

High Efficiency Standard Rectifier

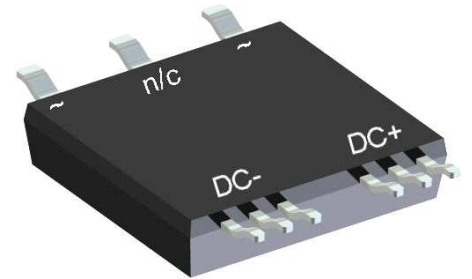
| |
|---------------------------|
| 1~ Rectifier |
| $V_{RRM} = 1200\text{ V}$ |
| $I_{DAV} = 124\text{ A}$ |
| $I_{FSM} = 400\text{ A}$ |

1~ Rectifier Bridge


Part number

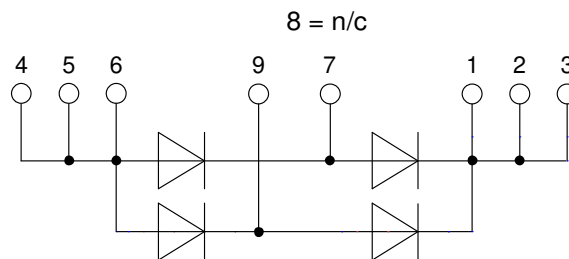
DLA100B1200LB

Marking on Product: *DLA100B1200LB*



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

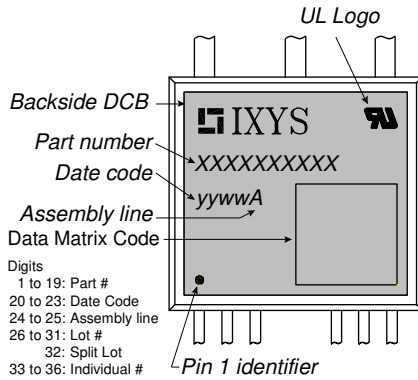
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| Rectifier | | | | Ratings | | | |
|------------|--|--|-------------------------|---------|------|------------------|--|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit | |
| V_{RSM} | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 1200 | V | |
| V_{RRM} | max. repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 1200 | V | |
| I_R | reverse current | $V_R = 1200\text{ V}$ | $T_{VJ} = 25^{\circ}C$ | | 10 | μA | |
| | | $V_R = 1200\text{ V}$ | $T_{VJ} = 150^{\circ}C$ | | 0.1 | mA | |
| V_F | forward voltage drop | $I_F = 50\text{ A}$ | $T_{VJ} = 25^{\circ}C$ | | 1.23 | V | |
| | | | | | 1.45 | V | |
| | | $I_F = 100\text{ A}$ | $T_{VJ} = 150^{\circ}C$ | | 1.15 | V | |
| | | | | | 1.44 | V | |
| I_{DAV} | bridge output current | $T_C = 135^{\circ}C$ 180° sine | $T_{VJ} = 175^{\circ}C$ | | 124 | A | |
| | | | | | | | |
| V_{FO} | threshold voltage | } for power loss calculation only | $T_{VJ} = 175^{\circ}C$ | | 0.75 | V | |
| r_F | slope resistance | | | | 4.2 | m Ω | |
| 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 | | $T_C = 25^{\circ}C$ | | 150 | W | |
| I_{FSM} | max. forward surge current | t = 10 ms; (50 Hz), sine | $T_{VJ} = 45^{\circ}C$ | | 400 | A | |
| | | t = 8,3 ms; (60 Hz), sine | $V_R = 0\text{ V}$ | | 430 | A | |
| | | t = 10 ms; (50 Hz), sine | $T_{VJ} = 150^{\circ}C$ | | 340 | A | |
| | | t = 8,3 ms; (60 Hz), sine | $V_R = 0\text{ V}$ | | 365 | A | |
| I^2t | value for fusing | t = 10 ms; (50 Hz), sine | $T_{VJ} = 45^{\circ}C$ | | 800 | A ² s | |
| | | t = 8,3 ms; (60 Hz), sine | $V_R = 0\text{ V}$ | | 770 | A ² s | |
| | | t = 10 ms; (50 Hz), sine | $T_{VJ} = 150^{\circ}C$ | | 580 | A ² s | |
| | | t = 8,3 ms; (60 Hz), sine | $V_R = 0\text{ V}$ | | 555 | A ² s | |
| C_J | junction capacitance | $V_R = 400\text{ V}; f = 1\text{ MHz}$ | $T_{VJ} = 25^{\circ}C$ | | 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 | 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
- 1200 = Reverse Voltage [V]
- LB = SMPD-B

| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|-------------|-------------------|--------------------|---------------|----------|----------|
| Standard | DLA100B1200LB-TUB | DLA100B1200LB | Tube | 20 | 517180 |
| Alternative | DLA100B1200LB-TRR | DLA100B1200LB | Tape & Reel | 200 | 517187 |

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175\text{ °C}$



Rectifier

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

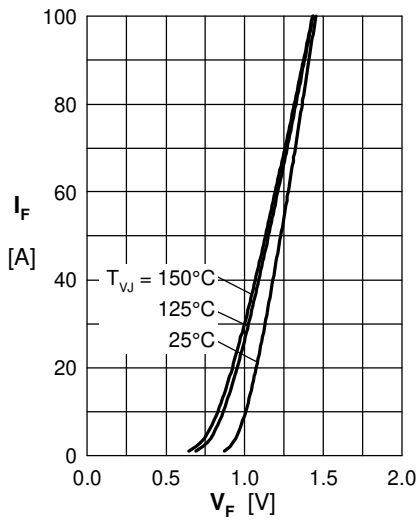
Rectifier


Fig. 1 Forward current versus voltage drop per diode

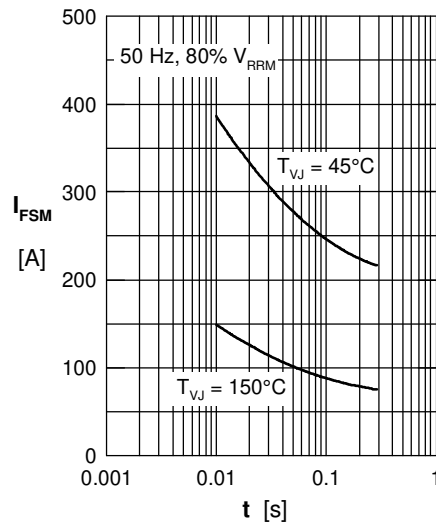


Fig. 2 Surge overload current

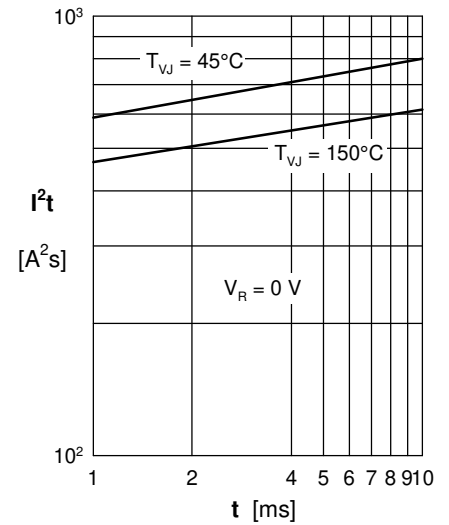
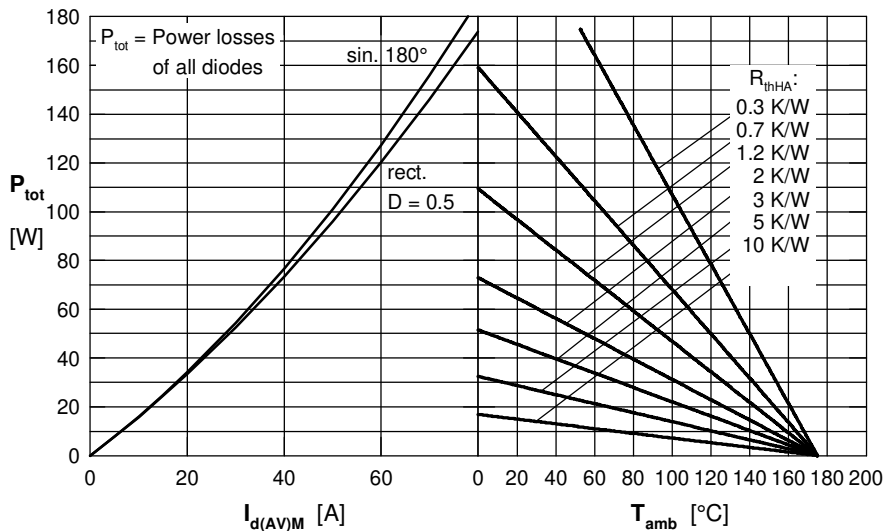

 Fig. 3 I^2t versus time per diode


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

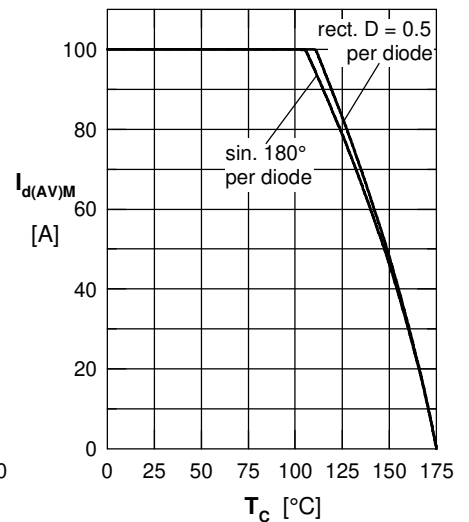


Fig. 5 Max. bridge output current vs. case temperature

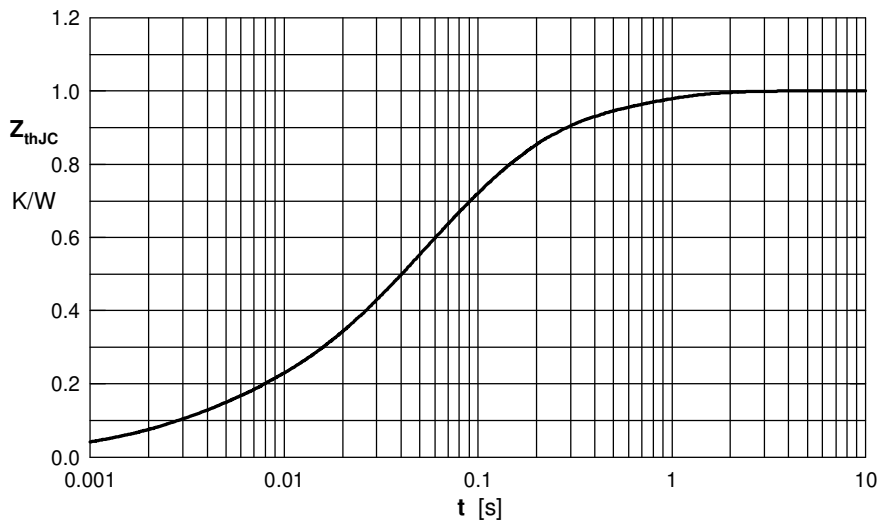


Fig. 6 Transient thermal impedance junction to case

 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 |

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