

Schottky Diode Gen ²

preliminary

$$V_{RRM} = 45V$$

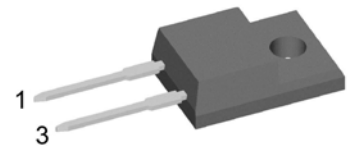
$$I_{FAV} = 10A$$

$$V_F = 0.52V$$

High Performance Schottky Diode
Low Loss and Soft Recovery
Single Diode

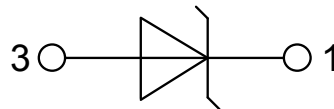
Part number

DSB10I45PM



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:

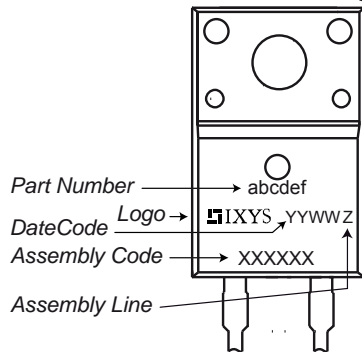
- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

Package: 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

| Schottky | | | | Ratings | | |
|------------|--|--|------|---------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| V_{RSM} | max. non-repetitive reverse blocking voltage | | | | 45 | V |
| V_{RRM} | max. repetitive reverse blocking voltage | | | | 45 | V |
| I_R | reverse current, drain current | $V_R = 45\text{ V}$ | | | 3.5 | mA |
| | | $V_R = 45\text{ V}$ | | | 35 | mA |
| V_F | forward voltage drop | $I_F = 10\text{ A}$ | | | 0.56 | V |
| | | $I_F = 20\text{ A}$ | | | 0.78 | V |
| | | $I_F = 10\text{ A}$ | | | 0.52 | V |
| | | $I_F = 20\text{ A}$ | | | 0.74 | V |
| I_{FAV} | average forward current | $T_C = 115^\circ\text{C}$ | | | 10 | A |
| | | rectangular $d = 0.5$ | | | | |
| V_{FO} | threshold voltage | } for power loss calculation only | | | 0.30 | V |
| r_F | slope resistance | | | | 20.8 | mΩ |
| R_{thJC} | thermal resistance junction to case | | | | 4.5 | K/W |
| R_{thCH} | thermal resistance case to heatsink | | | 0.50 | | K/W |
| P_{tot} | total power dissipation | | | | 30 | W |
| I_{FSM} | max. forward surge current | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | | | 260 | A |
| C_J | junction capacitance | $V_R = 5\text{ V } f = 1\text{ MHz}$ | | | 326 | 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 |
| Weight | | | | 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 | 3.2 | 2.7 | | mm |
| $d_{Spb/Apb}$ | | terminal to backside | 2.5 | 2.5 | | mm |
| V_{ISOL} | isolation voltage | t = 1 second | 2500 | | | V |
| | | t = 1 minute | 2080 | | | V |

Product Marking

Part number

- D = Diode
- S = Schottky Diode
- B = ultra low VF
- 10 = Current Rating [A]
- I = Single Diode
- 45 = Reverse Voltage [V]
- PM = TO-220ACFP (2)

| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DSB10I45PM | DSB10I45PM | Tube | 50 | 504423 |

Equivalent Circuits for Simulation

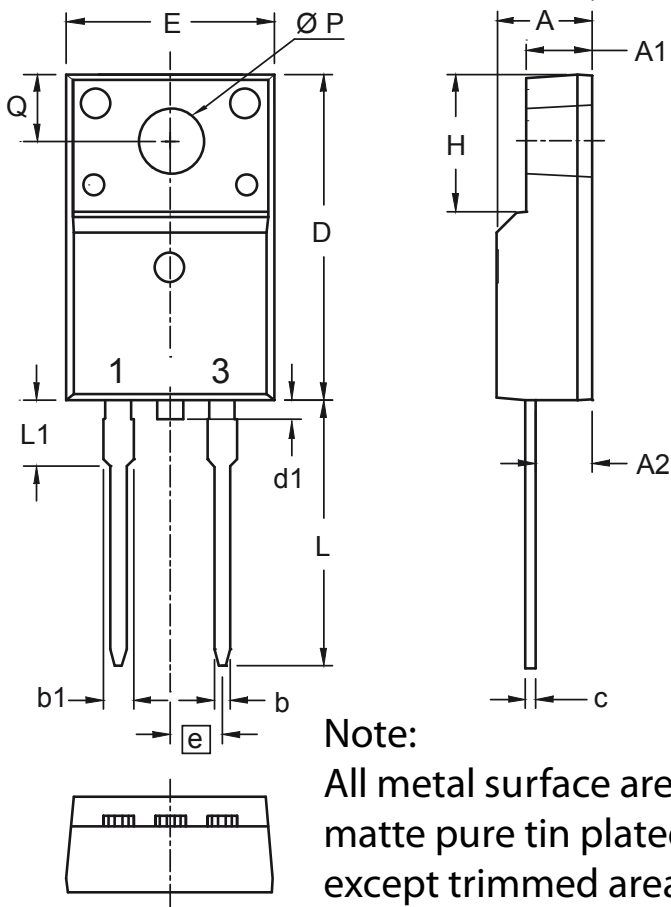
* on die level

 $T_{VJ} = 150\text{ °C}$

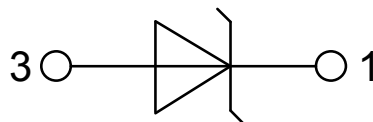
Schottky

| | | | |
|-------------|--------------------|------|----|
| $V_{0\max}$ | threshold voltage | 0.3 | V |
| $R_{0\max}$ | slope resistance * | 17.7 | 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 |
| b1 | 1.27 | 1.47 | 0.050 | 0.058 |
| c | 0.45 | 0.60 | 0.018 | 0.024 |
| D | 15.67 | 16.07 | 0.617 | 0.633 |
| d1 | 0 | 1.10 | 0 | 0.043 |
| 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 |



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