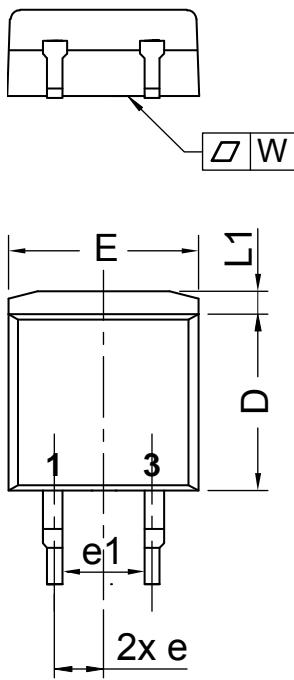
Dim.	Millimeter		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.5		0.098	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2,54 BSC		0,100 BSC	
e1	4.28		0.169	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

All dimensions conform with and/or within JEDEC standard.

Supplier Option
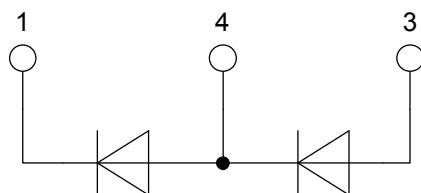
Rectifier
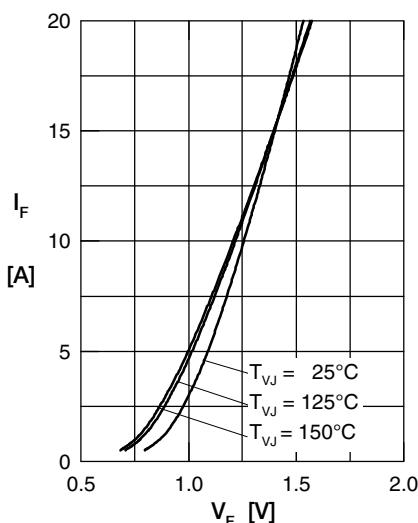
Fig. 1 Forward current versus voltage drop per diode
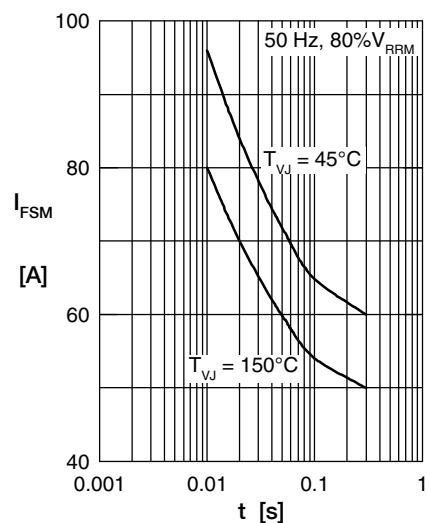

Fig. 2 Surge overload current
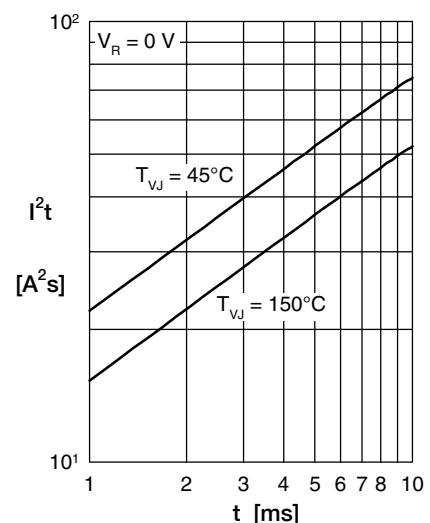
Fig. 3 I²t versus time per diode
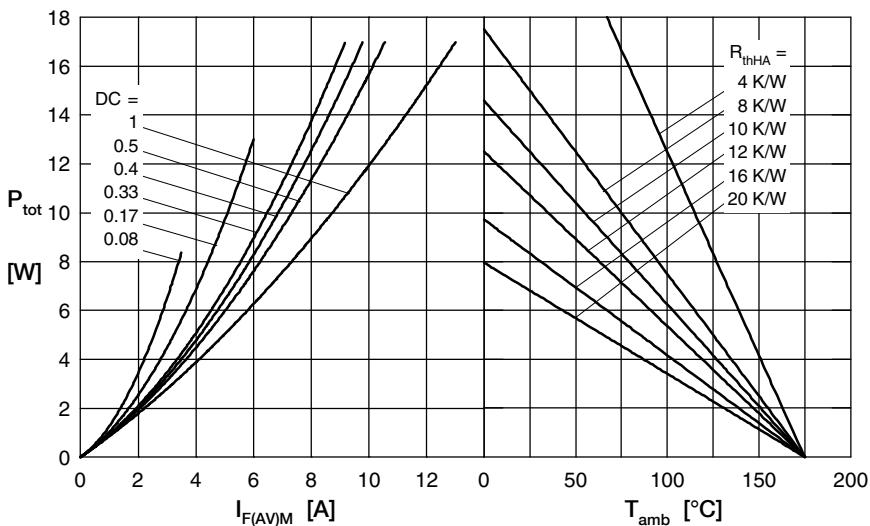
Fig. 4 Power dissipation vs. direct output current and ambient temperature
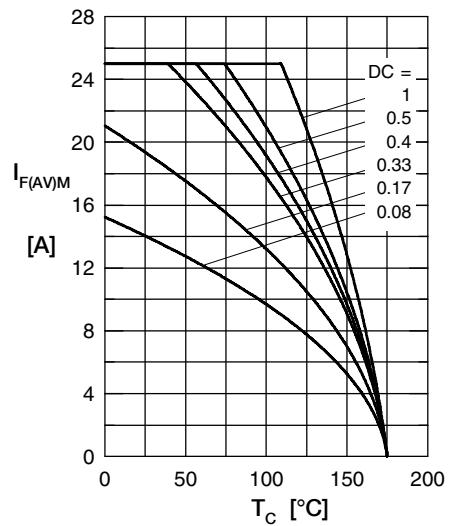

Fig. 5 Max. forward current vs. case temperature
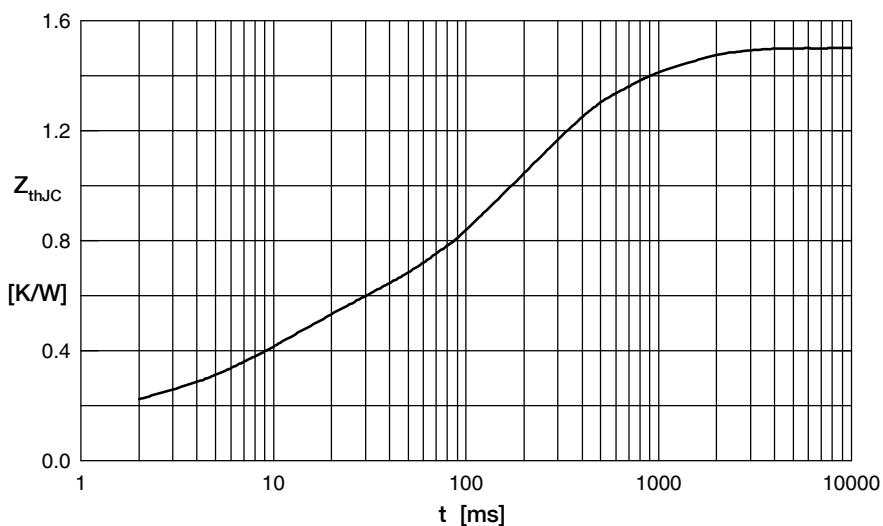
Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.155	0.0005
2	0.332	0.0095
3	0.713	0.17
4	0.3	0.8
5	0.00001	0.00001