High Efficiency Standard Rectifier

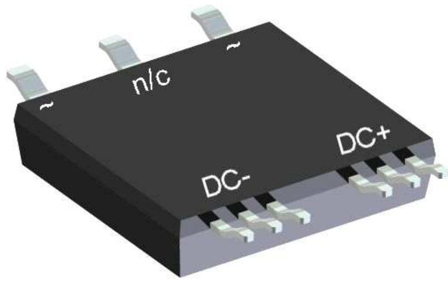
1~ Rectifier		
V_{RRM}	=	800 V
I_{DAV}	=	124 A
I_{FSM}	=	400 A

1~ Rectifier Bridge

Part number

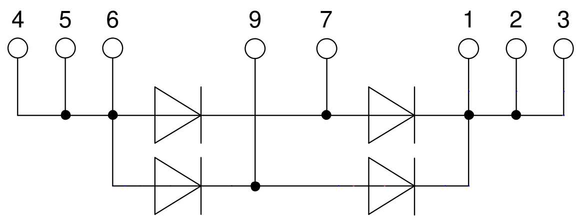
DLA100B800LB

Marking on Product: DLA100B800LB



Backside: isolated

E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:

- Diode Bridge for main rectification

Package: SMPD

- Isolation Voltage: 3000 V~
- Industry convenient outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

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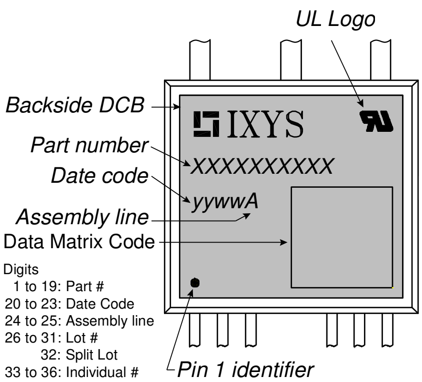
Rectifier

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			800	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			0.1	mA
V_F	*forward voltage drop*	I_F = 50 A	T_{VJ} = 25°C			1.23	V
		I_F = 100 A				1.45	V
		I_F = 50 A	T_{VJ} = 150°C			1.15	V
		I_F = 100 A				1.44	V
I_{DAV}	*bridge output current*	T_C = 135°C 180° sine	T_{VJ} = 175°C			124	A
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 175°C			0.75	V
r_F	*slope resistance*					4.2	mΩ
R_{thJC}	*thermal resistance junction to case*					1	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.40		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	T_{VJ} = 45°C			400	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			430	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			340	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			365	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			800	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			770	A^2s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			580	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			555	A^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		13		pF

Package SMPD				Ratings			
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal				100	A
T_{VJ}	*virtual junction temperature*			-55		175	°C
T_{op}	*operation temperature*			-55		150	°C
T_{stg}	*storage temperature*			-55		150	°C
Weight					8.5		g
F_C	*mounting force with clip*			40		130	N
$d_{Spp/App}$	*creepage distance on surface | striking distance through air*		*terminal to terminal*	1.6			mm
$d_{Spb/Apb}$			*terminal to backside*	4.0			mm
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA	3000			V
		t = 1 minute		2500			V



Part description

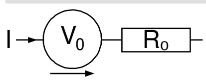
D = Diode
L = Low Voltage Standard Rectifier
A = (up to 1200V)
100 = Current Rating [A]
B = 1~ Rectifier Bridge
800 = Reverse Voltage [V]
LB = SMPD-B

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA100B800LB-TUB	DLA100B800LB	Tube	20	514614
Alternative	DLA100B800LB-TRR	DLA100B800LB	Tape & Reel	200	514621

Equivalent Circuits for Simulation

** on die level*

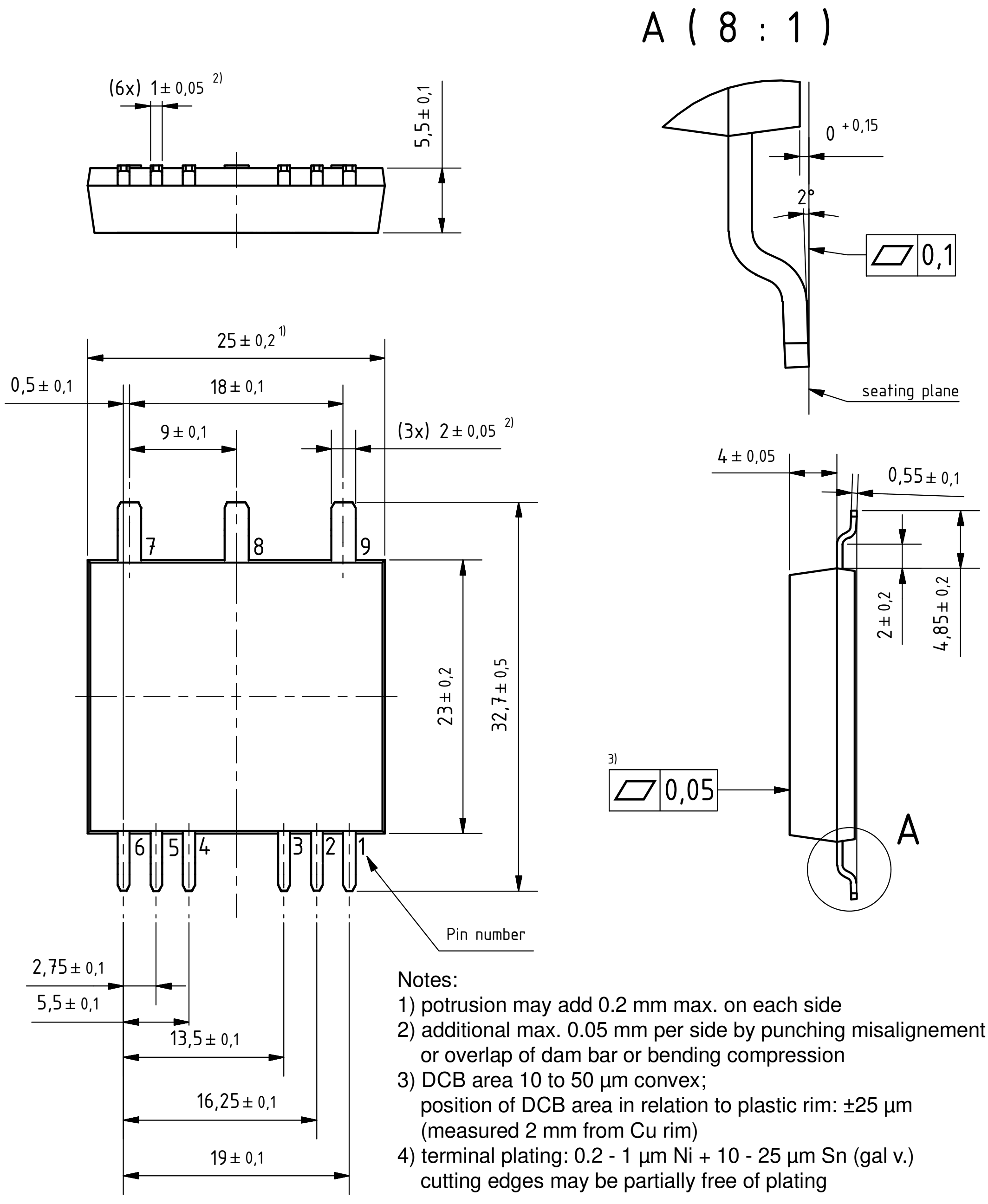
$T_{VJ} = 175\,°C$



Rectifier

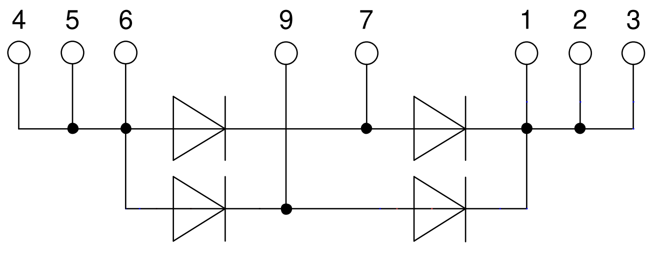
$V_{0\ max}$	*threshold voltage*	0.51	V
$R_{0\ max}$	*slope resistance **	1.3	mΩ

Outlines SMPD



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: 0.2 - 1 µm Ni + 10 - 25 µm Sn (gal v.) cutting edges may be partially free of plating

8 = n/c



Rectifier

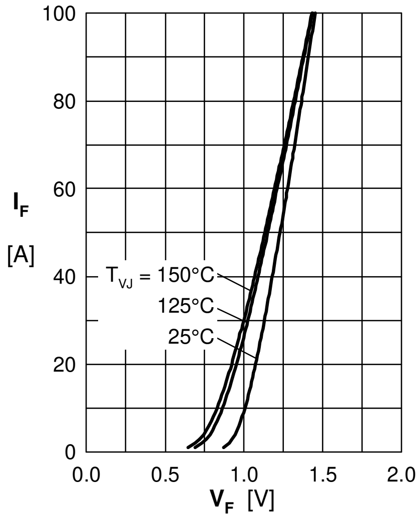


Fig. 1 Forward current versus voltage drop per diode

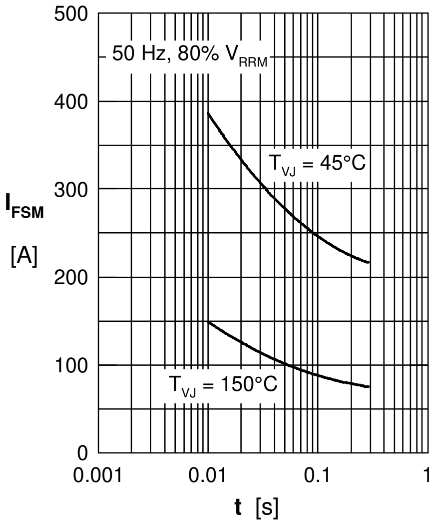


Fig. 2 Surge overload current

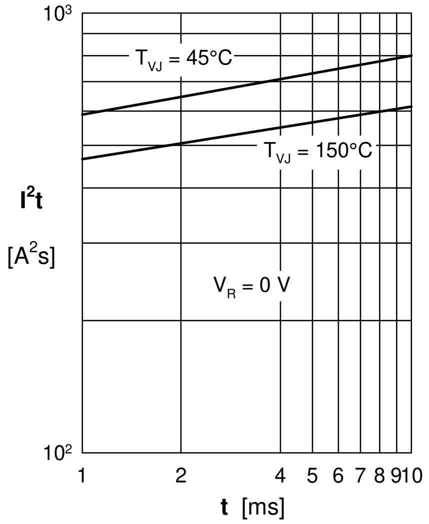


Fig. 3 I^2t versus time per diode

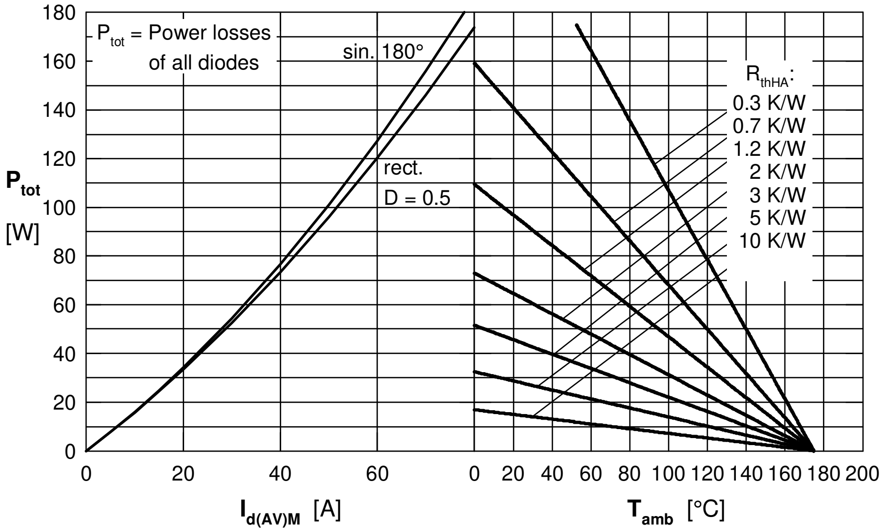


Fig. 4 Power dissipation vs. bridge output current and ambient temperature

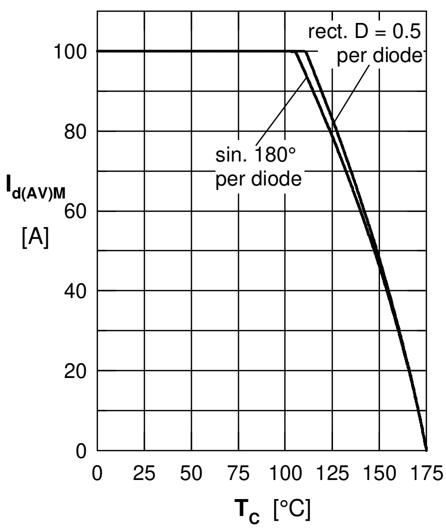


Fig. 5 Max. bridge output current vs. case temperature

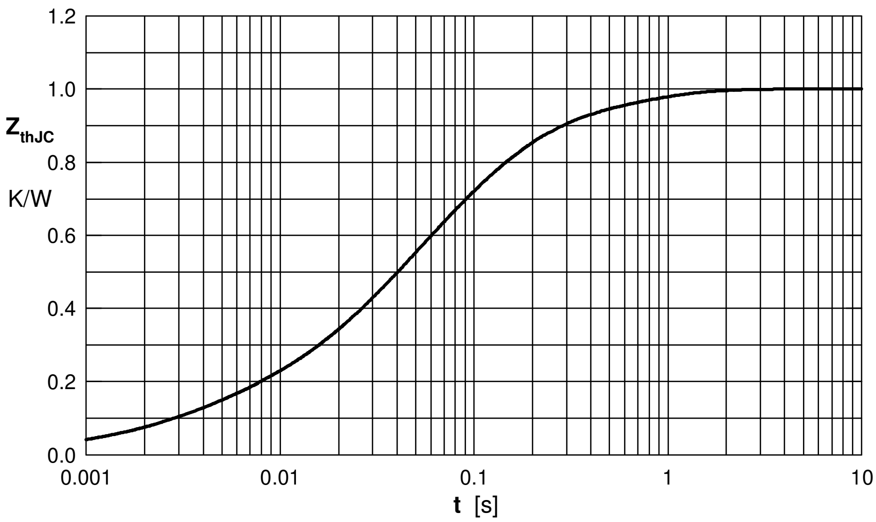


Fig. 6 Transient thermal impedance junction to case

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