

Low Voltage Standard Rectifier

$$\begin{aligned} V_{RRM} &= 1200\text{ V} \\ I_{FAV} &= 100\text{ A} \\ V_F &= 1,32\text{ V} \end{aligned}$$

Single Diode

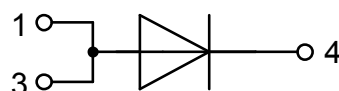
Part number

DLA100IM1200TZ

Marking on Product: DLA100IM1200TZ



Backside: 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-268AA (D3Pak-HV)

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

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Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1300	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				1200	V
I_R	reverse current	$V_R = 1200\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			20	μA
		$V_R = 1200\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			0,1	mA
V_F	forward voltage drop	$I_F = 100\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1,34	V
		$I_F = 200\text{ A}$				1,68	V
		$I_F = 100\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$			1,32	V
		$I_F = 200\text{ A}$				1,75	V
I_{FAV}	average forward current	$T_C = 105^{\circ}\text{C}$ 180° sine	$T_{VJ} = 175^{\circ}\text{C}$			100	A
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^{\circ}\text{C}$			0,85	V
r_F	slope resistance					4,6	m Ω
R_{thJC}	thermal resistance junction to case					0,35	K/W
R_{thCH}	thermal resistance case to heatsink				0,15		K/W
P_{tot}	total power dissipation		$T_C = 25^{\circ}\text{C}$			430	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			1,30	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			1,41	kA
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^{\circ}\text{C}$			1,11	kA
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			1,20	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			8,45	kA ² s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			8,21	kA ² s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^{\circ}\text{C}$			6,11	kA ² s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\text{ V}$			5,94	kA ² s
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		43		pF

Package TO-268AA (D3Pak-HV)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			70	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				4		g
F_c	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	9,4			mm
$d_{Spb/Apb}$		terminal to backside	5,6			mm

Product Marking



Part description

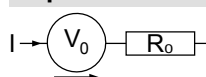
D = Diode
 L = Low Voltage Standard Rectifier
 A = (up to 1200V)
 100 = Current Rating [A]
 IM = Single Diode
 1200 = Reverse Voltage [V]
 TZ = TO-268AA (D3Pak) (2HV)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard		DLA100IM1200TZ			

Equivalent Circuits for Simulation

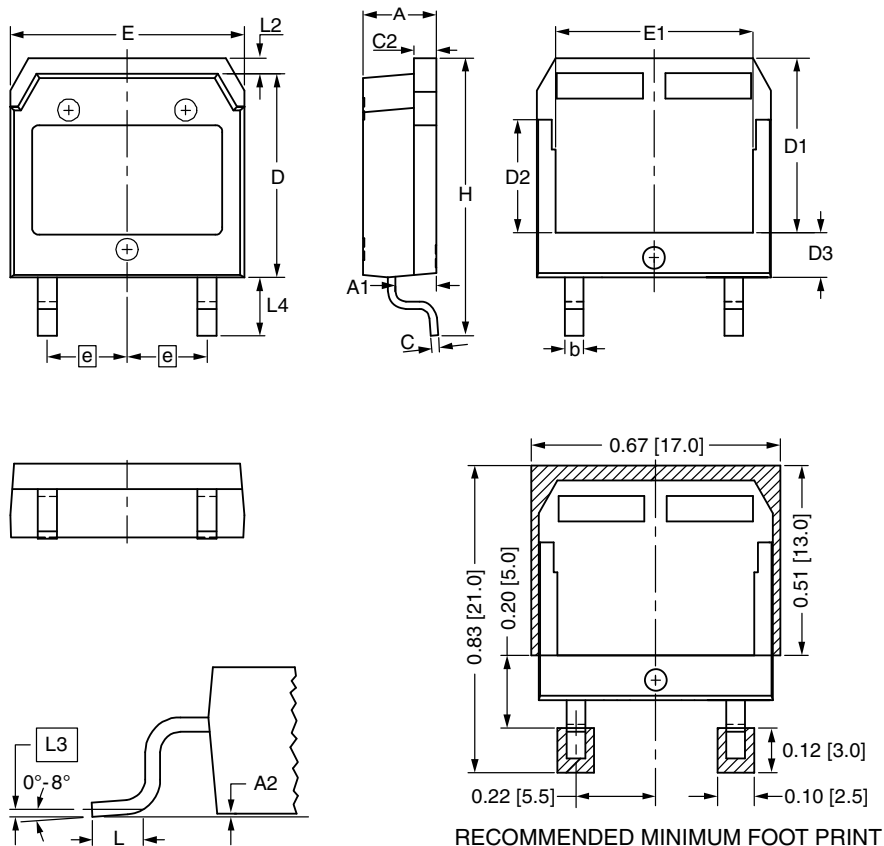
* on die level

$T_{VJ} = 175^{\circ}\text{C}$

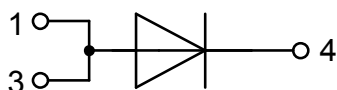


Rectifier

$V_{0\max}$	threshold voltage	0,85	V
$R_{0\max}$	slope resistance *	2,6	mΩ

Outlines TO-268AA (D3Pak-HV)


Dim.	Millimeter		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.70	2.90	0.106	0.114
A2	0.02	0.25	0.001	0.010
b	1.15	1.45	0.045	0.057
C	0.40	0.65	0.016	0.026
C2	1.45	1.60	0.057	0.063
D	13.80	14.00	0.543	0.551
D1	11.80	12.10	0.465	0.476
D2	7.50	7.80	0.295	0.307
D3	2.90	3.20	0.114	0.126
E	15.85	16.05	0.624	0.632
E1	13.30	13.60	0.524	0.535
e	5.450 BSC		0.215 BSC	
H	18.70	19.10	0.736	0.752
L	1.70	2.00	0.067	0.079
L2	1.00	1.15	0.039	0.045
L3	0.250 BSC		0.010 BSC	
L4	3.80	4.10	0.150	0.161



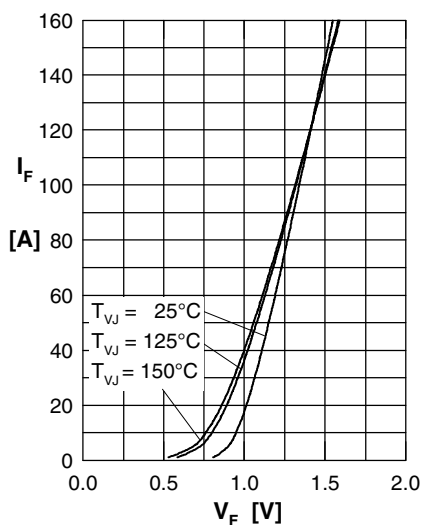
Rectifier


Fig. 1 Forward current versus voltage drop per diode

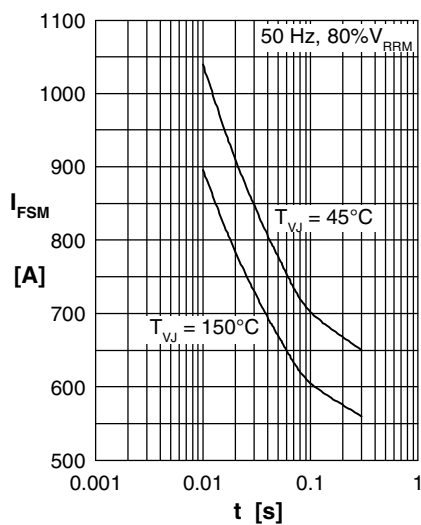


Fig. 2 Surge overload current versus time per diode

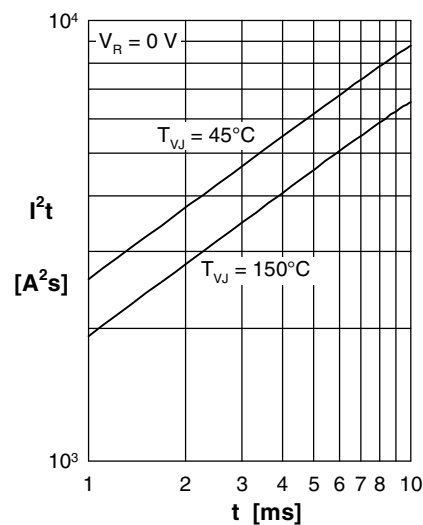
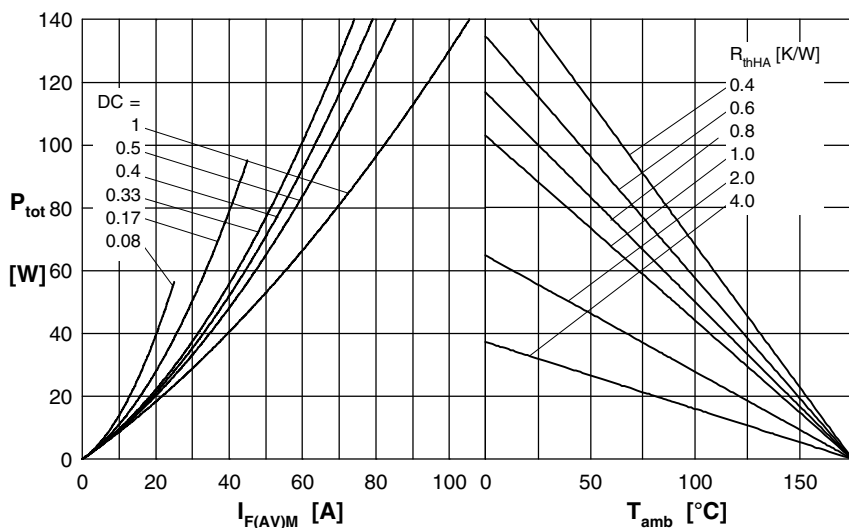

 Fig. 3 I^2t versus time per diode


Fig. 4 Power dissipation versus direct output current and ambient temperature per diode

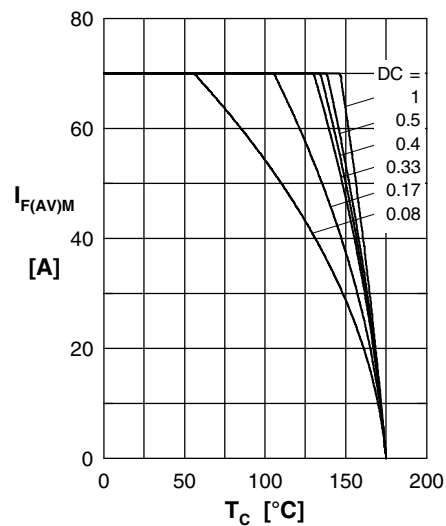


Fig. 5 Max. forward current versus case temperature per diode

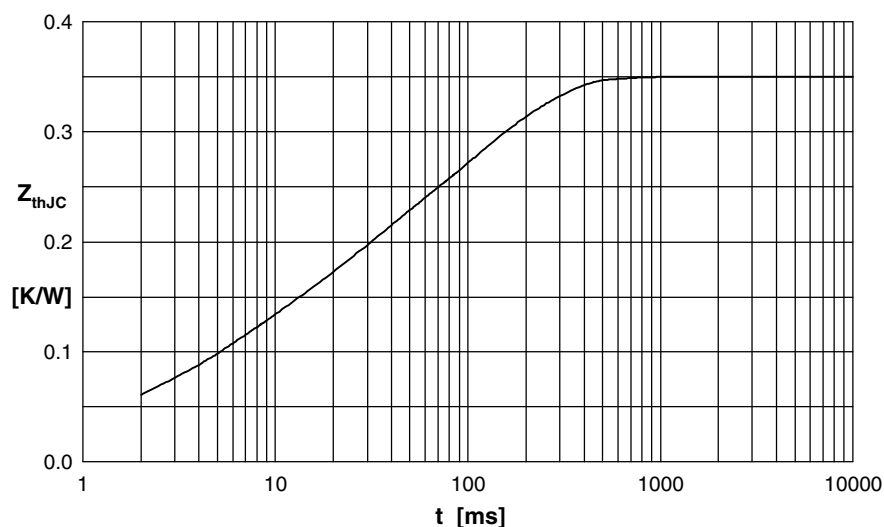


Fig. 6 Transient thermal impedance junction to case versus time per diode

 Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.023	0.0006
2	0.065	0.0038
3	0.094	0.0190
4	0.168	0.1300