



## SM2T3V3A

### Low voltage Transil™

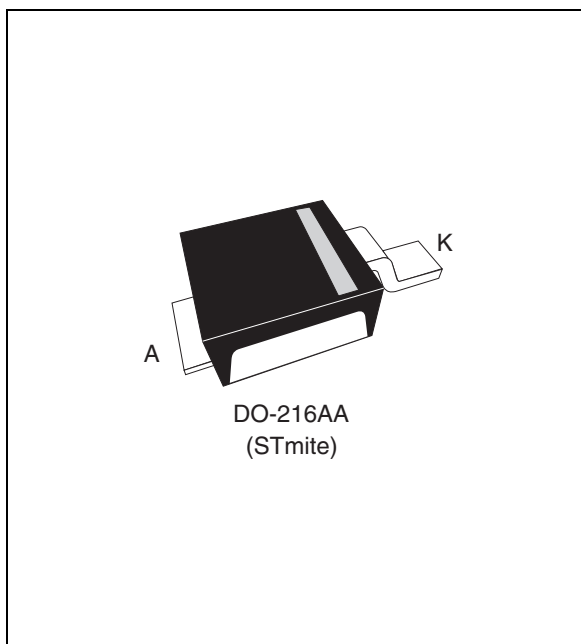
#### Features

- unidirectional Transil diode
- high peak pulse power: 200 w (10/1000  $\mu$ s)
- stand-off voltage 3.3 V
- low clamping factor  $V_{CL}/V_{BR}$
- fast response time
- JEDEC registered package outline

#### Description

The SM2T3V3A is a Transil diode designed specifically for portable equipment and miniaturized electronic devices subject to ESD transient overvoltages. Its low stand-off voltage makes it suitable for low voltage applications very sensitive to EOS and ESD events.

Transil diodes provide high overvoltage protection by clamping action.



TM: Transil is a trademark of STMicroelectronics

# 1 Characteristics

**Table 1. Absolute rating (limiting value)**

| Symbol                             | Parameter   |   | Value              | Unit |
|------------------------------------|---|---|--------------------|------|
| P <sub>PP</sub>                    | Peak pulse power dissipation <sup>(1)</sup>                         | T <sub>j</sub> initial = T <sub>amb</sub>                           | 200                | W    |
| P                                  | Power dissipation on infinite heatsink                              | T <sub>amb</sub> = 100°C  | 2.5                | W    |
| I <sub>FSM</sub>                   | Non repetitive surge peak forward current                           | t <sub>p</sub> = 10 ms<br>T <sub>j</sub> initial = T <sub>amb</sub> | 25                 | A    |
| T <sub>stg</sub><br>T <sub>j</sub> | Storage temperature range<br>Maximum operating junction temperature |   | -65 to +175<br>150 | °C   |
| T <sub>l</sub>                     | Lead solder temperature (10 seconds duration)                       |   | 260                | °C   |

1. 10/1000 μs pulse waveform

**Table 2. Thermal resistance**

| Symbol               | Parameter  | Value | Unit |
|----------------------|--|-------|------|
| R <sub>th(j-l)</sub> | Junction to leads                                      | 20    | °C/W |
| R <sub>th(j-a)</sub> | Junction to ambient on PCB with recommended pad layout | 250   | °C/W |

**Table 3. Electrical characteristics - parameters (T<sub>amb</sub> = 25 °C)**

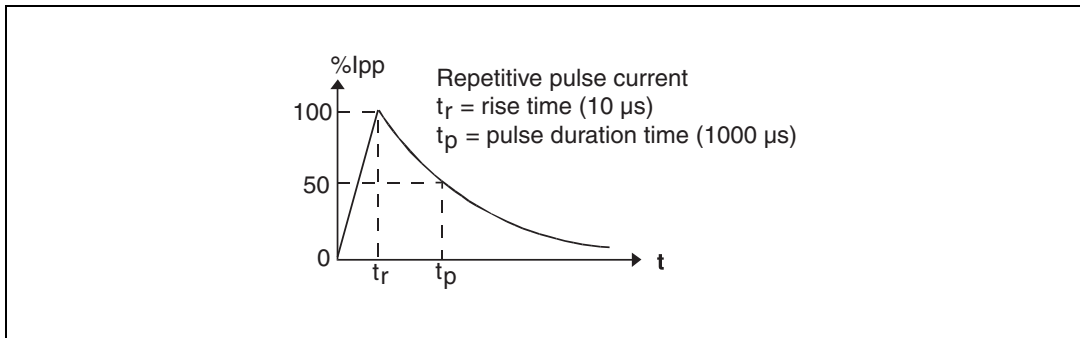
| Symbol          | Parameter                           |
|-----------------|-------------------------------------|
| V <sub>RM</sub> | Stand-off voltage.                  |
| V <sub>BR</sub> | Breakdown voltage.                  |
| V <sub>CL</sub> | Clamping voltage.                   |
| I <sub>RM</sub> | Leakage current @ V <sub>RM</sub> . |
| I <sub>PP</sub> | Peak pulse current.                 |
| αT              | Voltage temperature coefficient     |
| V <sub>F</sub>  | Forward voltage drop                |

**Table 4. Electrical characteristics - values (T<sub>amb</sub> = 25 °C)**

| Order code | I <sub>RM</sub> max @ V <sub>RM</sub> |     | V <sub>BR</sub> min @ I <sub>R</sub> <sup>(1)</sup> |    | V <sub>CL</sub> max @ I <sub>PP</sub> 10/1000 μs |    | V <sub>CL</sub> max @ I <sub>PP</sub> 10/1000 μs |    | αT max <sup>(2)</sup> | C max <sup>(3)</sup> |
|------------|---------------------------------------|-----|---|----|--|----|--|----|-----------------------|----------------------|
|            | μA                                    | V   | V   | mA | V  | A  | V  | A  | 10 <sup>-4</sup> /°C  | pF                   |
| SM2T3V3A   | 500                                   | 3.3 | 3.6   | 1  | 6.5  | 25 | 6.8  | 30 | -5.3                  | 2500                 |

1. Pulse test t<sub>p</sub> < 50 ms
2. ΔV<sub>BR</sub> = αT \* (T<sub>amb</sub> - 25) + V<sub>BR</sub> (25 °C)
3. V<sub>R</sub> = 0 V, F = 1 MHz

**Table 5. Pulse waveform**

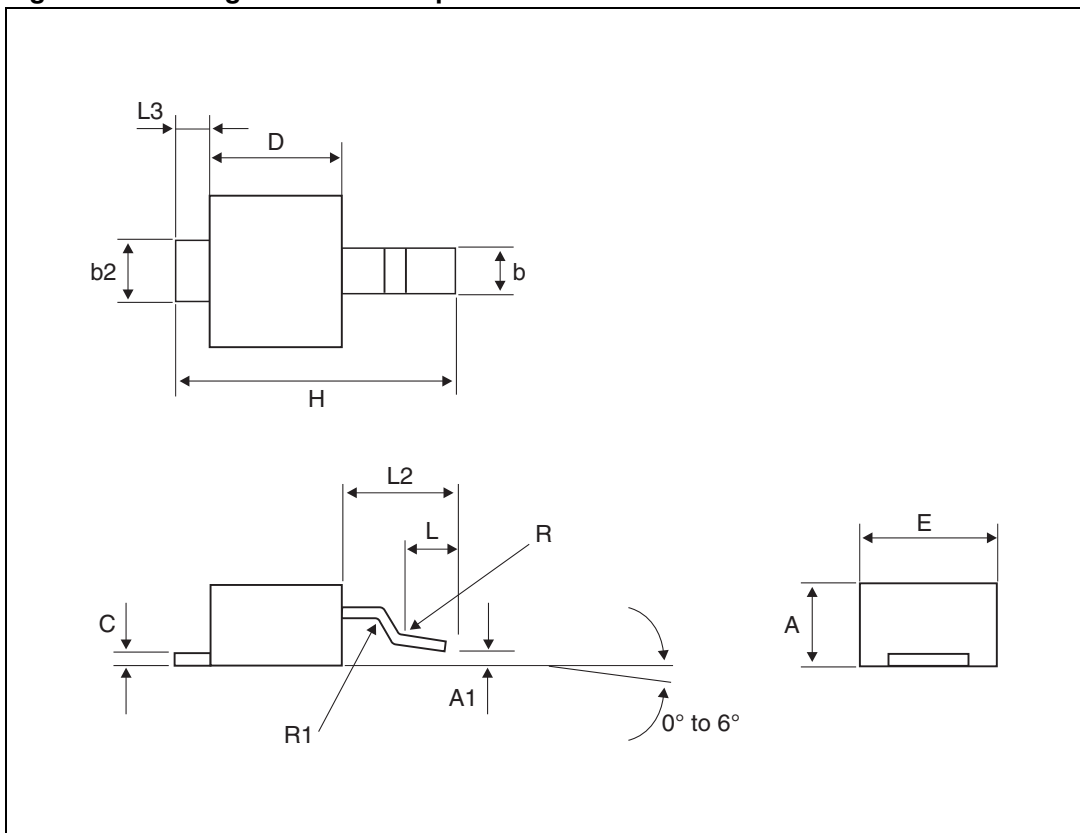


## 2 Package information

- epoxy meets ul94, v0
- band indicates cathode

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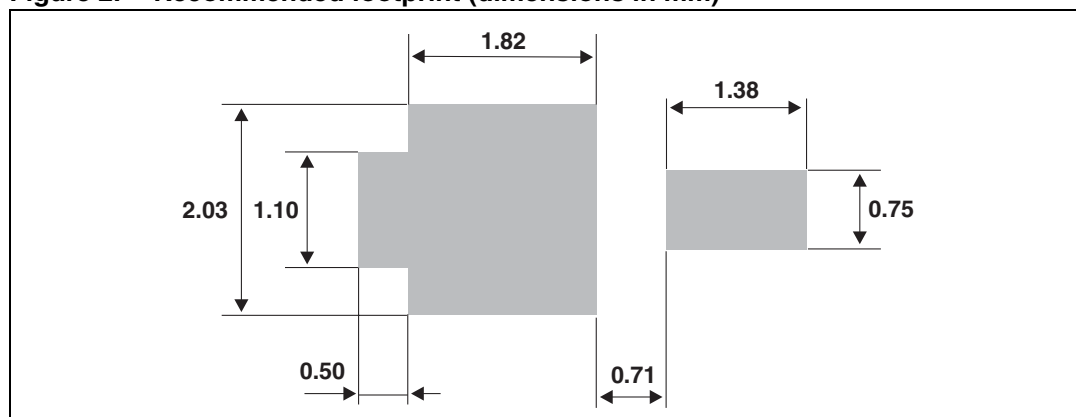
**Figure 1. Package dimensions - parameters**



**Table 6. Package dimensions - values**

| Ref. | Dimensions  |          |       |        |           |       |
|------|-------------|----------|-------|--------|-----------|-------|
|      | Millimetres |          |       | Inches |           |       |
|      | Min.        | Typ.     | Max.  | Min.   | Typ.      | Max.  |
| A    | 0.85        | 1.00     | 1.15  | 0.033  | 0.039     | 0.045 |
| A1   | -0.05       |          | 0.105 | -0.002 |           | 0.002 |
| b    | 0.40        |          | 0.65  | 0.016  |           | 0.025 |
| b2   | 0.70        |          | 1.00  | 0.027  |           | 0.039 |
| c    | 0.10        |          | 0.25  | 0.004  |           | 0.010 |
| D    | 1.75        | 1.90     | 2.05  | 0.069  | 0.007     | 0.081 |
| E    | 1.75        | 1.90     | 2.05  | 0.069  | 0.007     | 0.081 |
| H    | 3.60        | 3.75     | 3.90  | 0.142  | 0.148     | 0.154 |
| L    | 0.50        | 0.63     | 0.80  | 0.047  | 0.025     | 0.031 |
| L2   | 1.20        | 1.35     | 1.50  | 0.047  | 0.053     | 0.059 |
| L3   |             | 0.50 ref |       |        | 0.019 ref |       |
| R    | 0.07        |          |       | 0.003  |           |       |
| R1   | 0.07        |          |       | 0.003  |           |       |

**Figure 2. Recommended footprint (dimensions in mm)**



### 3 Ordering information

Table 7. Ordering information

| Order code | Marking | Package | Weight  | Base quantity | Delivery mode |
|------------|---------|---------|---------|---------------|---------------|
| SM2T3V3A   | MUL     | STmite  | 15.5 mg | 12000         | Tape and reel |

### 4 Revision history

Table 8. Document revision history

| Date        | Revision | Changes                                     |
|-------------|----------|---|
| 10-Oct-2005 | 1        | First Issue                                 |
| 09-Dec-2010 | 2        | Cathode band added to package illustration. |

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