

preliminary

# Schottky Diode Gen <sup>2</sup>

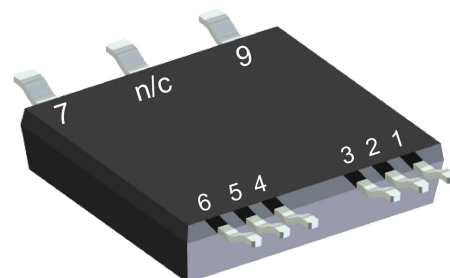
$$\begin{aligned} V_{RRM} &= 200 \text{ V} \\ I_{FAV} &= 2 \times 65 \text{ A} \\ V_F &= 0.82 \text{ V} \end{aligned}$$

High Performance Schottky Diode  
 Low Loss and Soft Recovery  
 Parallel legs

Part number

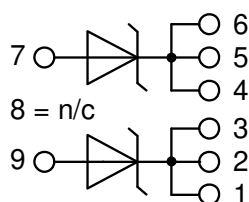
**DSA120X200LB**

Marking on Product: DSA120X200LB



Backside: isolated

 E72873



## Features / Advantages:

- Very low  $V_f$
- Extremely low switching losses
- Low  $I_{rm}$  values
- Improved thermal behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching

## Applications:

- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

## 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

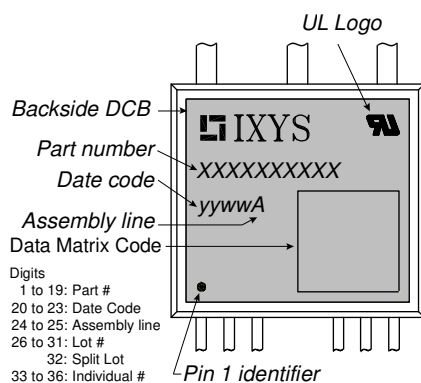
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| Schottky   |                                              |                                                                    |                                | Ratings                        |      |      |      |
|------------|----------------------------------------------|--------------------------------------------------------------------|--------------------------------|--------------------------------|------|------|------|
| Symbol     | Definition                                   | Conditions                                                         |                                | min.                           | typ. | max. | Unit |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 200  | V    |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 200  | V    |
| $I_R$      | reverse current, drain current               | $V_R = 200\text{ V}$                                               | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 1    | mA   |
|            |                                              | $V_R = 200\text{ V}$                                               | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 5    | mA   |
| $V_F$      | forward voltage drop                         | $I_F = 60\text{ A}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 0.98 | V    |
|            |                                              | $I_F = 120\text{ A}$                                               |                                |                                |      | 1.22 | V    |
|            |                                              | $I_F = 60\text{ A}$                                                | $T_{VJ} = 150^{\circ}\text{C}$ |                                |      | 0.82 | V    |
|            |                                              | $I_F = 120\text{ A}$                                               |                                |                                |      | 1.10 | V    |
| $I_{FAV}$  | average forward current                      | $T_C = 130^{\circ}\text{C}$                                        | $T_{VJ} = 175^{\circ}\text{C}$ |                                |      | 65   | A    |
|            |                                              | rectangular $d = 0.5$                                              |                                |                                |      |      |      |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  |                                | $T_{VJ} = 175^{\circ}\text{C}$ |      | 0.51 | V    |
| $r_F$      | slope resistance                             |                                                                    |                                |                                |      | 2.7  | mΩ   |
| $R_{thJC}$ | thermal resistance junction to case          |                                                                    |                                |                                |      | 0.8  | K/W  |
| $R_{thCH}$ | thermal resistance case to heatsink          |                                                                    |                                |                                | 0.40 |      | K/W  |
| $P_{tot}$  | total power dissipation                      | $T_C = 25^{\circ}\text{C}$                                         |                                |                                |      | 185  | W    |
| $I_{FSM}$  | max. forward surge current                   | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | $T_{VJ} = 45^{\circ}\text{C}$  |                                |      | 700  | A    |
| $C_J$      | junction capacitance                         | $V_R = 24\text{ V}$ $f = 1\text{ MHz}$                             | $T_{VJ} = 25^{\circ}\text{C}$  |                                | 394  |      | pF   |

preliminary

| 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   |
| <b>Weight</b> |                                                              |                      |         | 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    |



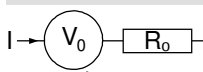
### Part description

D = Diode  
 S = Schottky Diode  
 A = low VF  
 120 = Current Rating [A]  
 X = Parallel legs  
 200 = Reverse Voltage [V]  
 LB = SMPD-B

| Ordering    | Ordering Number  | Marking on Product | Delivery Mode | Quantity | Code No. |
|-------------|------------------|--------------------|---------------|----------|----------|
| Standard    | DSA120X200LB-TUB | DSA120X200LB       | Tube          | 20       | 524773   |
| Alternative | DSA120X200LB-TRR | DSA120X200LB       | Tape & Reel   | 200      | 523115   |

### Equivalent Circuits for Simulation

\* on die level

 $T_{VJ} = 175\text{ °C}$ 


Schottky

 $V_{0\text{ max}}$  threshold voltage 0.51

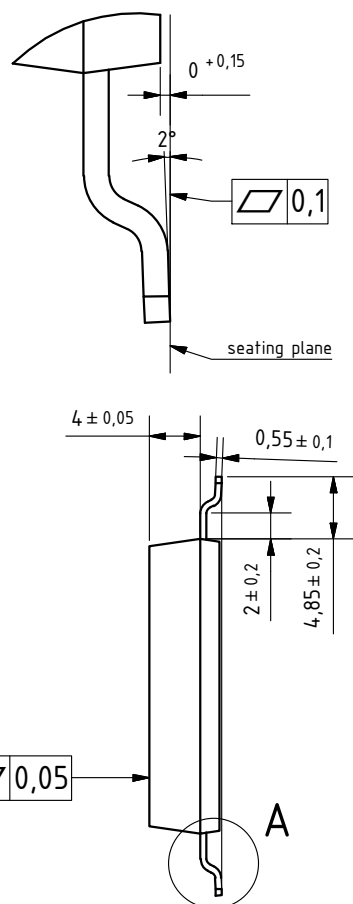
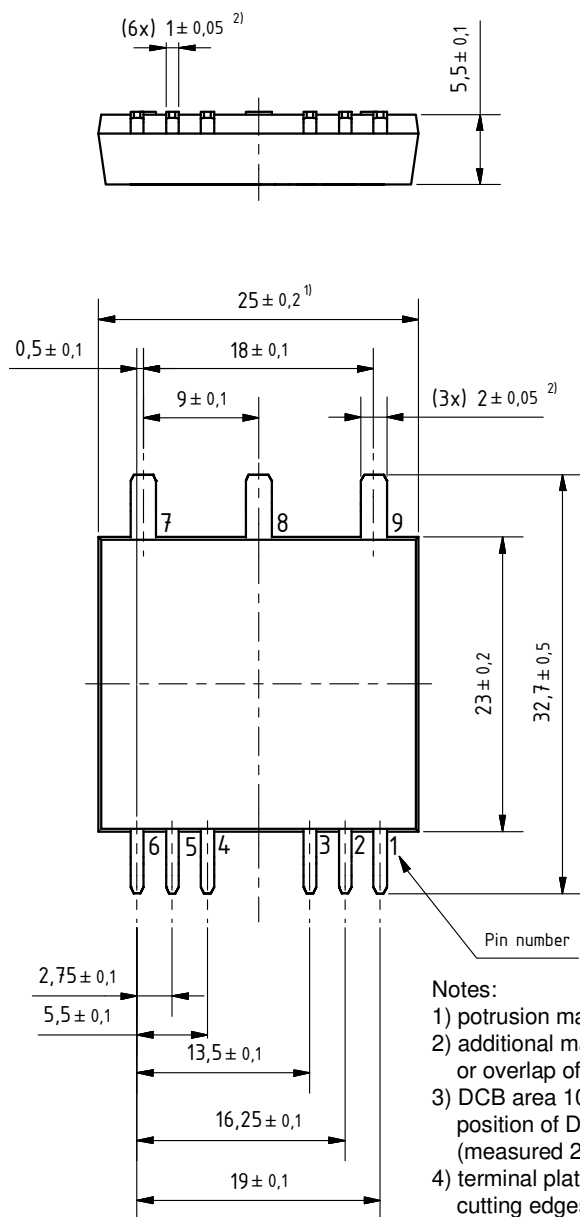
V

 $R_{0\text{ max}}$  slope resistance \* 2.7

mΩ

## Outlines SMPD

A ( 8 : 1 )



Notes:

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

