High Efficiency Standard Rectifier

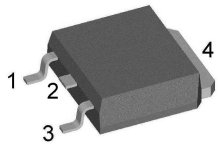
V_{RRM}	=	800 V
I_{FAV}	=	10 A
V_F	=	1.16 V

Single Diode

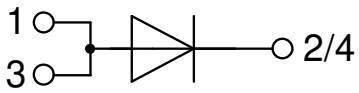
Part number

DLA10IM800UC

Marking on Product: MARLUI



Backside: 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-252 (DPak)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

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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			900	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			800	V
I_R	*reverse current*	V_R = 800 V	T_{VJ} = 25°C			5	µA
		V_R = 800 V	T_{VJ} = 150°C			0.05	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			1.22	V
		I_F = 20 A				1.40	V
		I_F = 10 A	T_{VJ} = 150°C			1.16	V
		I_F = 20 A				1.45	V
I_{FAV}	*average forward current*	T_C = 145°C	T_{VJ} = 175°C			10	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			0.84	V
r_F	*slope resistance* }					30	mΩ
R_{thJC}	*thermal resistance junction to case*					2	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.50		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			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	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			70	A^2s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			50	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			50	A^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		3		pF

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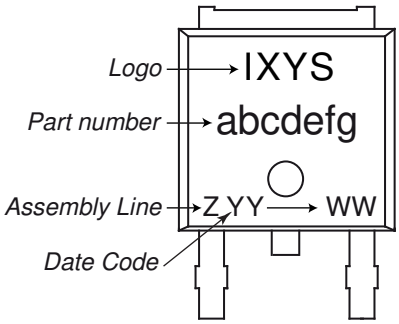
Package TO-252 (DPak)			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal [1)]			20	A
T_{VJ}	*virtual junction temperature*		-55		175	°C
T_{op}	*operation temperature*		-55		150	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				0.3		g
F_C	*mounting force with clip*		20		60	N

[1)] I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

Product Marking



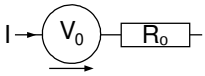
Part description

D = Diode
L = High Efficiency Standard Rectifier
A = (up to 1200V)
10 = Current Rating [A]
IM = Single Diode
800 = Reverse Voltage [V]
UC = TO-252AA (DPak)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA10IM800UC-TRL	MARLUI	Tape & Reel	2500	503668
Alternative	DLA10IM800UC-TUB	MARLUI	Tube	70	523435

Equivalent Circuits for Simulation

** on die level* T_{VJ} = 175 °C



Rectifier

$V_{0\,max}$	*threshold voltage*	0.84	V
$R_{0\,max}$	*slope resistance **	27	mΩ

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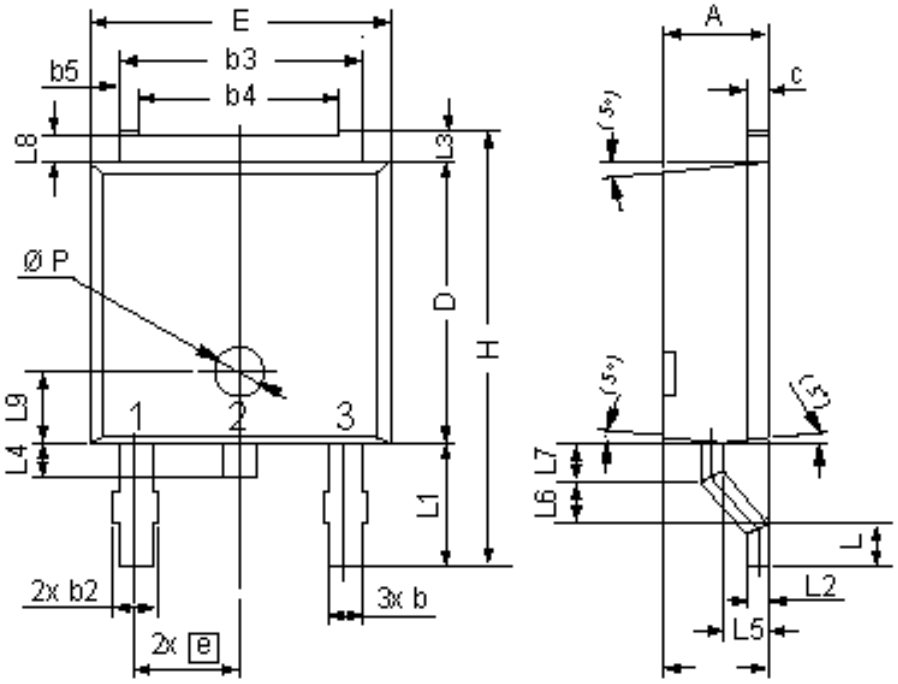
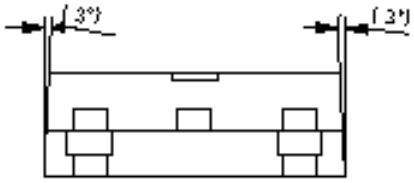
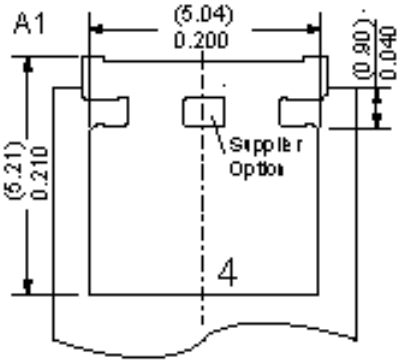
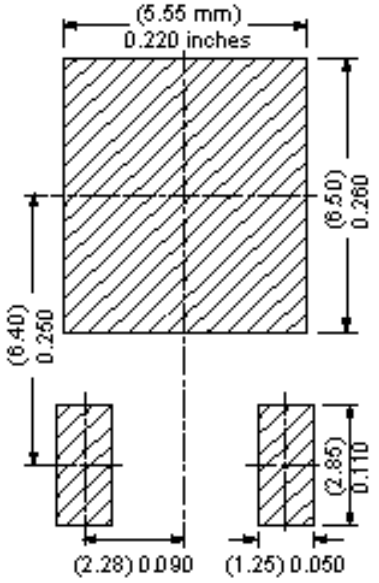
Outlines TO-252 (DPak)



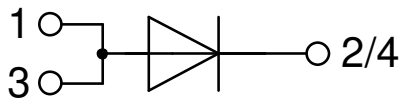






Recommended
min. foot print

Dim.	Millimeters		Inches	
	min	max	min	max
A	2.20	2.40	0.087	0.094
A1	2.10	2.50	0.083	0.098
b	0.66	0.86	0.026	0.034
b2	-	0.96	-	0.038
b3	5.04	5.64	0.198	0.222
b4	4.34 BSC		0.171 BSC	
b5	0.50 BSC		0.020 BSC	
c	0.40	0.86	0.016	0.034
D	5.90	6.30	0.232	0.248
E	6.40	6.80	0.252	0.268
e	2.10	2.50	0.083	0.098
H	9.20	10.10	0.362	0.398
L	0.55	1.28	0.022	0.050
L1	2.50	2.90	0.098	0.114
L2	0.40	0.60	0.016	0.024
L3	0.50	0.90	0.020	0.035
L4	0.60	1.00	0.024	0.039
L5	0.82	1.22	0.032	0.048
L6	0.79	0.99	0.031	0.039
L7	0.81	1.01	0.032	0.040
L8	0.40	0.80	0.016	0.031
L9	1.50 BSC		0.059 BSC	
Ø P	1.00 BSC		0.039 BSC	



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Rectifier

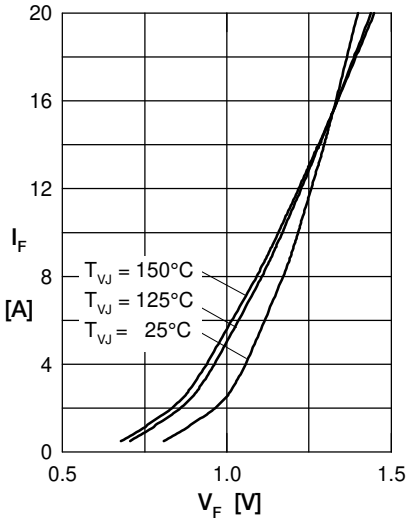

Fig. 1 Forward current versus voltage drop

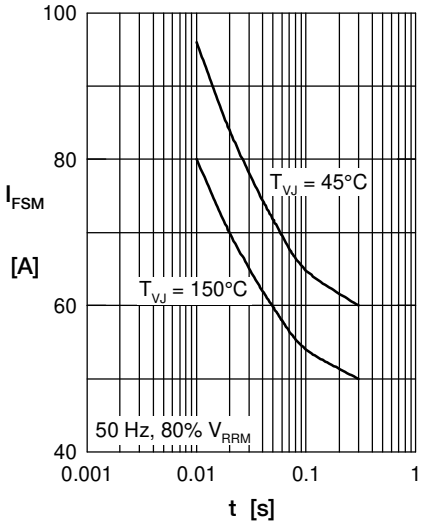

Fig. 2 Surge overload current

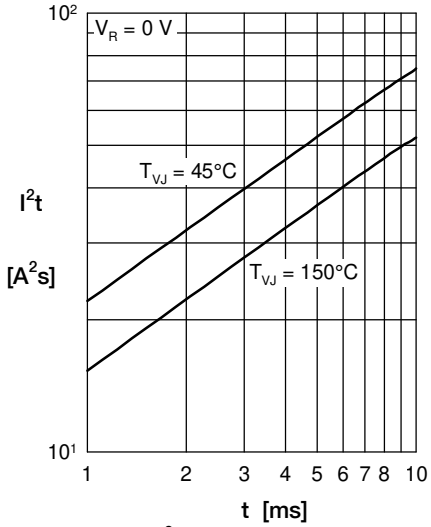

Fig. 3 I^2t versus time

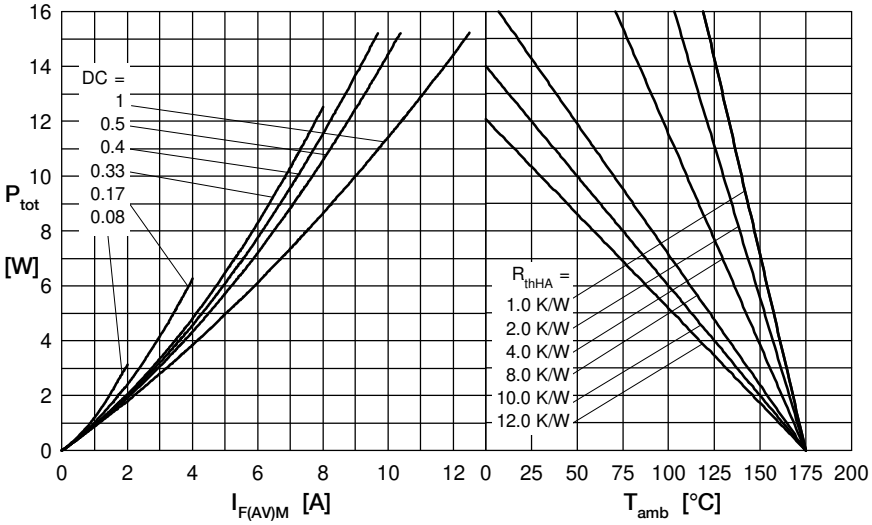

Fig. 4 Power dissipation versus direct output current and ambient temperature

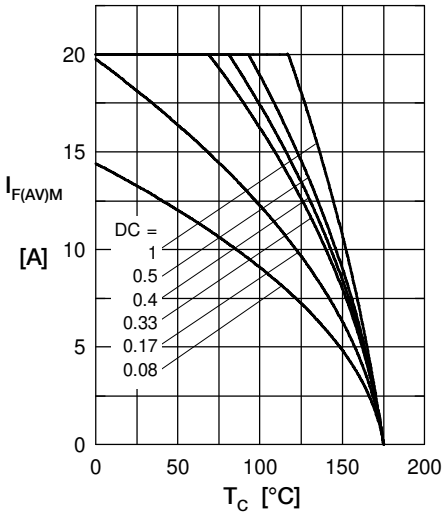

Fig. 5 Max. forward current vs. case temperature

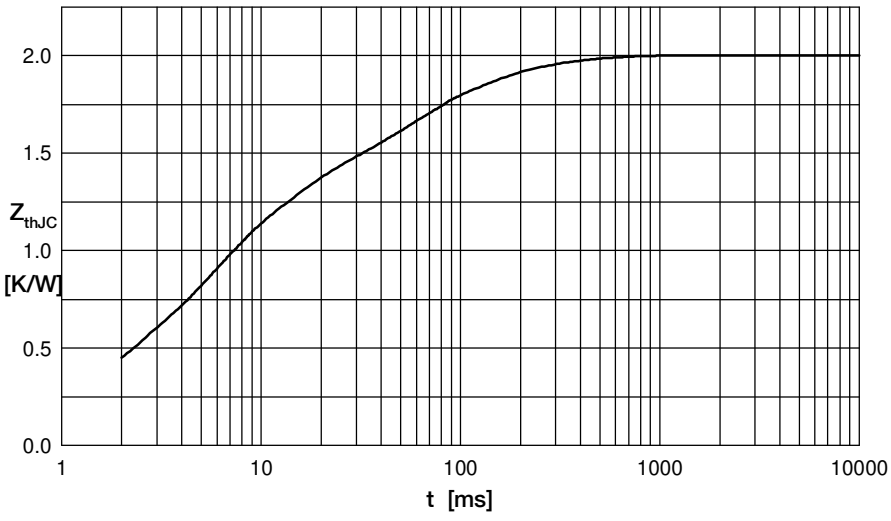

Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	1.1	0.005
2	0.06	0.0003
3	0.14	0.045
4	0.2	0.2
5	0.5	0.05

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