



# Low Voltage Standard Rectifier

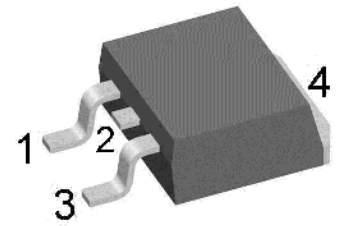
$V_{RRM}$	=	800 V
$I_{FAV}$	=	20 A
$V_F$	=	1.22 V

## Single Diode

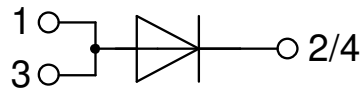
**Part number**

**DLA20IM800PC**

Marking on Product: *DLA20IM800PC*



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-263 (D2Pak)

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

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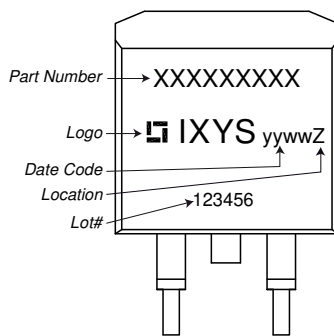
Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage					900	V
$V_{RRM}$	max. repetitive reverse blocking voltage					800	V
$I_R$	reverse current	$V_R = 800\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			5	$\mu\text{A}$
		$V_R = 800\text{ V}$	$T_{VJ} = 150^\circ\text{C}$			0.05	mA
$V_F$	forward voltage drop	$I_F = 20\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			1.25	V
						1.49	V
		$I_F = 40\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.22	V
						1.54	V
$I_{FAV}$	average forward current	$T_C = 140^\circ\text{C}$ rectangular	$T_{VJ} = 175^\circ\text{C}$			20	A
$V_{FO}$	threshold voltage	} for power loss calculation only				0.88	V
$r_F$	slope resistance					17	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					1	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.25		K/W
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		150	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			200	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			215	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			170	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			185	A
$I^2t$	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^\circ\text{C}$			200	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			190	A <sup>2</sup> s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^\circ\text{C}$			145	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$			140	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$		$T_{VJ} = 25^\circ\text{C}$		7	pF



Package TO-263 (D2Pak)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			35	A
$T_{VJ}$	virtual junction temperature		-55		175	°C
$T_{op}$	operation temperature		-55		150	°C
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				1.5		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 description**

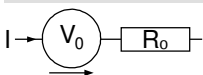
- D = Diode
- L = Low Voltage Standard Rectifier
- A = (up to 1200V)
- 20 = Current Rating [A]
- IM = Single Diode
- 800 = Reverse Voltage [V]
- PC = TO-263AB (D2Pak) (2)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA20IM800PC-TRL	DLA20IM800PC	Tape & Reel	800	506475
Alternative	DLA20IM800PC-TUB	DLA20IM800PC	Tube	50	506628

**Equivalent Circuits for Simulation**

*\* on die level*

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

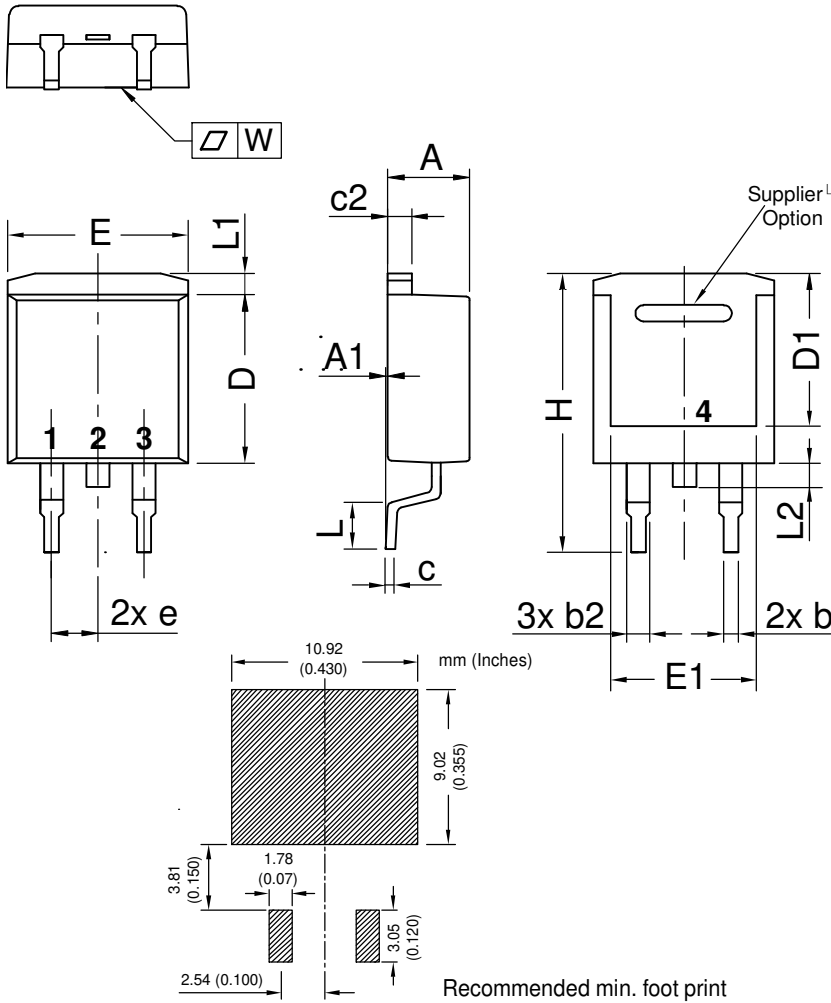


**Rectifier**

$V_{0\ max}$	threshold voltage	0.88	V
$R_{0\ max}$	slope resistance *	13	mΩ

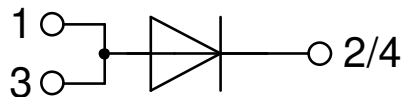


**Outlines TO-263 (D2Pak)**



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.*



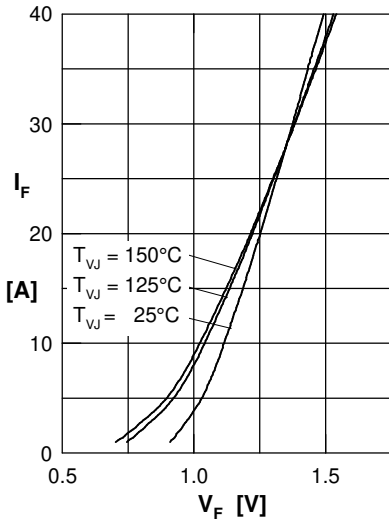
**Rectifier**


Fig. 1 Forward current versus voltage drop

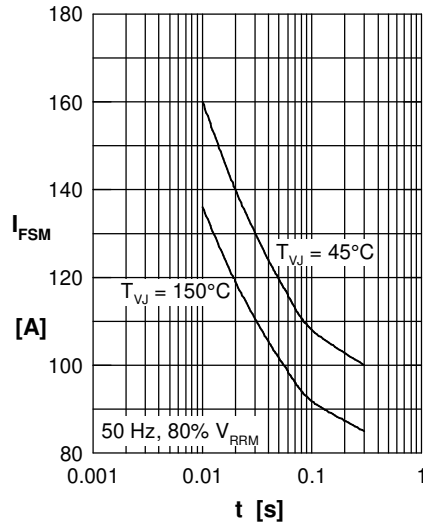


Fig. 2 Surge overload current

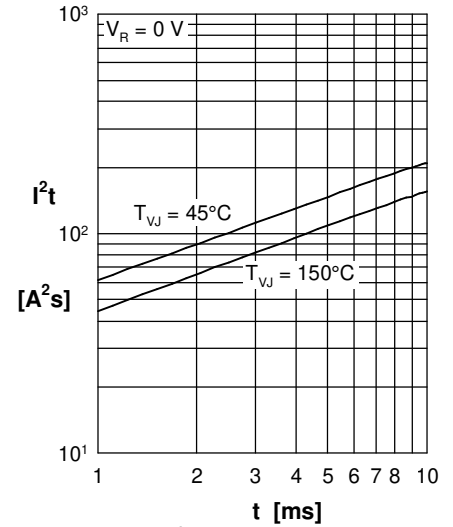
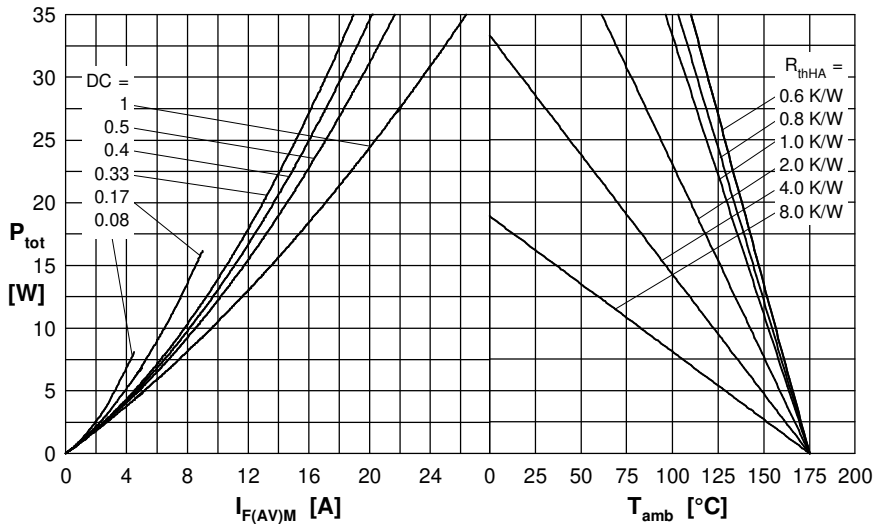

 Fig. 3  $I^2t$  versus time


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

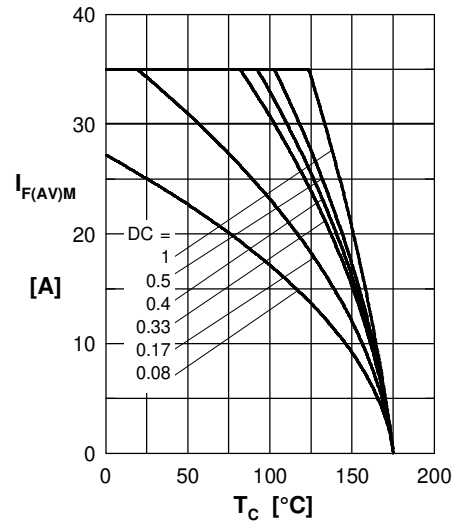


Fig. 5 Max. forward current vs. case temperature

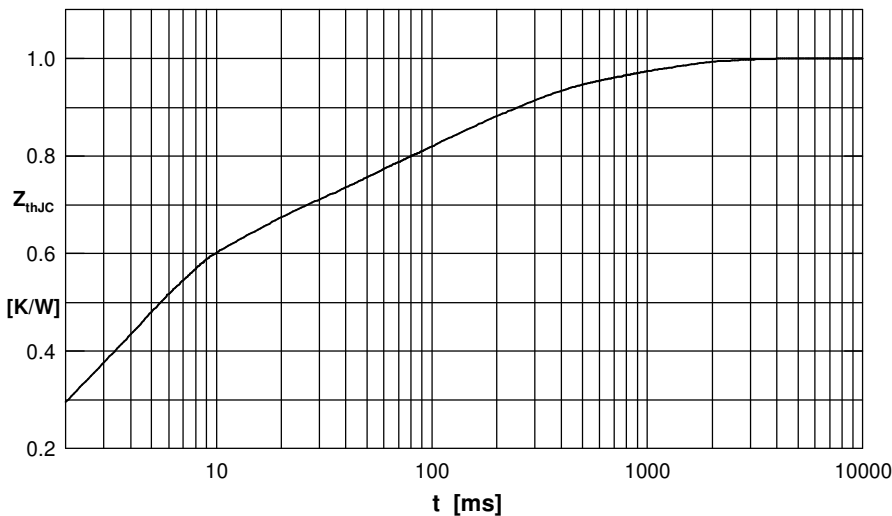


Fig. 6 Transient thermal impedance junction to case

 Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.51	0.0035
2	0.06	0.0003
3	0.14	0.0250
4	0.09	0.8000
5	0.20	0.1400