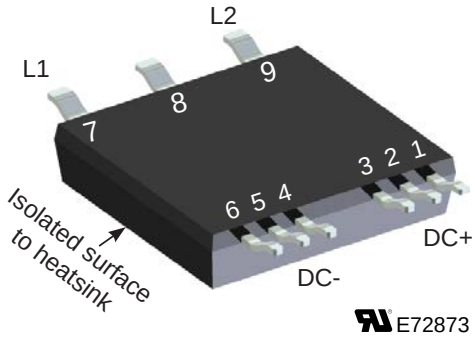
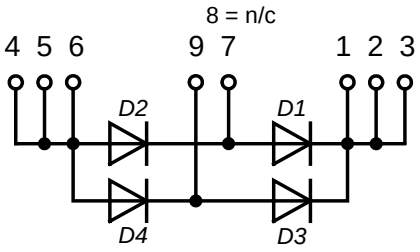
High Efficiency Standard Rectifier

Single Phase Rectifier Bridge

V_{RRM} = 800 V
I_{DAV} = 124 A
V_F = 1.15 V

Part number
DLA100B800LB





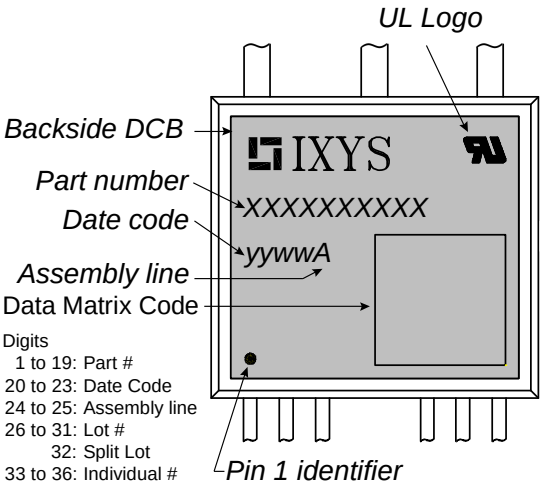
Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour
- AEC-Q 101 qualified 2018

Applications:
- Diode Bridge for main rectifi cation

Package: SMPD
- DCB isolated backside
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

Diodes				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
$V_{RRM\ op}$ $V_{RRM\ peak}$	*operating reverse blocking voltage* *peak repetitive reverse blocking voltage*		T_{VJ} = 25°C			800 1200	V V
I_R	*reverse current, drain current*	V_R = 800 V	T_{VJ} = 25°C T_{VJ} = 150°C			10 0.1	µA mA
V_F	*forward voltage drop*	I_F = 50 A I_F = 100 A	T_{VJ} = 25°C			1.23 1.45	V V
		I_F = 50 A I_F = 100 A	T_{VJ} = 150°C			1.15 1.44	V V
I_{DAV}	*avarage forward current*	*rectifier output current with:* rectangular; d = 0.5 (per diode) sine 180° (per diode)	T_C = 135°C			 132 124	 A A
V_{F0} r_F	*threshold voltage* *slope resistance*	for power loss calculation only	T_{VJ} = 175°C			0.75 4.2	V mΩ
R_{thJC}	*thermal resistance junction to case*					1.0	K/W
R_{thJH}	*thermal resistance junction to heatsink*	with thermal transfer paste (IXYS test setup)			1.45	1.60	K/W
P_{tot}	*total power dissipation*		T_C = 25°C			150	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V t = 8.3 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C T_{VJ} = 45°C			400 430	A A
		t = 10 ms; (50 Hz), sine; V_R = 0 V t = 8.3 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 150°C T_{VJ} = 150°C			350 375	A A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine; V_R = 0 V t = 8.3 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C T_{VJ} = 45°C			800 780	A^2s A^2s
		t = 10 ms; (50 Hz), sine; V_R = 0 V t = 8.3 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 150°C T_{VJ} = 150°C			610 570	A^2s A^2s
C_J		V_R = 800 V; f = 1 MHz	T_{VJ} = 25°C		13		pF

Package SMPD			Ratings			
Symbol	**Definitions**	**Conditions**	**min.**	**typ.**	**max.**	
I_{RMS}	*RMS current*	wide terminal standard terminal			100 60	A A
T_{stg} T_{op} T_{VJ}	*storage temperature* *opertation temperature* *virtual junction temperature*		-55 -55 -55		150 150 175	°C °C °C
Weight				8		g
F_C	*mounting force with clip*		40		130	N
$d_{Spp/App}$ $d_{Spb/Apb}$	*creepage distance on surface /* *striking distance through air*	terminal to terminal terminal to backside	1.6 4.0			mm mm
V_{ISOL}	*isolation voltage*	t = 1 second t = 1 minute 50/60 Hz; RMS; I_{ISOL} < 1 mA		3000 2500		V V

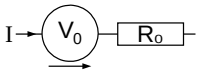


Part number

D = Diode
L = High Efficiency Standard Rectifier
A = (up to 1200V)
100 = Current Rating [A]
B = 1~ Rectifier Bridge
800 = Reverse Voltage [V]
LB = SMPD-B

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DLA100B800LB-TRR	DLA100B800LB-TRR	Tape&Reel	200	514621
	DLA100B800LB	DLA100B800LB	Tube	20	514614

Equivalent Circuits for Simulation **on die level* T_{VJ} = 175°C

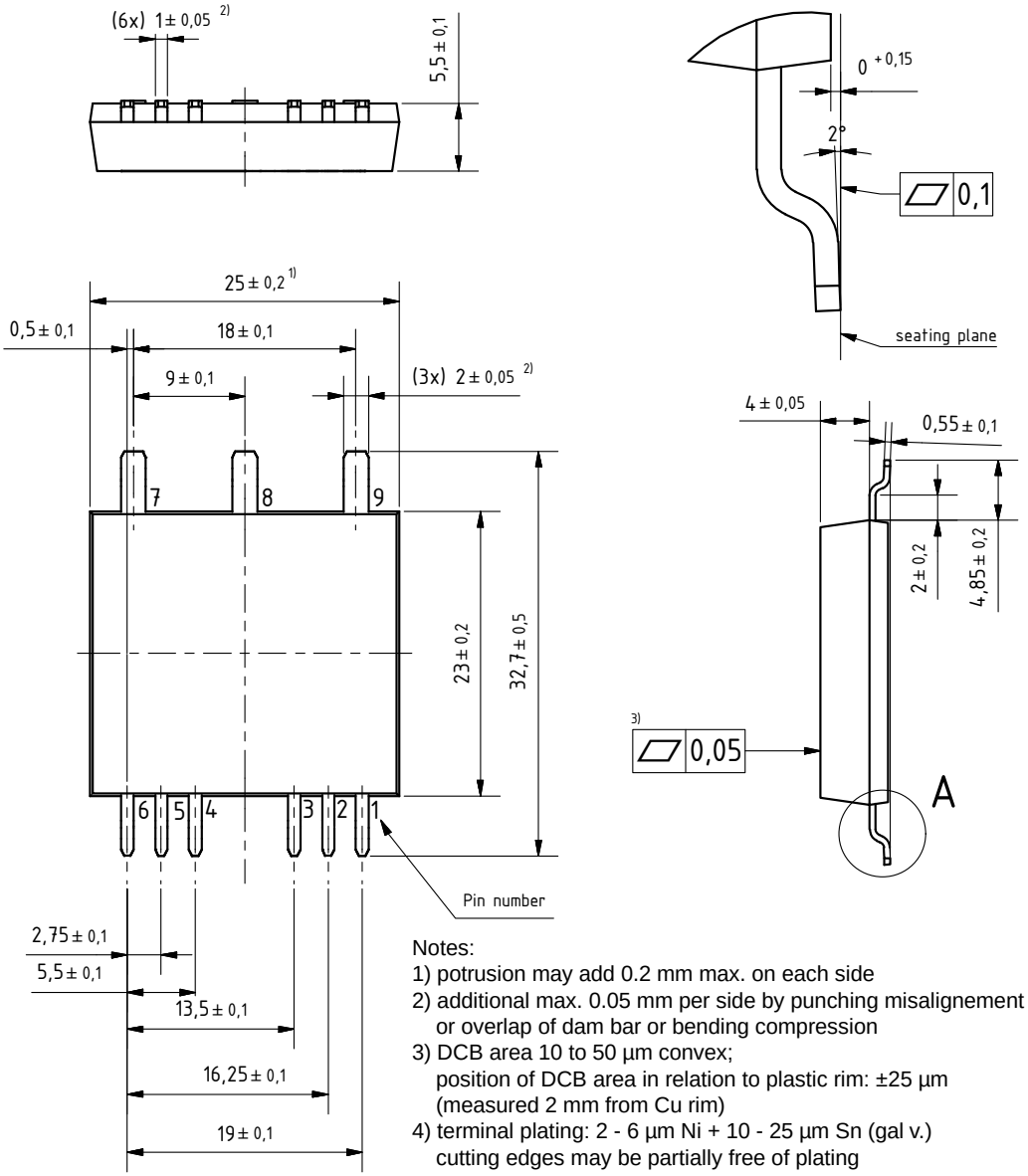


Diode

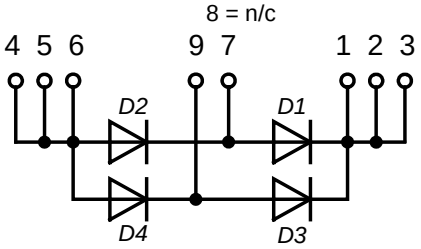
$V_{0\ max}$	*threshold voltage*	0.75	V
$R_{0\ max}$	*slope resistance **	4.2	mΩ

Outlines SMPD

Dimensions in mm (1 mm = 0.0394“)



Notes:
1) potrusion may add 0.2 mm max. on each side
2) additional max. 0.05 mm per side by punching misalignement or overlap of dam bar or bending compression
3) DCB area 10 to 50 µm convex;
position of DCB area in relation to plastic rim: ±25 µm (measured 2 mm from Cu rim)
4) terminal plating: 2 - 6 µm Ni + 10 - 25 µm Sn (gal v.)
cutting edges may be partially free of plating



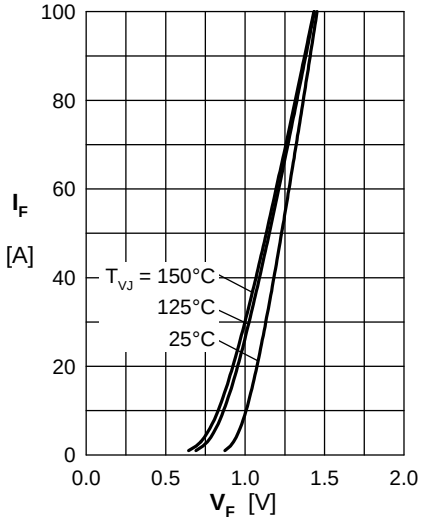


Fig. 1 Forward current versus voltage drop per diode

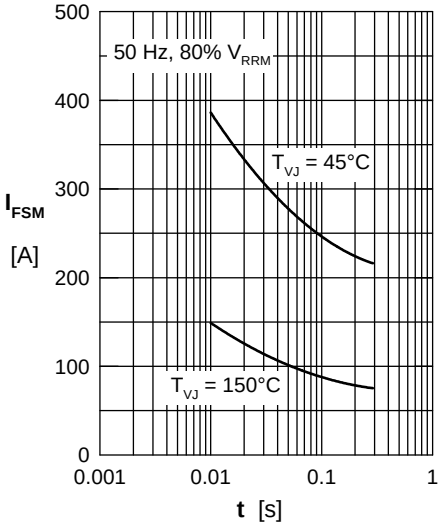


Fig. 2 Surge overload current

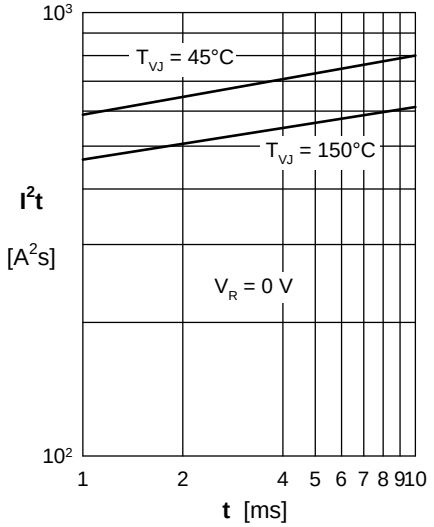


Fig. 3 I^2t versus time per diode

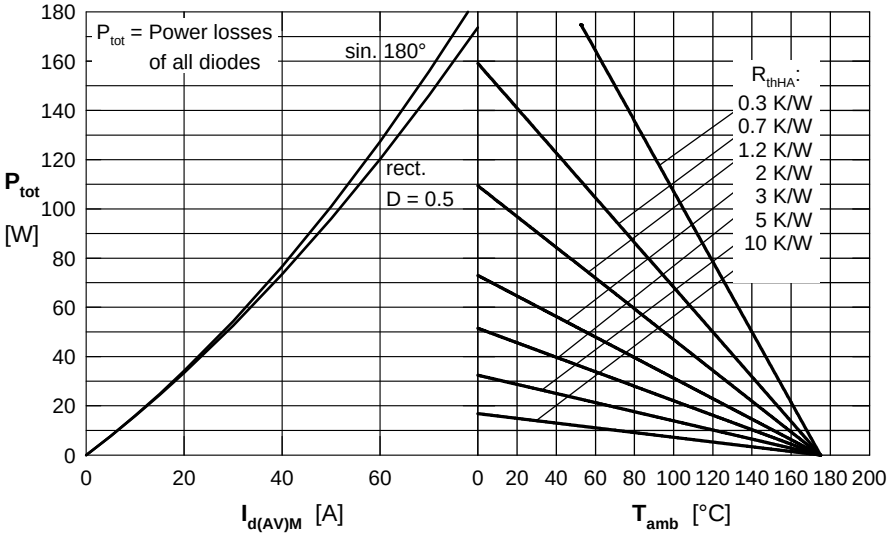


Fig. 4 Power dissipation vs. bridge output current and ambient temperature

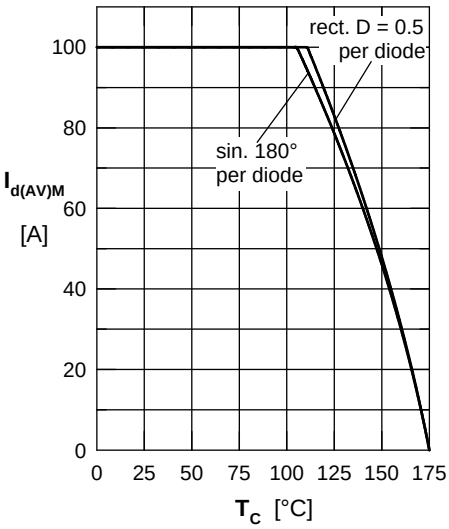


Fig. 5 Max. bridge output current vs. case temperature

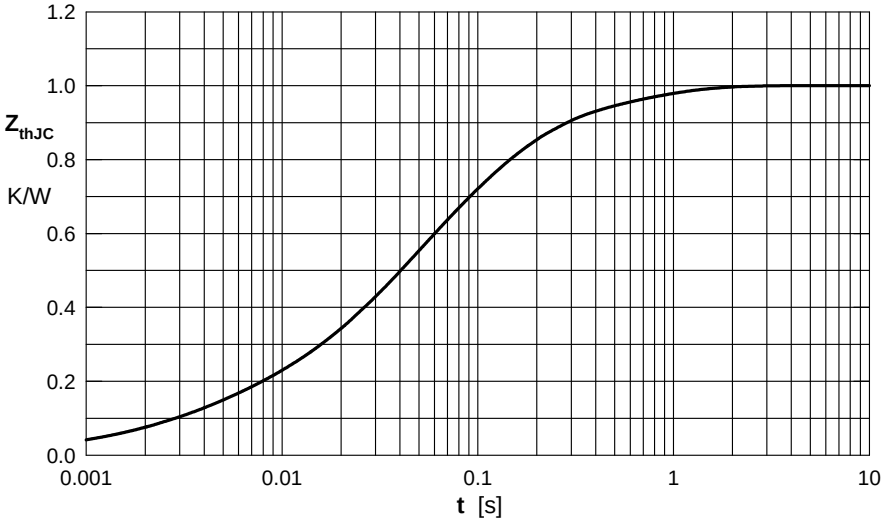


Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.09	0.003
2	0.116	0.062
3	0.386	0.1
4	0.128	0.55