



preliminary

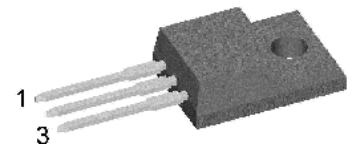
# Schottky Diode Gen <sup>2</sup>

$V_{RRM} = 60\text{ V}$   
 $I_{FAV} = 2 \times 10\text{ A}$   
 $V_F = 0.62\text{ V}$

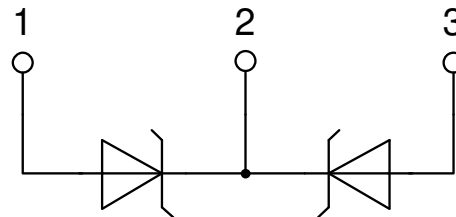
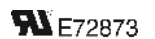
High Performance Schottky Diode  
 Low Loss and Soft Recovery  
 Common Cathode

Part number

**DSB20C60PN**



Backside: isolated



**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-220FP**

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

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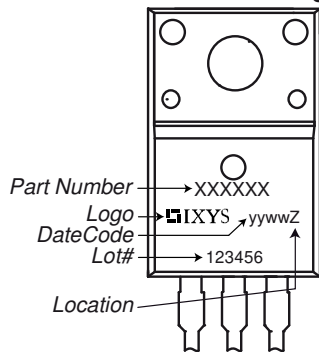


| Schottky   |  |  |                    | Ratings                      |      |      |      |
|------------|--|--|--------------------|------------------------------|------|------|------|
| Symbol     | Definition                                   | Conditions   |                    | min.                         | typ. | max. | Unit |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage |  |                    |                              |      | 60   | V    |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     |  |                    |                              |      | 60   | V    |
| $I_R$      | reverse current, drain current               | $V_R = 60\text{ V}$  |                    | $T_{VJ} = 25^\circ\text{C}$  |      | 4    | mA   |
|            |  | $V_R = 60\text{ V}$  |                    | $T_{VJ} = 100^\circ\text{C}$ |      | 35   | mA   |
| $V_F$      | forward voltage drop                         | $I_F = 10\text{ A}$  |                    | $T_{VJ} = 25^\circ\text{C}$  |      | 0.69 | V    |
|            |  | $I_F = 20\text{ A}$  |                    |                              |      | 0.93 | V    |
|            |  | $I_F = 10\text{ A}$  |                    | $T_{VJ} = 125^\circ\text{C}$ |      | 0.62 | V    |
|            |  | $I_F = 20\text{ A}$  |                    |                              |      | 0.82 | V    |
| $I_{FAV}$  | average forward current                      | $T_C = 110^\circ\text{C}$  | rectangular        | $T_{VJ} = 150^\circ\text{C}$ |      | 10   | A    |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  |                    |                              |      | 0.44 | V    |
| $r_F$      | slope resistance                             |  |                    |                              |      | 16.1 | mΩ   |
| $R_{thJC}$ | thermal resistance junction to case          |  |                    |                              |      | 4.5  | K/W  |
| $R_{thCH}$ | thermal resistance case to heatsink          |  |                    |                              |      | 0.5  | K/W  |
| $P_{tot}$  | total power dissipation                      |  |                    | $T_C = 25^\circ\text{C}$     |      | 30   | 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                         | $V_R = 12\text{ V}$  | $f = 1\text{ MHz}$ | $T_{VJ} = 25^\circ\text{C}$  |      | 149  | pF   |



| Package TO-220FP |  | Ratings              |      |      |      |      |
|------------------|--|----------------------|------|------|------|------|
| Symbol           | Definition   | Conditions           | min. | typ. | max. | Unit |
| $I_{RMS}$        | RMS current  | per terminal         |      |      | 35   | A    |
| $T_{VJ}$         | virtual junction temperature                                 |                      | -55  |      | 150  | °C   |
| $T_{op}$         | operation temperature  |                      | -55  |      | 125  | °C   |
| $T_{stg}$        | storage temperature  |                      | -55  |      | 150  | °C   |
| <b>Weight</b>    |  |                      |      | 2    |      | g    |
| $M_D$            | mounting torque  |                      | 0.4  |      | 0.6  | Nm   |
| $F_C$            | mounting force with clip                                     |                      | 20   |      | 60   | N    |
| $d_{Spp/ App}$   | creepage distance on surface   striking distance through air | terminal to terminal | 1.6  | 1.0  |      | mm   |
| $d_{Spb/ Apb}$   |  | terminal to backside | 2.5  | 2.5  |      | mm   |
| $V_{ISOL}$       | isolation voltage  | t = 1 second         | 2500 |      |      | V    |
|                  |  | t = 1 minute         | 2100 |      |      | V    |

**Product Marking**



**Part description**

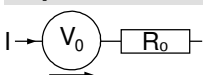
- D = Diode
- S = Schottky Diode
- B = ultra low VF
- 20 = Current Rating [A]
- C = Common Cathode
- 60 = Reverse Voltage [V]
- PN = TO-220ABFP (3)

| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSB20C60PN      | DSB20C60PN         | Tube          | 50       | 508864   |

**Equivalent Circuits for Simulation**

\* on die level

$T_{VJ} = 150^{\circ}C$

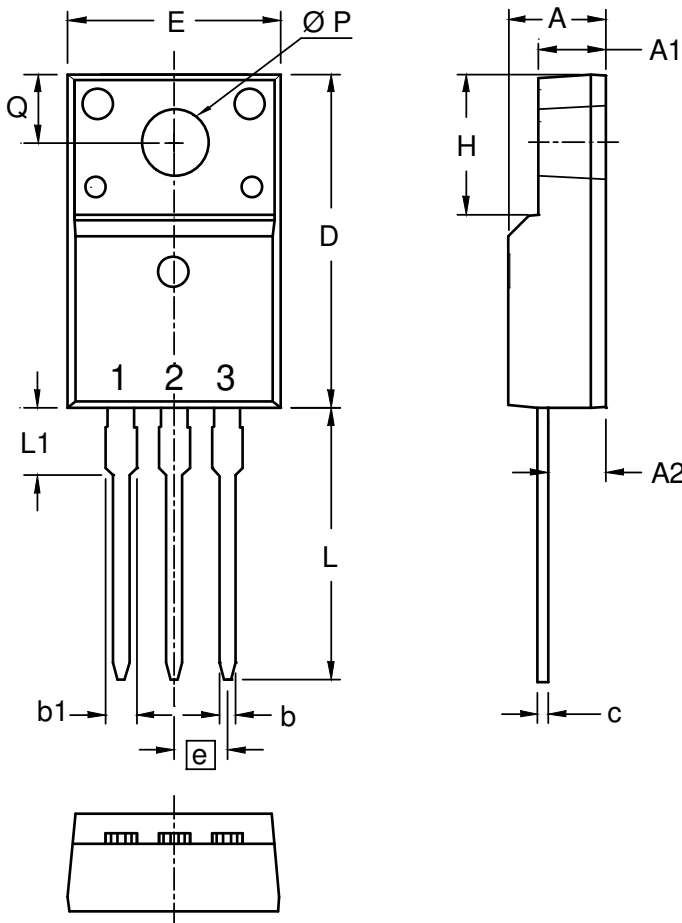


**Schottky**

|              |                    |      |    |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage  | 0.44 | V  |
| $R_{0\ max}$ | slope resistance * | 13   | mΩ |



**Outlines TO-220FP**



| Dim. | Millimeters |       | Inches    |       |
|------|-------------|-------|-----------|-------|
|      | min         | max   | min       | max   |
| A    | 4.50        | 4.90  | 0.177     | 0.193 |
| A1   | 2.34        | 2.74  | 0.092     | 0.108 |
| A2   | 2.56        | 2.96  | 0.101     | 0.117 |
| b    | 0.70        | 0.90  | 0.028     | 0.035 |
| c    | 0.45        | 0.60  | 0.018     | 0.024 |
| D    | 15.67       | 16.07 | 0.617     | 0.633 |
| E    | 9.96        | 10.36 | 0.392     | 0.408 |
| e    | 2.54 BSC    |       | 0.100 BSC |       |
| H    | 6.48        | 6.88  | 0.255     | 0.271 |
| L    | 12.68       | 13.28 | 0.499     | 0.523 |
| L1   | 3.03        | 3.43  | 0.119     | 0.135 |
| ØP   | 3.08        | 3.28  | 0.121     | 0.129 |
| Q    | 3.20        | 3.40  | 0.126     | 0.134 |

