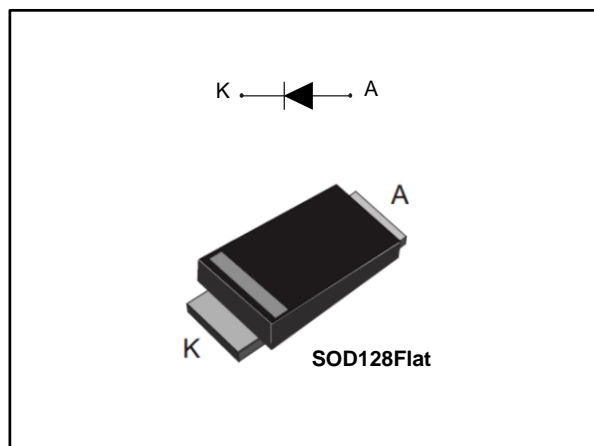


Automotive high voltage power Schottky rectifier

Datasheet - production data



Description

This high voltage Schottky barrier rectifier device is packaged in SOD128Flat and designed for high frequency miniature switched mode power supplies and for board DC to DC converters for automotive applications.

Table 1: Device summary

| Symbol | Value |
|--------------------|--------|
| $I_{F(AV)}$ | 5 A |
| V_{RRM} | 100 V |
| $T_j(\text{max.})$ | 175 °C |
| $V_F(\text{typ.})$ | 0.51 V |

Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade-off between leakage current and forward voltage drop
- Avalanche specification
- ECOPACK® compliant component
- AEC-Q101
- PPAP capable
- V_{RRM} guaranteed from -40 to +175 °C

1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)

| Symbol | Parameter | | Value | Unit |
|--------------------|--|---|-------------|------|
| V _{RRM} | Repetitive peak reverse voltage (T _j = -40 °C to +175 °C) | | 100 | V |
| I _{F(AV)} | Average forward current | T _L = 115 °C, δ = 0.5, square pulse | 5 | A |
| I _{FSM} | Surge non repetitive forward current | t _p = 10 ms sinusoidal | 125 | A |
| | | t _p = 8.3 ms sinusoidal | 130 | |
| P _{ARM} | Repetitive peak avalanche power | t _p = 10 μs, T _j = 125 °C | 300 | W |
| T _{stg} | Storage temperature range | | -65 to +175 | °C |
| T _j | Operating junction temperature range ⁽¹⁾ | | -40 to +175 | °C |

Notes:

⁽¹⁾(dP_{tot}/dT_j) < (1/R_{th(j-a)}) condition to avoid thermal runaway for a diode on its own heatsink.

Table 3: Thermal parameters

| Symbol | Parameter | Max. value | Unit |
|----------------------|------------------|------------|------|
| R _{th(j-l)} | Junction to lead | 16 | °C/W |

Table 4: Static electrical characteristics

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|-------------------------------|-------------------------|-------------------------|------------------------|------|------|------|------|
| I _R ⁽¹⁾ | Reverse leakage current | T _j = 25 °C | V _R = 100 V | - | 0.7 | 3.5 | μA |
| | | T _j = 125 °C | | - | 1 | 4 | mA |
| | | T _j = 150 °C | | - | | 16 | |
| V _F ⁽²⁾ | Forward voltage drop | T _j = 25 °C | I _F = 2.5 A | - | | 0.67 | V |
| | | T _j = 125 °C | I _F = 2.5 A | - | 0.51 | 0.55 | |
| | | T _j = 25 °C | I _F = 5 A | - | | 0.76 | |
| | | T _j = 125 °C | I _F = 5 A | - | 0.57 | 0.61 | |

Notes:

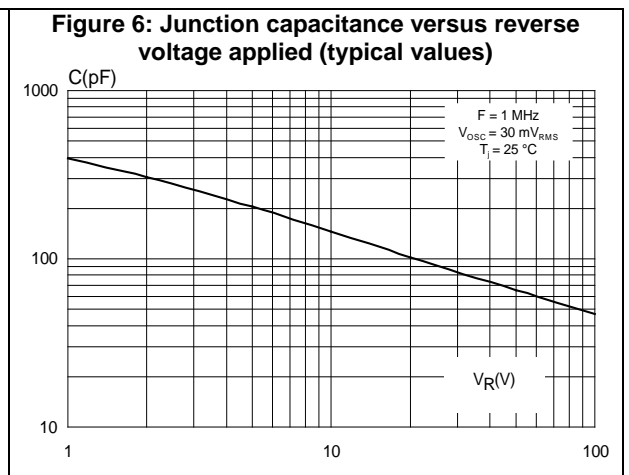
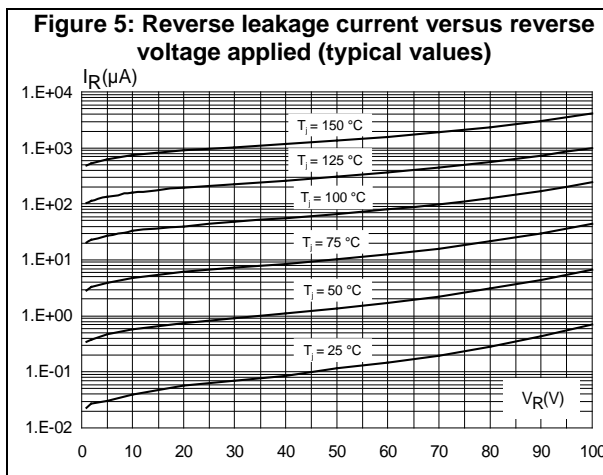
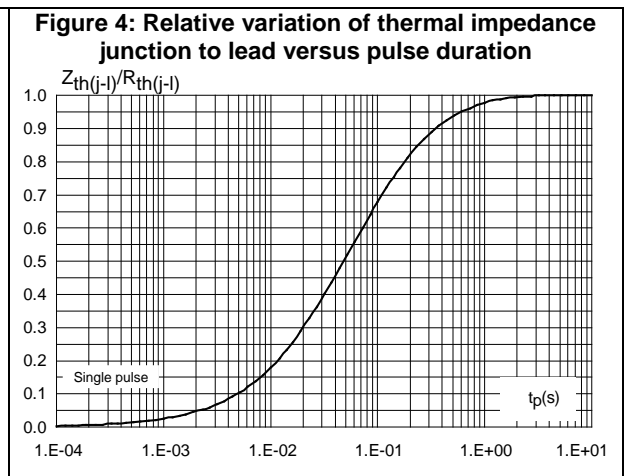
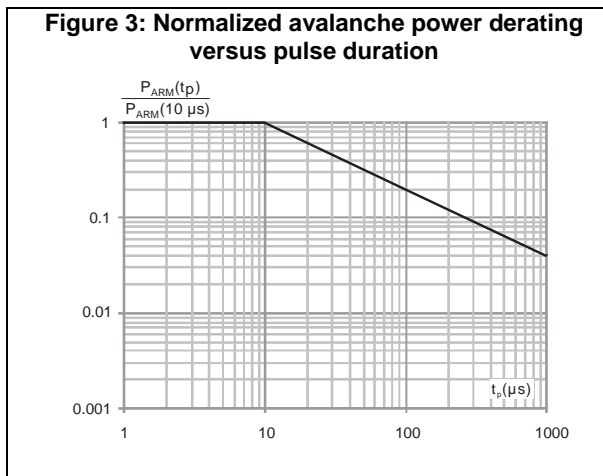
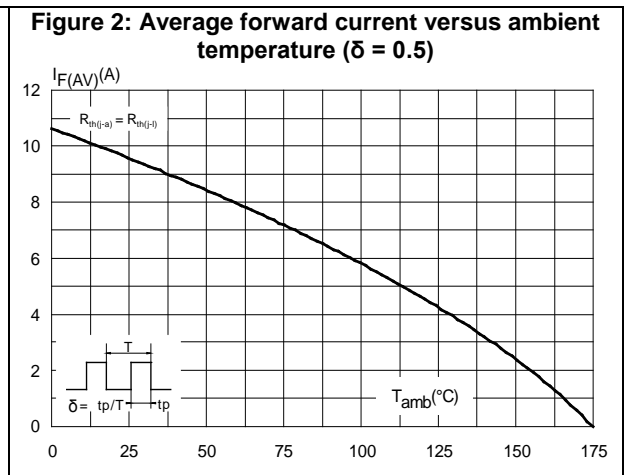
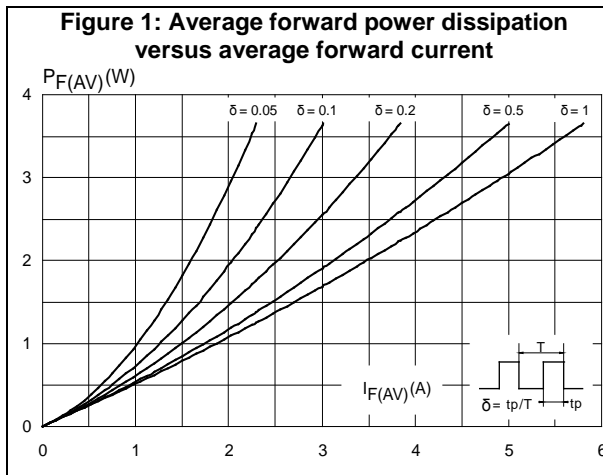
⁽¹⁾Pulse test: t_p = 5 ms, δ < 2%

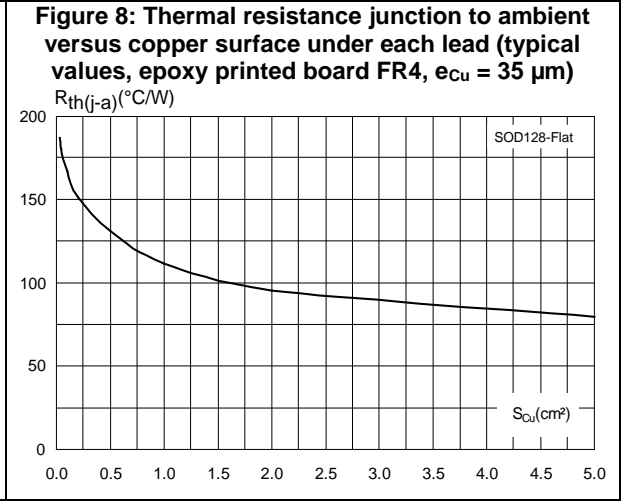
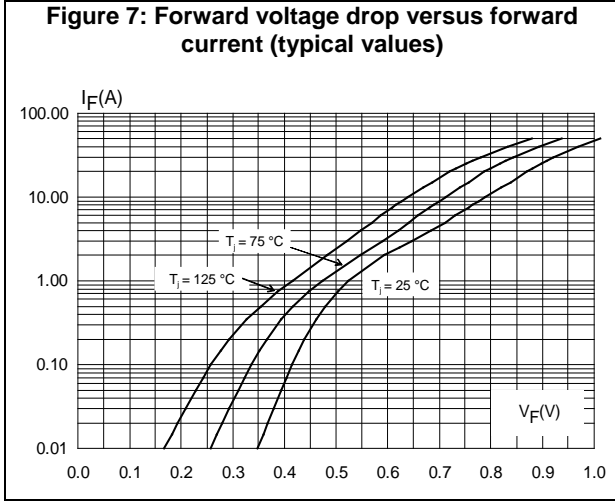
⁽²⁾Pulse test: t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation:

$$P = 0.49 \times I_{F(AV)} + 0.024 \times I_{F(RMS)}^2$$

1.1 Characteristics (curves)





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.

- Epoxy meets UL94, V0
- Lead-free package

2.1 SOD128Flat package information

Figure 9: SOD128Flat package outline

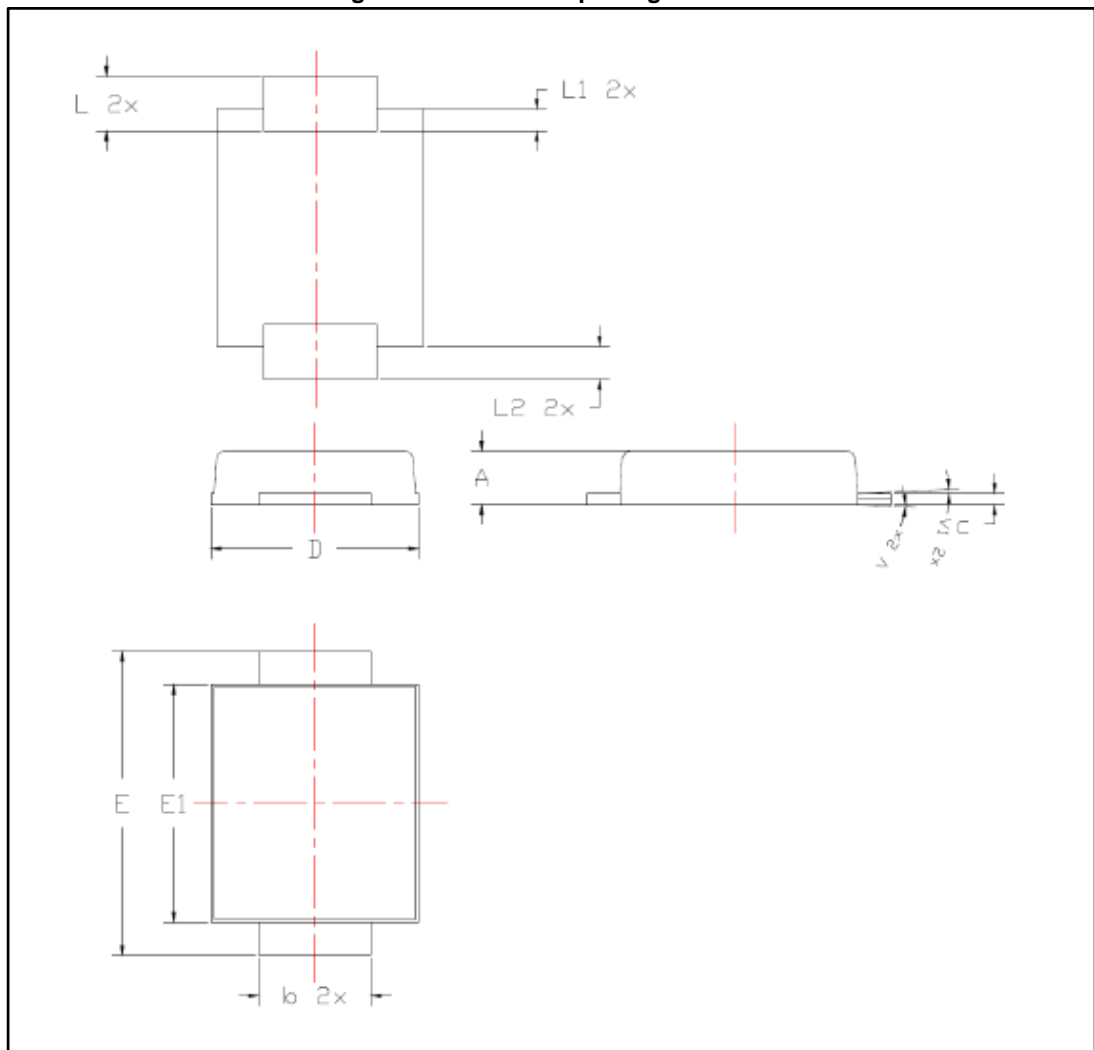
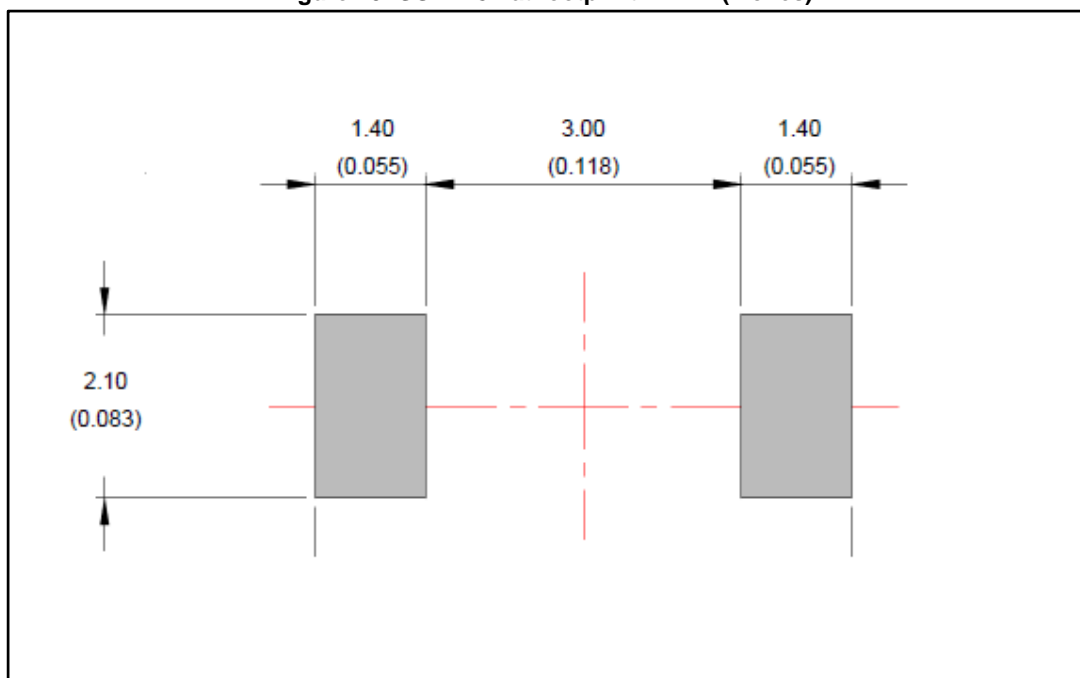


Table 5: SOD128Flat package mechanical data

| Ref. | Dimensions | | | |
|------|-------------|------|------------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 0.93 | 1.03 | 0.037 | 0.041 |
| b | 1.69 | 1.81 | 0.067 | 0.071 |
| c | 0.10 | 0.22 | 0.004 | 0.009 |
| D | 2.30 | 2.50 | 0.091 | 0.098 |
| E | 4.60 | 4.80 | 0.181 | 0.189 |
| E1 | 3.70 | 3.90 | 0.146 | 0.154 |
| L | 0.55 | 0.85 | 0.026 | 0.033 |
| L1 | 0.30 typ. | | 0.012 typ. | |
| L2 | 0.45 typ. | | 0.018 typ. | |

Figure 10: SOD128Flat footprint in mm (inches)



3 Ordering information

Table 6: Ordering information

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|--------------|---------|------------|---------|-----------|---------------|
| STPS5H100AFY | 5H100Y | SOD128Flat | 26.4 mg | 3000 | Tape and reel |

4 Revision history

Table 7: Document revision history

| Date | Revision | Changes |
|-------------|----------|---|
| 14-Jun-2016 | 1 | Initial release. |
| 24-Jun-2016 | 2 | Updated Table 2 : " <i>Absolute ratings (limiting values at 25 °C, unless otherwise specified)</i> ". |

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