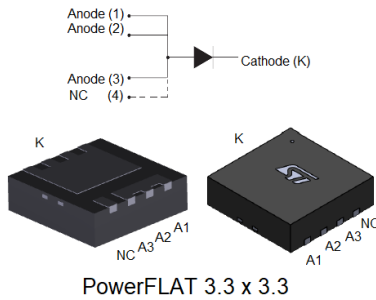


100 V, 8 A power Schottky rectifier



Features

- Very low conduction losses
- Negligible switching losses
- Extremely fast switching
- Low thermal resistance
- Avalanche capacity specified
- High junction temperature capability
- ECOPACK2 compliant

Description

This Schottky rectifier is designed for switch mode power supply and high frequency DC to DC converters.

Packaged in PowerFLAT, this device is intended for use in low voltage, high frequency, inverters, free-wheeling, by-pass diode and polarity protection applications. Its low profile was especially designed to be used in applications with space-saving constraints.

Product status link

[STPS8H100DEE](#)

Product summary

| Symbol | Value |
|--------------|--------|
| $I_{F(AV)}$ | 8 A |
| V_{RRM} | 100 V |
| T_j (max.) | 175 °C |
| V_F (typ.) | 0.60 V |

1 Characteristics

Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified)

| Symbol | Parameter | | Value | Unit | |
|--------------|---|-------------------------------|---------------------------------|------|---|
| V_{RRM} | Repetitive peak reverse voltage | | 100 | V | |
| $I_{F(RMS)}$ | Forward rms current | | 15 | A | |
| $I_{F(AV)}$ | Average forward current, $\delta = 0.5$ square wave | $T_c = 150\text{ °C}$ | 8 | A | |
| I_{FSM} | Surge non repetitive forward current | | $t_p = 10\text{ ms}$ sinusoidal | 100 | A |
| P_{ARM} | Repetitive peak avalanche power | $t_p = 10\text{ }\mu\text{s}$ | $T_c = 125\text{ °C}$ | 480 | W |
| T_{stg} | Storage temperature range | | -65 to +175 | °C | |
| T_j | Maximum operating junction temperature | | +175 | °C | |

Table 2. Thermal resistance parameters

| Symbol | Parameter | Max. value | Unit |
|---------------|------------------|------------|------|
| $R_{th(j-c)}$ | Junction to case | 4 | °C/W |

For more information, please refer to the following application note:

- AN5088: Rectifiers thermal management, handling and mounting recommendations

Table 3. Static electrical characteristics

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|-------------|-------------------------|-----------------------|---------------------|------|------|------|---------------|
| $I_R^{(1)}$ | Reverse leakage current | $T_j = 25\text{ °C}$ | $V_R = V_{RRM}$ | - | | 4.5 | μA |
| | | $T_j = 125\text{ °C}$ | | - | 2 | 6 | mA |
| $V_F^{(2)}$ | Forward voltage drop | $T_j = 25\text{ °C}$ | $I_F = 8\text{ A}$ | - | | 0.82 | V |
| | | $T_j = 125\text{ °C}$ | | - | 0.60 | 0.68 | |
| | | $T_j = 25\text{ °C}$ | $I_F = 10\text{ A}$ | | | 0.85 | |
| | | $T_j = 125\text{ °C}$ | | | 0.62 | 0.70 | |
| | | $T_j = 25\text{ °C}$ | $I_F = 16\text{ A}$ | | | 0.90 | |
| | | $T_j = 125\text{ °C}$ | | | 0.68 | 0.75 | |

1. Pulse test: $t_p = 5\text{ ms}$, $\delta < 2\%$

2. Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses, use the following equation:

$$P = 0.61 \times I_{F(AV)} + 0.0088 \times I_{F(RMS)}^2$$

For more information, please refer to the following application notes related to the power losses:

- AN604: Calculation of conduction losses in a power rectifier
- AN4021: Calculation of reverse losses in a power diode

1.1 Characteristics (curves)

Figure 1. Average forward power dissipation versus average forward current

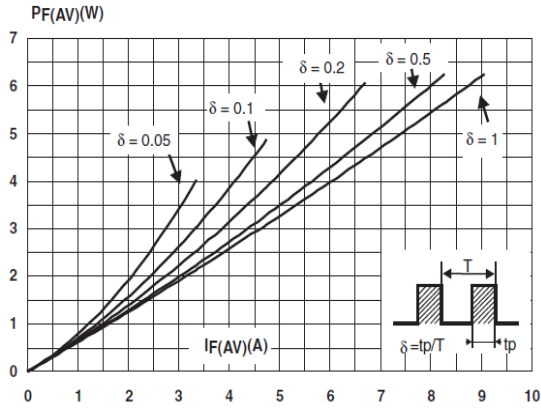


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

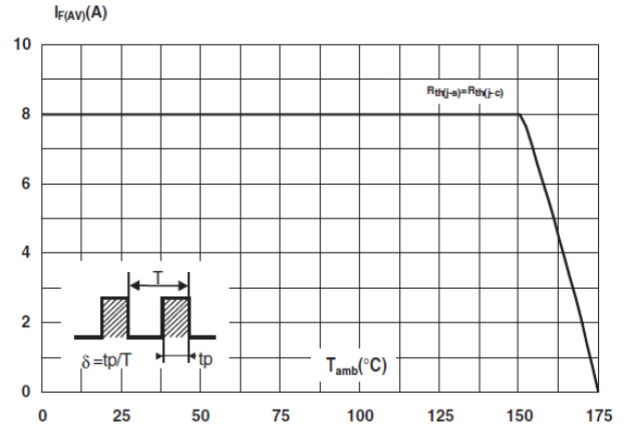


Figure 3. Normalized avalanche power derating versus pulse duration

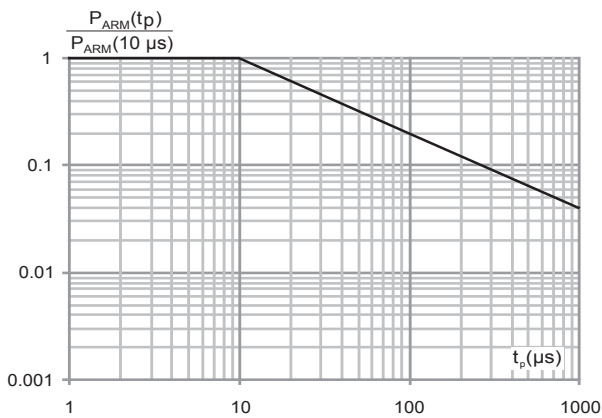


Figure 4. Relative variation of thermal impedance junction to case versus pulse duration

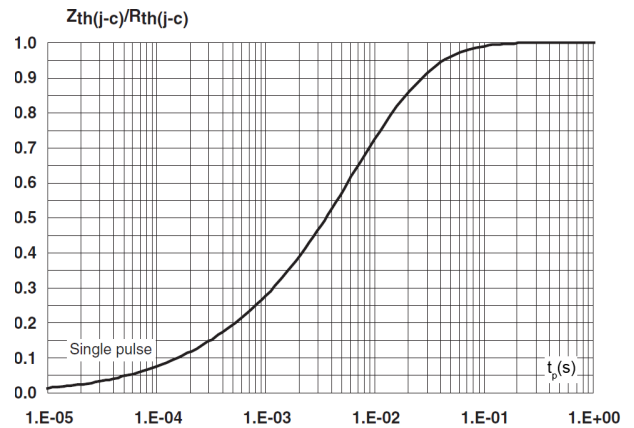


Figure 5. Reverse leakage current versus reverse voltage applied (typical values)

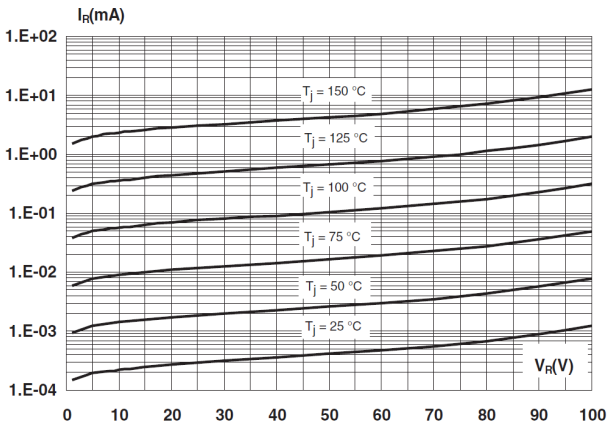


Figure 6. Junction capacitance versus reverse voltage applied (typical values)

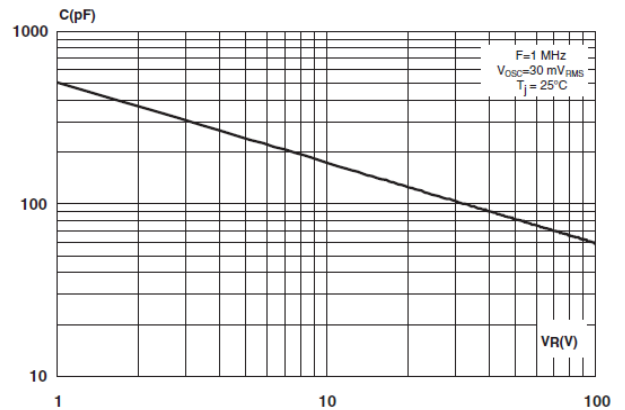


Figure 7. Forward voltage drop versus forward current

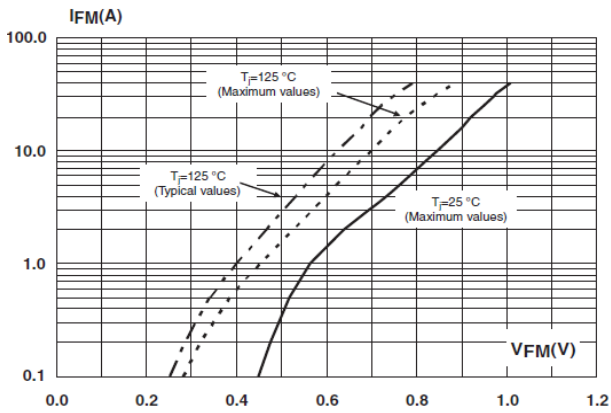
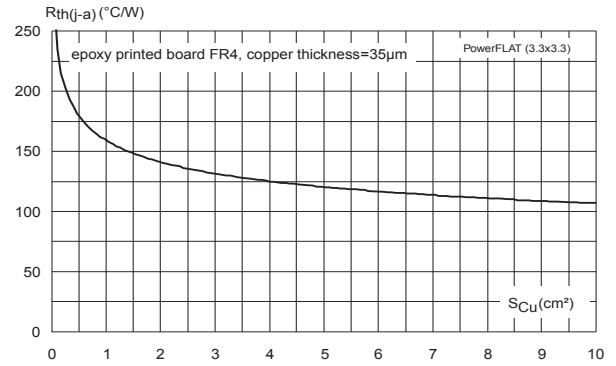


Figure 8. Thermal resistance junction to ambient versus copper surface under tab



2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

2.1 PowerFLAT 3.3x3.3 mm package information

Figure 9. PowerFLAT 3.3x3.3 mm package outline

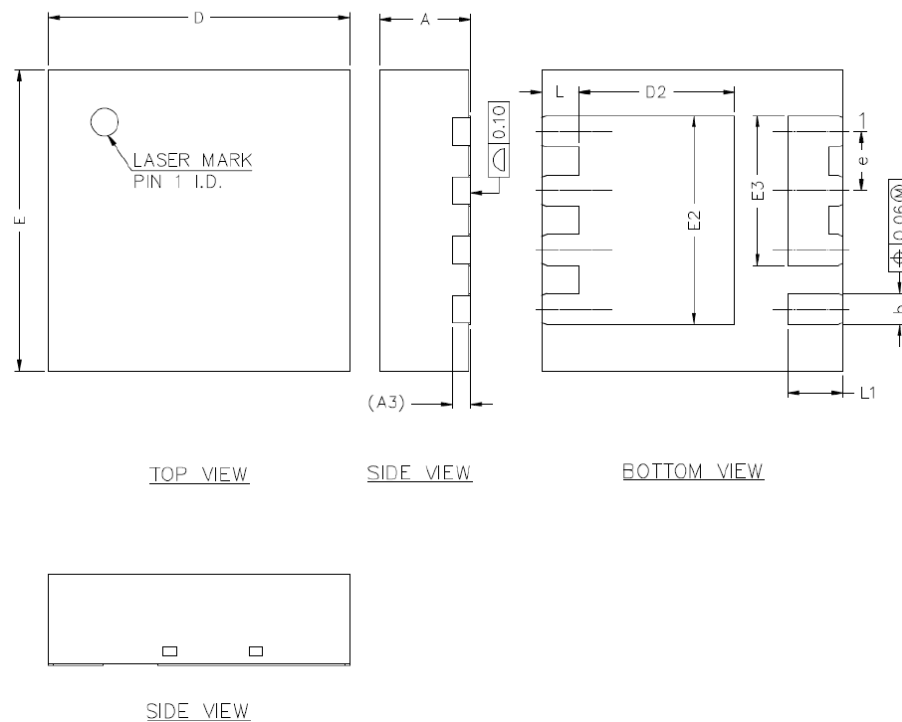
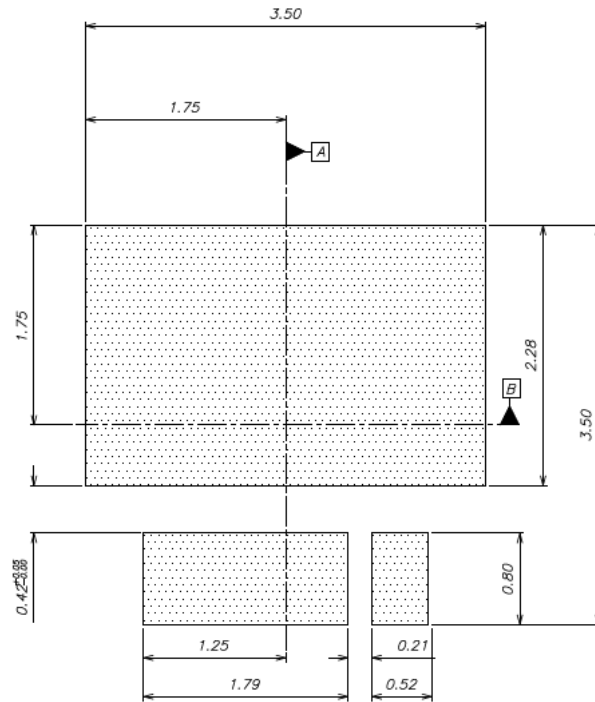


Table 4. PowerFLAT 3.3x3.3 mm mechanical data

| Ref. | Dimensions | | |
|------|-------------|------|------|
| | Millimeters | | |
| | Min. | Typ. | Max. |
| A | 0.90 | | 1.10 |
| A3 | | 0.20 | |
| b | 0.29 | | 0.44 |
| D | 3.20 | | 3.40 |
| D2 | 1.61 | | 1.82 |
| E | 3.20 | | 3.40 |
| E2 | 2.19 | | 2.39 |
| E3 | 1.54 | | 1.74 |
| e | 0.55 | | 0.75 |
| L | 0.30 | | 0.50 |
| L1 | 0.50 | | 0.70 |

Figure 10. Recommended footprint (dimensions are in mm)



3 Ordering information

Table 5. Ordering information

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|-----------------|---------|---------------------|--------|-----------|-------------------|
| STPS8H100DEE-TR | S8H100 | PowerFLAT 3.3 x 3.3 | 34 mg | 3000 | Tape and 13" reel |

Revision history

Table 6. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 09-Sep-2012 | 1 | First issue. |
| 16-Jan-2015 | 2 | Updated order code name and reformatted to current standard. |
| 13-Dec-2016 | 3 | Updated restriction and order code. |
| 18-May-2022 | 4 | Updated package outline PowerFLAT 3.3 x 3.3. |

IMPORTANT NOTICE – READ CAREFULLY

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved