

Schottky Diode

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

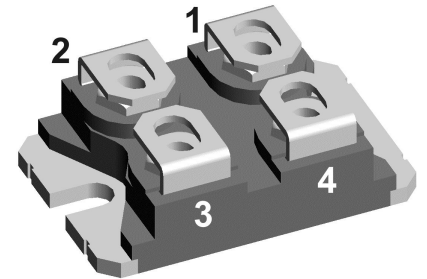
$$I_{FAV} = 2 \times 120 \text{ A}$$

$$V_F = 0.85 \text{ V}$$

High Performance Schottky Diode
Low Loss and Soft Recovery
Parallel legs

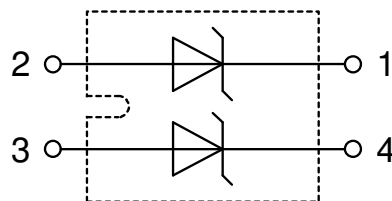
Part number

DSA240X150NA



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: SOT-227B (minibloc)

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate: Copper internally DCB isolated
- Advanced power cycling

Terms Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact the sales office, which is responsible for you.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact the sales office, which is responsible for you.

Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

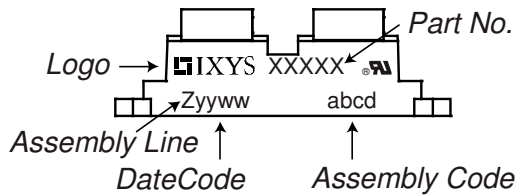
- to perform joint risk and quality assessments;

- the conclusion of quality agreements;

- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

| 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 | $V_R = 150\text{ V}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 1.5 | mA |
| | | $V_R = 150\text{ V}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 15 | mA |
| V_F | forward voltage drop | $I_F = 120\text{ A}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 0.98 | V |
| | | $I_F = 240\text{ A}$ | | | | 1.24 | V |
| | | $I_F = 120\text{ A}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 0.85 | V |
| | | $I_F = 240\text{ A}$ | | | | 1.15 | V |
| I_{FAV} | average forward current | $T_C = 95^\circ\text{C}$ | rectangular | $T_{VJ} = 150^\circ\text{C}$ | | 120 | A |
| V_{F0} | threshold voltage | } for power loss calculation only | | | | 0.51 | V |
| r_F | slope resistance | | | | | 2.5 | mΩ |
| R_{thJC} | thermal resistance junction to case | | | | | 0.4 | K/W |
| R_{thCH} | thermal resistance case to heatsink | | | 0.10 | | | K/W |
| P_{tot} | total power dissipation | | | $T_C = 25^\circ\text{C}$ | | 310 | W |
| I_{FSM} | max. forward surge current | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | | $T_{VJ} = 45^\circ\text{C}$ | | 1.60 | kA |
| C_J | junction capacitance | $V_R = 24\text{ V}$ | $f = 1\text{ MHz}$ | $T_{VJ} = 25^\circ\text{C}$ | | 902 | pF |

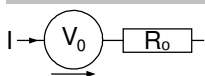
| Package SOT-227B (minibloc) | | | | Ratings | | | |
|-----------------------------|--|----------------------|-------------------------------------|---------|------|------|--|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit | |
| I_{RMS} | RMS current | per terminal | | | 150 | A | |
| T_{VJ} | virtual junction temperature | | -40 | | 150 | °C | |
| T_{op} | operation temperature | | -40 | | 125 | °C | |
| T_{stg} | storage temperature | | -40 | | 150 | °C | |
| Weight | | | | 30 | | g | |
| M_D | mounting torque | | 1.1 | | 1.5 | Nm | |
| M_T | terminal torque | | 1.1 | | 1.5 | Nm | |
| $d_{Spp/App}$ | creepage distance on surface striking distance through air | terminal to terminal | 10.5 | 3.2 | | mm | |
| $d_{Spb/Apb}$ | | terminal to backside | 8.6 | 6.8 | | mm | |
| V_{ISOL} | isolation voltage | t = 1 second | | 3000 | | V | |
| | | t = 1 minute | 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA | 2500 | | V | |

Product Marking

Part description

- D = Diode
- S = Schottky Diode
- A = low VF
- 240 = Current Rating [A]
- X = Parallel legs
- 150 = Reverse Voltage [V]
- NA = SOT-227B (minibloc)

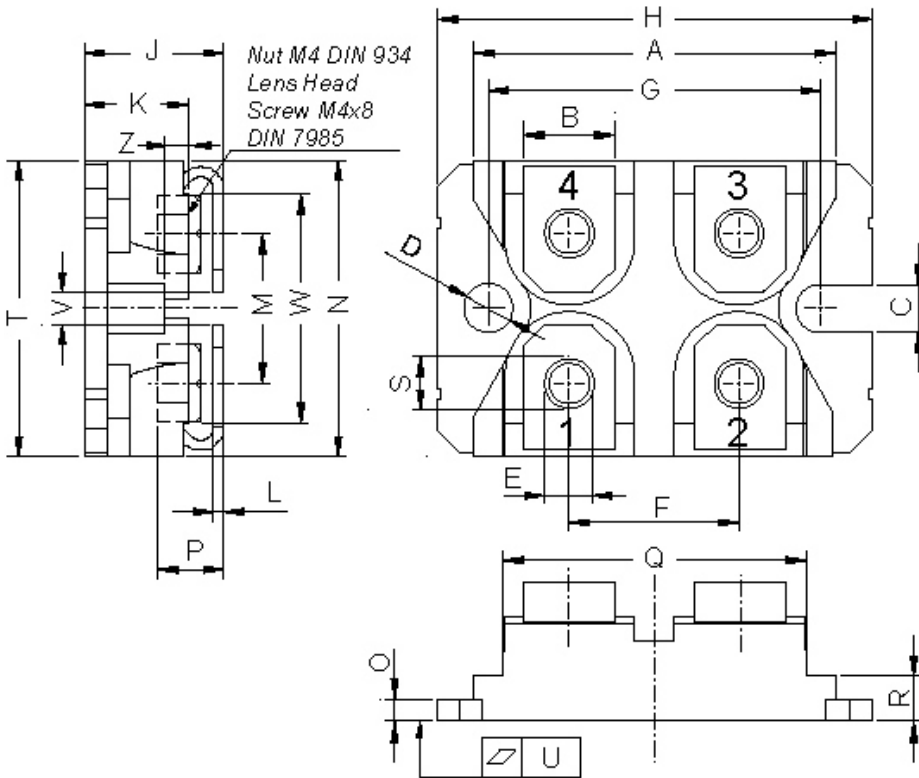
| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSA240X150NA | DSA240X150NA | Tube | 10 | 511101 |

| Similar Part | Package | Voltage class |
|---------------|---------------------|---------------|
| DSS2x101-015A | SOT-227B (minibloc) | 150 |

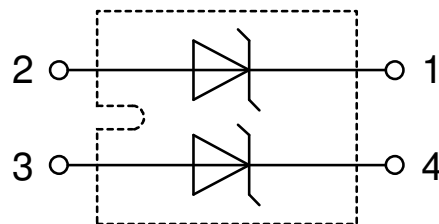
Equivalent Circuits for Simulation
** on die level*
 $T_{VJ} = 150^\circ\text{C}$

Schottky

| | | | |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage | 0.51 | V |
| $R_{0\ max}$ | slope resistance * | 0.6 | mΩ |

Outlines SOT-227B (minibloc)



| Dim. | Millimeter | | Inches | |
|------|------------|-------|--------|-------|
| | min | max | min | max |
| A | 31.50 | 31.88 | 1.240 | 1.255 |
| B | 7.80 | 8.20 | 0.307 | 0.323 |
| C | 4.09 | 4.29 | 0.161 | 0.169 |
| D | 4.09 | 4.29 | 0.161 | 0.169 |
| E | 4.09 | 4.29 | 0.161 | 0.169 |
| F | 14.91 | 15.11 | 0.587 | 0.595 |
| G | 30.12 | 30.30 | 1.186 | 1.193 |
| H | 37.80 | 38.23 | 1.488 | 1.505 |
| J | 11.68 | 12.22 | 0.460 | 0.481 |
| K | 8.92 | 9.60 | 0.351 | 0.378 |
| L | 0.74 | 0.84 | 0.029 | 0.033 |
| M | 12.50 | 13.10 | 0.492 | 0.516 |
| N | 25.15 | 25.42 | 0.990 | 1.001 |
| O | 1.95 | 2.13 | 0.077 | 0.084 |
| P | 4.95 | 6.20 | 0.195 | 0.244 |
| Q | 26.54 | 26.90 | 1.045 | 1.059 |
| R | 3.94 | 4.42 | 0.155 | 0.167 |
| S | 4.55 | 4.85 | 0.179 | 0.191 |
| T | 24.59 | 25.25 | 0.968 | 0.994 |
| U | -0.05 | 0.10 | -0.002 | 0.004 |
| V | 3.20 | 5.50 | 0.126 | 0.217 |
| W | 19.81 | 21.08 | 0.780 | 0.830 |
| Z | 2.50 | 2.70 | 0.098 | 0.106 |



Schottky

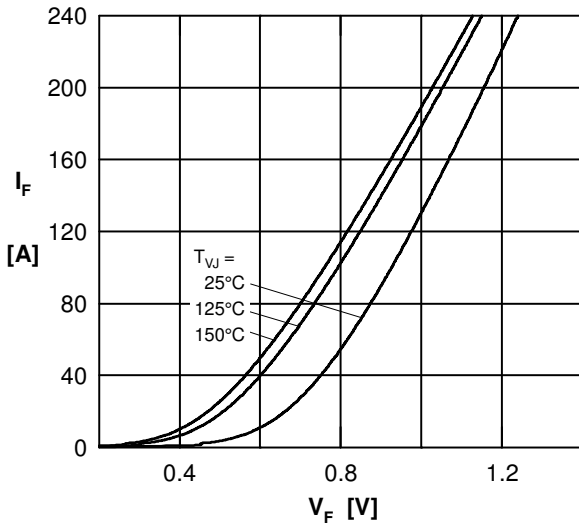


Fig. 1 Max. forward voltage drop characteristics

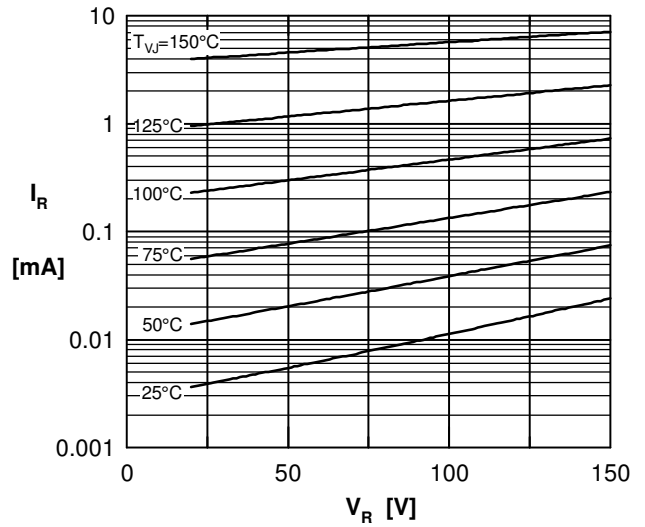


Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

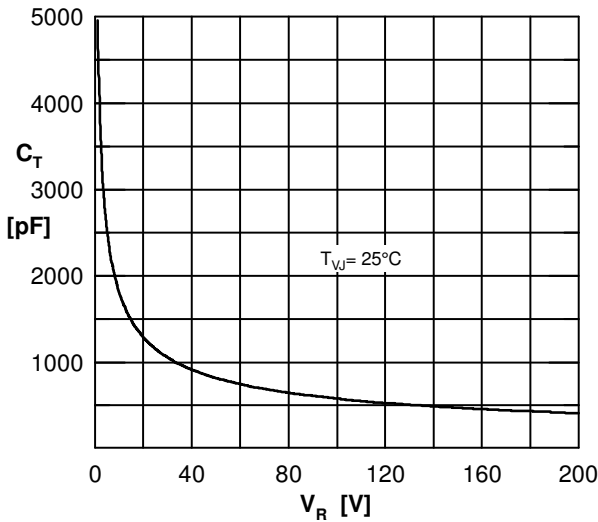


Fig. 3 Typ. junction capacitance C_T versus reverse voltage V_R

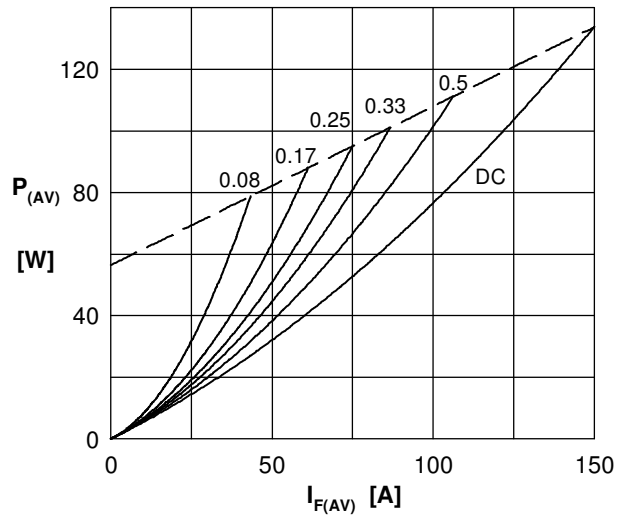


Fig. 4a Power dissipation versus direct output current Fig. 4b and ambient temperature

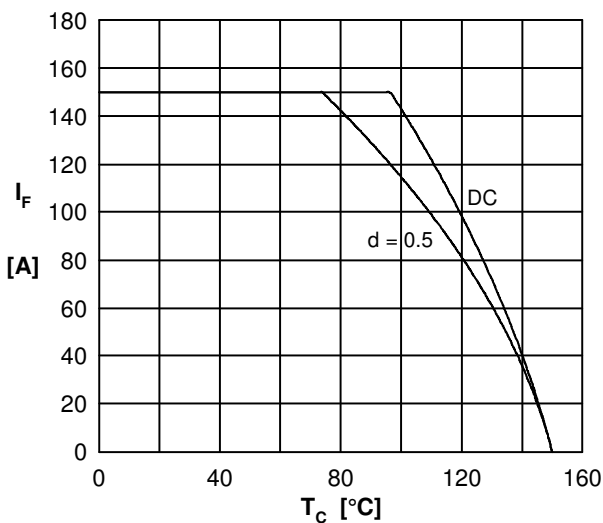


Fig. 5 Average forward current $I_{F(AV)}$ vs. case temp. T_C

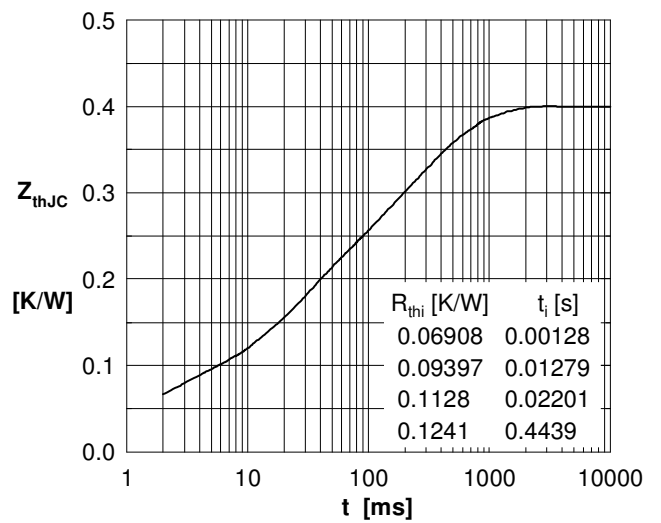


Fig. 6 Transient thermal impedance junction to case