



# Schottky Diode Gen 2

$V_{RRM} = 150\text{ V}$

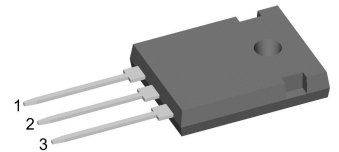
$I_{FAV} = 2 \times 35\text{ A}$

$V_F = 0.77\text{ V}$

High Performance Schottky Diode  
Low Loss and Soft Recovery  
Common Cathode

Part number

**DSA70C150HB**



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-247

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

### Disclaimer Notice

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| Schottky   |  |  |                              | Ratings                     |      |      |               |
|------------|--|--|------------------------------|-----------------------------|------|------|---------------|
| Symbol     | Definition                                   | Conditions   |                              | min.                        | typ. | max. | Unit          |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage |  |                              |                             |      | 150  | V             |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     |  |                              |                             |      | 150  | V             |
| $I_R$      | reverse current, drain current               | $V_R = 150\text{ V}$   | $T_{VJ} = 25^\circ\text{C}$  |                             |      | 680  | $\mu\text{A}$ |
|            |  | $V_R = 150\text{ V}$   | $T_{VJ} = 125^\circ\text{C}$ |                             |      | 7.5  | mA            |
| $V_F$      | forward voltage drop                         | $I_F = 35\text{ A}$  | $T_{VJ} = 25^\circ\text{C}$  |                             |      | 0.90 | V             |
|            |  | $I_F = 70\text{ A}$  |                              |                             |      | 1.06 | V             |
|            |  | $I_F = 35\text{ A}$  | $T_{VJ} = 125^\circ\text{C}$ |                             |      | 0.77 | V             |
|            |  | $I_F = 70\text{ A}$  |                              |                             |      | 0.94 | V             |
| $I_{FAV}$  | average forward current                      | $T_C = 150^\circ\text{C}$<br>rectangular                           | $T_{VJ} = 175^\circ\text{C}$ |                             |      | 35   | A             |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  | $T_{VJ} = 175^\circ\text{C}$ |                             |      | 0.53 | V             |
| $r_F$      | slope resistance                             |  |                              |                             |      | 4.9  | m $\Omega$    |
| $R_{thJC}$ | thermal resistance junction to case          |  |                              |                             |      | 0.7  | K/W           |
| $R_{thCH}$ | thermal resistance case to heatsink          |  |                              |                             | 0.3  |      | K/W           |
| $P_{tot}$  | total power dissipation                      |  |                              | $T_C = 25^\circ\text{C}$    |      | 215  | W             |
| $I_{FSM}$  | max. forward surge current                   | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ |                              | $T_{VJ} = 45^\circ\text{C}$ |      | 600  | A             |
| $C_J$      | junction capacitance                         | $V_R = 24\text{ V}$  | $f = 1\text{ MHz}$           | $T_{VJ} = 25^\circ\text{C}$ |      | 226  | pF            |



| Package TO-247 |                              |                            | Ratings |      |      |      |
|----------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol         | Definition                   | Conditions                 | min.    | typ. | max. | Unit |
| $I_{RMS}$      | RMS current                  | per terminal <sup>1)</sup> |         |      | 50   | A    |
| $T_{VJ}$       | virtual junction temperature |                            | -55     |      | 175  | °C   |
| $T_{op}$       | operation temperature        |                            | -55     |      | 150  | °C   |
| $T_{stg}$      | storage temperature          |                            | -55     |      | 150  | °C   |
| <b>Weight</b>  |                              |                            |         | 6    |      | g    |
| $M_D$          | mounting torque              |                            | 0.8     |      | 1.2  | Nm   |
| $F_C$          | mounting force with clip     |                            | 20      |      | 120  | N    |

**Product Marking**



**Part description**

- D = Diode
- S = Schottky Diode
- A = low VF
- 70 = Current Rating [A]
- C = Common Cathode
- 150 = Reverse Voltage [V]
- HB = TO-247AD (3)

| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSA70C150HB     | DSA70C150HB        | Tube          | 30       | 506708   |

**Equivalent Circuits for Simulation**

*\* on die level*

$T_{VJ} = 175^{\circ}C$



**Schottky**

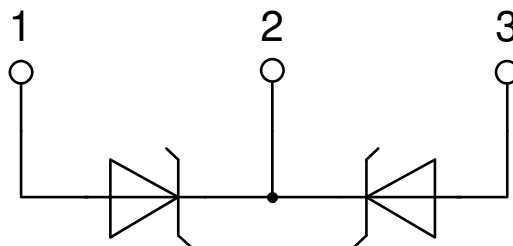
|              |                    |      |    |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage  | 0.53 | V  |
| $R_{0\ max}$ | slope resistance * | 2.3  | mΩ |



**Outlines TO-247**



| Sym. | Inches    |       | Millimeter |       |
|------|-----------|-------|------------|-------|
|      | min.      | max.  | min.       | max.  |
| A    | 0.185     | 0.209 | 4.70       | 5.30  |
| A1   | 0.087     | 0.102 | 2.21       | 2.59  |
| A2   | 0.059     | 0.098 | 1.50       | 2.49  |
| D    | 0.819     | 0.845 | 20.79      | 21.45 |
| E    | 0.610     | 0.640 | 15.48      | 16.24 |
| E2   | 0.170     | 0.216 | 4.31       | 5.48  |
| e    | 0.215 BSC |       | 5.46 BSC   |       |
| L    | 0.780     | 0.800 | 19.80      | 20.30 |
| L1   | -         | 0.177 | -          | 4.49  |
| Ø P  | 0.140     | 0.144 | 3.55       | 3.65  |
| Q    | 0.212     | 0.244 | 5.38       | 6.19  |
| S    | 0.242 BSC |       | 6.14 BSC   |       |
| b    | 0.039     | 0.055 | 0.99       | 1.40  |
| b2   | 0.065     | 0.094 | 1.65       | 2.39  |
| b4   | 0.102     | 0.135 | 2.59       | 3.43  |
| c    | 0.015     | 0.035 | 0.38       | 0.89  |
| D1   | 0.515     | -     | 13.07      | -     |
| D2   | 0.020     | 0.053 | 0.51       | 1.35  |
| E1   | 0.530     | -     | 13.45      | -     |
| Ø P1 | -         | 0.29  | -          | 7.39  |





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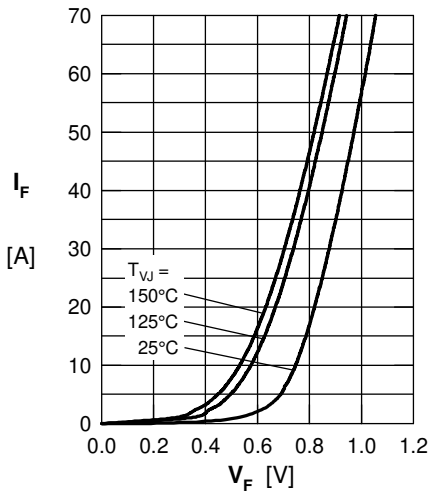


Fig. 1 Maximum forward voltage drop characteristics

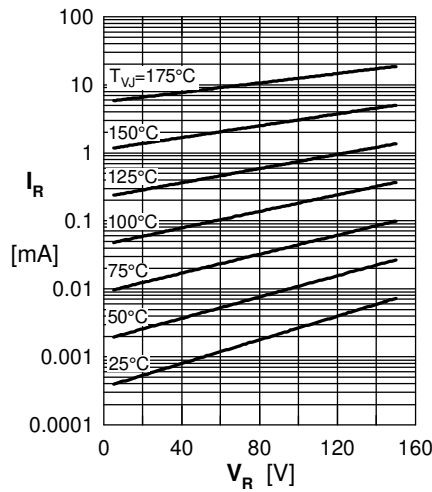


Fig. 2 Typ. reverse current  $I_R$  vs. reverse voltage  $V_R$

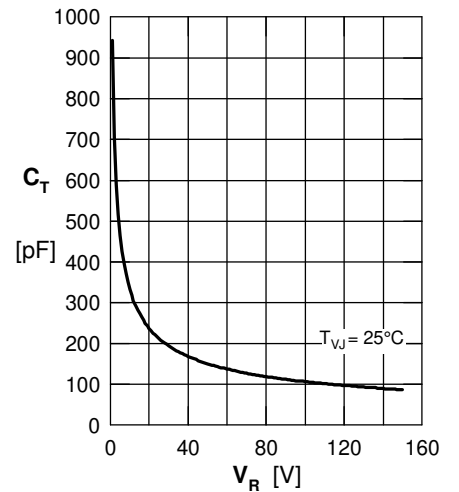


Fig. 3 Typ. junction capacitance  $C_T$  vs. reverse voltage  $V_R$

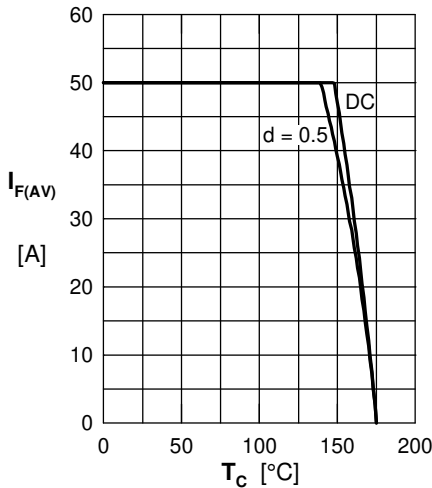


Fig. 4 Average forward current  $I_{F(AV)}$  vs. case temperature  $T_C$

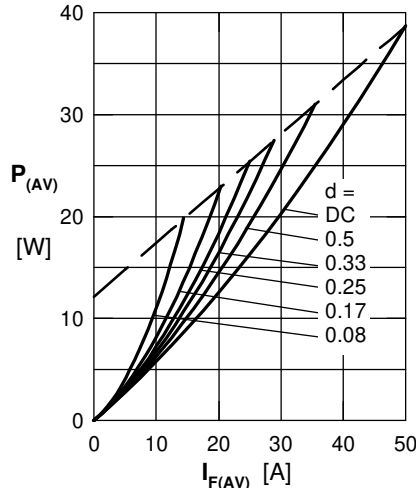


Fig. 5 Forward power loss characteristics

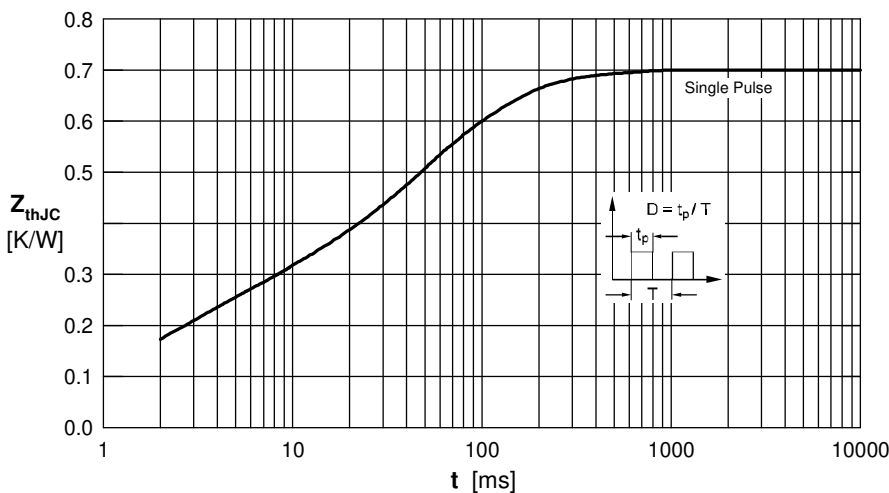


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode