High Efficiency Standard Rectifier
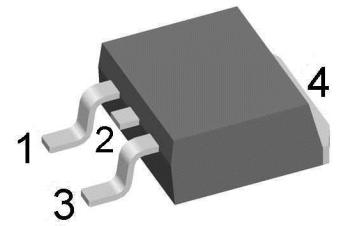
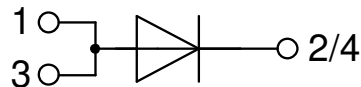|		
V_{RRM}	=	800 V
I_{FAV}	=	40 A
V_F	=	1.26 V

Single Diode

Part number

DLA40IM800PC

Marking on Product: 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

Disclaimer Notice

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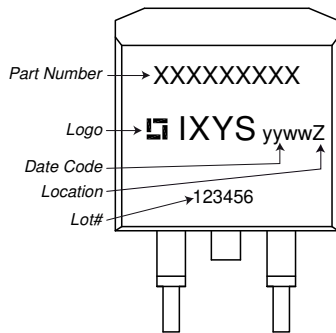
Rectifier | Ratings

Symbol	Definition	Conditions		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	$T_{VJ} = 25°C$			10	µA
		$V_R = 800$ V	$T_{VJ} = 150°C$			0.05	mA
V_F	forward voltage drop	$I_F = 40$ A	$T_{VJ} = 25°C$			1.30	V
		$I_F = 80$ A				1.56	V
		$I_F = 40$ A	$T_{VJ} = 150°C$			1.26	V
		$I_F = 80$ A				1.65	V
I_{FAV}	average forward current	$T_C = 120°C$ rectangular	$T_{VJ} = 175°C$			40	A
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 175°C$			0.85	V
r_F	slope resistance					10	mΩ
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		$T_C = 25°C$			185	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			300	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			325	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			255	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			275	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			450	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			440	A²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			325	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			315	A²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$		10		pF

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747 and per semiconductor unless otherwise specified   20190212b

Package   TO-263 (D2Pak)

Symbol	Definition	Conditions	min.	typ.	max.	Unit
Ratings						
I_{RMS}	RMS current	per terminal [1]			35	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				1.5		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 Number → XXXXXXXXX
Logo → ⎍ IXYS yywwZ
Date Code
Location → 123456
Lot#

Part description

D   = Diode
L   = Low Voltage Standard Rectifier
A   = (up to 1200V)
40 = Current Rating [A]
IM = Single Diode
800 = Reverse Voltage [V]
PC = TO-263AB (D2Pak) (2)
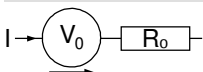
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA40IM800PC-TRL	DLA40IM800PC	Tape & Reel	800	509995
Alternative	DLA40IM800PC-TUB	DLA40IM800PC	Tube	50	525085

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 $T_{VJ} = 175°C$
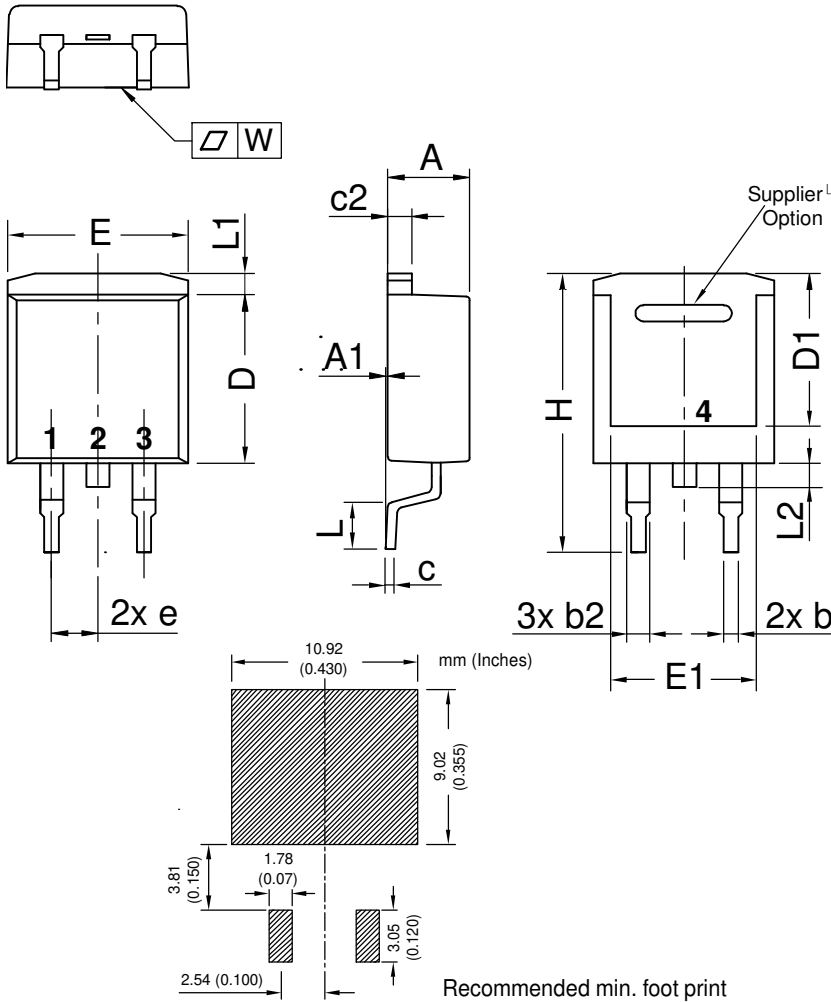

Rectifier

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

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Outlines   TO-263 (D2Pak)

Dim.	Millimeter min	Millimeter max	Inches min	Inches 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.

10.92 (0.430)   mm (Inches)

9.02 (0.355)

3.81 (0.150)

1.78 (0.07)

3.05 (0.120)

2.54 (0.100)

Recommended min. foot print
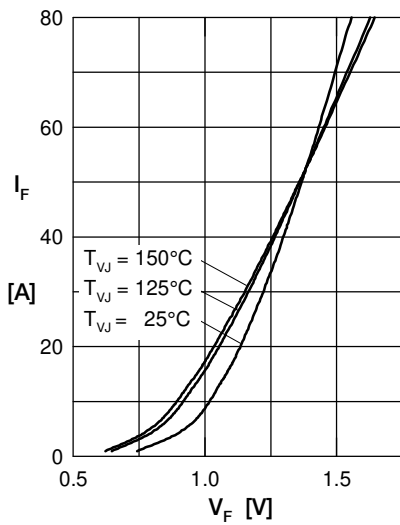
Supplier Option

1 ○
3 ○
○ 2/4
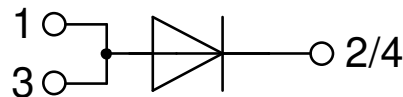
Rectifier

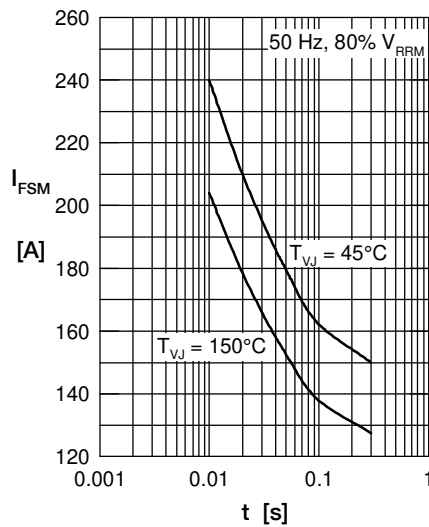
Fig. 1 Forward current versus voltage drop
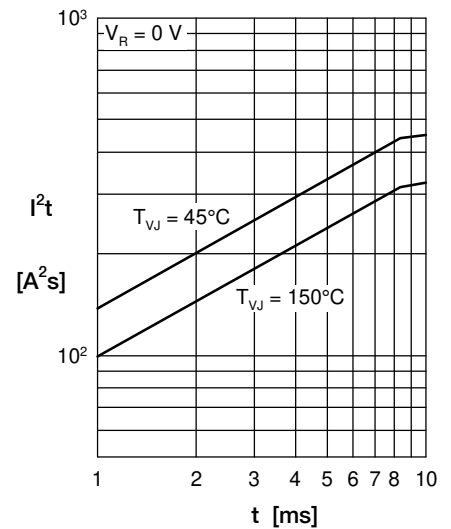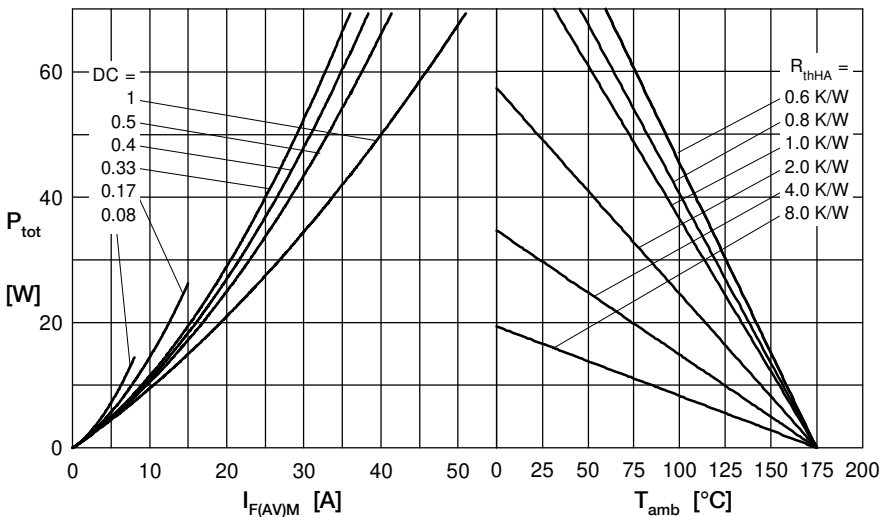

Fig. 2 Surge overload current

Fig. 3 I^2t versus time

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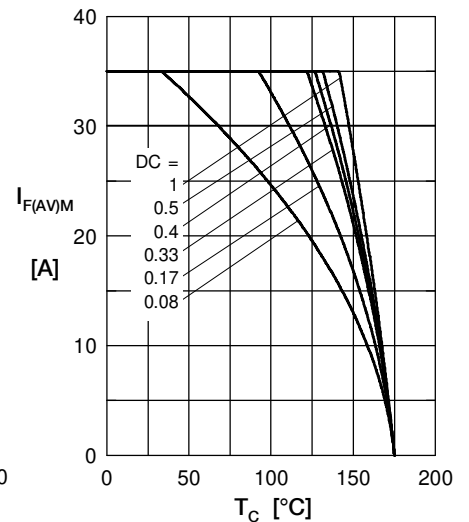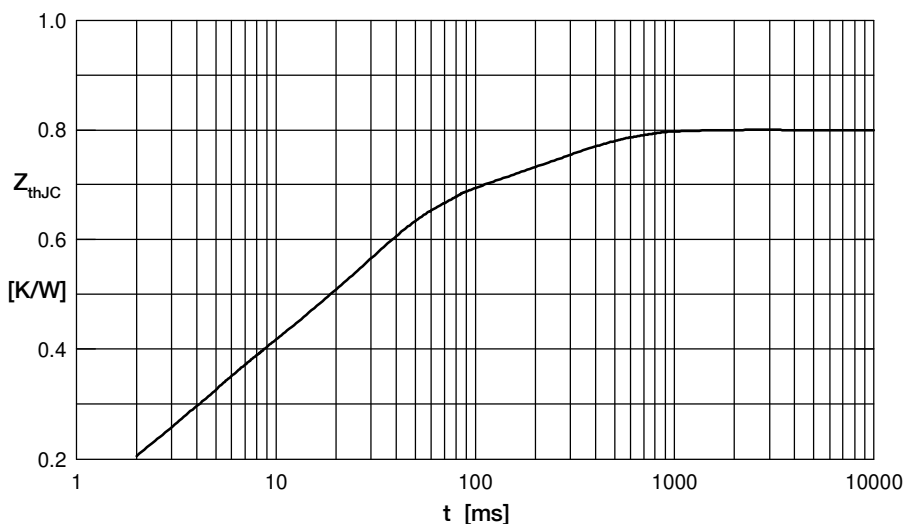

Fig. 5 Max. forward current vs. case temperature

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