
Table 1. Device summary

| Symbol | Value |
|--------------|--------|
| $I_{F(AV)}$ | 2 A |
| V_{RRM} | 200 V |
| $T_{j(max)}$ | 175 °C |
| $V_{F(typ)}$ | 0.58 V |

Features

- Low forward voltage drop
- Very small conduction losses
- Negligible switching losses
- Extremely fast switching
- Low thermal resistance
- -40°C minimum operating T_j
- ECOPACK^{®2} compliant component

Description

This device is a 200 V Schottky rectifier suited for switch mode power supplies and high frequency DC to DC converters.

Packaged in SMB, SMBflat, this device is especially intended for use in low voltage, high frequency inverters, freewheeling and polarity protection. Also ideal for all LED lighting applications.

1 Characteristics

Table 2. Absolute ratings (limiting values, at 25 °C unless otherwise stated)

| Symbol | Parameter | | Value | Unit | |
|--------------|--|---|-----------------------|------|---|
| V_{RRM} | Repetitive peak reverse voltage | | 200 | V | |
| $I_{F(RMS)}$ | Forward rms current | | 10 | A | |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$, square wave | SMB | $T_1 = 145\text{ °C}$ | 2 | A |
| | | SMBflat | $T_1 = 150\text{ °C}$ | | |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10\text{ ms}$ sinusoidal, $T_1 = 25\text{ °C}$ | 100 | A | |
| T_{stg} | Storage temperature range | | -65 to +175 | °C | |
| T_j | Operating junction temperature range | | -40 to +175 | °C | |

Table 3. Thermal parameters

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|---------|-------|------|
| $R_{th(j-l)}$ | Junction to lead | SMB | 20 | °C/W |
| | | SMBflat | 15 | |

Table 4. Static electrical characteristics

| Symbol | Test conditions | | Min. | Typ. | Max. | Unit | |
|-------------|-------------------------|-----------------------|--------------------|------|------|---------------|---|
| $I_R^{(1)}$ | Reverse leakage current | $T_j = 25\text{ °C}$ | $V_R = V_{RRM}$ | | 5 | μA | |
| | | $T_j = 125\text{ °C}$ | | 0.7 | 2.5 | mA | |
| $V_F^{(1)}$ | Forward voltage drop | $T_j = 25\text{ °C}$ | $I_F = 2\text{ A}$ | | 0.73 | 0.80 | V |
| | | $T_j = 125\text{ °C}$ | | 0.58 | 0.64 | V | |

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

To evaluate the maximum conduction losses use the following equation:
 $P = 0.58 \times I_{F(AV)} + 0.03 I_{F(RMS)}^2$

*Note: More information is available in the application notes:
 AN604 Calculation of conduction losses in a power rectifier
 AN4021 Calculation of reverse losses in a power diode*

Figure 1. Average forward power dissipation versus average forward current

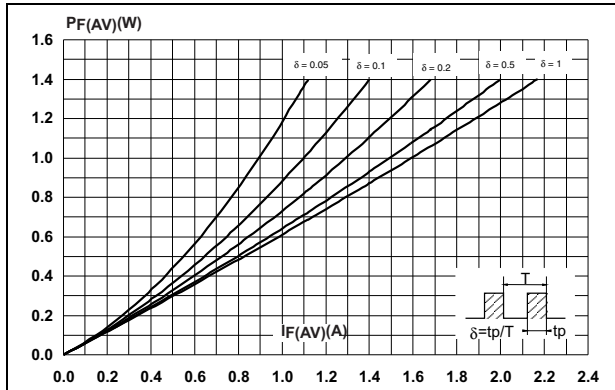


Figure 2. Forward voltage drop versus forward current

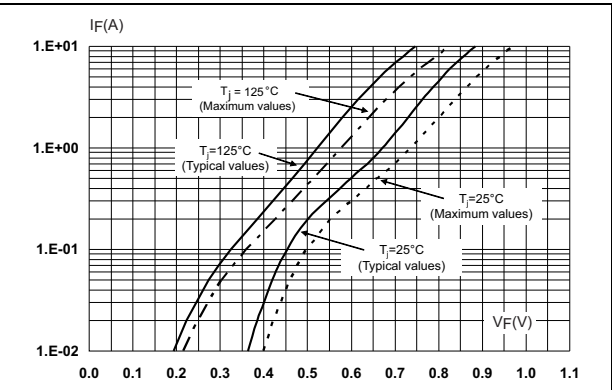


Figure 3. Reverse leakage current versus reverse voltage applied (typical values)

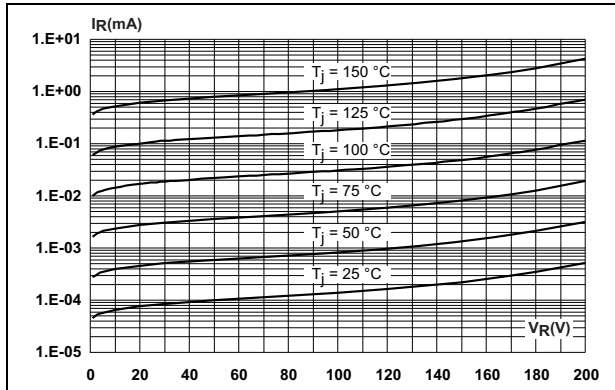


Figure 4. Junction capacitance versus reverse voltage applied (typical values)

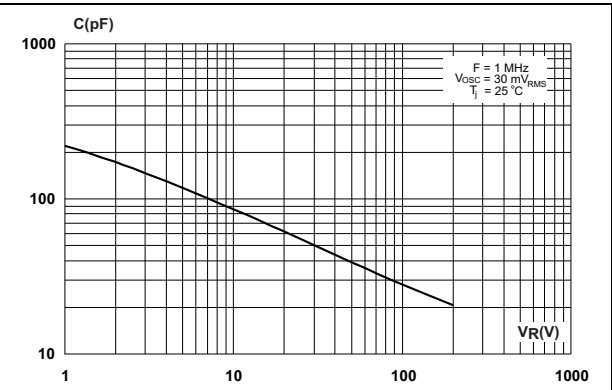


Figure 5. Relative variation of thermal impedance junction to lead versus pulse duration (SMB)

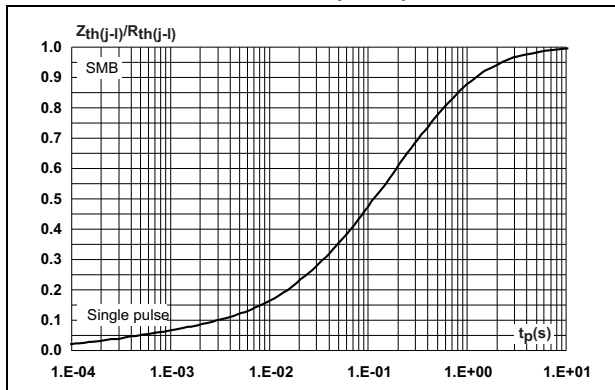


Figure 6. Relative variation of thermal impedance junction to lead versus pulse duration (SMBflat)

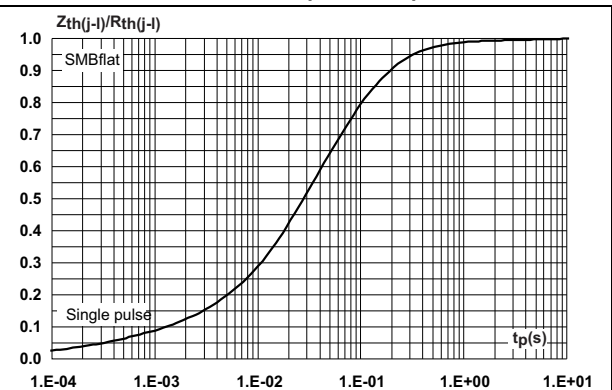


Figure 7. Thermal resistance junction to ambient versus copper surface under each lead (SMB)

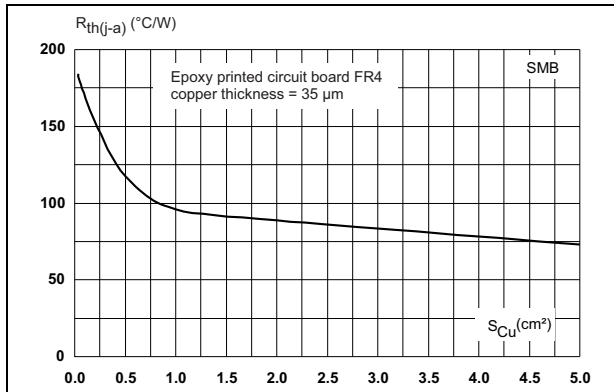
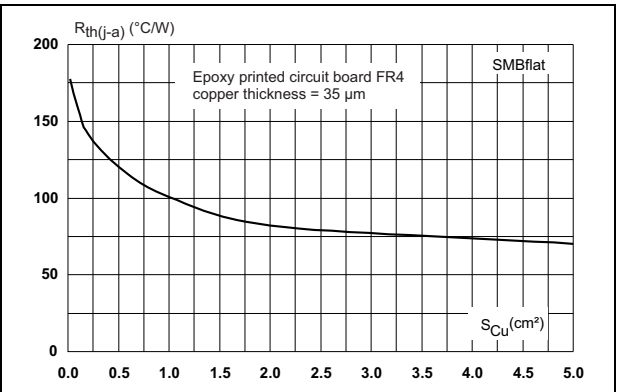


Figure 8. Thermal resistance junction to ambient versus copper surface under each lead (SMBflat)



2 Package information

- Epoxy meets UL94, V0
- Lead-free package
- Cooling method: by conduction (C)
- Recommended torque value: 0.4 to 0.6 N·m

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.

Figure 9. SMB dimension definitions

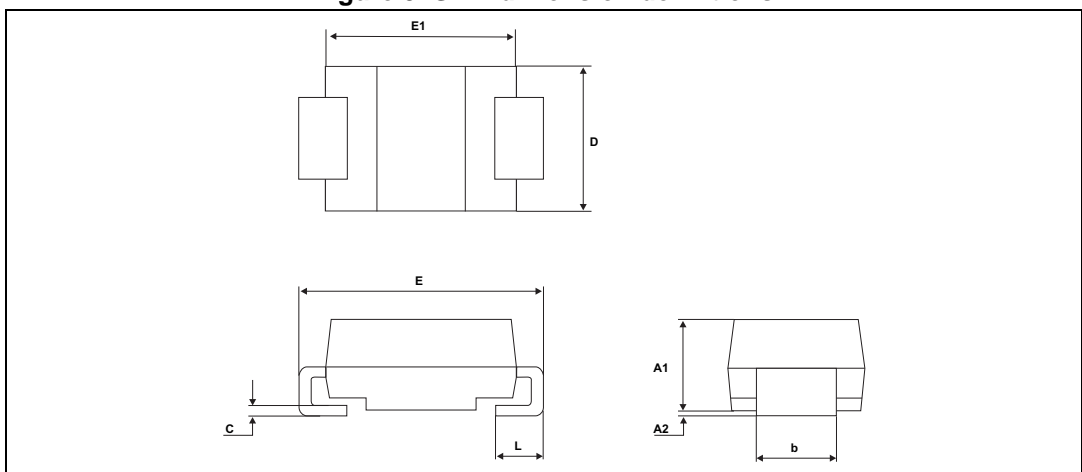


Table 5. SMB dimension values

| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A1 | 1.90 | | 2.45 | 0.075 | | 0.096 |
| A2 | 0.05 | | 0.20 | 0.002 | | 0.008 |
| b | 1.95 | | 2.20 | 0.077 | | 0.087 |
| c | 0.15 | | 0.40 | 0.006 | | 0.016 |
| D | 3.30 | | 3.95 | 0.130 | | 0.156 |
| E | 5.10 | | 5.60 | 0.201 | | 0.220 |
| E1 | 4.05 | | 4.60 | 0.159 | | 0.181 |
| L | 0.75 | | 1.50 | 0.030 | | 0.059 |

Figure 10. SMB footprint, dimensions in mm (inches)

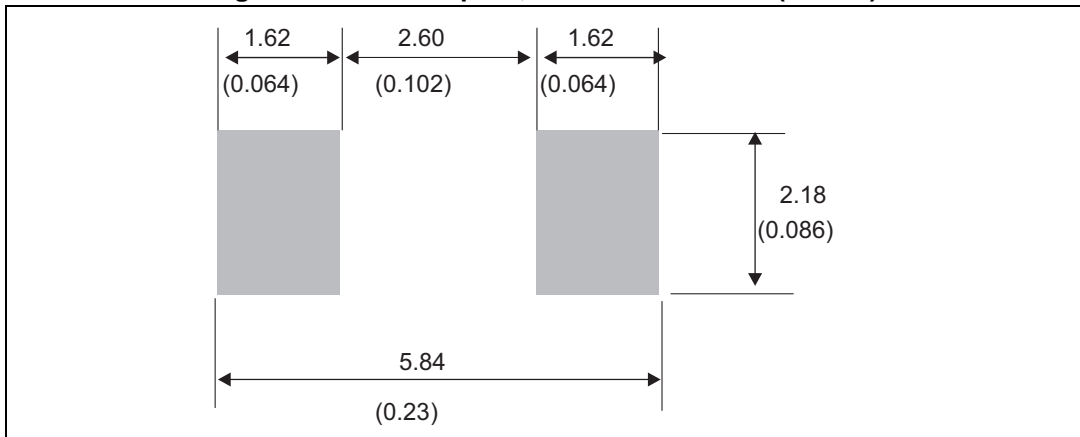


Figure 11. SMBflat (non exposed pad) dimension definitions

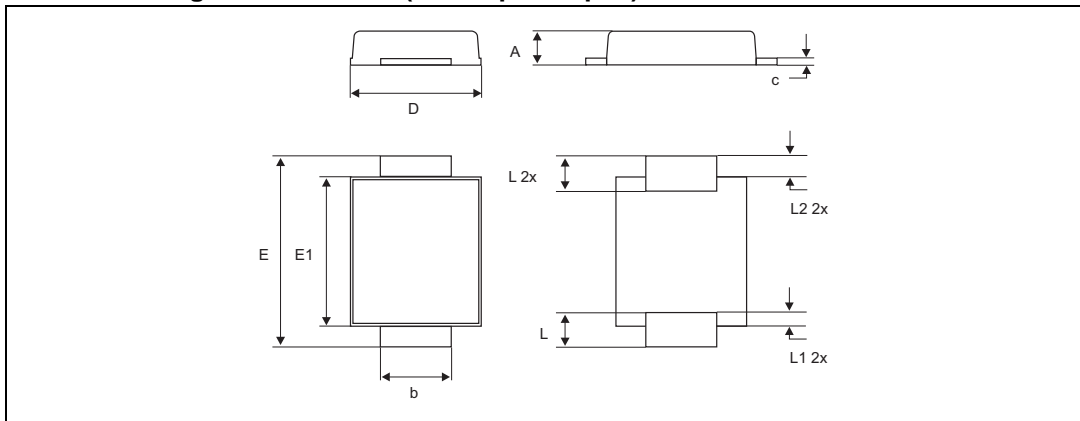
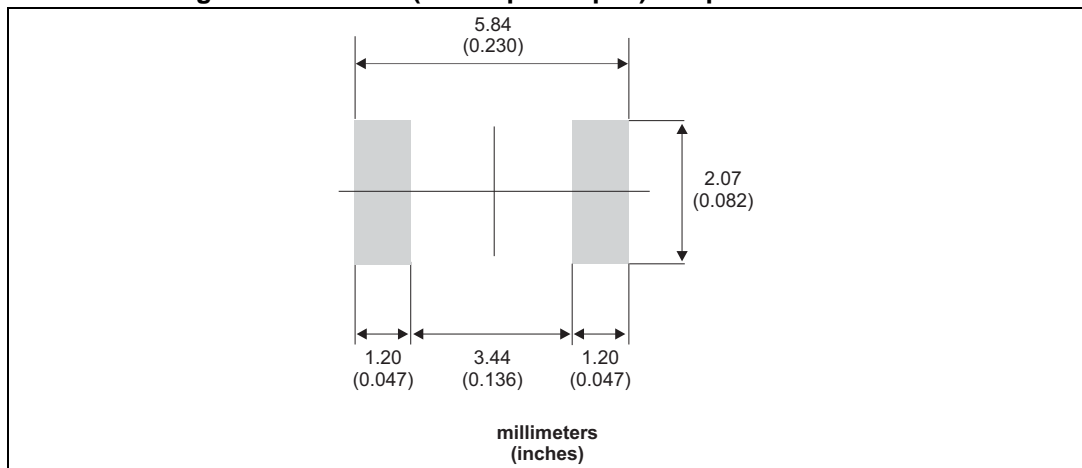


Table 6. SMBflat (non exposed pad) dimension values

| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 0.90 | | 1.10 | 0.035 | | 0.043 |
| b | 1.95 | | 2.20 | 0.077 | | 0.087 |
| c | 0.15 | | 0.40 | 0.006 | | 0.016 |
| D | 3.30 | | 3.95 | 1.30 | | 0.156 |
| E | 5.10 | | 5.60 | 0.200 | | 0.220 |
| E1 | 4.05 | | 4.60 | 0.189 | | 0.181 |
| L | 0.75 | | 1.50 | 0.029 | | 0.059 |
| L1 | | 0.40 | | | 0.016 | |
| L2 | | 0.60 | | | 0.024 | |

Figure 12. SMBflat (non exposed pad) footprint dimensions



3 Ordering information

Table 7. Ordering information

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|--------|----------|---------------|
| STPS2200U | G22 | SMB | g | 2500 | Tape and reel |
| STPS2200UF | FG22 | SMBflat | g | 5000 | Tape and reel |

4 Revision history

Table 8. Document revision history

| Date | Revision | Changes |
|-------------|----------|-------------|
| 11-Apr-2013 | 1 | First issue |

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