

Schottky Diode Gen ²

preliminary

$$V_{RRM} = 15V$$

$$I_{FAV} = 2 \times 20A$$

$$V_F = 0.39V$$

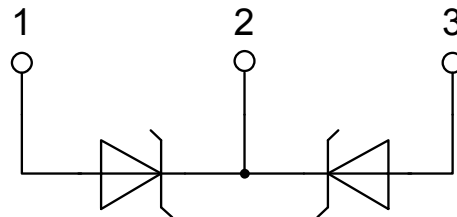
High Performance Schottky Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSB40C15PB



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 | | | | | 15 | V |
| V_{RRM} | max. repetitive reverse blocking voltage | | | | | 15 | V |
| I_R | reverse current, drain current | $V_R = 15\text{ V}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 5 | mA |
| | | $V_R = 15\text{ V}$ | | $T_{VJ} = 100^\circ\text{C}$ | | 40 | mA |
| V_F | forward voltage drop | $I_F = 20\text{ A}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 0.48 | V |
| | | $I_F = 40\text{ A}$ | | | | 0.60 | V |
| | | $I_F = 20\text{ A}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 0.39 | V |
| | | $I_F = 40\text{ A}$ | | | | 0.54 | V |
| I_{FAV} | average forward current | $T_C = 130^\circ\text{C}$ | rectangular | $T_{VJ} = 150^\circ\text{C}$ | | 20 | A |
| V_{FO} | threshold voltage | } for power loss calculation only | | $T_{VJ} = 150^\circ\text{C}$ | | 0.23 | V |
| r_F | slope resistance | | | | | 7.2 | mΩ |
| R_{thJC} | thermal resistance junction to case | | | | | 1.75 | K/W |
| R_{thCH} | thermal resistance case to heatsink | | | | 0.50 | | K/W |
| P_{tot} | total power dissipation | | | $T_C = 25^\circ\text{C}$ | | 70 | W |
| I_{FSM} | max. forward surge current | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | | $T_{VJ} = 45^\circ\text{C}$ | | 390 | A |
| C_J | junction capacitance | $V_R = 3\text{ V}$ | $f = 1\text{ MHz}$ | $T_{VJ} = 25^\circ\text{C}$ | | 1.28 | nF |

preliminary

| Package TO-220 | | | Ratings | | | |
|----------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal ¹⁾ | | | 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 |

Product Marking



Part number

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

| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DSB40C15PB | DSB40C15PB | Tube | 50 | 502802 |

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150\text{ °C}$



Schottky

| | | | |
|-------------|--------------------|------|----|
| $V_{0\max}$ | threshold voltage | 0.23 | V |
| $R_{0\max}$ | slope resistance * | 4.1 | 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 |
| $\varnothing P$ | 3.54 | 4.08 | 0.139 | 0.161 |
| Q | 2.54 | 3.18 | 0.100 | 0.125 |



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