

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.

Features

- Unidirectional Transil diode
- High peak pulse power: 200 W (10/1000 μ s)
- Stand-off voltage 3.3 V
- Low clamping factor V_{CL}/V_{BR}
- Fast response time
- JEDEC registered package outline

TM: Transil is a trademark of STMicroelectronics

1 Characteristics

Table 1. Absolute rating (limiting value)

| Symbol | Parameter | | Value | Unit |
|------------------------------------|---|---|--------------------|------|
| P _{PP} | Peak pulse power dissipation ⁽¹⁾ | T _j initial = T _{amb} | 200 | W |
| P | Power dissipation on infinite heatsink | T _{amb} = 100°C | 2.5 | W |
| I _{FSM} | Non repetitive surge peak forward current | t _p = 10 ms T _j initial = T _{amb} | 25 | A |
| T _{stg} T _j | Storage temperature range Maximum operating junction temperature | | -65 to +175 150 | °C |
| T _l | Lead solder temperature (10 seconds duration) | | 260 | °C |

1. 10/1000 μs pulse waveform

Table 2. Thermal resistance

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

Table 3. Electrical characteristics - parameters (T_{amb} = 25 °C)

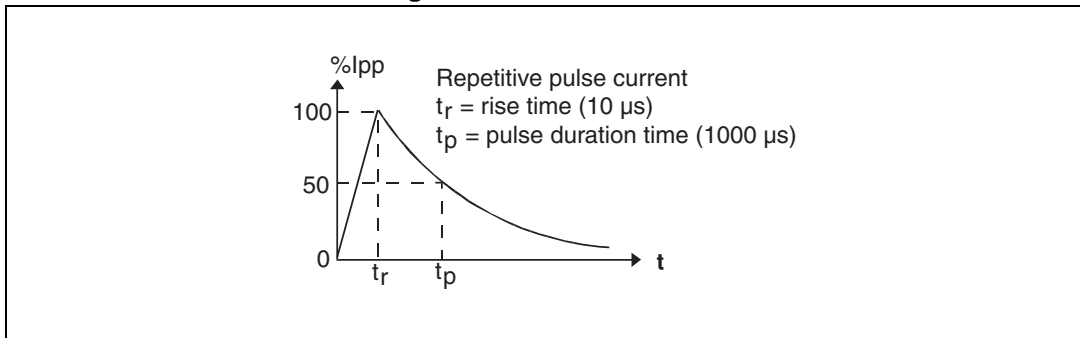
| Symbol | Parameter |
|-----------------|-------------------------------------|
| V _{RM} | Stand-off voltage. |
| V _{BR} | Breakdown voltage. |
| V _{CL} | Clamping voltage. |
| I _{RM} | Leakage current @ V _{RM} . |
| I _{PP} | Peak pulse current. |
| αT | Voltage temperature coefficient |
| V _F | Forward voltage drop |

Table 4. Electrical characteristics - values (T_{amb} = 25 °C)

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

1. Pulse test t_p < 50 ms
2. ΔV_{BR} = αT * (T_{amb} - 25) * V_{BR} (25 °C)
3. V_R = 0 V, F = 1 MHz

Figure 1. Pulse waveform



2 Package information

- Epoxy meets ul94, v0
- Band indicates cathode

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.

Figure 2. Package dimensions - parameters

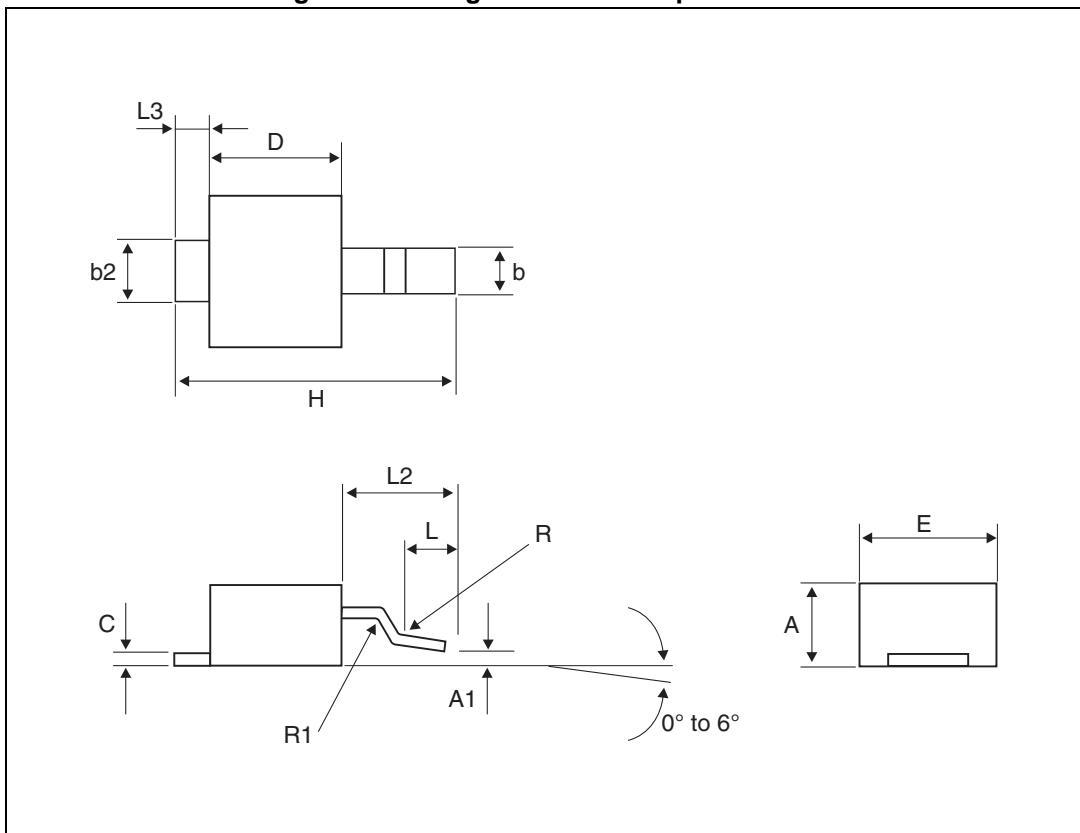
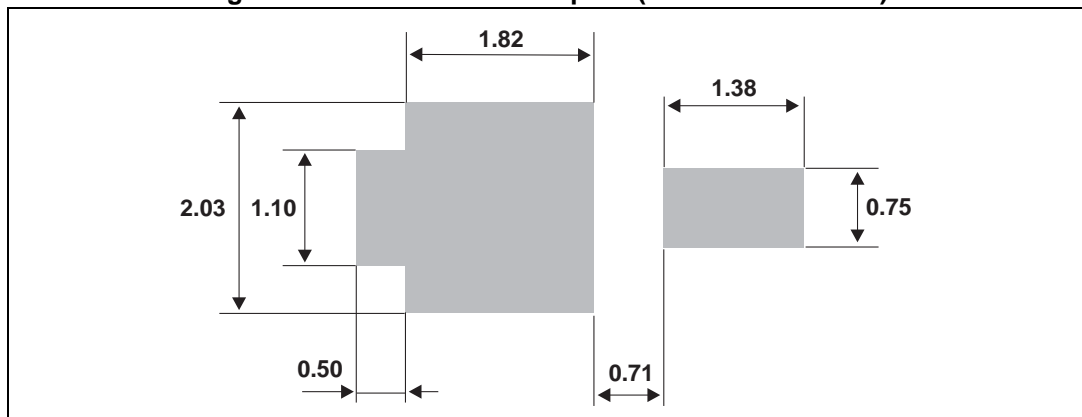


Table 5. Package dimensions - values

| 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 3. Recommended footprint (dimensions in mm)



3 Ordering information

Table 6. 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 7. Document revision history

| Date | Revision | Changes |
|-------------|----------|---|
| 10-Oct-2005 | 1 | First Issue |
| 09-Dec-2010 | 2 | Cathode band added to package illustration. |
| 10-Aug-2015 | 3 | Updated features on cover page. Minor text changes |

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