

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

preliminary

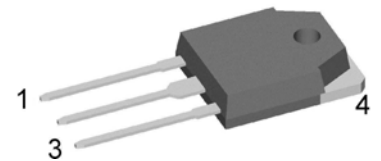
$$V_{RRM} = 100V$$

$$I_{FAV} = 2 \times 15A$$

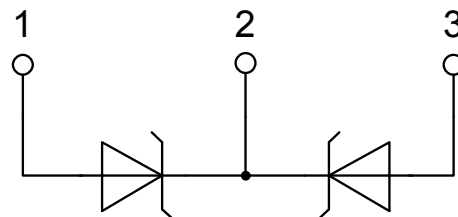
$$V_F = 0.72V$$

High Performance Schottky Diode  
Low Loss and Soft Recovery  
Common Cathode

Part number

**DSA30C100QB**


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-3P

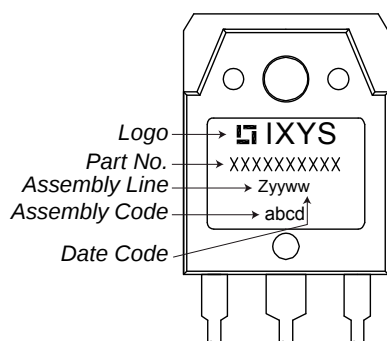
- Industry standard outline compatible with TO-247
- RoHS compliant
- Epoxy meets UL 94V-0

| 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               | $V_R = 100\text{ V}$                                               | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 250  | $\mu\text{A}$ |
|            |                                              | $V_R = 100\text{ V}$                                               | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 2.5  | mA            |
| $V_F$      | forward voltage drop                         | $I_F = 15\text{ A}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 0.91 | V             |
|            |                                              | $I_F = 30\text{ A}$                                                |                                |                                |      | 1.06 | V             |
|            |                                              | $I_F = 15\text{ A}$                                                | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 0.72 | V             |
|            |                                              | $I_F = 30\text{ A}$                                                |                                |                                |      | 0.90 | V             |
| $I_{FAV}$  | average forward current                      | $T_C = 150^{\circ}\text{C}$<br>rectangular $d = 0.5$               | $T_{VJ} = 175^{\circ}\text{C}$ |                                |      | 15   | A             |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  |                                | $T_{VJ} = 175^{\circ}\text{C}$ |      | 0.46 | V             |
| $r_F$      | slope resistance                             |                                                                    |                                |                                |      | 11.7 | m $\Omega$    |
| $R_{thJC}$ | thermal resistance junction to case          |                                                                    |                                |                                |      | 1.75 | K/W           |
| $R_{thCH}$ | thermal resistance case to heatsink          |                                                                    |                                |                                | 0.25 |      | K/W           |
| $P_{tot}$  | total power dissipation                      | $T_C = 25^{\circ}\text{C}$                                         |                                |                                |      | 85   | W             |
| $I_{FSM}$  | max. forward surge current                   | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | $T_{VJ} = 45^{\circ}\text{C}$  |                                |      | 340  | A             |
| $C_J$      | junction capacitance                         | $V_R = 12\text{ V}$ $f = 1\text{ MHz}$                             | $T_{VJ} = 25^{\circ}\text{C}$  |                                | 146  |      | pF            |

preliminary

| Package TO-3P |                              |                            | Ratings |      |      |      |
|---------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol        | Definition                   | Conditions                 | min.    | typ. | max. | Unit |
| $I_{RMS}$     | RMS current                  | per terminal <sup>1)</sup> |         |      | 50   | A    |
| $T_{VJ}$      | virtual junction temperature |                            | -55     |      | 175  | °C   |
| $T_{op}$      | operation temperature        |                            | -55     |      | 150  | °C   |
| $T_{stg}$     | storage temperature          |                            | -55     |      | 150  | °C   |
| Weight        |                              |                            |         | 5    |      | g    |
| $M_D$         | mounting torque              |                            | 0.8     |      | 1.2  | Nm   |
| $F_C$         | mounting force with clip     |                            | 20      |      | 120  | N    |

### Product Marking



### Part number

D = Diode  
 S = Schottky Diode  
 A = low VF  
 30 = Current Rating [A]  
 C = Common Cathode  
 100 = Reverse Voltage [V]  
 QB = TO-3P (3)

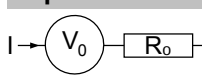
| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DSA30C100QB | DSA30C100QB        | Tube          | 30       | 503339   |

| Similar Part | Package        | Voltage class |
|--------------|----------------|---------------|
| DSA30C100HB  | TO-247AD (3)   | 100           |
| DSA30C100PB  | TO-220AB (3)   | 100           |
| DSA30C100PN  | TO-220ABFP (3) | 100           |

### Equivalent Circuits for Simulation

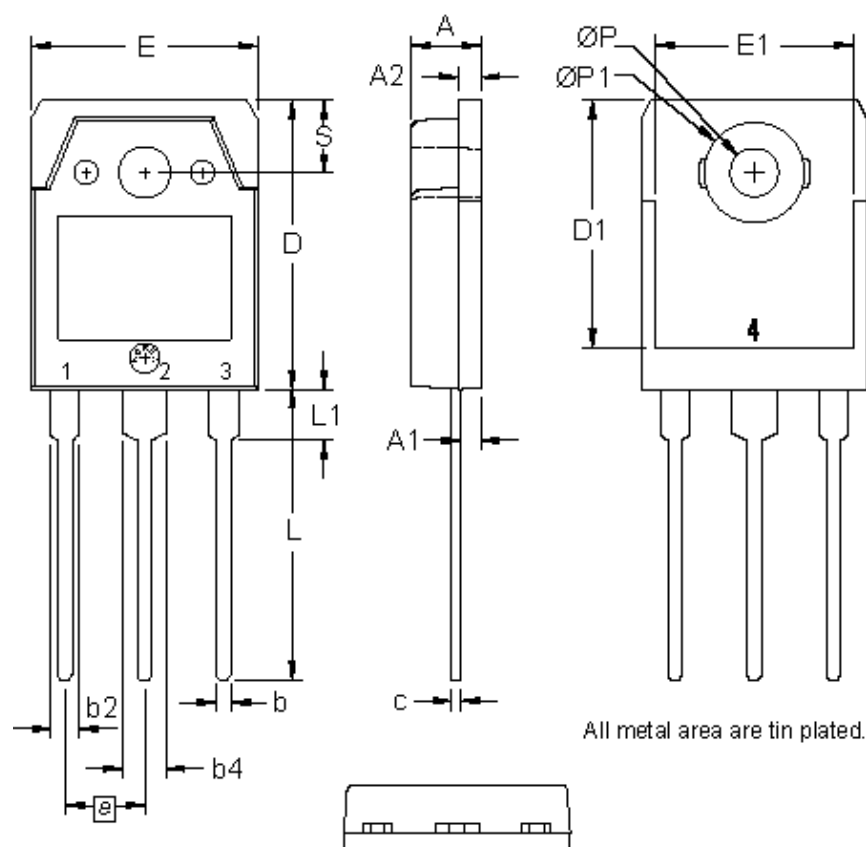
\* on die level

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

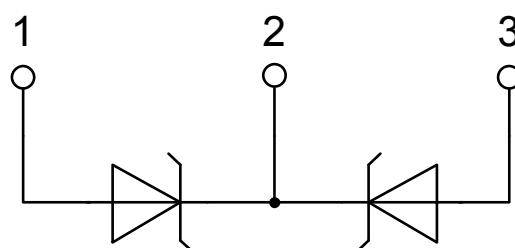


Schottky

|             |                    |      |    |
|-------------|--------------------|------|----|
| $V_{0\max}$ | threshold voltage  | 0.46 | V  |
| $R_{0\max}$ | slope resistance * | 9.1  | mΩ |

**Outlines TO-3P**


| Dim. | Millimeter |       | Inches    |       |
|------|------------|-------|-----------|-------|
|      | min        | max   | min       | max   |
| A    | 4.70       | 4.90  | 0.185     | 0.193 |
| A1   | 1.30       | 1.50  | 0.051     | 0.059 |
| A2   | 1.45       | 1.65  | 0.057     | 0.065 |
| b    | 0.90       | 1.15  | 0.035     | 0.045 |
| b2   | 1.90       | 2.20  | 0.075     | 0.087 |
| b4   | 2.90       | 3.20  | 0.114     | 0.126 |
| c    | 0.55       | 0.80  | 0.022     | 0.031 |
| D    | 19.80      | 20.10 | 0.780     | 0.791 |
| D1   | 16.90      | 17.20 | 0.665     | 0.677 |
| E    | 15.50      | 15.80 | 0.610     | 0.622 |
| E1   | 13.50      | 13.70 | 0.531     | 0.539 |
| e    | 5.45 BSC   |       | 0.215 BSC |       |
| L    | 19.80      | 20.20 | 0.780     | 0.795 |
| L1   | 3.40       | 3.60  | 0.134     | 0.142 |
| Ø P  | 3.20       | 3.40  | 0.126     | 0.134 |
| ØP1  | 6.90       | 7.10  | 0.272     | 0.280 |
| S    | 4.90       | 5.10  | 0.193     | 0.201 |



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