

preliminary

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

$$V_{RRM} = 100V$$

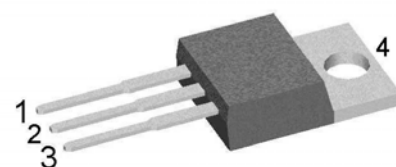
$$I_{FAV} = 2 \times 10A$$

$$V_F = 0.71V$$

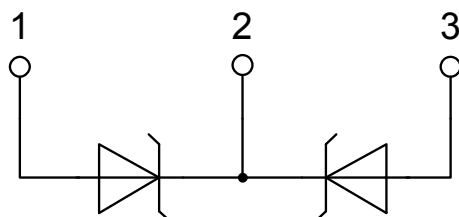
High Performance Schottky Diode  
Low Loss and Soft Recovery  
Common Cathode

Part number

DSA20C100PB



Backside: cathode



### 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: TO-220

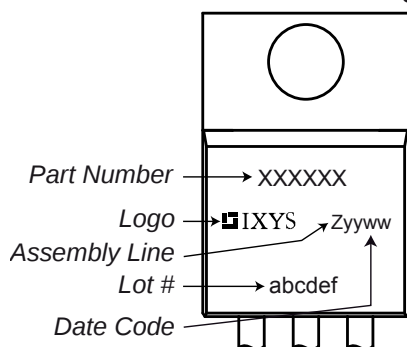
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

| Schottky   |                                              |                                                                    |                                | Ratings                        |      |      |               |
|------------|----------------------------------------------|--------------------------------------------------------------------|--------------------------------|--------------------------------|------|------|---------------|
| Symbol     | Definition                                   | Conditions                                                         |                                | min.                           | typ. | max. | Unit          |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 100  | V             |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 100  | V             |
| $I_R$      | reverse current, drain current               | $V_R = 100\text{ V}$                                               | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 200  | $\mu\text{A}$ |
|            |                                              | $V_R = 100\text{ V}$                                               | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 2    | mA            |
| $V_F$      | forward voltage drop                         | $I_F = 10\text{ A}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 0.89 | V             |
|            |                                              | $I_F = 20\text{ A}$                                                |                                |                                |      | 1.04 | V             |
|            |                                              | $I_F = 10\text{ A}$                                                | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 0.71 | V             |
|            |                                              | $I_F = 20\text{ A}$                                                |                                |                                |      | 0.87 | V             |
| $I_{FAV}$  | average forward current                      | $T_C = 155^{\circ}\text{C}$<br>rectangular $d = 0.5$               | $T_{VJ} = 175^{\circ}\text{C}$ |                                |      | 10   | A             |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  |                                | $T_{VJ} = 175^{\circ}\text{C}$ |      | 0.45 | V             |
| $r_F$      | slope resistance                             |                                                                    |                                |                                |      | 16.1 | m $\Omega$    |
| $R_{thJC}$ | thermal resistance junction to case          |                                                                    |                                |                                |      | 2.4  | K/W           |
| $R_{thCH}$ | thermal resistance case to heatsink          |                                                                    |                                |                                | 0.50 |      | K/W           |
| $P_{tot}$  | total power dissipation                      | $T_C = 25^{\circ}\text{C}$                                         |                                |                                |      | 65   | W             |
| $I_{FSM}$  | max. forward surge current                   | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | $T_{VJ} = 45^{\circ}\text{C}$  |                                |      | 240  | A             |
| $C_J$      | junction capacitance                         | $V_R = 12\text{ V}$ $f = 1\text{ MHz}$                             | $T_{VJ} = 25^{\circ}\text{C}$  |                                | 96   |      | pF            |

preliminary

| Package TO-220 |                              |                            | Ratings |      |      |      |
|----------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol         | Definition                   | Conditions                 | min.    | typ. | max. | Unit |
| $I_{RMS}$      | RMS current                  | per terminal <sup>1)</sup> |         |      | 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         |                              |                            |         | 2    |      | g    |
| $M_D$          | mounting torque              |                            | 0.4     |      | 0.6  | Nm   |
| $F_C$          | mounting force with clip     |                            | 20      |      | 60   | N    |

### Product Marking



### Part number

D = Diode  
 S = Schottky Diode  
 A = low VF  
 20 = Current Rating [A]  
 C = Common Cathode  
 100 = Reverse Voltage [V]  
 PB = TO-220AB (3)

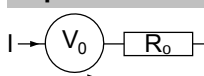
| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DSA20C100PB | DSA20C100PB        | Tube          | 50       | 503509   |

| Similar Part | Package        | Voltage class |
|--------------|----------------|---------------|
| DSA20C100PN  | TO-220ABFP (3) | 100           |

### Equivalent Circuits for Simulation

\* on die level

$T_{VJ} = 175^{\circ}\text{C}$



Schottky

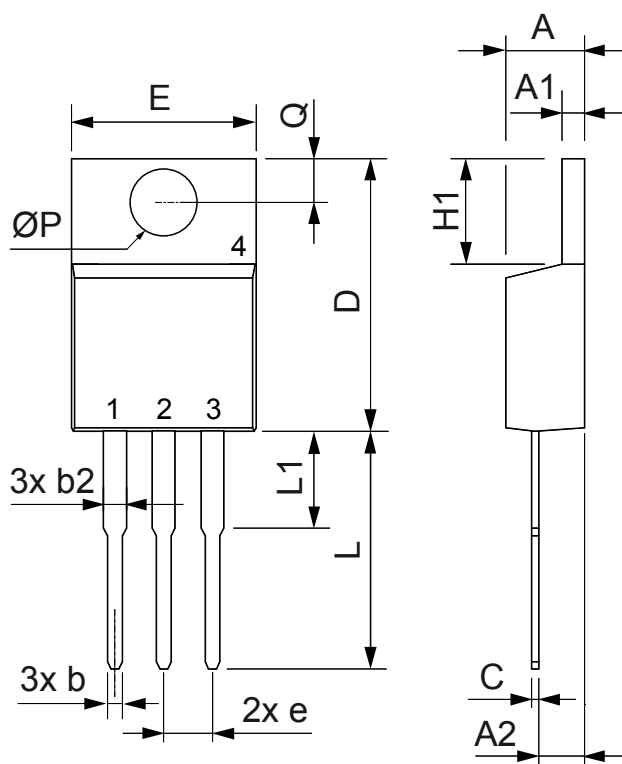
$V_{0\max}$  threshold voltage 0.45

V

$R_{0\max}$  slope resistance \* 12.9

mΩ

## Outlines TO-220



| Dim. | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 4.32       | 4.82  | 0.170  | 0.190 |
| A1   | 1.14       | 1.39  | 0.045  | 0.055 |
| A2   | 2.29       | 2.79  | 0.090  | 0.110 |
| b    | 0.64       | 1.01  | 0.025  | 0.040 |
| b2   | 1.15       | 1.65  | 0.045  | 0.065 |
| C    | 0.35       | 0.56  | 0.014  | 0.022 |
| D    | 14.73      | 16.00 | 0.580  | 0.630 |
| E    | 9.91       | 10.66 | 0.390  | 0.420 |
| e    | 2.54       | BSC   | 0.100  | BSC   |
| H1   | 5.85       | 6.85  | 0.230  | 0.270 |
| L    | 12.70      | 13.97 | 0.500  | 0.550 |
| L1   | 2.79       | 5.84  | 0.110  | 0.230 |
| ØP   | 3.54       | 4.08  | 0.139  | 0.161 |
| Q    | 2.54       | 3.18  | 0.100  | 0.125 |

