

## High Efficiency Standard Rectifier

$$V_{RRM} = 800V$$

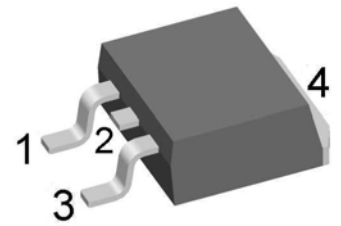
$$I_{FAV} = 40A$$

$$V_F = 1.26V$$

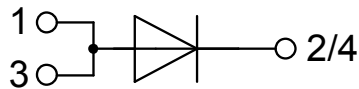
Single Diode

Part number

DLA40IM800PC



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

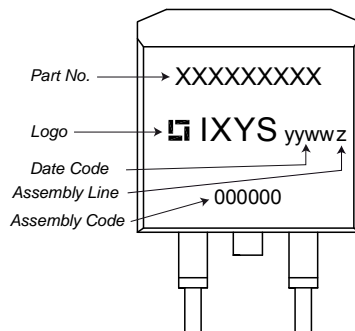
### Package: TO-263 (D2Pak)

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

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	$V_R = 800 V$	$T_{VJ} = 25^{\circ}C$		10	$\mu A$
		$V_R = 800 V$	$T_{VJ} = 150^{\circ}C$		0.05	mA
$V_F$	forward voltage drop	$I_F = 40 A$	$T_{VJ} = 25^{\circ}C$		1.30	V
					1.56	V
		$I_F = 80 A$	$T_{VJ} = 150^{\circ}C$		1.26	V
					1.65	V
$I_{FAV}$	average forward current	$T_C = 120^{\circ}C$ rectangular	$T_{VJ} = 175^{\circ}C$		40	A
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^{\circ}C$		0.85	V
$r_F$	slope resistance				10	m $\Omega$
$R_{thJC}$	thermal resistance junction to case				0.8	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		185	W
$I_{FSM}$	max. forward surge current	$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}C$		300	A
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		325	A
		$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}C$		255	A
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		275	A
$I^2t$	value for fusing	$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 45^{\circ}C$		450	A <sup>2</sup> s
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		440	A <sup>2</sup> s
		$t = 10 \text{ ms; (50 Hz), sine}$	$T_{VJ} = 150^{\circ}C$		325	A <sup>2</sup> s
		$t = 8,3 \text{ ms; (60 Hz), sine}$	$V_R = 0 V$		315	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400 V \quad f = 1 \text{ MHz}$	$T_{VJ} = 25^{\circ}C$		10	pF

Package TO-263 (D2Pak)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			35	A
$T_{stg}$	storage temperature		-55		150	°C
$T_{vj}$	virtual junction temperature		-55		175	°C
<b>Weight</b>				2		g
$F_C$	mounting force with clip		20		60	N

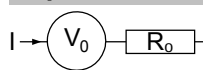
<sup>1)</sup>  $I_{RMS}$  is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

**Product Marking**

**Part number**

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

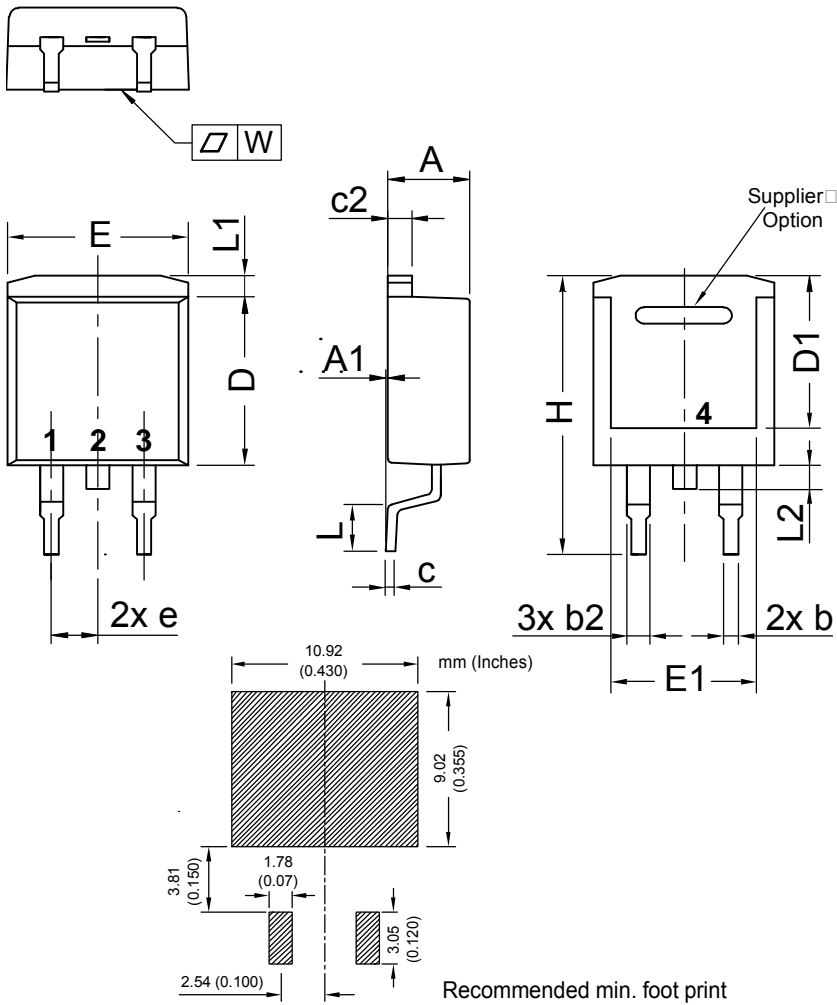
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA40IM800PC	DLA40IM800PC	Tape & Reel	800	509995

Similar Part	Package	Voltage class
DSI30-08AS	TO-263AB (D2Pak) (2)	800
DSI30-12AS	TO-263AB (D2Pak) (2)	1200
DSI30-16AS	TO-263AB (D2Pak) (2)	1600

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

**Rectifier**

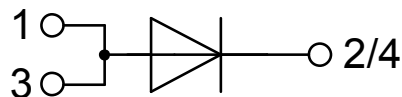
$V_{0\ max}$	threshold voltage	0.85	V
$R_{0\ max}$	slope resistance *	6.8	mΩ

## 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

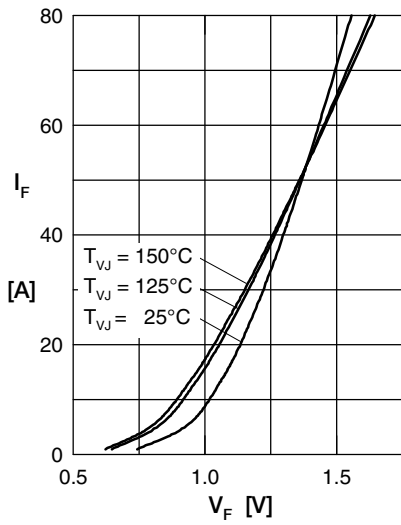


Fig. 1 Forward current versus voltage drop

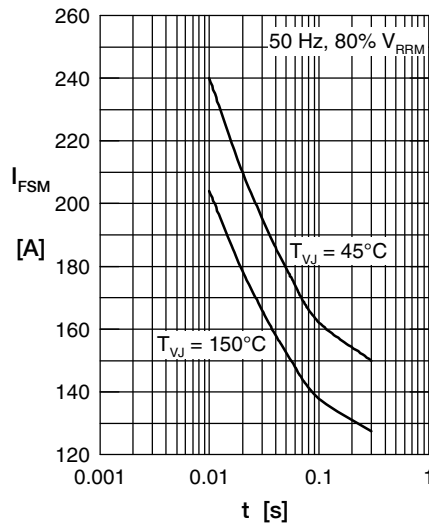


Fig. 2 Surge overload current

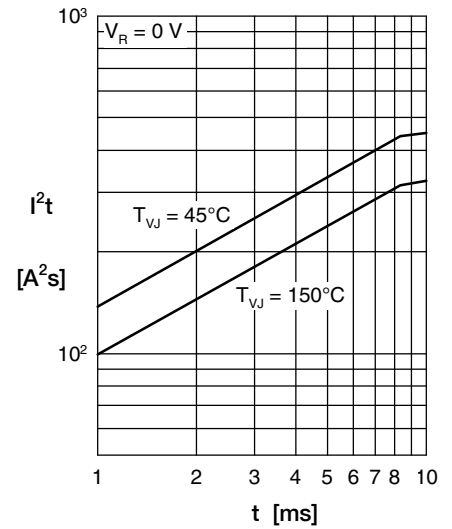


Fig. 3  $I^2t$  versus time

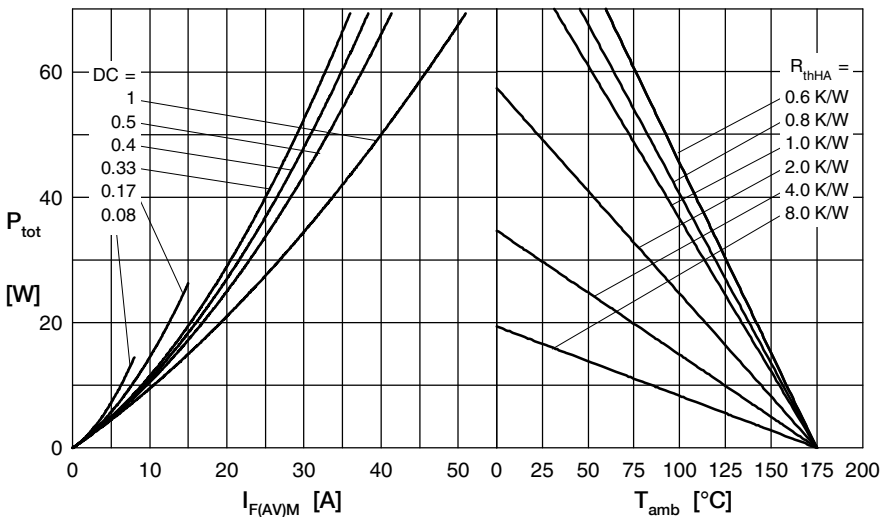


Fig. 4 Power dissipation versus direct output current and ambient temperature

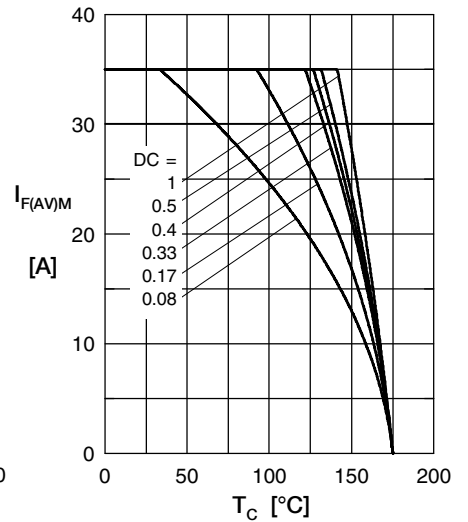


Fig. 5 Max. forward current vs. case temperature

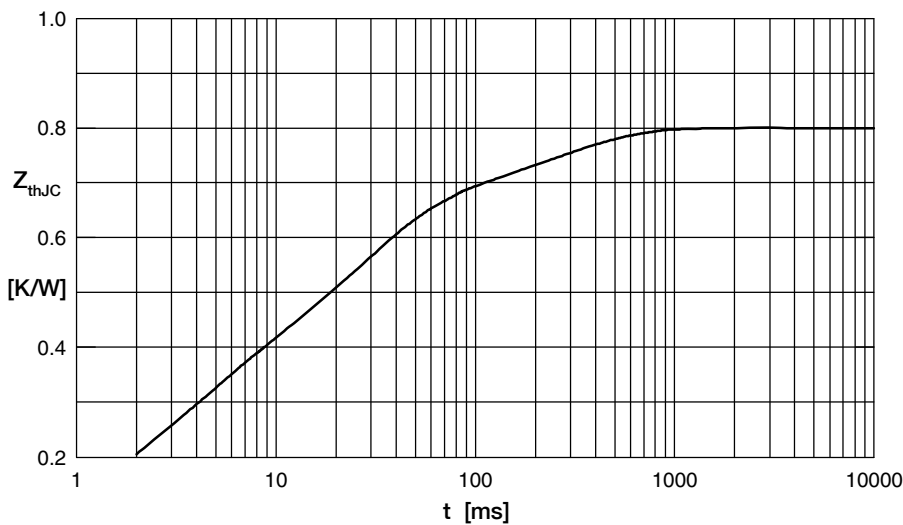


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.04	0.0004
2	0.07	0.002
3	0.19	0.003
4	0.35	0.024
5	0.15	0.25