

## High Efficiency Standard Rectifier

$$V_{RRM} = 800V$$

$$I_{FAV} = 10A$$

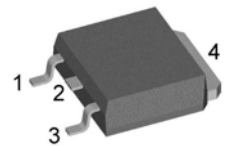
$$V_F = 1.16V$$

Single Diode

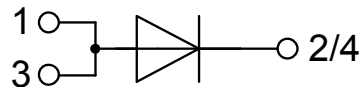
Part number

**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

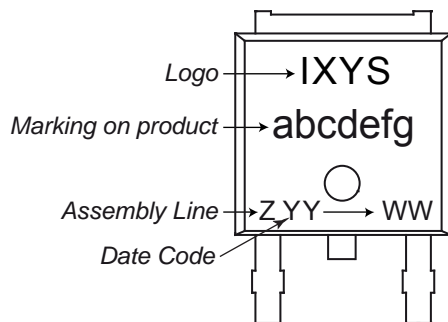
### Package: TO-252 (DPak)

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

Rectifier				Ratings		
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			900	V
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			800	V
$I_R$	reverse current, drain current	$V_R = 800 V$	$T_{VJ} = 25^{\circ}C$		5	$\mu A$
		$V_R = 800 V$	$T_{VJ} = 150^{\circ}C$		0.05	mA
$V_F$	forward voltage drop	$I_F = 10 A$	$T_{VJ} = 25^{\circ}C$		1.22	V
		$I_F = 20 A$			1.40	V
		$I_F = 10 A$	$T_{VJ} = 150^{\circ}C$		1.16	V
		$I_F = 20 A$			1.45	V
$I_{FAV}$	average forward current	$T_C = 145^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 175^{\circ}C$		10	A
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^{\circ}C$		0.84	V
$r_F$	slope resistance				30	m $\Omega$
$R_{thJC}$	thermal resistance junction to case				2	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		75	W
$I_{FSM}$	max. forward surge current	$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}C$		120	A
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		130	A
		$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}C$		100	A
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		110	A
$I^2t$	value for fusing	$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}C$		72	A <sup>2</sup> s
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		70	A <sup>2</sup> s
		$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}C$		50	A <sup>2</sup> s
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		50	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400 V$ $f = 1 \text{ MHz}$	$T_{VJ} = 25^{\circ}C$		3	pF

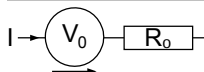
Package TO-252 (DPak)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			20	A
$T_{stg}$	storage temperature		-55		150	°C
$T_{VJ}$	virtual junction temperature		-55		175	°C
<b>Weight</b>				0.3		g
$F_C$	mounting force with clip		20		60	N

<sup>1)</sup>  $I_{RMS}$  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 number**

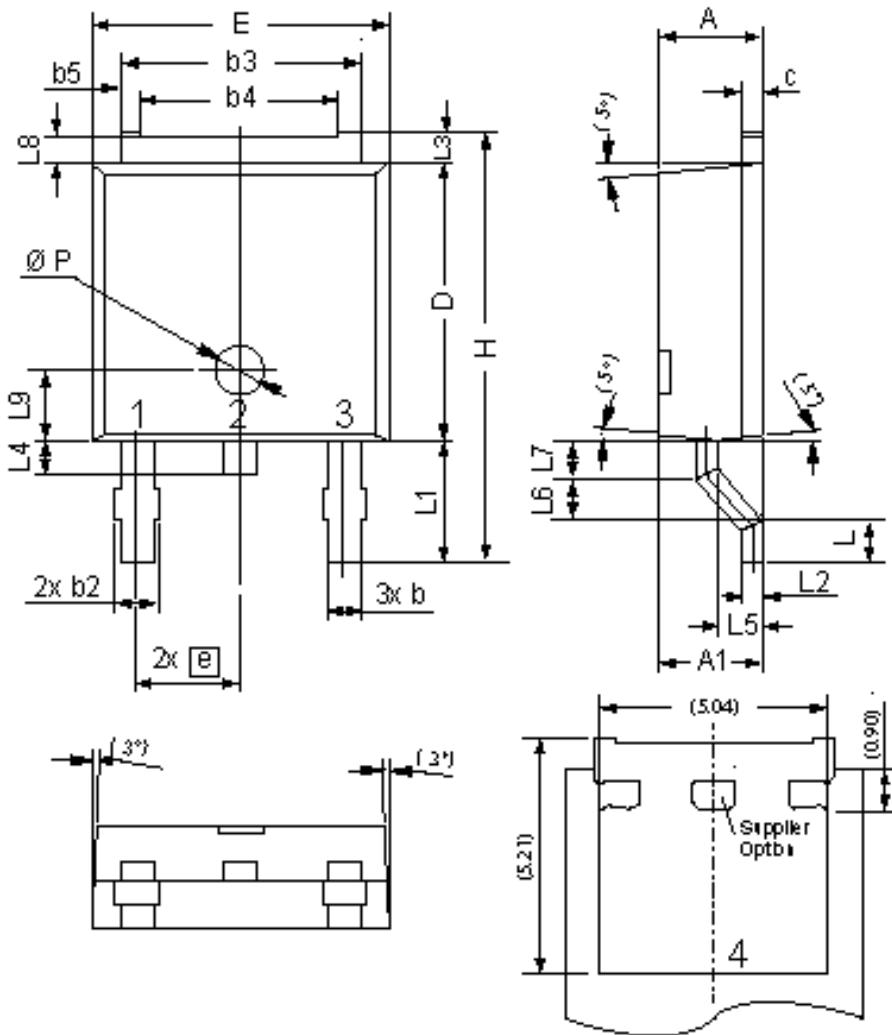
- D = Diode
- L = High Efficiency Standard Rectifier
- A = (up to 1200V)
- 10 = Current Rating [A]
- IM = Single Diode
- 800 = Reverse Voltage [V]
- UC = TO-252AA (DPak)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA10IM800UC	MARLUI	Tape & Reel	2500	503668

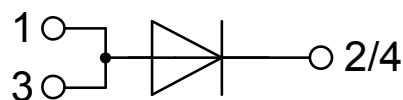
**Equivalent Circuits for Simulation**
*\* on die level*
 $T_{VJ} = 175^{\circ}C$ 

**Rectifier**

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

## Outlines TO-252 (DPak)



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	



**Rectifier**

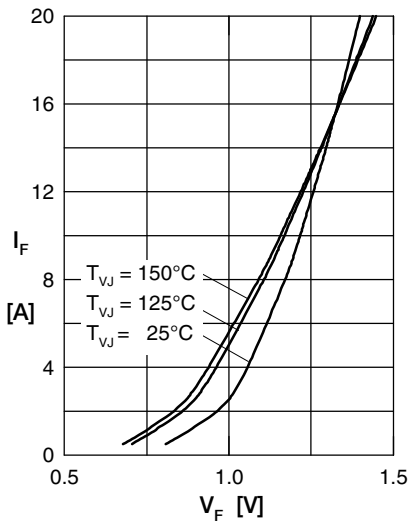


Fig. 1 Forward current versus voltage drop

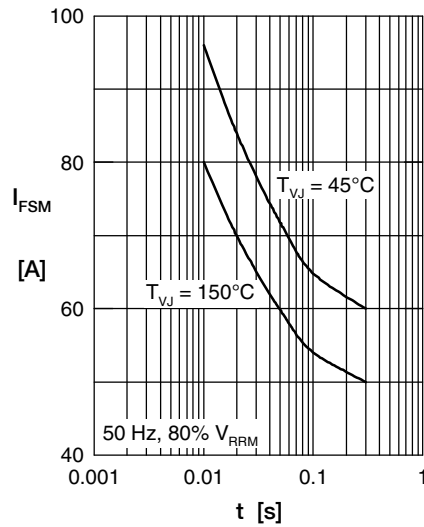


Fig. 2 Surge overload current

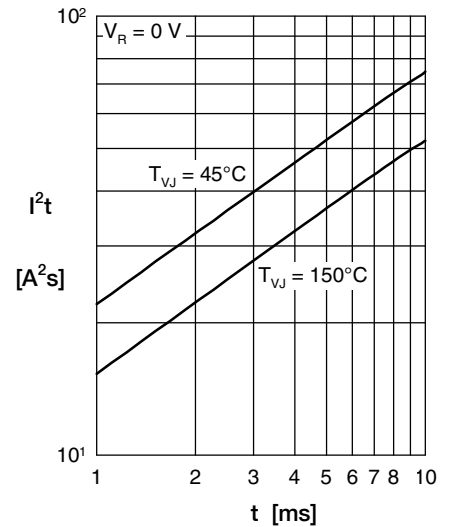


Fig. 3  $I^2t$  versus time

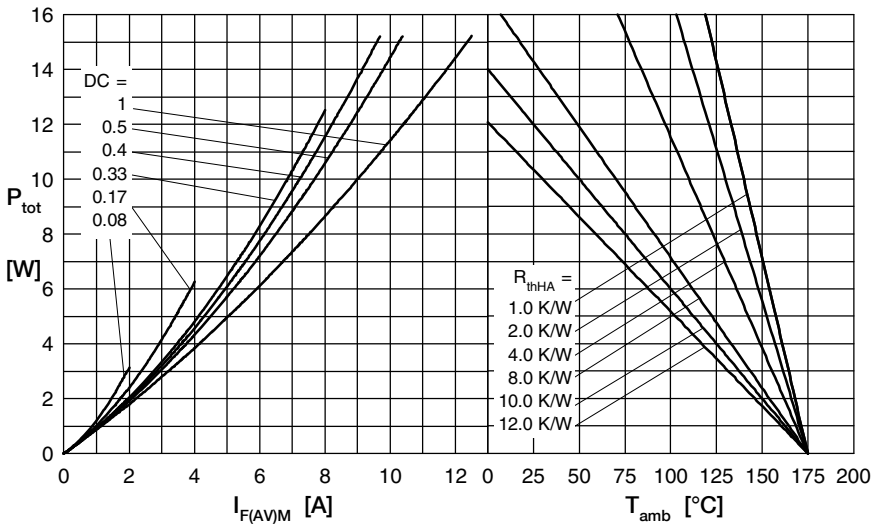


Fig. 4 Power dissipation versus direct output current and ambient temperature

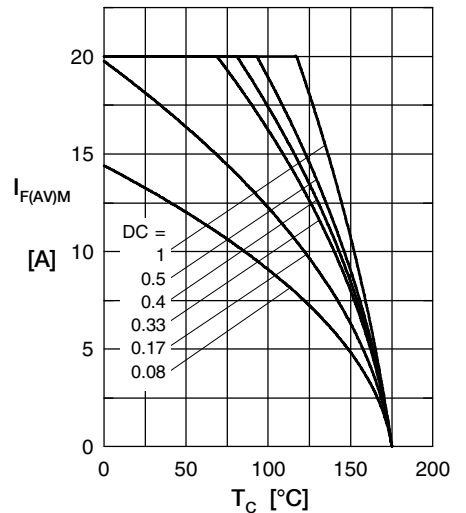


Fig. 5 Max. forward current vs. case temperature

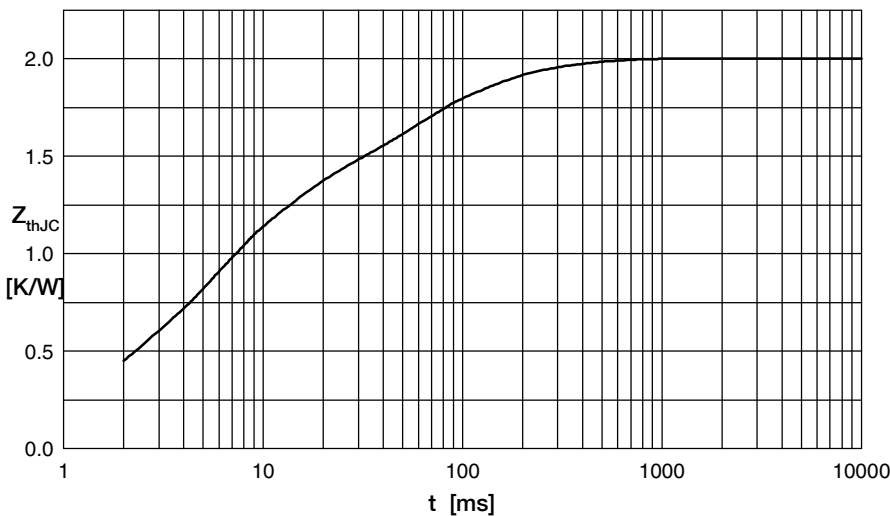


Fig. 6 Transient thermal impedance junction to case

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