Standard Rectifier

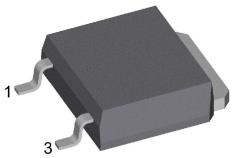
V_{RRM} = 2x 1200 V
I_{FAV} = 10 A
V_F = 1.27 V

Phase leg

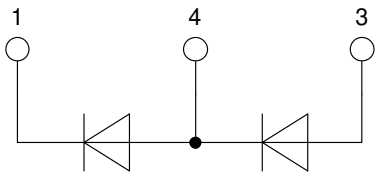
Part number

DMA10P1200UZ

Marking on Product: MATMZP



Backside: anode/cathode



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour
- High commutation robustness
- High surge capability

Applications:

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

Package: TO-252 (DPak)

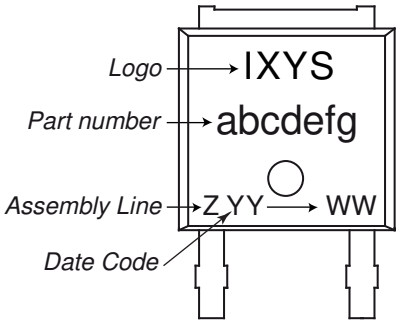
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- High creepage distance between terminals

Rectifier

Symbol	Definition	Conditions		Ratings 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			5	µA
		V_R = 1200 V	T_{VJ} = 150°C			0.05	mA
V_F	*forward voltage drop*	I_F = 5 A	T_{VJ} = 25°C			1.29	V
		I_F = 10 A				1.55	V
		I_F = 5 A	T_{VJ} = 150°C			1.27	V
		I_F = 10 A				1.63	V
I_{FAV}	*average forward current*	T_C = 140°C 180° sine	T_{VJ} = 175°C			10	A
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			0.90	V
r_F	*slope resistance* }					37	mΩ
R_{thJC}	*thermal resistance junction to case*					2	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.5		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			75	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			100	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			110	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			85	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			92	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			50	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			50	A^2s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			36	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			35	A^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		1		pF

Package TO-252 (DPak)			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal			20	A
T_{VJ}	*virtual junction temperature*		-55		175	°C
T_{op}	*operation temperature*		-55		150	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				0.3		g
F_C	*mounting force with clip*		20		60	N
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*	*terminal to terminal*	3.6			mm
$d_{Spb/Apb}$		*terminal to backside*	3.0			mm

Product Marking



Part description

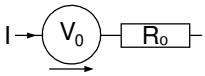
D = Diode
M = Standard Rectifier
A = (up to 1800V)
10 = Current Rating [A]
P = Phase leg
1200 = Reverse Voltage [V]
UZ = TO-252AA (DPak) (2HV)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA10P1200UZ-TRL	MATMZP	Tape & Reel	2500	524603
Alternative	DMA10P1200UZ-TUB	MATMZP	Tube	70	524596

Similar Part	Package	Voltage class
DMA10P1600UZ	TO-252AA (DPak) (2HV)	1600

Equivalent Circuits for Simulation

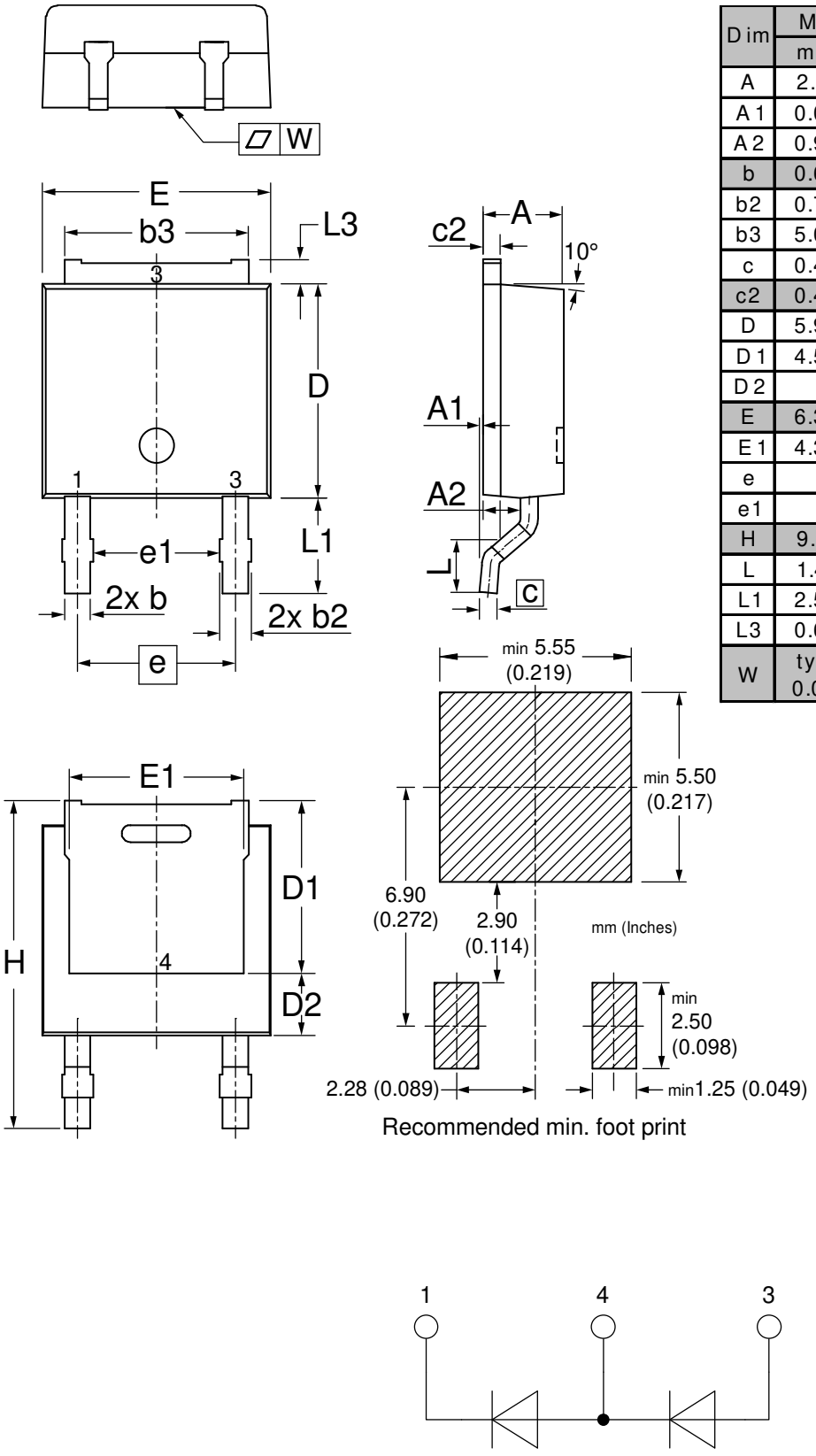
** on die level* T_{VJ} = 175 °C



Rectifier

$V_{0\,max}$	*threshold voltage*	0.9	V
$R_{0\,max}$	*slope resistance **	34	mΩ

Outlines TO-252 (DPak)



Dim	Millimeters		Inches	
	min	max	min	max
A	2.18	2.39	0.086	0.094
A1	0.00	0.13	0.000	0.005
A2	0.97	1.17	0.038	0.046
b	0.64	0.89	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	5.08	5.59	0.200	0.220
c	0.46	0.61	0.018	0.024
c2	0.46	0.58	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	4.57	5.21	0.180	0.205
D2	2.03		0.080	
E	6.35	6.73	0.250	0.265
E1	4.32	5.21	0.170	0.205
e	4.57		0.180	
e1	3.62		0.143	
H	9.15	10.34	0.360	0.407
L	1.40	1.78	0.055	0.070
L1	2.54	2.92	0.100	0.115
L3	0.64	1.02	0.025	0.040
W	typ. 0.02	0.040	typ. 0.0008	0.000

Rectifier

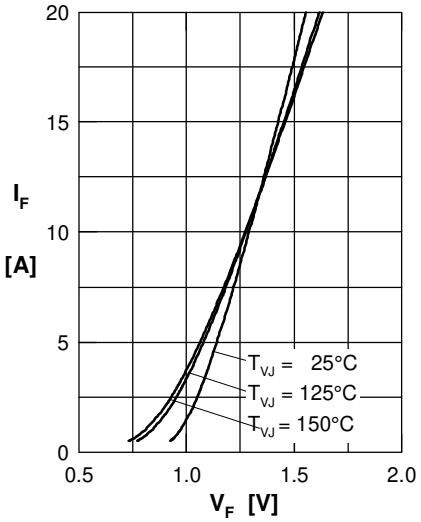


Fig. 1 Forward current versus voltage drop per diode

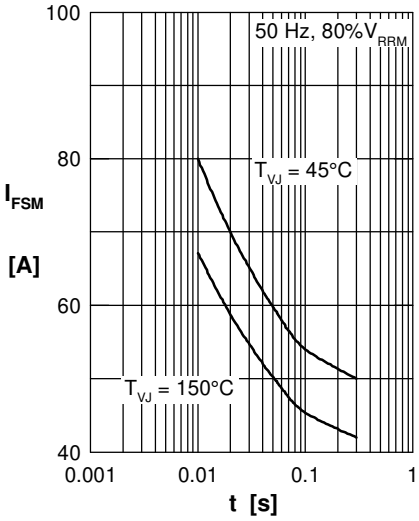


Fig. 2 Surge overload current

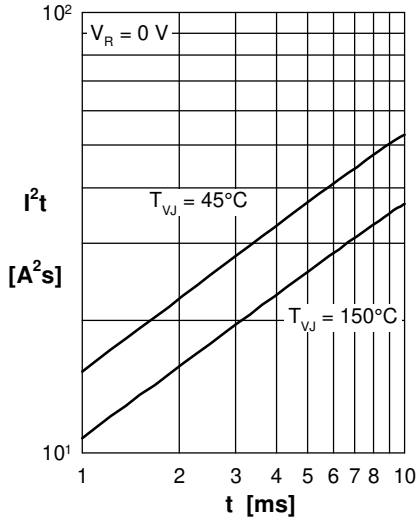


Fig. 3 I^2t versus time per diode

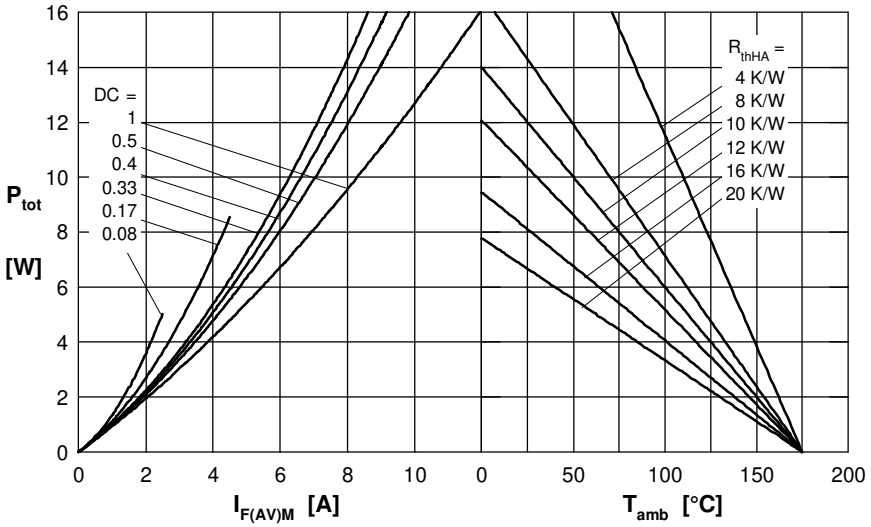


Fig. 4 Power dissipation vs. direct output current and ambient temperature

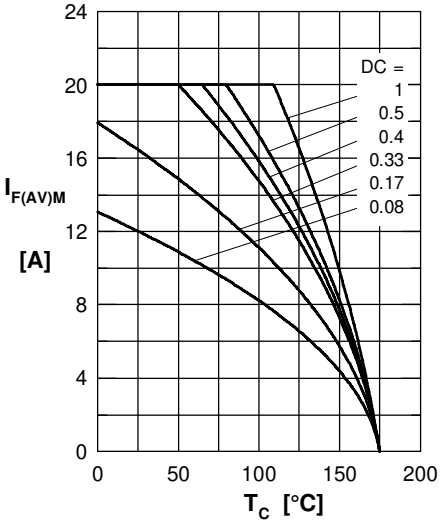


Fig. 5 Max. forward current vs. case temperature

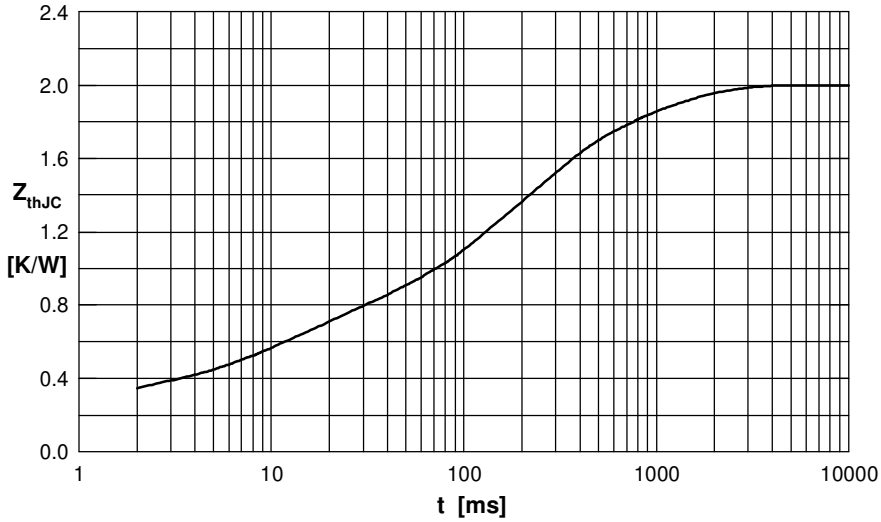


Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.275	0.0005
2	0.385	0.0105
3	0.880	0.1700
4	0.460	0.8500