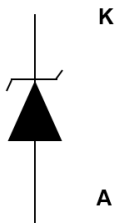
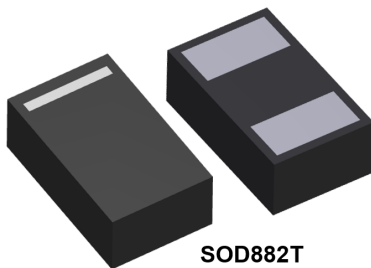


15 V, 25 A unidirectional TVS in SOD882T



Unidirectional

Features

- Peak pulse power: 600 W (8/20 μ s)
- Stand-off voltage: 15 V
- Unidirectional type
- Low leakage current: 80 nA at 25 °C
- Operating T_j max: 150 °C
- Lead finishing: gold

Complies with the following standards

- IPC7531 footprint and JEDEC registered package outline
- IEC 61000-4-2, C = 150 pF - R = 330 Ω exceeds level 4:
 - 30 kV (contact discharge)
 - 30 kV (air discharge)

Description

The ESDA17P20-1F2 is a unidirectional single line TVS diode designed to protect the power line against EOS and ESD transients.

The device is ideal for applications where board space saving is required.

Product status link

[ESDA17P20-1F2](#)

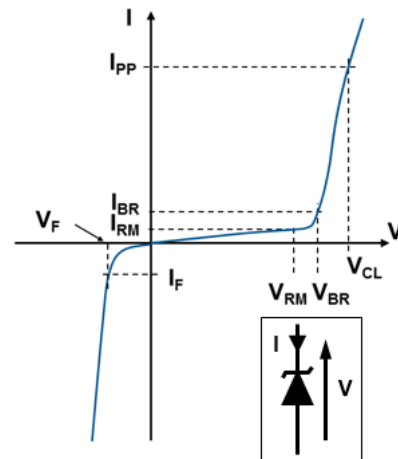
1 Characteristics

Table 1. Absolute maximum ratings ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

| Symbol | Parameter | | Value | Unit |
|-----------|--|--|------------|--------------------|
| V_{pp} | Peak pulse voltage | ISO10605 (C = 330 pF, R = 330 Ω) | 30 | kV |
| | | contact discharge | 30 | |
| | | air discharge | | |
| P_{pp} | Peak pulse power (8/20 μs) | | 600 | W |
| I_{pp} | Peak pulse current (8/20 μs) | | 25 | A |
| T_{op} | Operating junction temperature range | | -55 to 150 | $^{\circ}\text{C}$ |
| T_{stg} | Storage junction temperature range | | -55 to 150 | |
| T_L | Maximum lead temperature for soldering during 10 s | | 260 | |

Figure 1. Electrical characteristics (definitions)

- V_{RM} Maximum stand-off voltage
- I_{RM} Maximum leakage current @ V_{RM}
- V_R Stand-off voltage
- I_R Leakage current @ V_R
- V_{BR} Breakdown voltage @ I_{BR}
- I_{BR} Breakdown current
- V_{CL} Clamping voltage @ I_{pp}
- I_{pp} Peak pulse current
- R_D Dynamic resistance
- V_F Forward voltage drop @ I_F
- I_F Forward current
- αT Voltage temperature coefficient


Table 2. Electrical characteristics (values) ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

| Symbol | Parameter | Test condition | Min. | Typ. | Max. | Unit |
|------------|---------------------------|---|------|------|------|----------|
| V_{RM} | Stand-off voltage | | | | 15 | V |
| V_{BR} | Breakdown voltage | $I_R = 1\text{ mA}$ | 15.6 | 16.7 | 17.9 | V |
| I_{RM} | Leakage current | $V_{RM} = 15\text{ V}$ | | | 80 | nA |
| V_{CL} | Clamping voltage | $I_{pp} = 20\text{ A} - 8/20\text{ }\mu\text{s}$ | | | 23 | V |
| | | IEC 61000-4-2, 8 kV contact discharge measured at 30 ns | | 20.6 | | |
| R_D | Dynamic resistance, pulse | 8/20 μs | | 0.25 | | Ω |
| C_{LINE} | Line capacitance | f = 1 MHz, $V_{LINE} = 0\text{ V}$, $V_{OSC} = 30\text{ mV}$ | | 190 | | pF |

1.1 Characteristics (curves)

Figure 2. Maximum peak power dissipation versus initial junction temperature

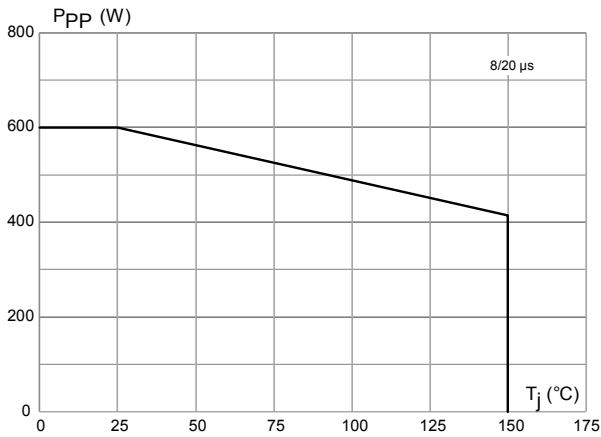


Figure 3. Maximum peak pulse power versus exponential pulse duration

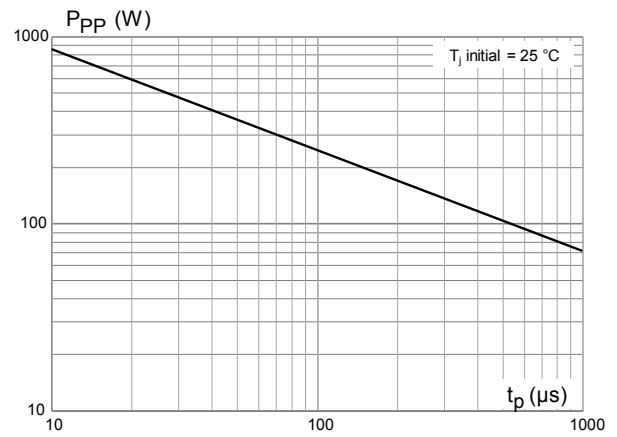


Figure 4. Maximum clamping voltage versus peak pulse current

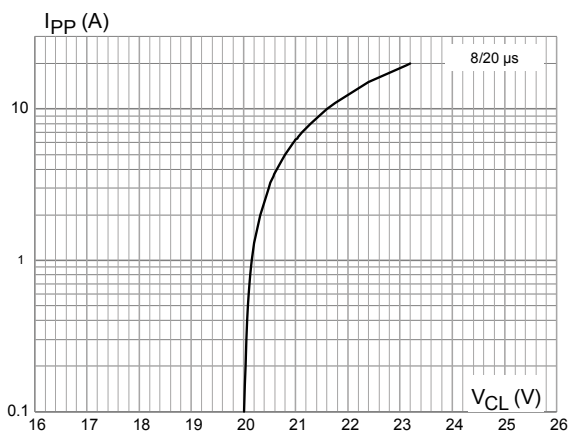


Figure 5. Leakage current versus junction temperature

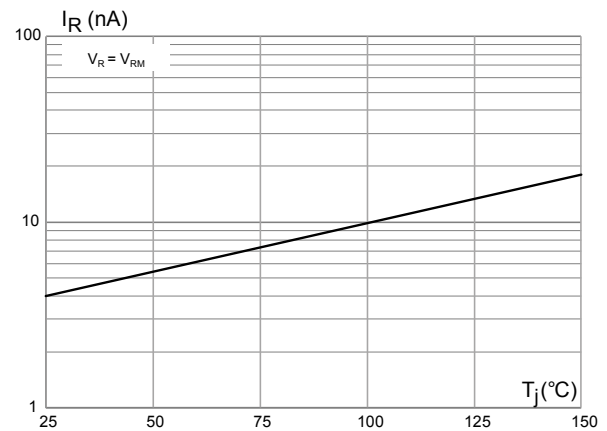


Figure 6. ESD response to IEC 61000-4-2 (-8 kV contact discharge)

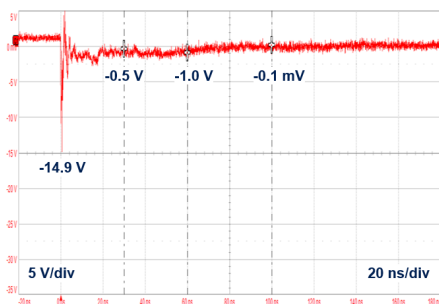
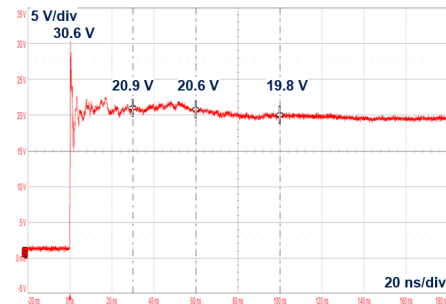


Figure 7. ESD response to IEC 61000-4-2 (+8 kV contact discharge)



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 SOD882T package information

Figure 8. SOD882T package outline

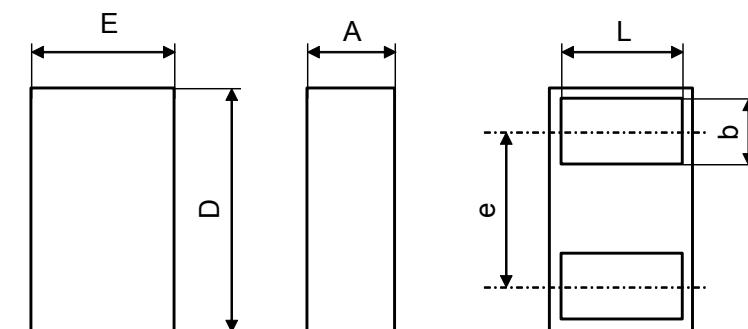


Table 3. SOD882T mechanical data

| Ref. | Dimensions | | |
|------|-------------|-------|-------|
| | Millimeters | | |
| | Min. | Typ. | Max. |
| A | 0.330 | 0.350 | 0.370 |
| b | 0.230 | 0.250 | 0.270 |
| D | 0.970 | 1.000 | 1.030 |
| E | 0.570 | 0.600 | 0.630 |
| e | | 0.650 | |
| L | 0.480 | 0.500 | 0.520 |

Figure 9. Recommended footprint (mm)

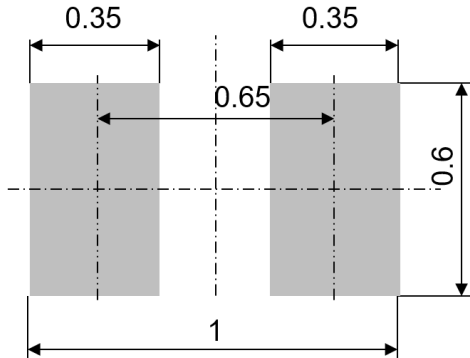
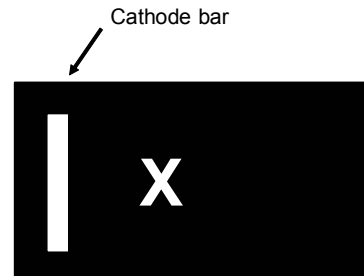
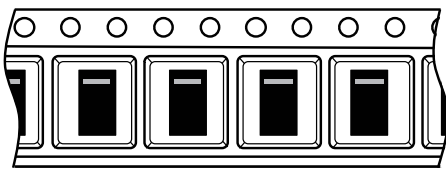


Figure 10. Marking



X : refer to ordering table for marking

Figure 11. Package orientation in reel



Taped according to EIA-481

Note: Pocket dimensions are not on scale
Pocket shape may vary depending on package
On bidirectional devices, marking and logo may be not always in the same direction

Figure 12. Tape and reel orientation

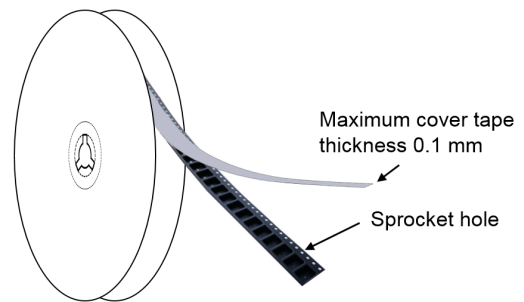


Figure 13. Reel dimension values (mm)

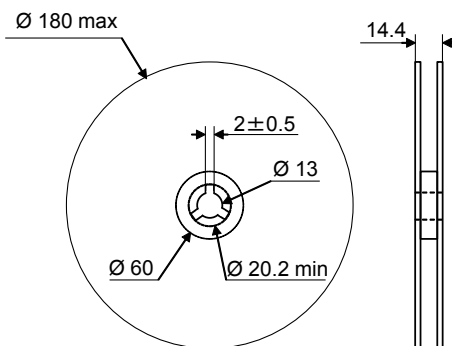


Figure 14. Inner box dimension values (mm)

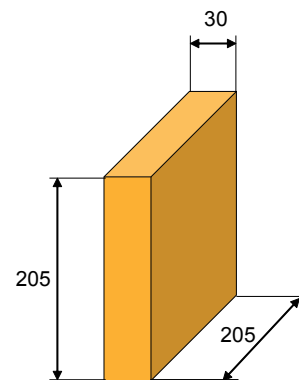
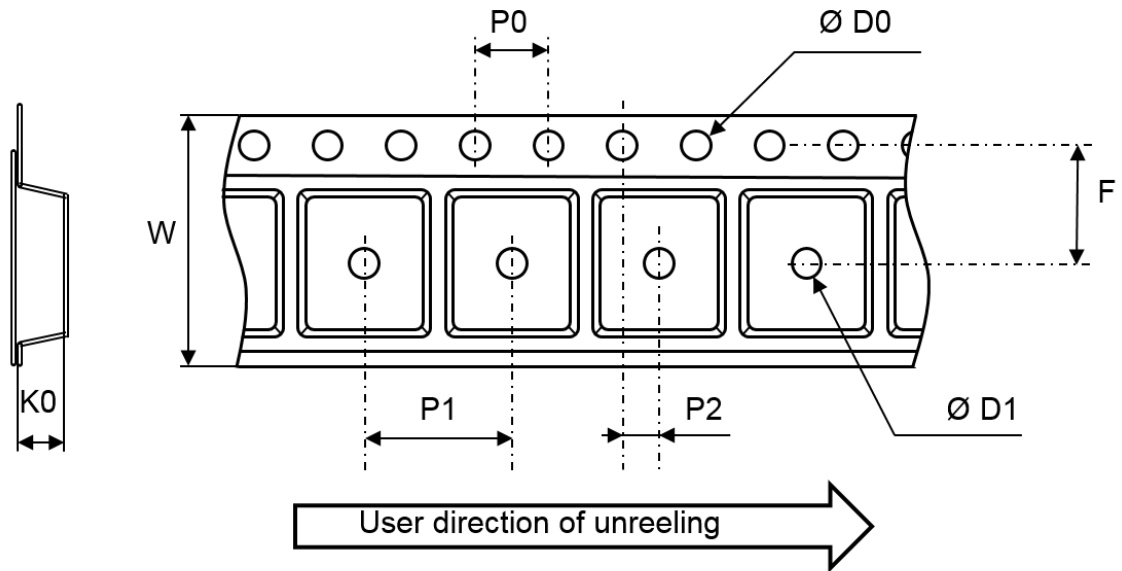


Figure 15. Tape outline



Note: Pocket dimensions are not on scale
Pocket shape may vary depending on package

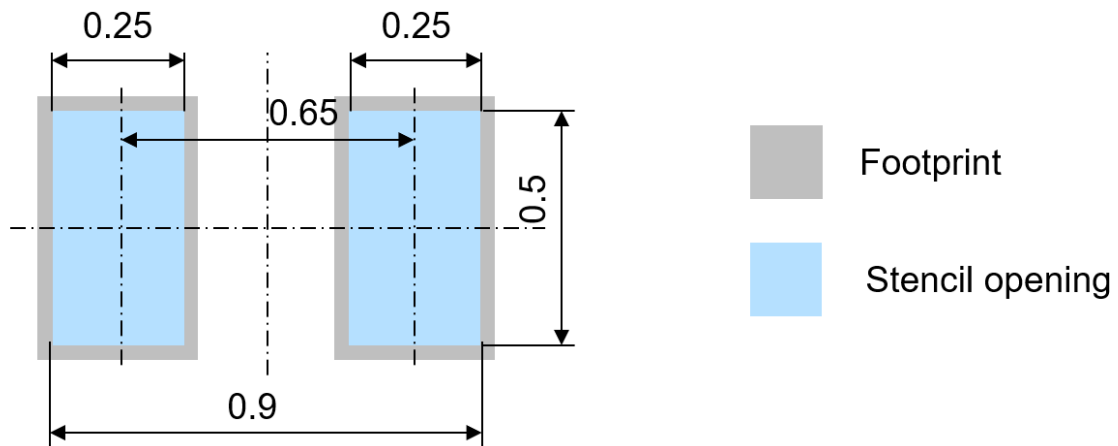
Table 4. Tape dimension values

| Ref. | Dimensions | | |
|------|-------------|------|-------|
| | Millimeters | | |
| | Min. | Typ. | Max. |
| D0 | 1.5 | 1.55 | 1.6 |
| D1 | 0.195 | 0.2 | 0.205 |
| F | 3.45 | 3.5 | 3.55 |
| K0 | 0.39 | 0.42 | 0.45 |
| P0 | 3.9 | 4.0 | 4.1 |
| P1 | 1.95 | 2.0 | 2.05 |
| P2 | 1.95 | 2.0 | 2.05 |
| W | 7.9 | 8.0 | 8.3 |

3 PCB assembly recommendations

3.1 Recommended stencil opening

Figure 16. Recommended stencil opening (mm)



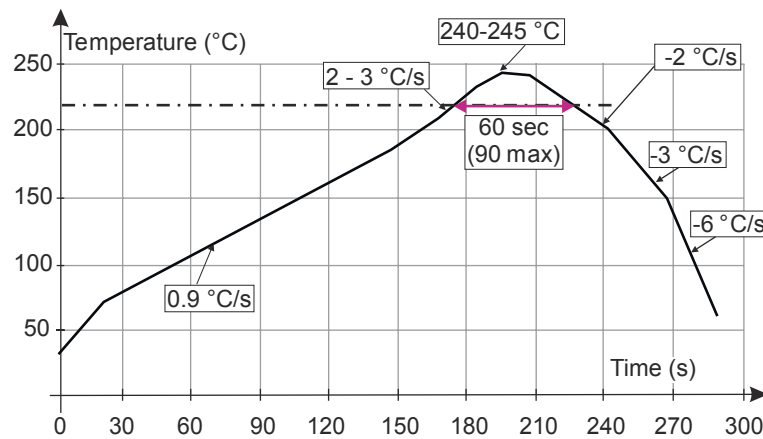
Stencil opening thickness: 100 μ m

3.2 Solder paste

1. Halide-free flux qualification ROL0 according to ANSI/J-STD-004.
2. "No clean" solder paste is recommended.
3. Offers a high tack force to resist component movement during high speed.
4. Use solder paste with fine particles: powder particle size 20-38 μ m.

3.3 Reflow profile

Figure 17. ST ECOPACK® recommended soldering reflow profile for PCB mounting



Note: Minimize air convection currents in the reflow oven to avoid component movement. Maximum soldering profile corresponds to the latest IPC/JEDEC J-STD-020.

4 Ordering information

Table 5. Ordering information

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|---------------|---------|---------|---------|-----------|---------------|
| ESDA17P20-1F2 | A | SOD882T | 0.54 mg | 10000 | Tape and reel |

Revision history

Table 6. Document revision history

| Date | Version | Changes |
|-------------|---------|------------------|
| 15-Jun-2020 | 1 | Initial release. |

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