# 1 Characteristics

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

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | 200 | V |
| $I_{F(AV)}$ | Average forward current | $T_{lead}$ = 153 °C , δ = 0.5 square wave | 1 | A |
| $I_{FSM}$ | Surge non repetitive forward current | $t_p$ = 10 ms sinusoidal | 25 | A |
| $T_{stg}$ | Storage temperature range | | -65 to +175 | °C |
| $T_j$ | Maximum operating junction temperature | | +175 | °C |

**Table 3: Thermal parameter**

| Symbol | Parameter | Maximum | Unit |
|---|---|---|---|
| $R_{th(j-l)}$ | Junction to lead | 23 | °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 | $V_R = V_{RRM}$ | - | | 0.5 | µA |
| | | $T_j$ = 125 °C | | - | 1 | 10 | µA |
| $V_F$ (2) | Forward voltage drop | $T_j$ = 25 °C | $I_F$ = 1 A | - | 0.87 | 1.00 | V |
| | | $T_j$ = 125 °C | | - | 0.75 | 0.85 | |

**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:

$P = 0.75 \times I_{F(AV)} + 0.1 \times I_F{}^2{}_{(RMS)}$

**Table 5: Dynamic electrical characteristics**

| Symbol | Parameters | Test conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{rr}$ | Reverse recovery time | $I_F$ = 1 A<br>$dI_F/dt$ = 50 A/µs<br>$V_R$ = 30 V<br>$T_j$ = 25 °C | - | 25 | 32 | ns |
| | | $I_F$ = 1 A<br>$dI_F/dt$ = 100 A/µs<br>$V_R$ = 160 V<br>$T_j$ = 125 °C | - | 30 | | |
| $I_{RM}$ | Reverse recovery current | | - | 2.2 | | A |
| $Q_{rr}$ | Reverse recovery charges | | - | 34 | | nC |

## 1.2 Characteristics (curves)

**Figure 1: Average forward power dissipation versus average forward current**

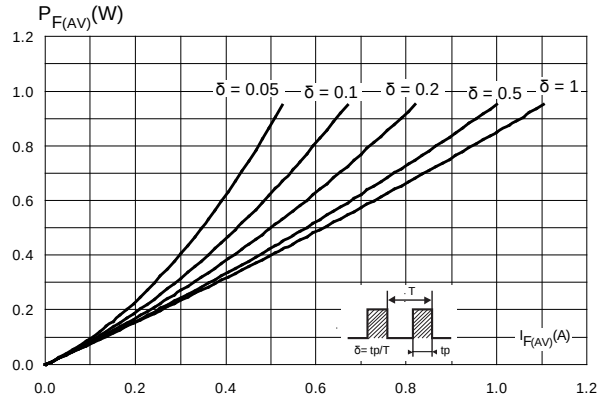



**Figure 2: Forward voltage drop versus forward current (typical values)**

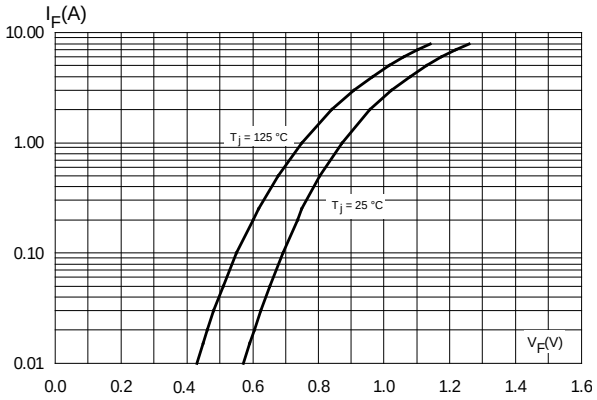



**Figure 3: Forward voltage drop versus forward current (maximum values)**

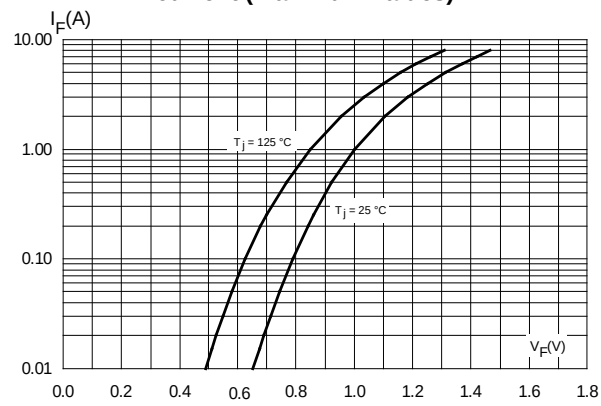



**Figure 4: Relative variation of thermal impedance junction to lead versus pulse duration**

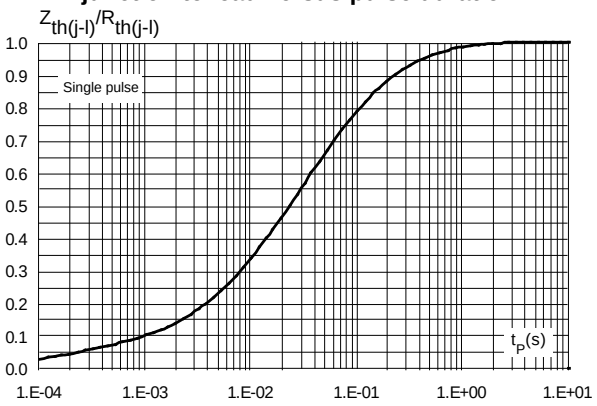



**Figure 5: Peak reverse recovery current versus $dI_F$ / dt (typical values)**

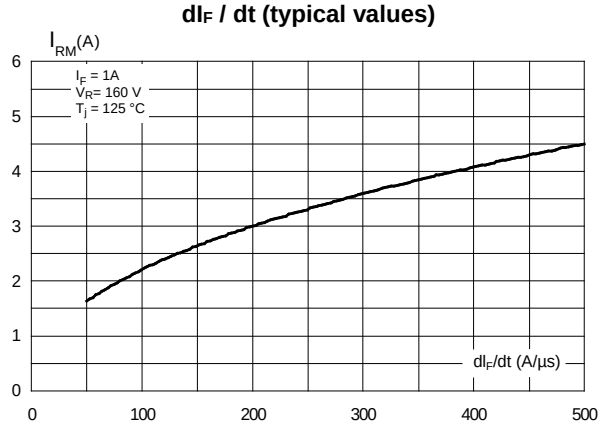



**Figure 6: Reverse recovery charges versus $dI_F$ / dt (typical values)**

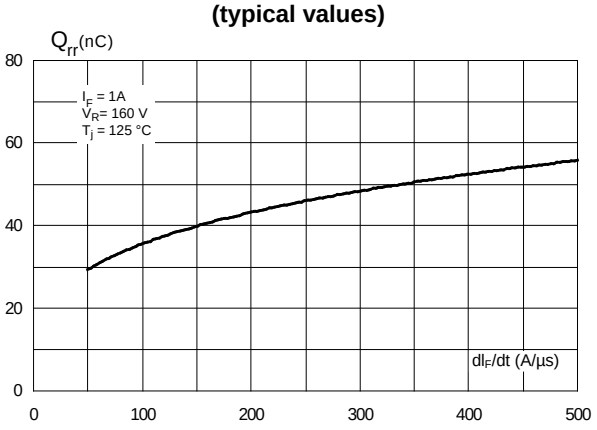


**Figure 7: Reverse recovery time versus $dI_F / dt$ (typical values)**

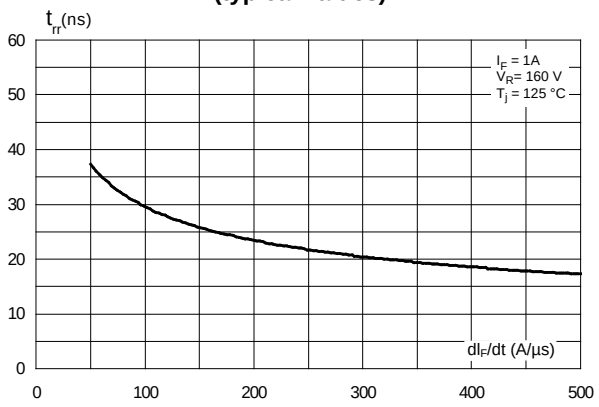



**Figure 8: Reverse recovery softness factor versus $dI_F / dt$ (typical values)**

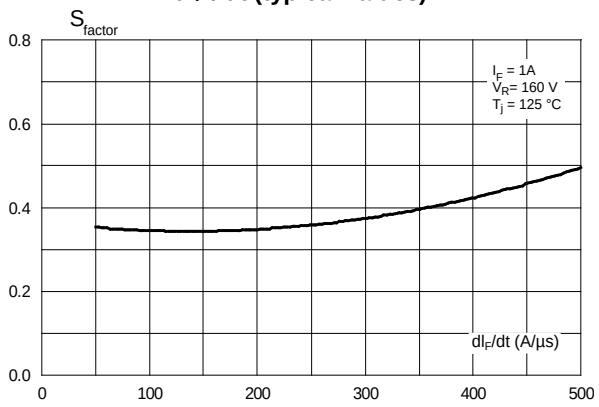



**Figure 9: Dynamic parameters versus junction temperature (reference $T_j$ = 125 °C)**

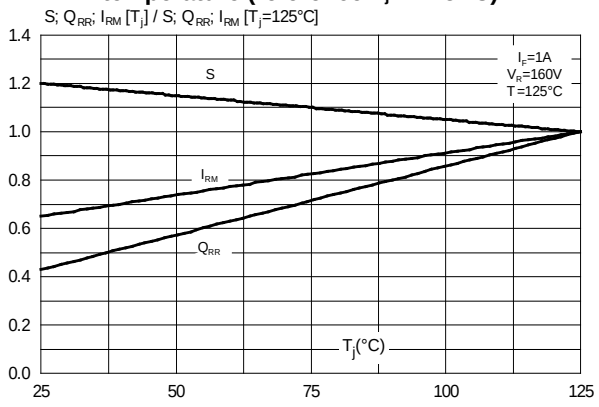



**Figure 10: Junction capacitance versus reverse voltage applied (typical values)**

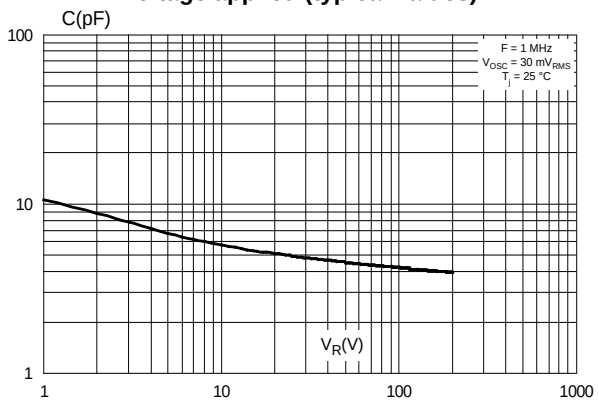
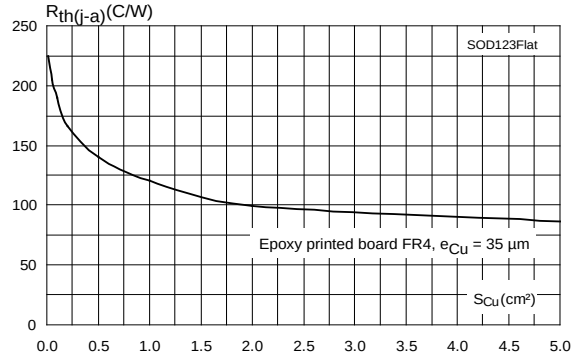



**Figure 11: Thermal resistance junction to ambient total versus copper surface under each lead (typical values)**



# 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
- Cooling method: by conduction (C)

## 2.1 SOD123Flat package information

**Figure 12: SOD123Flat package outline**

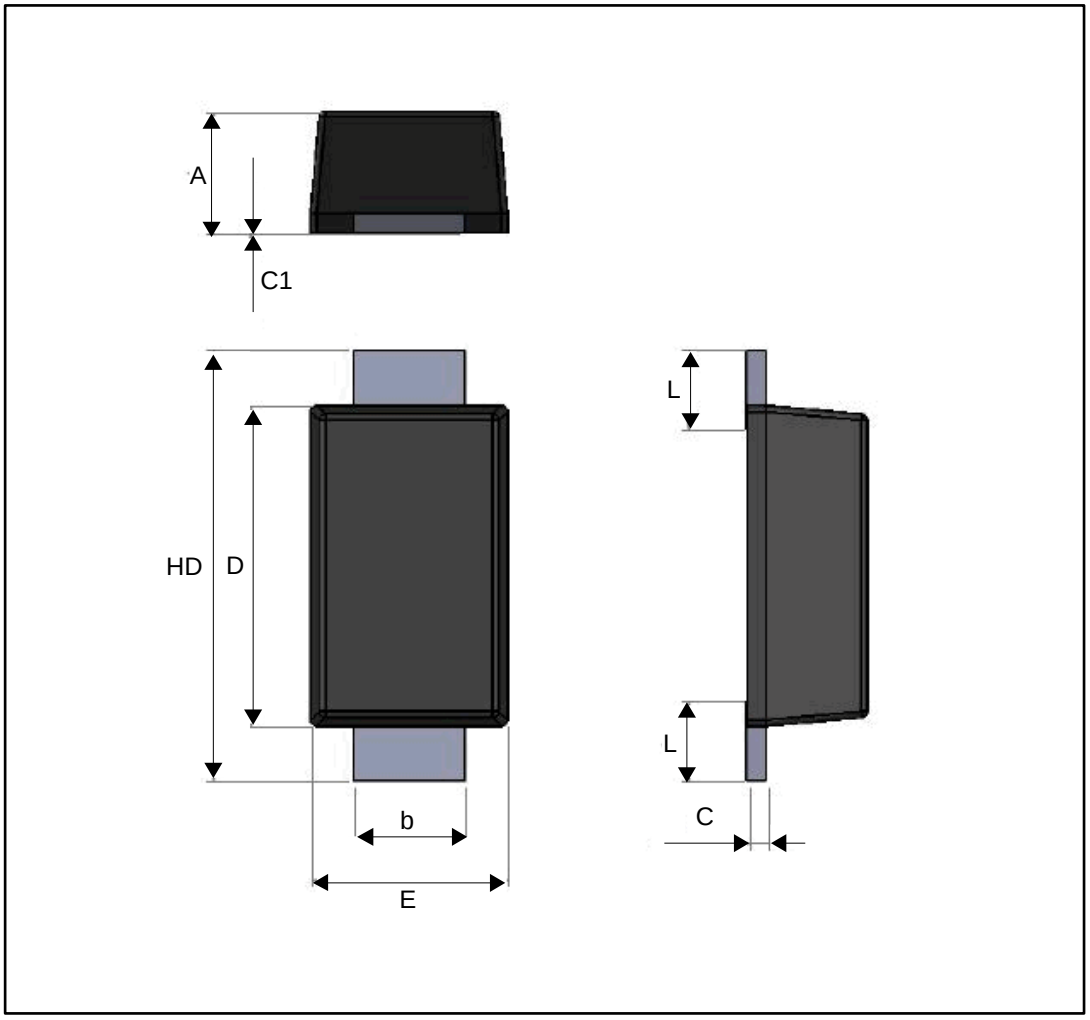
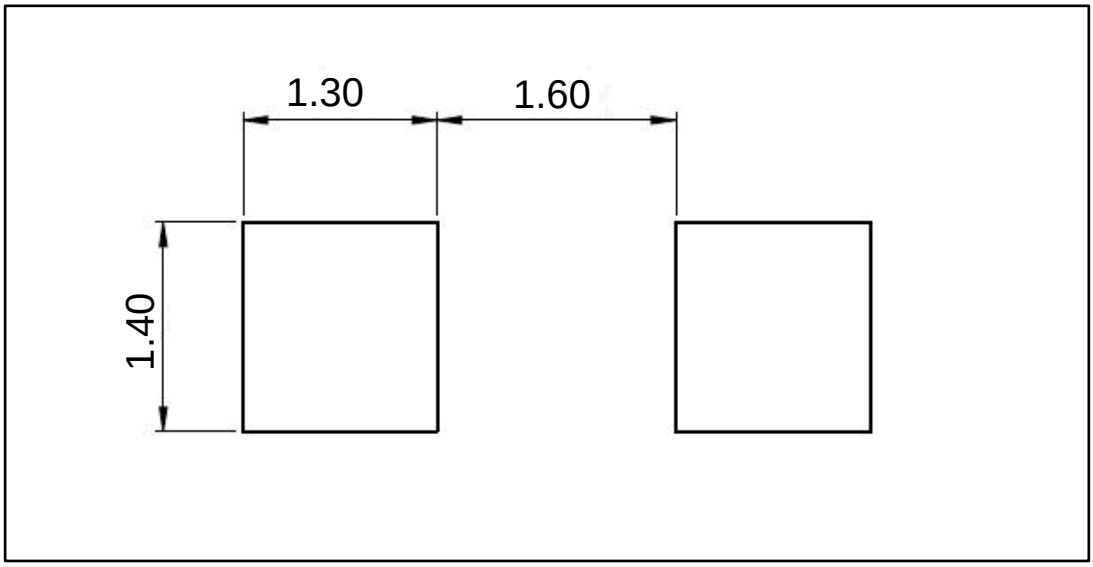


**Table 6: SOD123Flat package mechanical data**

| Ref. | Dimensions | | |
|---|---|---|---|
| | Millimeters | | |
| | Min. | Typ. | Max. |
| A | 0.86 | 0.98 | 1.10 |
| b | 0.80 | 0.90 | 1.00 |
| c | 0.08 | 0.15 | 0.25 |
| c1 | 0.00 | | 0.10 |
| D | 2.50 | 2.60 | 2.70 |
| E | 1.50 | 1.60 | 1.80 |
| HD | 3.30 | 3.50 | 3.70 |
| L | 0.45 | 0.65 | 0.85 |

**Figure 13: SOD123Flat footprint dimensions (mm)**



# 3 Ordering information

**Table 7: Ordering information**

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|---|---|---|---|---|---|
| STTH1R02ZF | 1R2 | SOD123Flat | 12.5 mg | 3000 | Tape and reel |

# 4 Revision history

**Table 8: Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 06-Feb-2017 | 1 | First issue |

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