

# DSA20C100PN

## 100 V, 20 A Schottky Rectifier Diode



### Features:

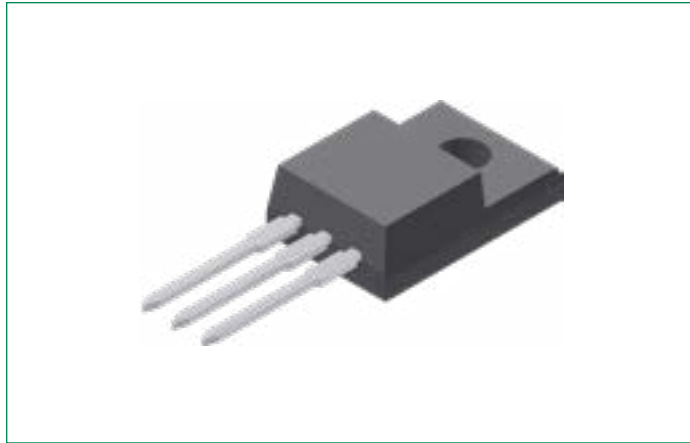
- Very low  $V_F$
- Extremely low switching losses
- Low  $I_{RM}$  values
- Improved thermal behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Terminals finish: 100% pure tin
- This is a Pb-free device
- Epoxy meets UL 94 V-0
- Isolation Voltage:  $V \sim 2500$
- Soldering pins for PCB mounting
- Base plate: Plastic over molded tab

### Applications:

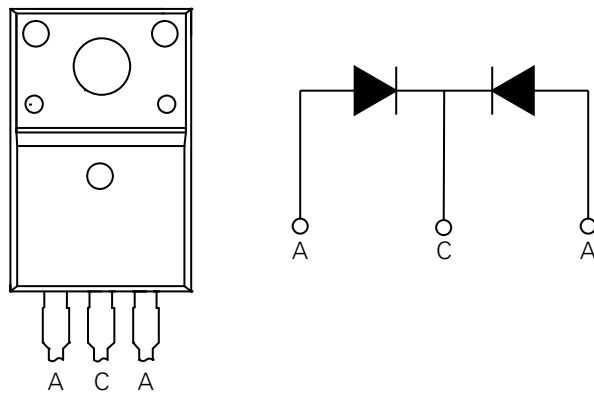
- Switching power supply
- Free-Wheeling diodes
- Converters
- Reverse battery protection

### Product Summary

| Characteristic | Value         | Unit |
|----------------|---------------|------|
| $V_{RRM}$      | 100           | V    |
| $I_{FAV}$      | $2 \times 10$ | A    |
| $V_F$          | 0.71          | V    |



### Pinout Diagram (TO-220-3L ABFP)



**A:** Anode; **C:** Cathode

**Maximum Ratings** ( $T_{VJ} = 25^{\circ}\text{C}$  unless otherwise specified)

| Symbol    | Characteristic                                        | Conditions                                                              | Value            | Unit |
|-----------|-------------------------------------------------------|-------------------------------------------------------------------------|------------------|------|
| $V_{RRM}$ | Peak Repetitive Reverse Voltage                       | -                                                                       | 100              | V    |
| $V_{RWM}$ | Working Peak Reverse Voltage                          |                                                                         |                  |      |
| $V_R$     | DC Blocking Voltage                                   |                                                                         |                  |      |
| $I_{FAV}$ | Average Rectified Forward Current                     | 50% duty cycle @ $T_C = 140^{\circ}\text{C}$ ,<br>rectangular wave form | per leg<br>10    | A    |
|           |                                                       |                                                                         | per device<br>20 | A    |
| $I_{FSM}$ | Peak One Cycle Non-Repetitive Surge Current (per leg) | 10 ms, Half Sine pulse, $T_{VJ} = 25^{\circ}\text{C}$                   | 240              | A    |
| $P_{tot}$ | Total Power Dissipation                               | $T_C = 25^{\circ}\text{C}$                                              | 33               | W    |

**Electrical Characteristics** ( $T_{VJ} = 25^{\circ}\text{C}$  unless otherwise specified)

| Symbol    | Characteristic                              | Conditions                                                                    | Value |      |      | Unit          |
|-----------|---------------------------------------------|-------------------------------------------------------------------------------|-------|------|------|---------------|
|           |                                             |                                                                               | Min.  | Typ. | Max. |               |
| $V_{F1}$  | Forward Voltage Drop (per leg) <sup>1</sup> | @10 A, Pulse, $T_{VJ} = 25^{\circ}\text{C}$                                   | -     | -    | 0.89 | V             |
| $V_{F2}$  |                                             | @10 A, Pulse, $T_{VJ} = 125^{\circ}\text{C}$                                  | -     | -    | 0.71 | V             |
| $I_{R1}$  | Reverse Current (per leg) <sup>1</sup>      | @ $V_R = \text{rated } V_R$ , $T_{VJ} = 25^{\circ}\text{C}$                   | -     | -    | 200  | $\mu\text{A}$ |
| $I_{R2}$  |                                             | @ $V_R = \text{rated } V_R$ , $T_{VJ} = 125^{\circ}\text{C}$                  | -     | -    | 10   | mA            |
| $C_T$     | Junction Capacitance (per leg)              | @ $V_R = 12\text{ V}$ , $T_C = 25^{\circ}\text{C}$ , $f_{sig} = 1\text{ MHz}$ | -     | 180  | -    | pF            |
| $V_{ISO}$ | Isolation Voltage                           | $t = 1\text{ sec.}$ , 50/60 Hz. RMS; $I_{ISOL} \leq 1\text{ mA}$              | 2500  | -    | -    | V             |
|           |                                             | $t = 1\text{ min.}$ , 50/60 Hz. RMS; $I_{ISOL} \leq 1\text{ mA}$              | 2100  | -    | -    |               |

**Note 1:** Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%**Thermal-Mechanical Specifications**

| Symbol     | Characteristics                              | Condition    | Specification      | Units              |
|------------|----------------------------------------------|--------------|--------------------|--------------------|
| $T_{VJ}$   | Junction Temperature                         | -            | -55 to +175        | $^{\circ}\text{C}$ |
| $T_O$      | Operation Temperature                        | -            | -55 to +150        | $^{\circ}\text{C}$ |
| $T_{stg}$  | Storage Temperature                          | -            | -55 to +150        | $^{\circ}\text{C}$ |
| $M_D$      | Mounting torque                              | -            | Min 0.4<br>Max 0.6 | Nm                 |
| $F_C$      | Mounting force with clip                     | -            | Min 20<br>Max 60   | N                  |
| $R_{thJC}$ | Maximum Thermal Resistance Junction to Case  | DC operation | 4.5                | K/W                |
| $R_{thCS}$ | Typical Thermal Resistance Case to Heat Sink | -            | 0.50               | K/W                |
| wt         | Approximate Weight                           | -            | 2                  | g                  |

Characteristic Curves

Fig. 1. Typical Forward Characteristics

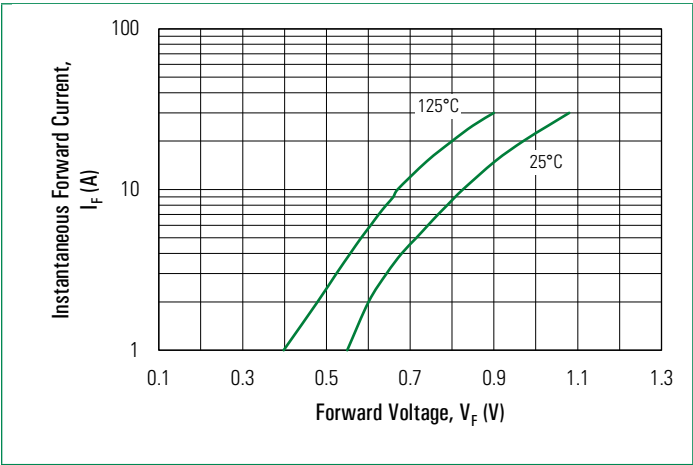


Fig. 2. Typical Reverse Characteristics

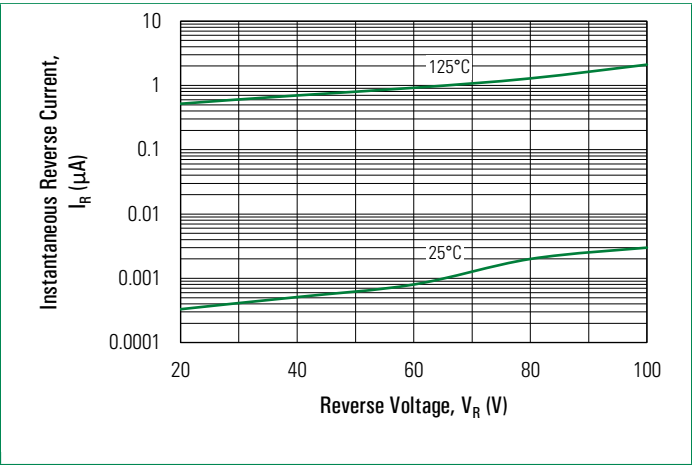
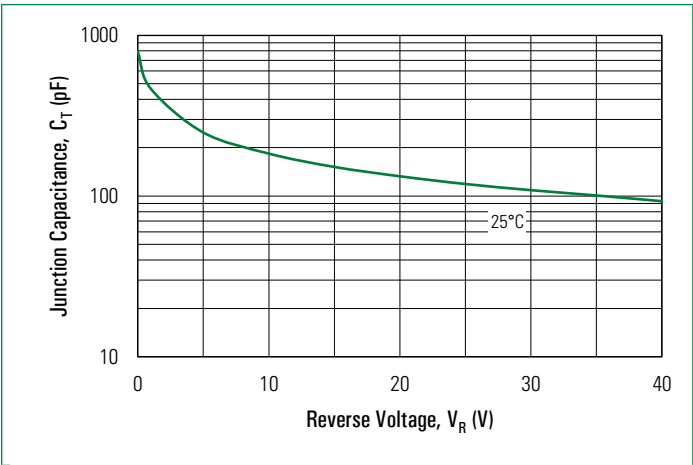
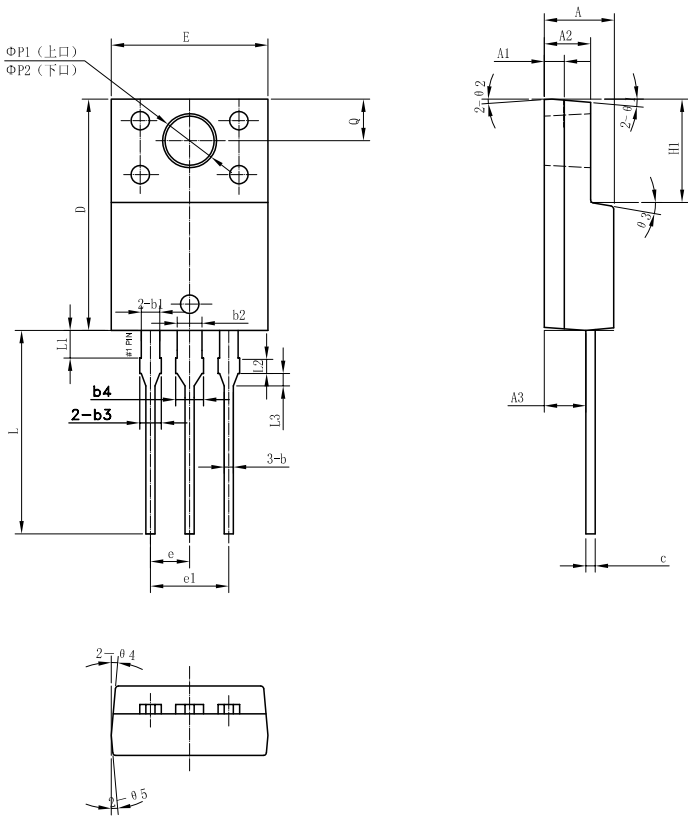


Fig. 3. Typical Junction Capacitance



Part Outline Drawing (TO-220-3L ABFP)



| Symbol | Inches |         |       | Millimeters |         |       |
|--------|--------|---------|-------|-------------|---------|-------|
|        | Min.   | Typical | Max.  | Min.        | Typical | Max   |
| A      | 0.169  | 0.177   | 0.185 | 4.30        | 4.50    | 4.70  |
| A1     | 0.043  | 0.051   | 0.059 | 1.10        | 1.30    | 1.50  |
| A2     | 0.110  | 0.118   | 0.126 | 2.80        | 3.00    | 3.20  |
| A3     | 0.098  | 0.106   | 0.114 | 2.50        | 2.70    | 2.90  |
| b      | 0.020  | 0.024   | 0.03  | 0.50        | 0.60    | 0.75  |
| b1     | 0.043  | 0.047   | 0.053 | 1.10        | 1.20    | 1.35  |
| b2     | 0.059  | 0.063   | 0.069 | 1.50        | 1.60    | 1.75  |
| b3     | 0.047  | 0.051   | 0.057 | 1.20        | 1.30    | 1.45  |
| b4     | 0.063  | 0.067   | 0.073 | 1.60        | 1.70    | 1.85  |
| c      | 0.020  | 0.024   | 0.030 | 0.50        | 0.60    | 0.75  |
| D      | 0.583  | 0.591   | 0.598 | 14.80       | 15.00   | 15.20 |
| E      | 0.392  | 0.400   | 0.408 | 9.96        | 10.16   | 10.36 |
| e      | —      | 0.100   | —     | —           | 2.55    | —     |
| e1     | —      | 0.201   | —     | —           | 5.10    | —     |
| H1     | 0.256  | 0.264   | 0.272 | 6.50        | 6.70    | 6.90  |
| L      | 0.500  | 0.520   | 0.539 | 12.70       | 13.20   | 13.70 |
| L1     | 0.063  | 0.071   | 0.079 | 1.60        | 1.80    | 2.00  |
| L2     | 0.031  | 0.039   | 0.047 | 0.80        | 1.00    | 1.20  |
| L3     | 0.024  | 0.031   | 0.039 | 0.60        | 0.80    | 1.00  |
| ØP1    | 0.130  | 0.138   | 0.146 | 3.30        | 3.50    | 3.70  |
| ØP2    | 0.118  | 0.126   | 0.133 | 2.99        | 3.19    | 3.39  |
| Q      | 0.098  | 0.106   | 0.114 | 2.50        | 2.70    | 2.90  |

Ordering Information

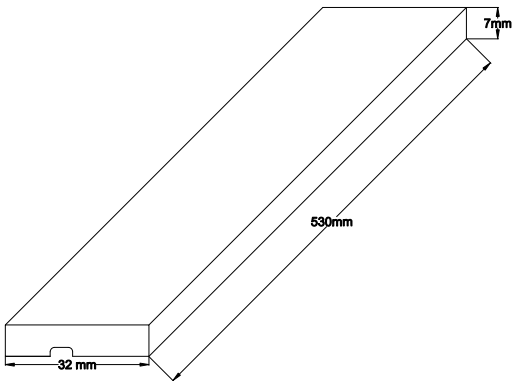
| Part Number | Marking     | Packing Mode | Quantity    |
|-------------|-------------|--------------|-------------|
| DSA20C100PN | DSA20C100PN | Tube         | 50 pcs/tube |

Part Numbering and Marking

DSA20C100PN  
IXYS YYWWWS  
XXXXXXX

D = Diode  
S = Schottky Diode  
A = Product Generation  
20 = Current Rating (20 A)  
C = Common Cathode  
100 = Voltage Rating (100 V)  
PN = Package Code  
YY = Year  
WW = Work Week  
S = Plant Location Code  
XXXXXXX = Lot Number

Packing Specifications



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