## THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th\ (j-a)}$ | Junction to ambient (*) | 340 | °C/W |

(*) Mounted on epoxy board.

## STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Tests conditions | | Value | | | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | | STPS0540Z | | STPS0560Z | | |
| | | | | typ. | max. | typ. | max. | |
| $I_R$ * | Reverse leakage current | Tj=25°C | $V_R = V_{RRM}$ | | 40 | | 50 | µA |
| | | T =100°C | | 1.5 | 5 | 1 | 4 | mA |
| $V_F$ ** | Forward voltage drop | Tj=25°C | $I_F$ = 0.5 A | | 0.50 | | 0.53 | V |
| | | Tj=100°C | | 0.35 | 0.40 | 0.44 | 0.50 | |
| | | Tj=25°C | $I_F$ = 1 A | | 0.55 | | 0.66 | |
| | | Tj=100°C | | 0.45 | 0.51 | 0.58 | 0.65 | |

Pulse test : * tp = 5 ms, δ < 2%
** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
STPS0540Z: $P = 0.29 \times I_{F(AV)} + 0.22 \times I_F^2{}_{(RMS)}$
STPS0560Z: $P = 0.35 \times I_{F(AV)} + 0.3 \times I_F^2{}_{(RMS)}$

**Fig. 1-1:** Average forward power dissipation versus average forward current.(STPS0540Z)

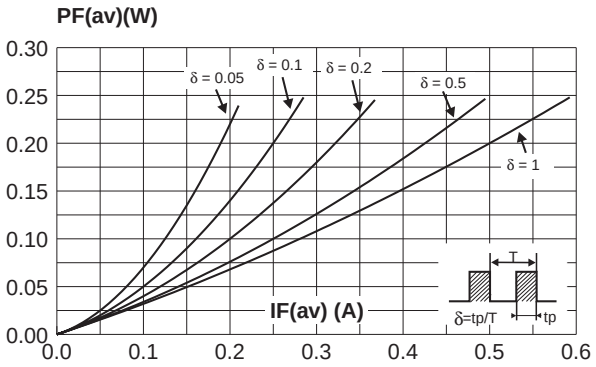



**Fig. 1-2:** Average forward power dissipation versus average forward current.(STPS0560Z)

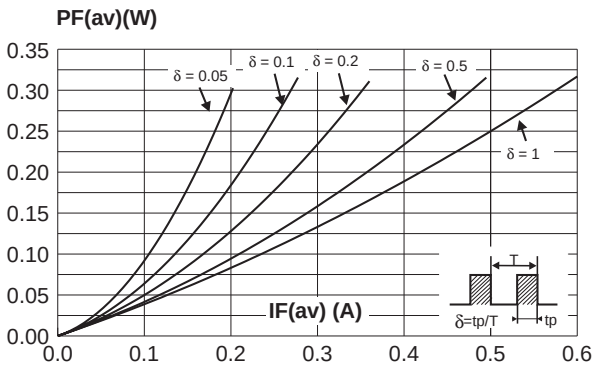



**Fig. 2:** Average forward current versus ambient temperature (δ = 0.5).

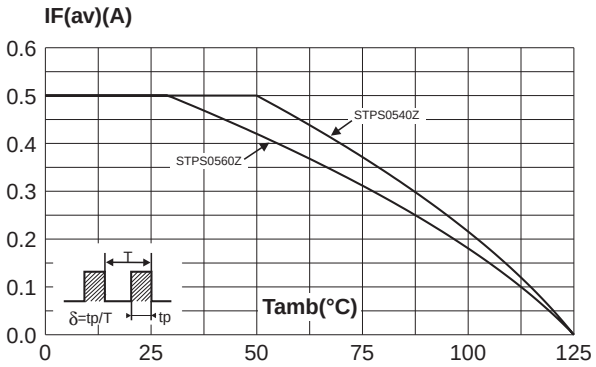



**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values).

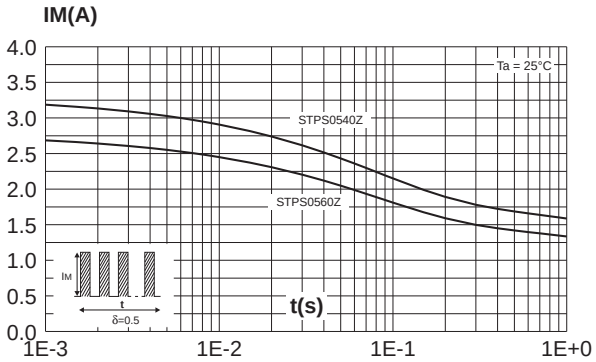



**Fig. 4:** Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4 with recommended pad layout).

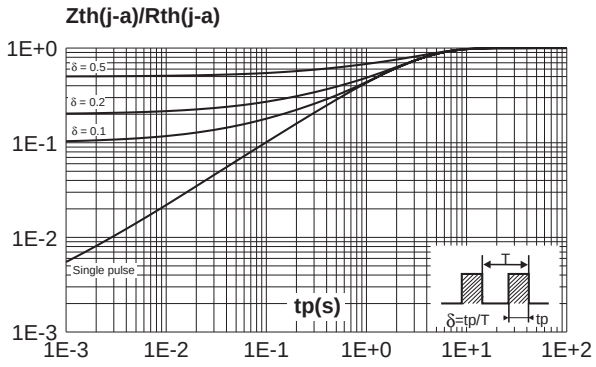



**Fig. 5-1:** Reverse leakage current versus reverse voltage applied (typical values).(STPS0540Z)

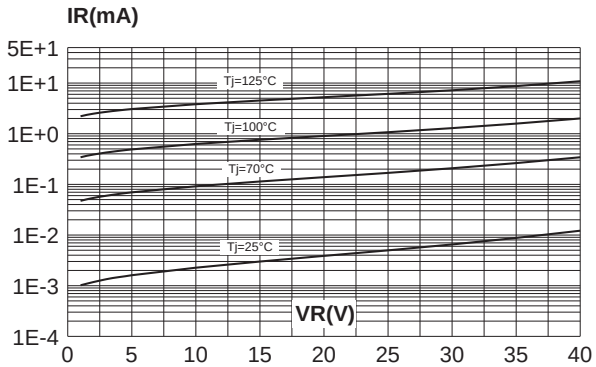


**Fig. 5-2:** Reverse leakage current versus reverse voltage applied (typical values).(STPS0560Z)

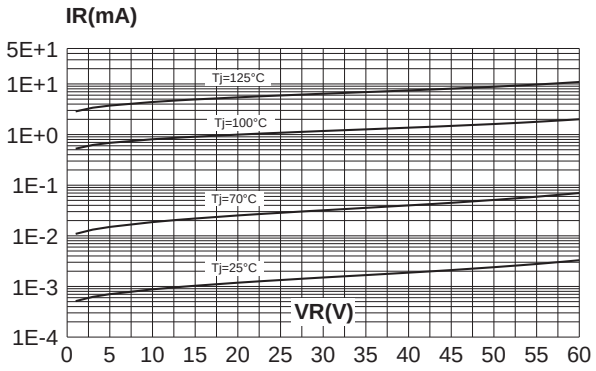



**Fig. 6:** Reverse leakage current versus junction temperature (typical values).

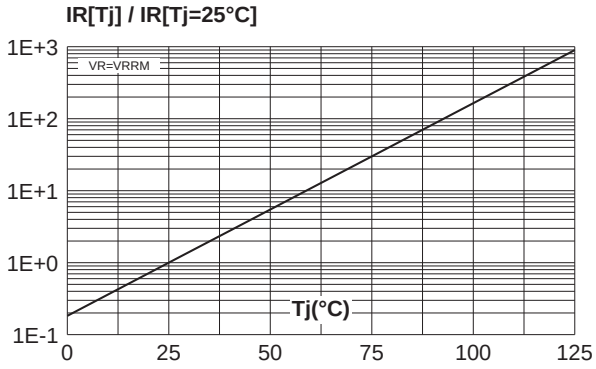



**Fig. 7:** Junction capacitance versus reverse voltage applied (typical values).

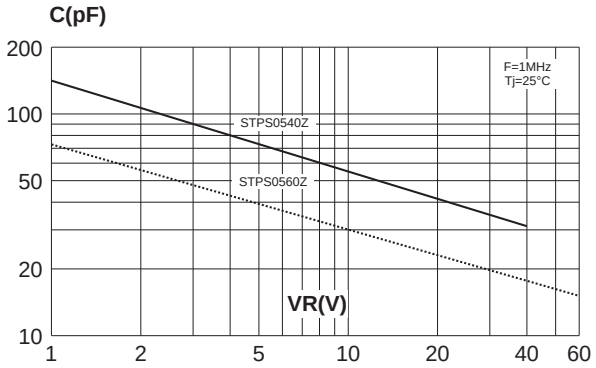



**Fig. 8-1:** Forward voltage drop versus forward current (maximum values).(STPS0540Z)

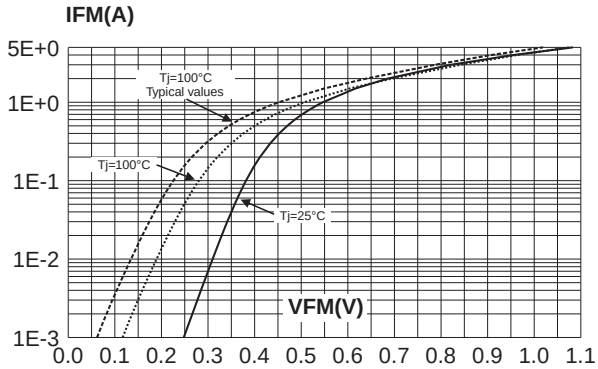



**Fig. 8-2:** Forward voltage drop versus forward current (maximum values).(STPS0560Z)

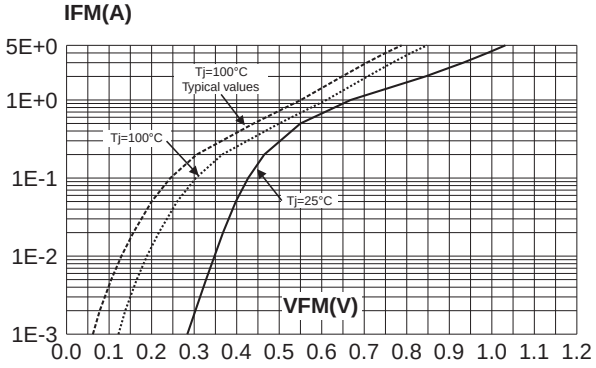
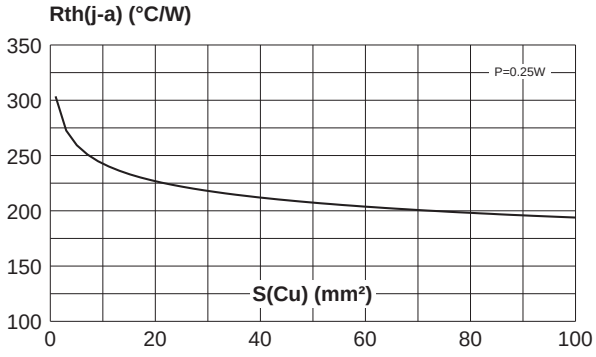
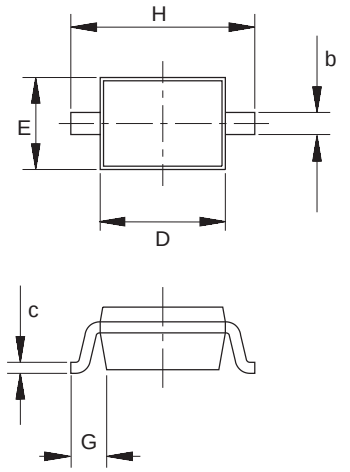



**Fig. 9:** Variation of thermal resistance junction to ambient versus copper surface under each lead (Printed circuit board FR4, e(Cu) = 35µm).



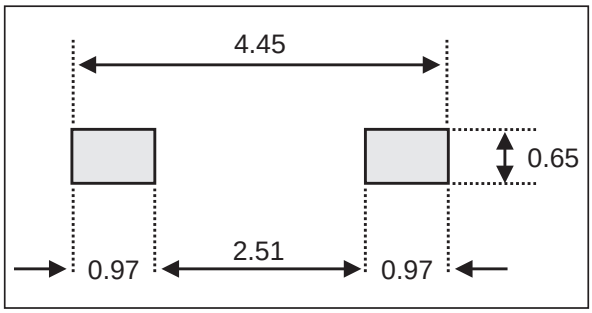
## PACKAGE MECHANICAL DATA

SOD-123




| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | | 1.45 | | 0.057 |
| A1 | 0 | 0.1 | 0 | 0.004 |
| A2 | 0.85 | 1.35 | 0.033 | 0.053 |
| b | 0.55 Typ. | | 0.022 Typ. | |
| c | 0.15 Typ. | | 0.039 Typ. | |
| D | 2.55 | 2.85 | 0.1 | 0.112 |
| E | 1.4 | 1.7 | 0.055 | 0.067 |
| G | 0.25 | | 0.01 | |
| H | 3.55 | 3.95 | 0.14 | 0.156 |

**FOOTPRINT** (in millimeters)




## MARKING

| Type | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| STPS0540Z | Z54 | SOD-123 | 0.01 g | 3000 | Tape & reel |
| STPS0560Z | Z56 | SOD-123 | 0.01 g | 3000 | Tape & reel |

- Epoxy meets UL94, V0.
- Band indicates cathode.