

Schottky Diode

$$V_{RRM} = 200 \text{ V}$$

$$I_{FAV} = 15 \text{ A}$$

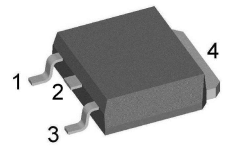
$$V_F = 0.78 \text{ V}$$

High Performance Schottky Diode
Low Loss and Soft Recovery
Single Diode

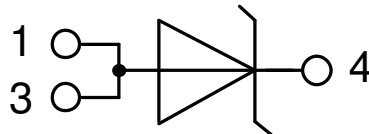
Part number

DSA15IM200UC

Marking on Product: SFMAUI



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-252 (DPak)

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

Terms and 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 your local sales office.

Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.

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;

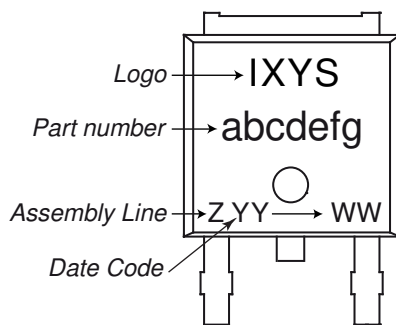
- the conclusion of quality agreements;

- 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 | | | | | 200 | V | |
| V_{RRM} | max. repetitive reverse blocking voltage | | | | | 200 | V | |
| I_R | reverse current, drain current | $V_R = 200\text{ V}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 250 | μA | |
| | | $V_R = 200\text{ V}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 2.5 | mA | |
| V_F | forward voltage drop | $I_F = 15\text{ A}$ | | $T_{VJ} = 25^\circ\text{C}$ | | 0.94 | V | |
| | | $I_F = 30\text{ A}$ | | | | 1.10 | V | |
| | | $I_F = 15\text{ A}$ | | $T_{VJ} = 125^\circ\text{C}$ | | 0.78 | V | |
| | | $I_F = 30\text{ A}$ | | | | 0.95 | V | |
| I_{FAV} | average forward current | $T_C = 150^\circ\text{C}$ | rectangular | $T_{VJ} = 175^\circ\text{C}$ | | 15 | A | |
| V_{F0} | threshold voltage | } for power loss calculation only | | | | 0.53 | V | |
| r_F | slope resistance | | | | | 10.8 | m Ω | |
| R_{thJC} | thermal resistance junction to case | | | | | 2 | K/W | |
| R_{thCH} | thermal resistance case to heatsink | | | 0.50 | | | K/W | |
| P_{tot} | total power dissipation | | | $T_C = 25^\circ\text{C}$ | | | 75 | W |
| I_{FSM} | max. forward surge current | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | | $T_{VJ} = 45^\circ\text{C}$ | | | 200 | A |
| C_J | junction capacitance | $V_R = 24\text{ V}$ | $f = 1\text{ MHz}$ | $T_{VJ} = 25^\circ\text{C}$ | 67 | pF | | |

| Package TO-252 (DPak) | | | Ratings | | | |
|-----------------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal ¹⁾ | | | 20 | A |
| T_{VJ} | virtual junction temperature | | -55 | | 175 | °C |
| T_{op} | operation temperature | | -55 | | 150 | °C |
| T_{stg} | storage temperature | | -55 | | 150 | °C |
| Weight | | | | 0.3 | | g |
| F_C | mounting force with clip | | 20 | | 60 | N |

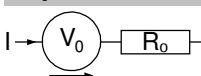
¹⁾ I_{RMS} is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2). In case of (1) and a product with multiple pins for one chip-potential, the current capability can be increased by connecting the pins as one contact.

Product Marking

Part description

D = Diode
 S = Schottky Diode
 A = low VF
 15 = Current Rating [A]
 IM = Single Diode
 200 = Reverse Voltage [V]
 UC = TO-252AA (DPak)

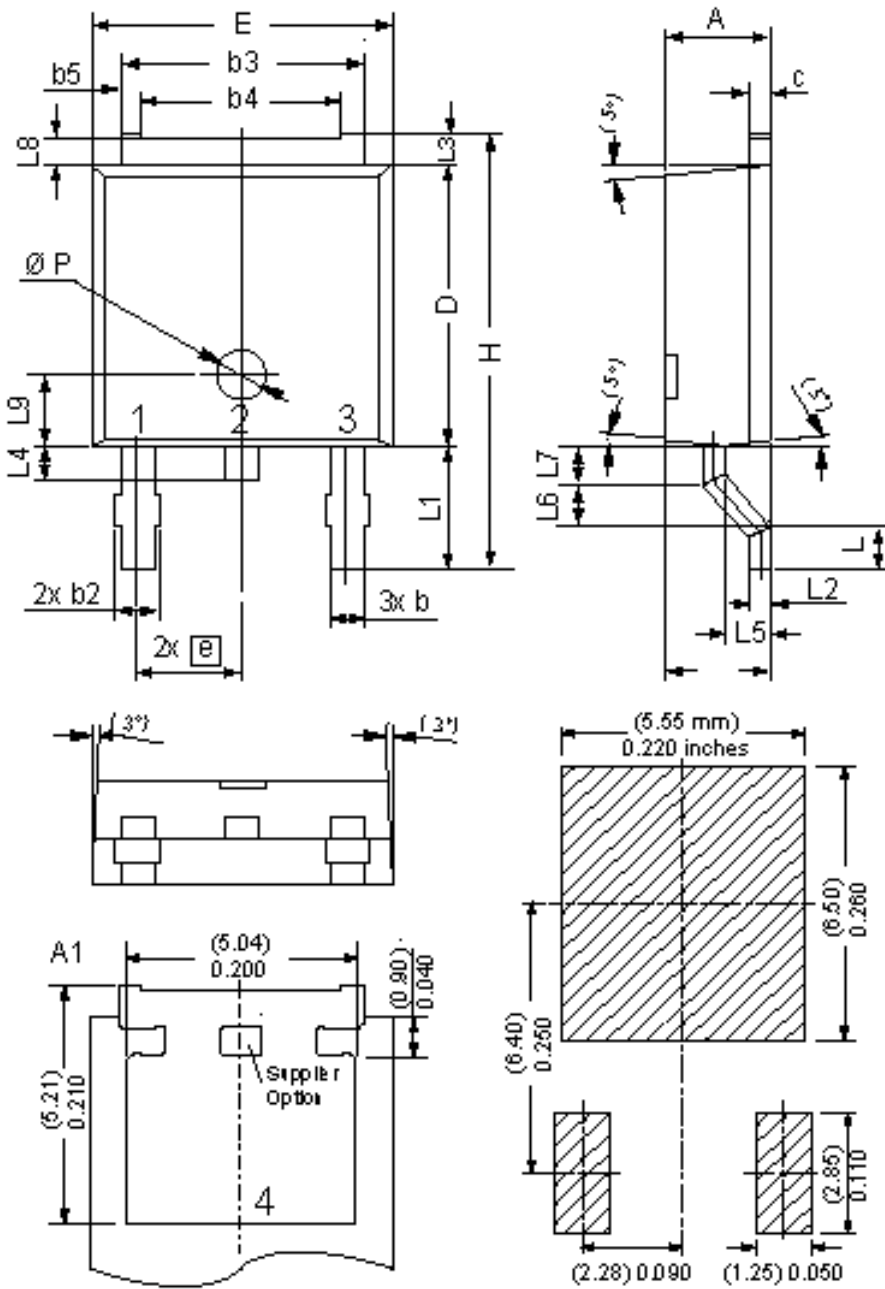
| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSA15IM200UC | SFMAUI | Tape & Reel | 2500 | 510408 |

| Similar Part | Package | Voltage class |
|--------------|-----------------|---------------|
| DSB15IM30UC | TO-252AA (DPak) | 30 |
| DSA15IM45UC | TO-252AA (DPak) | 45 |
| DSA10IM100UC | TO-252AA (DPak) | 100 |
| DSA15IM150UC | TO-252AA (DPak) | 150 |

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

Schottky

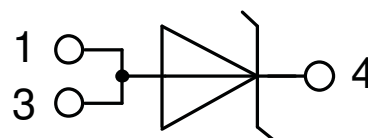
| | | | |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage | 0.53 | V |
| $R_{0\ max}$ | slope resistance * | 7.6 | mΩ |

Outlines TO-252 (DPak)



| Dim | Millimeters | | Inches | |
|-----|-------------|-------|-----------|-------|
| | min | max | min | max |
| A | 2.20 | 2.40 | 0.087 | 0.094 |
| A1 | 2.10 | 2.50 | 0.083 | 0.098 |
| b | 0.66 | 0.86 | 0.026 | 0.034 |
| b2 | - | 0.96 | - | 0.038 |
| b3 | 5.04 | 5.64 | 0.198 | 0.222 |
| b4 | 4.34 BSC | | 0.171 BSC | |
| b5 | 0.50 BSC | | 0.020 BSC | |
| c | 0.40 | 0.86 | 0.016 | 0.034 |
| D | 5.90 | 6.30 | 0.232 | 0.248 |
| E | 6.40 | 6.80 | 0.252 | 0.268 |
| e | 2.10 | 2.50 | 0.083 | 0.098 |
| H | 9.20 | 10.10 | 0.362 | 0.398 |
| L | 0.55 | 1.28 | 0.022 | 0.050 |
| L1 | 2.50 | 2.90 | 0.098 | 0.114 |
| L2 | 0.40 | 0.60 | 0.016 | 0.024 |
| L3 | 0.50 | 0.90 | 0.020 | 0.035 |
| L4 | 0.60 | 1.00 | 0.024 | 0.039 |
| L5 | 0.82 | 1.22 | 0.032 | 0.048 |
| L6 | 0.79 | 0.99 | 0.031 | 0.039 |
| L7 | 0.81 | 1.01 | 0.032 | 0.040 |
| L8 | 0.40 | 0.80 | 0.016 | 0.031 |
| L9 | 1.50 BSC | | 0.059 BSC | |
| Ø P | 1.00 BSC | | 0.039 BSC | |

Recommended
min. foot print



Schottky

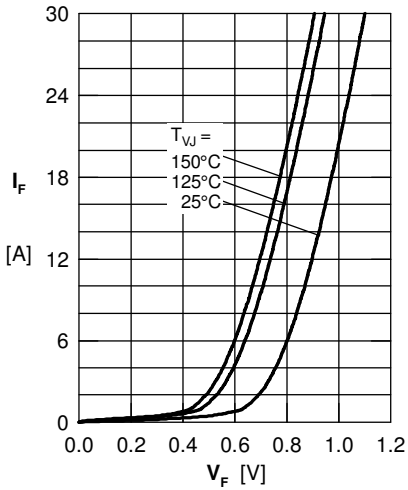


Fig. 1 Maximum forward voltage drop characteristics

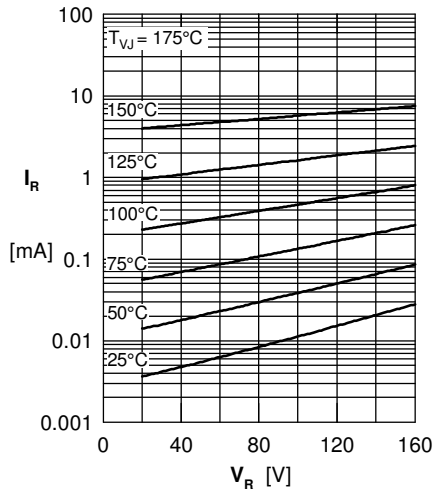


Fig. 2 Typ. reverse current I_R vs. reverse voltage V_R

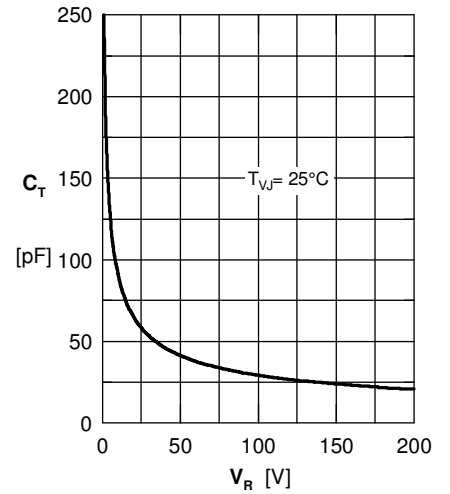


Fig. 3 Typ. junction capacitance C_T vs. reverse voltage V_R

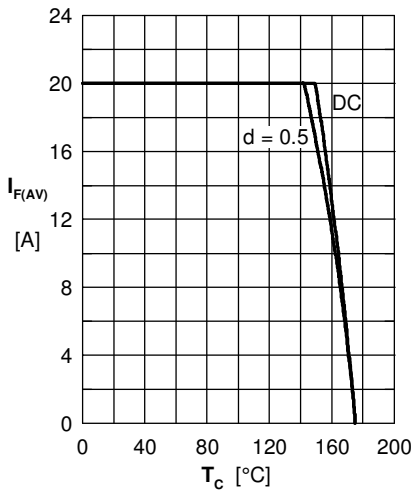


Fig. 4 Avg: forward current $I_{F(AV)}$ vs. case temperature T_C

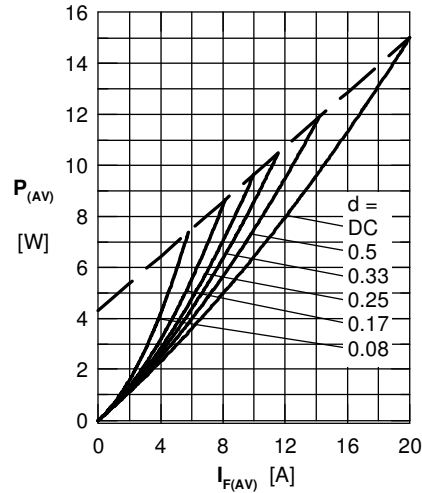


Fig. 5 Forward power loss characteristics

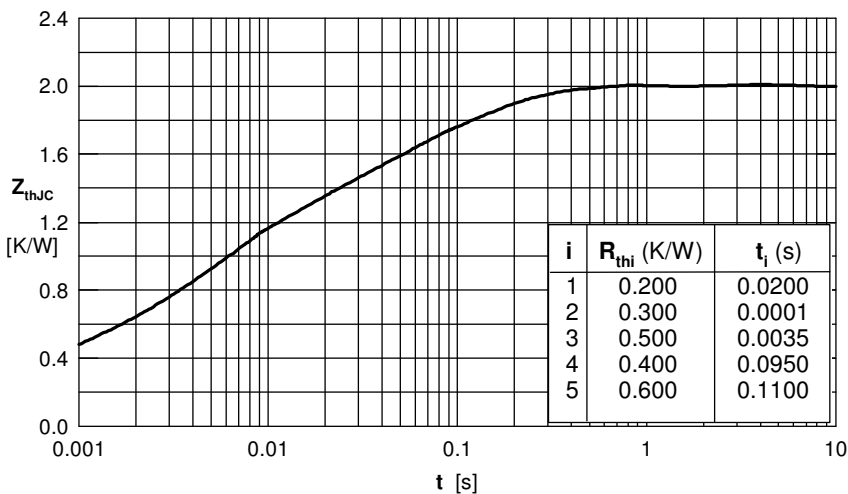


Fig. 6 Transient thermal impedance junction to case