

Schottky Diode Gen²

$$V_{RRM} = 150V$$

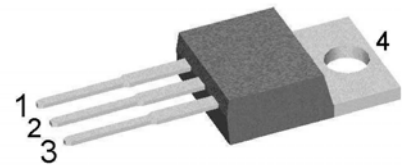
$$I_{FAV} = 2 \times 30A$$

$$V_F = 0.8V$$

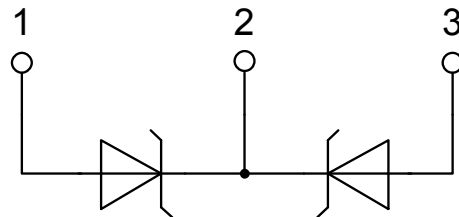
High Performance Schottky Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DSA60C150PB



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:

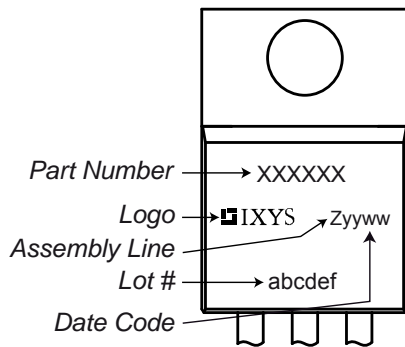
- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

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 | $T_{VJ} = 25^{\circ}C$ | | | 150 | V |
| V_{RRM} | max. repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}C$ | | | 150 | V |
| I_R | reverse current, drain current | $V_R = 150 V$ | $T_{VJ} = 25^{\circ}C$ | | 450 | μA |
| | | $V_R = 150 V$ | $T_{VJ} = 125^{\circ}C$ | | 5 | mA |
| V_F | forward voltage drop | $I_F = 30 A$ | $T_{VJ} = 25^{\circ}C$ | | 0.93 | V |
| | | $I_F = 60 A$ | | | 1.09 | V |
| | | $I_F = 30 A$ | $T_{VJ} = 125^{\circ}C$ | | 0.80 | V |
| | | $I_F = 60 A$ | | | 0.98 | V |
| I_{FAV} | average forward current | $T_C = 150^{\circ}C$ rectangular $d = 0.5$ | $T_{VJ} = 175^{\circ}C$ | | 30 | A |
| V_{FO} | threshold voltage | } for power loss calculation only | $T_{VJ} = 175^{\circ}C$ | | 0.55 | V |
| r_F | slope resistance | | | | 6 | m Ω |
| R_{thJC} | thermal resistance junction to case | | | | 0.85 | K/W |
| R_{thCH} | thermal resistance case to heatsink | | | 0.50 | | K/W |
| P_{tot} | total power dissipation | | $T_C = 25^{\circ}C$ | | 175 | W |
| I_{FSM} | max. forward surge current | $t = 10 ms; (50 Hz), sine; V_R = 0 V$ | $T_{VJ} = 45^{\circ}C$ | | 390 | A |
| C_J | junction capacitance | $V_R = 12 V \quad f = 1 MHz$ | $T_{VJ} = 25^{\circ}C$ | | 289 | pF |

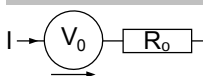
| Package TO-220 | | | Ratings | | | |
|----------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal ¹⁾ | | | 35 | A |
| T_{VJ} | virtual junction temperature | | -55 | | 175 | °C |
| T_{op} | operation temperature | | -55 | | 150 | °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
- A = low VF
- 60 = Current Rating [A]
- C = Common Cathode
- 150 = Reverse Voltage [V]
- PB = TO-220AB (3)

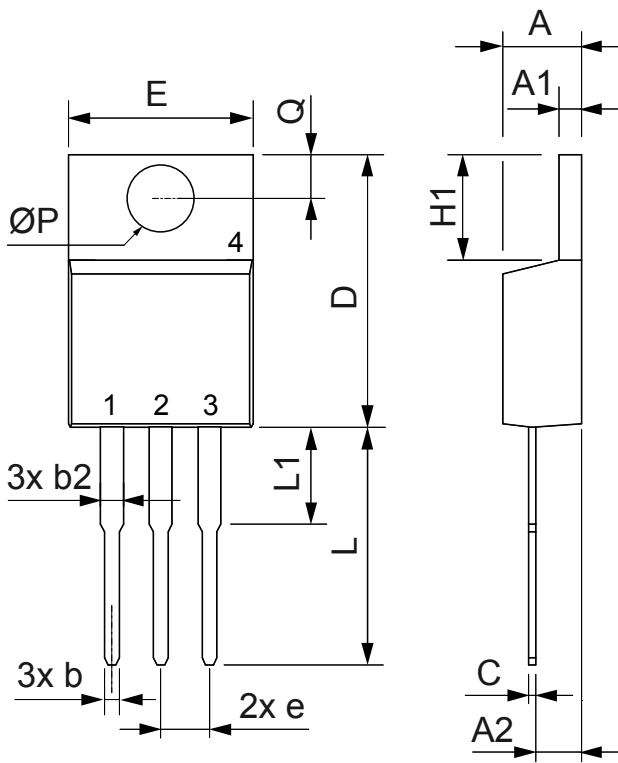
| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DSA60C150PB | DSA60C150PB | Tube | 50 | 509198 |

| Similar Part | Package | Voltage class |
|--------------|--------------|---------------|
| DSA50C150HB | TO-247AD (3) | 150 |

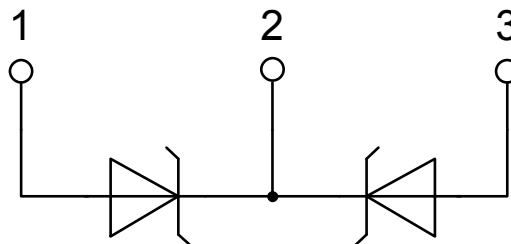
Equivalent Circuits for Simulation
** on die level*
 $T_{VJ} = 175\text{ °C}$

Schottky

| | | | |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage | 0.55 | V |
| $R_{0\ max}$ | slope resistance * | 2.8 | 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 |



Schottky

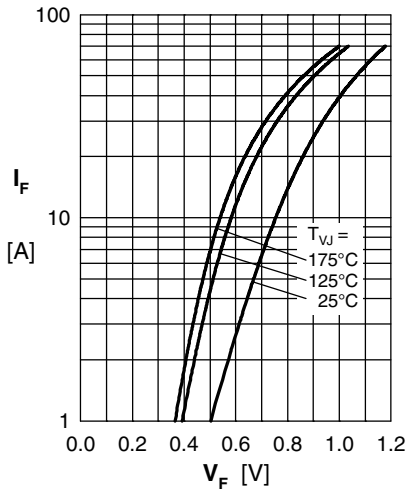


Fig. 1 Maximum forward voltage drop characteristics

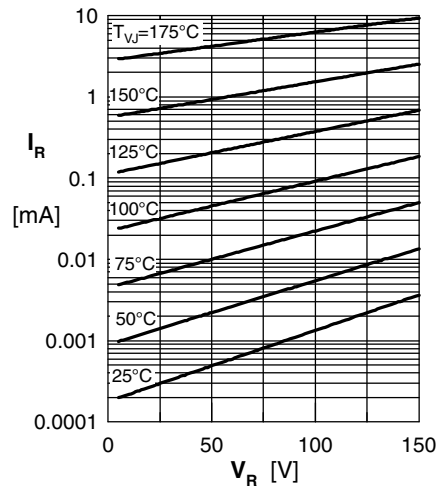


Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

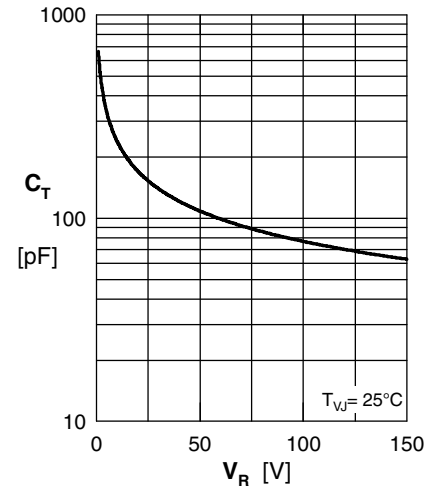


Fig. 3 Typ. junction capacitance C_T vs. reverse voltage V_R

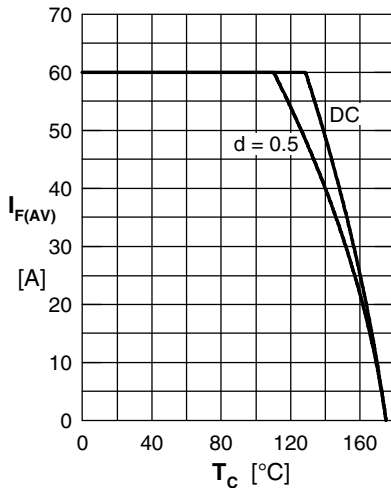


Fig. 4 Average forward current $I_{F(AV)}$ vs. case temperature T_C

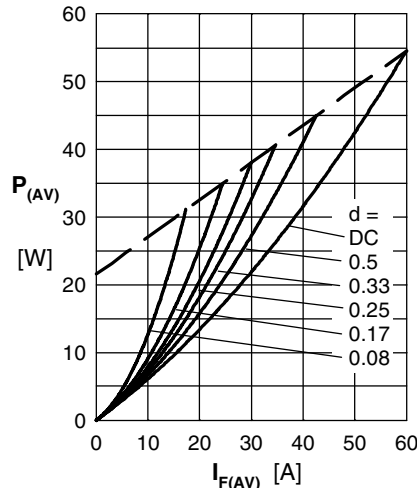


Fig. 5 Forward power loss characteristics

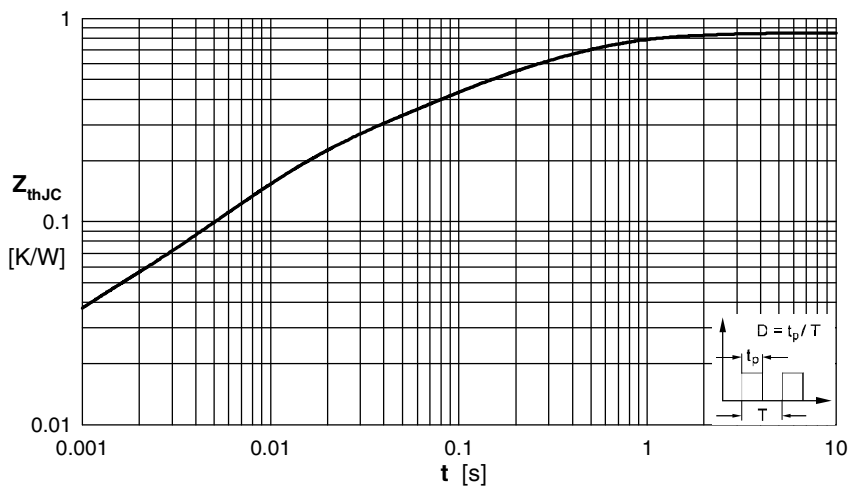


Fig. 6 Transient thermal impedance junction to case at various duty cycles

| i | R_{thi} [K/W] | t_i [s] |
|---|-----------------|-----------|
| 1 | 0.02326 | 0.0005 |
| 2 | 0.1539 | 0.011 |
| 3 | 0.2031 | 0.072 |
| 4 | 0.3892 | 0.34 |
| 5 | 0.08053 | 1.5 |