



# PTVS26VZ1USK

Transient voltage suppressor in DSN1608-2 for mobile applications

22 August 2016

Product data sheet

## 1. General description

Unidirectional Transient Voltage Suppressor (TVS) in a very small leadless DSN1608-2 (SOD964) package.

## 2. Features and benefits

- Rated peak pulse current:  $I_{PPM} = 32\text{ A}$  (8/20  $\mu\text{s}$  pulse)
- Rated peak pulse power:  $P_{PPM} = 1850\text{ W}$  (8/20  $\mu\text{s}$  pulse)
- Dynamic resistance  $R_{dyn} = 0.15\ \Omega$
- Reverse current:  $I_{RM} = 0.1\text{ nA typ.}$
- Very low package height: 0.29 mm

## 3. Applications

- Power supply protection
- Industrial application
- Power management

## 4. Quick reference data

Table 1. Quick reference data

| Symbol    | Parameter                | Conditions                           |        | Min | Typ | Max | Unit |
|-----------|--------------------------|--------------------------------------|--------|-----|-----|-----|------|
| $I_{PPM}$ | peak pulse current       | $t_p = 8/20\ \mu\text{s}$            | [1][2] | -   | -   | 32  | A    |
|           |                          | $t_p = 10/1000\ \mu\text{s}$         | [3][2] | -   | -   | 4.5 | A    |
| $V_{RWM}$ | reverse standoff voltage | $T_{amb} = 25\text{ }^\circ\text{C}$ |        | -   | -   | 26  | V    |

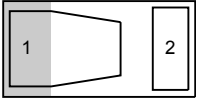
[1] In accordance with IEC 61000-4-5 (8/20  $\mu\text{s}$  current waveform).

[2] Measured from pin 1 to pin 2.

[3] In accordance with IEC 61643-321 (10/1000  $\mu\text{s}$  current waveform).

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline                                                                                                                     | Graphic symbol                                                                                       |
|-----|--------|-------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 1   | K      | cathode     | <br>Transparent top view<br><b>DSN1608-2 (SOD964)</b> | <br><i>sym035</i> |
| 2   | A      | anode       |                                                                                                                                        |                                                                                                      |

6. Ordering information

Table 3. Ordering information

| Type number  | Package   |                                                                    |         |
|--------------|-----------|--------------------------------------------------------------------|---------|
|              | Name      | Description                                                        | Version |
| PTVS26VZ1USK | DSN1608-2 | leadless very small package; 2 terminals; body 1.6 x 0.8 x 0.29 mm | SOD964  |

7. Marking

Table 4. Marking codes

| Type number  | Marking code |
|--------------|--------------|
| PTVS26VZ1USK | Z8           |

8. Limiting values

Table 5. Limiting values  
In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol              | Parameter                       | Conditions                       |        | Min | Max  | Unit |
|---------------------|---------------------------------|----------------------------------|--------|-----|------|------|
| P <sub>PPM</sub>    | peak pulse power                | t <sub>p</sub> = 8/20 μs         | [1][2] | -   | 1850 | W    |
|                     |                                 | t <sub>p</sub> = 10/1000 μs      | [3][2] | -   | 200  | W    |
| I <sub>PPM</sub>    | peak pulse current              | t <sub>p</sub> = 8/20 μs         | [1][2] | -   | 32   | A    |
|                     |                                 | t <sub>p</sub> = 10/1000 μs      | [3][2] | -   | 4.5  | A    |
| T <sub>j</sub>      | junction temperature            |                                  |        | -   | 150  | °C   |
| T <sub>amb</sub>    | ambient temperature             |                                  |        | -40 | 125  | °C   |
| T <sub>stg</sub>    | storage temperature             |                                  |        | -65 | 150  | °C   |
| ESD maximum ratings |                                 |                                  |        |     |      |      |
| V <sub>ESD</sub>    | electrostatic discharge voltage | IEC 61000-4-2; contact discharge | [4][2] | -   | 30   | kV   |
|                     |                                 | IEC 61000-4-2; air discharge     | [4][2] | -   | 30   | kV   |

- [1] In accordance with IEC 61000-4-5 (8/20 μs current waveform).  
[2] Measured from pin 1 to pin 2.  
[3] In accordance with IEC 61643-321 (10/1000 μs current waveform).  
[4] Device stressed with ten non-repetitive ESD pulses.

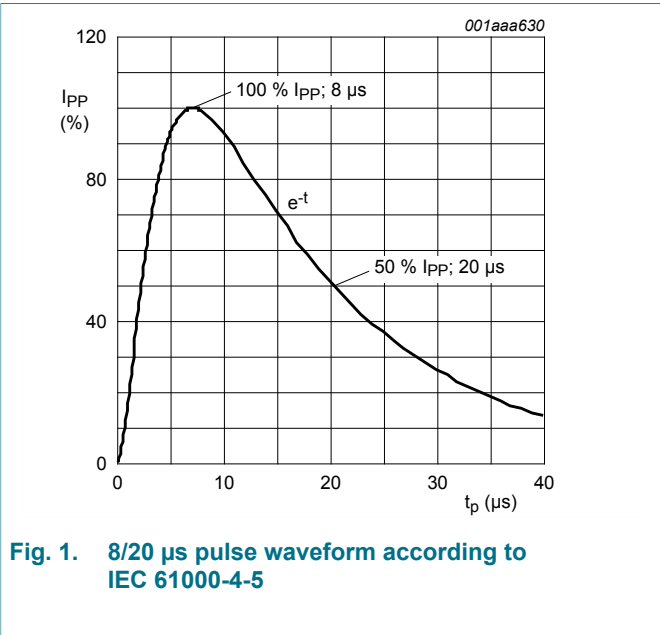


Fig. 1. 8/20 μs pulse waveform according to IEC 61000-4-5

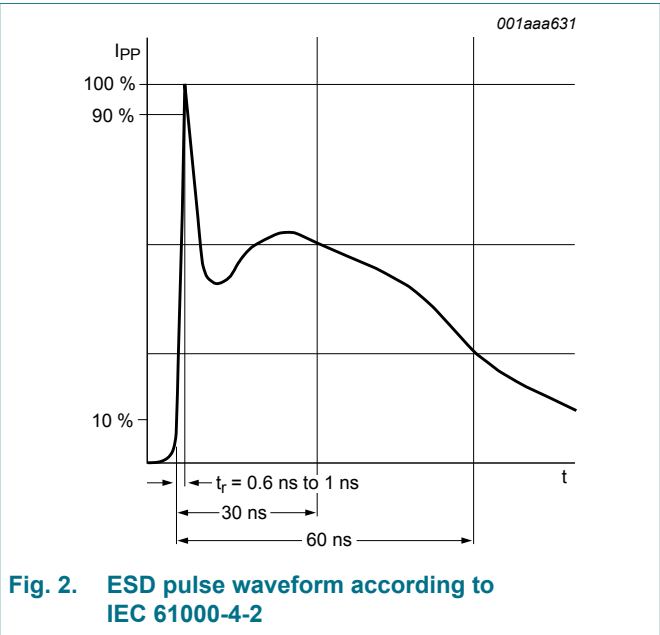
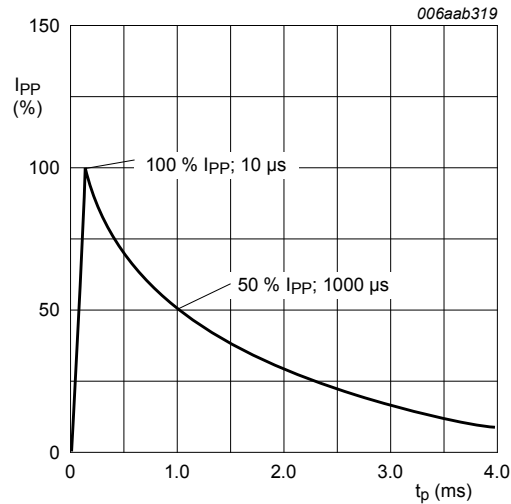


Fig. 2. ESD pulse waveform according to IEC 61000-4-2

Fig. 3. 10/1000  $\mu$ s pulse waveform according to IEC 61643-321

## 9. Characteristics

Table 6. Characteristics

| Symbol    | Parameter                | Conditions                                                                                             |        | Min  | Typ  | Max  | Unit     |
|-----------|--------------------------|--------------------------------------------------------------------------------------------------------|--------|------|------|------|----------|
| $V_{RWM}$ | reverse standoff voltage | $T_{amb} = 25\text{ }^{\circ}\text{C}$                                                                 |        | -    | -    | 26   | V        |
| $V_{BR}$  | breakdown voltage        | $I_R = 10\text{ mA}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                          | [1]    | 28.9 | 31.1 | 33.4 | V        |
| $I_{RM}$  | reverse leakage current  | $V_{RWM} = 26\text{ V}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                       | [1]    | -    | 0.1  | 200  | nA       |
| $C_d$     | diode capacitance        | $f = 1\text{ MHz}$ ; $V_R = 0\text{ V}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                       |        | -    | 215  | -    | pF       |
| $V_{CL}$  | clamping voltage         | $I_{PPM} = 32\text{ A}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$ ; $t_p = 8/20\text{ }\mu\text{s}$     | [2][1] | -    | 47.9 | 57.5 | V        |
|           |                          | $I_{PPM} = 4.5\text{ A}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$ ; $t_p = 10/1000\text{ }\mu\text{s}$ | [3][1] | -    | 38.4 | 46   | V        |
| $R_{dyn}$ | dynamic resistance       | $I_R = 10\text{ A}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$                                           | [4][1] | -    | 0.15 | -    | $\Omega$ |

[1] Measured from pin 1 to 2.

[2] In accordance with IEC 61000-4-5 (8/20  $\mu$ s current waveform).[3] In accordance with IEC 61643-321 (10/1000  $\mu$ s current waveform).[4] Non-repetitive current pulse, Transmission Line Pulse (TLP)  $t_p = 100\text{ ns}$ ; square pulse; ANSI / ESD STM5.5.1-2008.

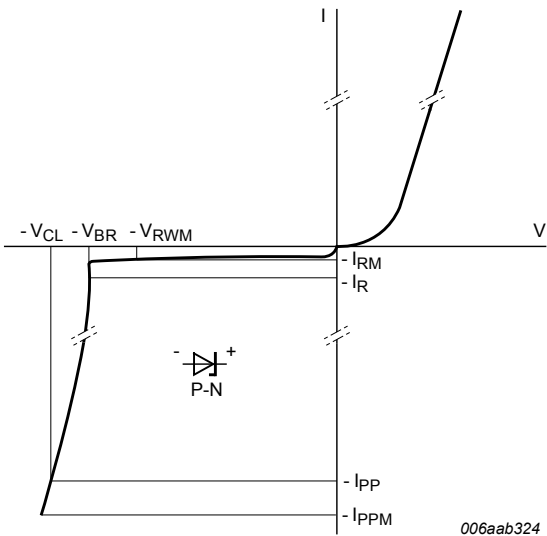


Fig. 4. V-I characteristics for a unidirectional TVS protection diode

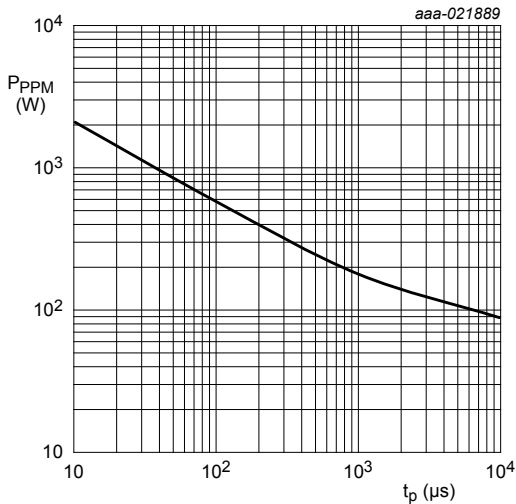


Fig. 5. Rated peak pulse power as a function of square pulse duration; typical values

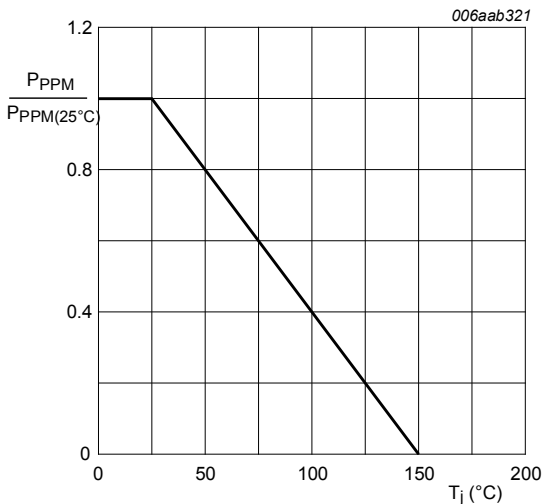
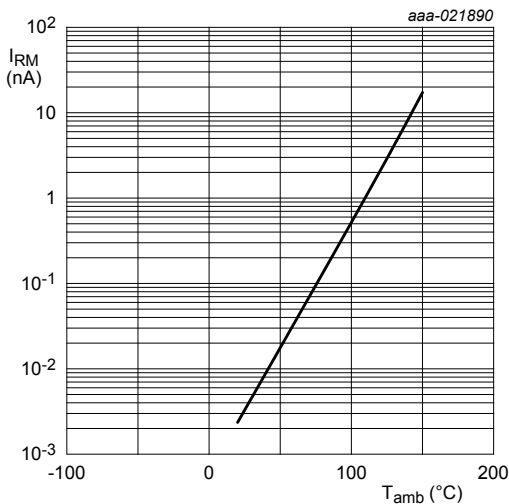


Fig. 6. Relative variation of rated peak pulse power as a function of junction temperature; typical values



$V_{RWM} = 26\text{ V}$

Fig. 7. Relative variation of reverse leakage current as a function of ambient temperature; typical values

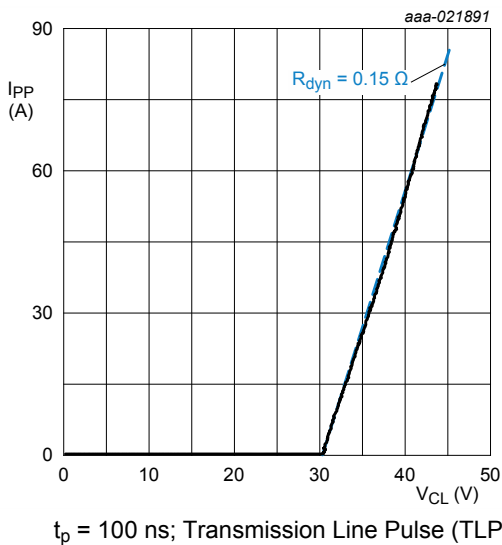


Fig. 8. Positive clamping voltage (TLP); typical values

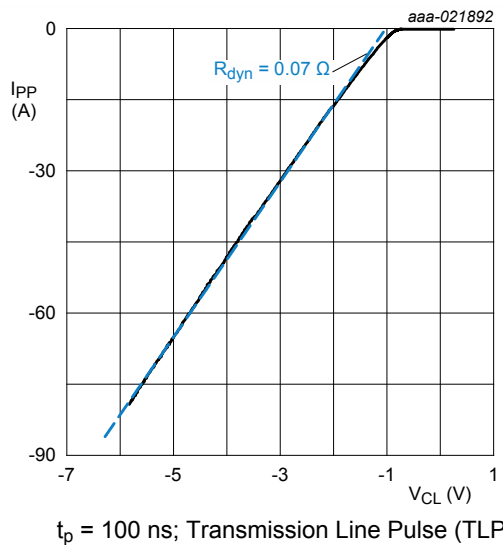


Fig. 9. Negative clamping voltage (TLP); typical values

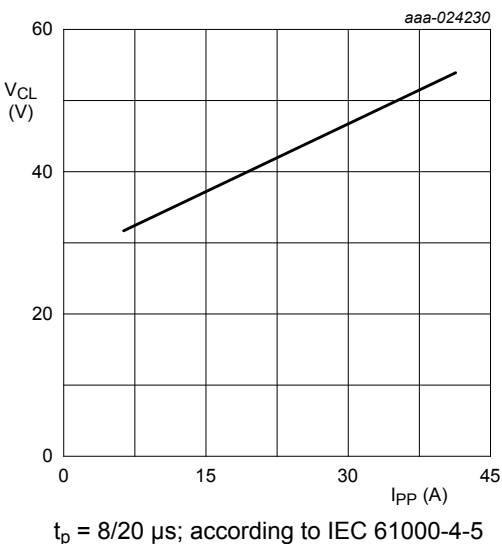


Fig. 10. Positive clamping voltage (8/20  $\mu$ s pulse); typical values

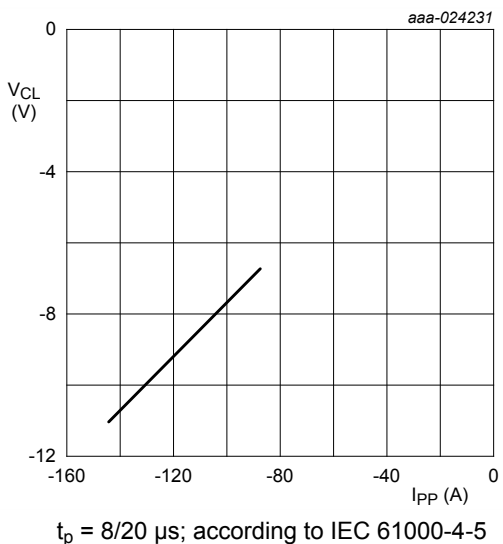
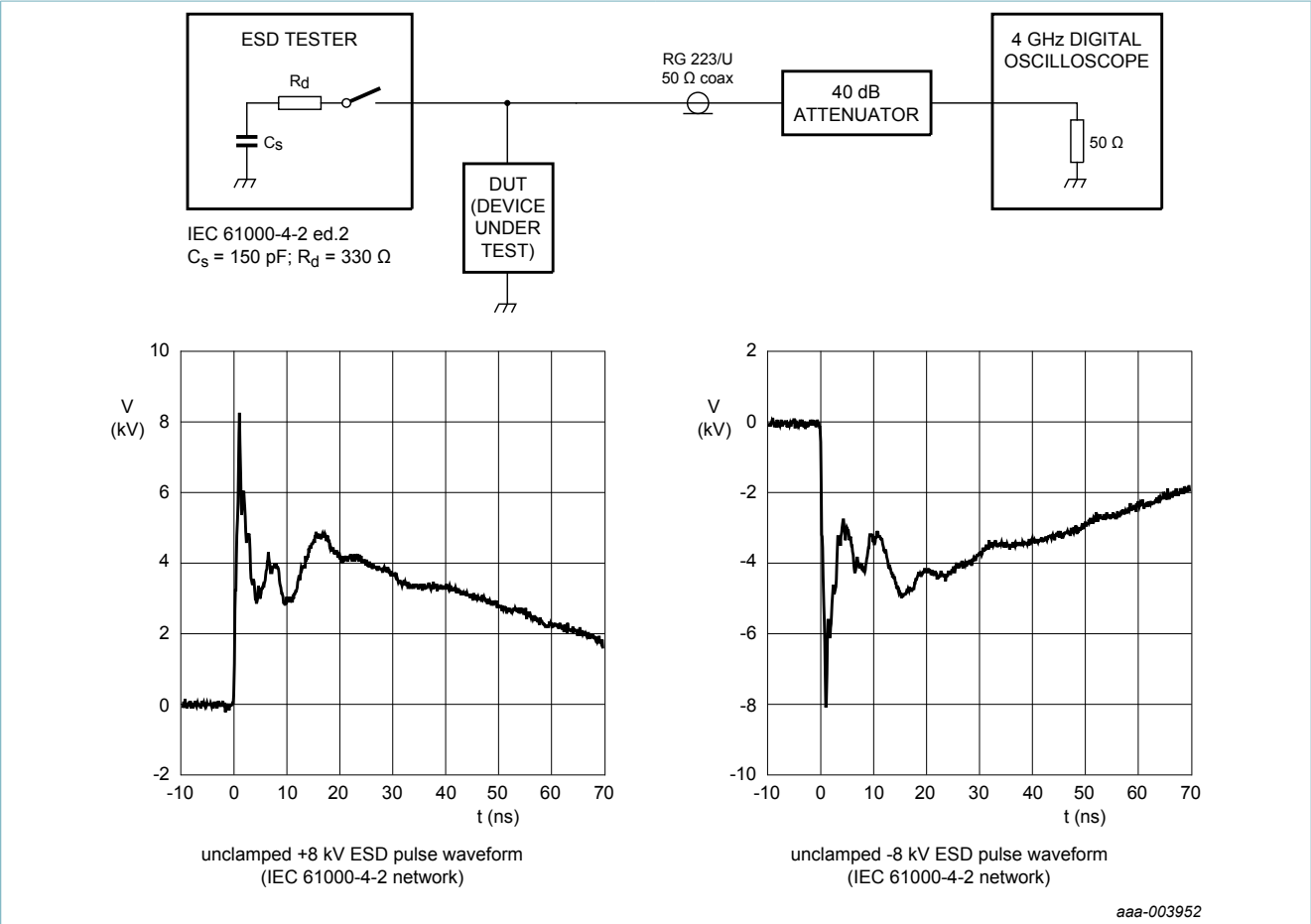


Fig. 11. Negative clamping voltage (8/20  $\mu$ s pulse); typical values

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10. Application information

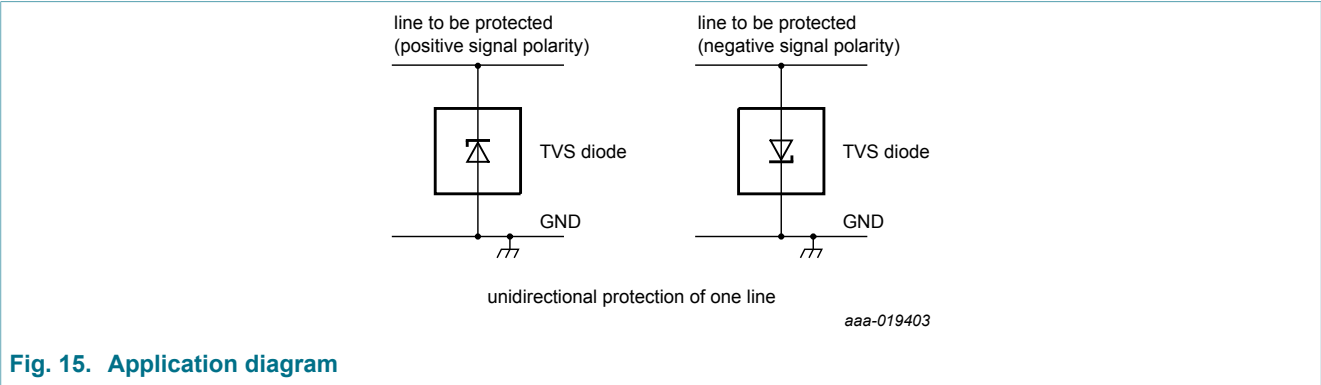


Fig. 15. Application diagram

11. Package outline

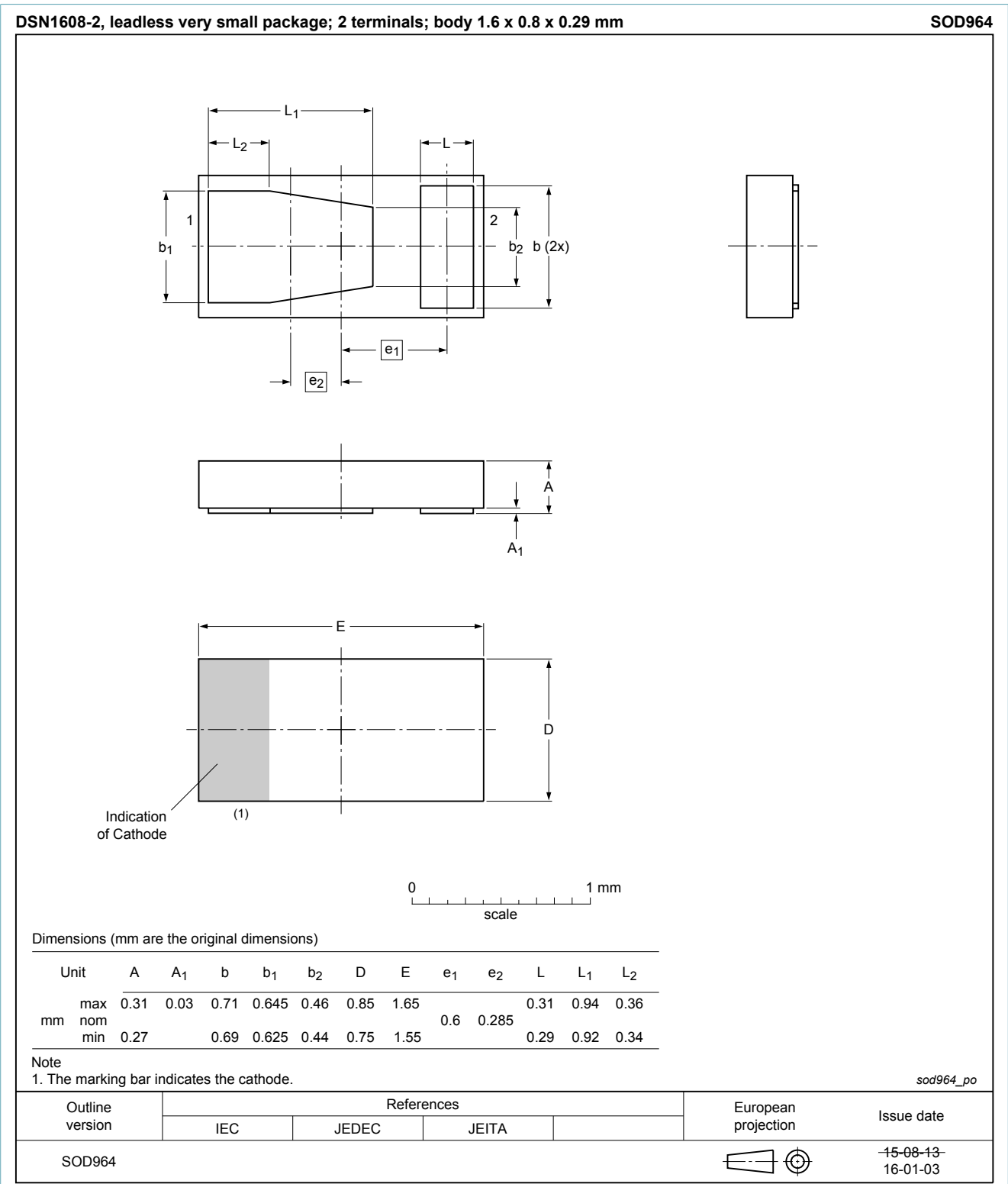


Fig. 16. Package outline DSN1608-2 (SOD964)

12. Soldering

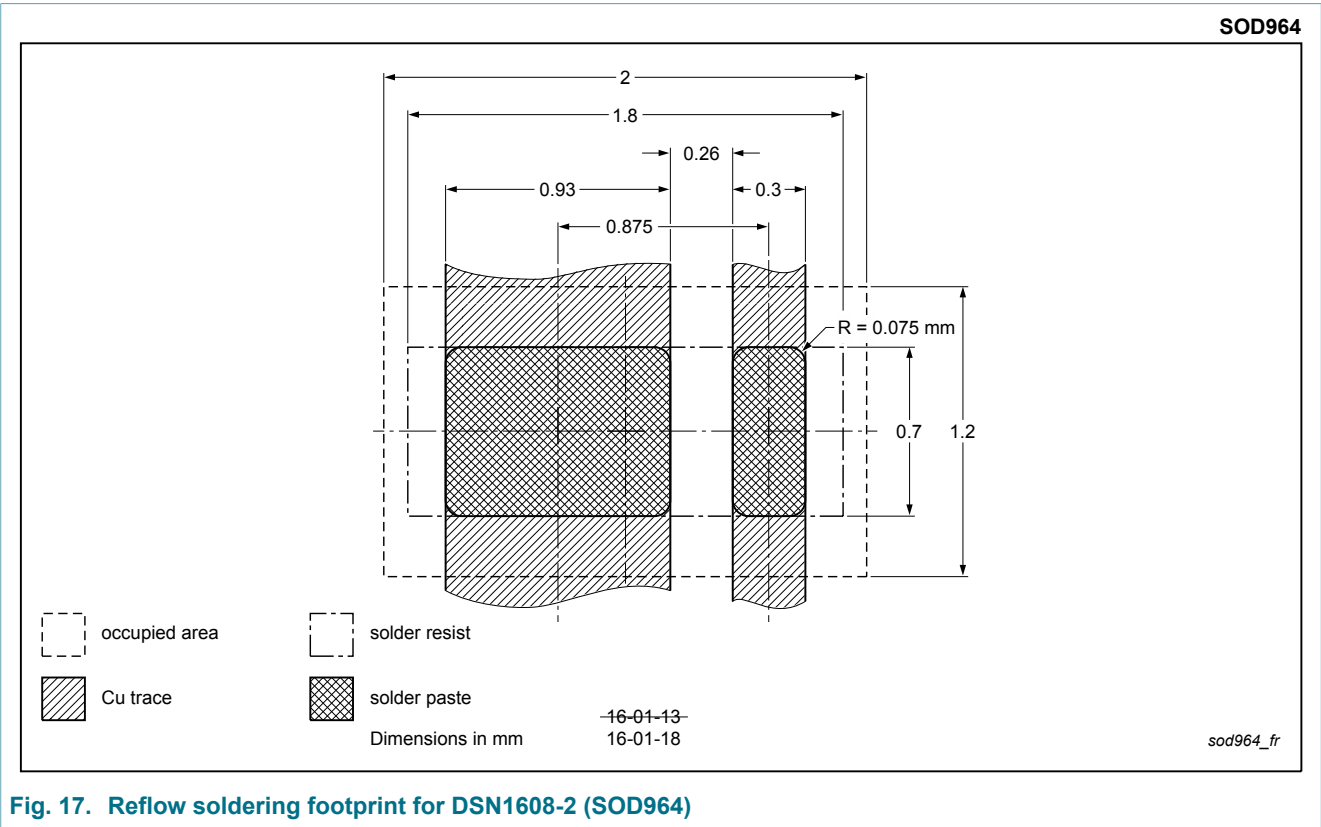


Fig. 17. Reflow soldering footprint for DSN1608-2 (SOD964)

13. Revision history

Table 7. Revision history

| Data sheet ID    | Release date                                                                                           | Data sheet status      | Change notice | Supersedes       |
|------------------|--------------------------------------------------------------------------------------------------------|------------------------|---------------|------------------|
| PTVS26VZ1USK v.2 | 20160822                                                                                               | Product data sheet     | -             | PTVS26VZ1USK v.1 |
| Modifications:   | <ul style="list-style-type: none"><li>Updated document according to the latest measurements.</li></ul> |                        |               |                  |
| PTVS26VZ1USK v.1 | 20160212                                                                                               | Preliminary data sheet | -             | -                |

## 14. Legal information

### Data sheet status

| Document status [1][2]         | Product status [3] | Definition                                                                            |
|--------------------------------|--------------------|---------------------------------------------------------------------------------------|
| Objective [short] data sheet   | Development        | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification      | This document contains data from the preliminary specification.                       |
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