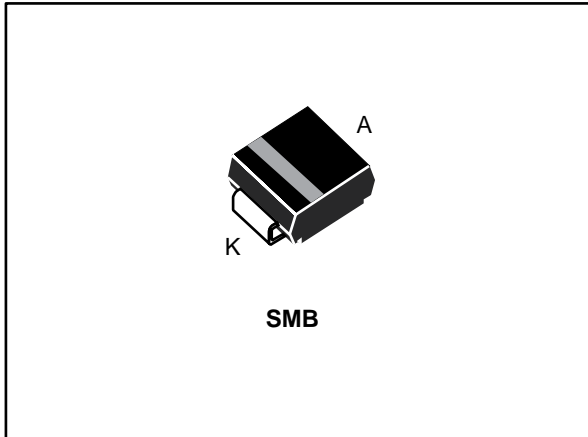



Low voltage Transil™

Datasheet - production data

**Description**

This is a Transil diode designed specifically to protect sensitive 3.3 V equipment against transient overvoltages.

Transil diodes provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages make them particularly suited to protect voltage sensitive devices such as MOS technology and low voltage supplied ICs.

 TM: Transil is a trademark of STMicroelectronics

Features

- Peak pulse power 600 W (10/1000 μ s)
- Stand-off voltage 3.3 V
- Unidirectional type
- Low clamping factor
- Fast response time
- JEDEC registered package outline

1 Characteristics

Table 1: Absolute maximum ratings (limiting values at $T_{amb} = 25\text{ °C}$ unless otherwise specified)

| Symbol | Parameter | | Value | Unit |
|-----------|--|---|-------------|------|
| P_{pp} | Peak pulse power dissipation ⁽¹⁾ | $T_j \text{ initial} = T_{amb}$ | 600 | W |
| P | Power dissipation on infinite heatsink | $T_{amb} = 50\text{ °C}$ | 6 | W |
| I_{FSM} | Non repetitive surge peak forward current for unidirectional types | $t_p = 10\text{ ms}$ $T_j \text{ initial} = T_{amb}$ | 100 | A |
| T_{stg} | Storage temperature range | | -65 to +175 | °C |
| T_j | Junction temperature range | | -55 to +175 | °C |
| T_L | Maximum lead temperature for soldering during 10 s. | | 260 | °C |

Notes:

⁽¹⁾For a surge greater than the maximum values, the diode will fail in short-circuit.

Table 2: Thermal resistances

| Symbol | Parameter | Value | Unit |
|---------------|--|-------|------|
| $R_{th(j-l)}$ | Junction to leads | 20 | °C/W |
| $R_{th(j-a)}$ | Junction to ambient on printed circuit on recommended pad layout | 100 | °C/W |

Figure 1: Electrical characteristics (definitions)

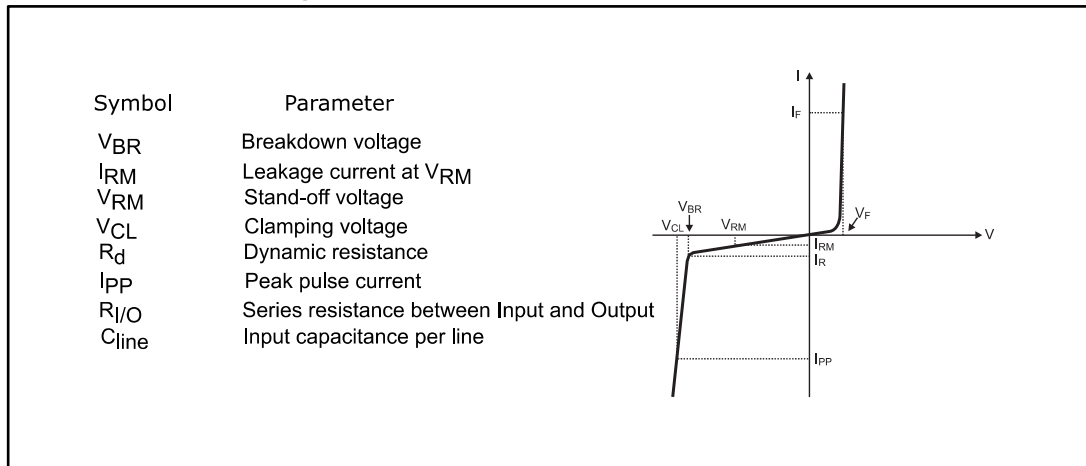


Table 3: Electrical characteristics ($T_{amb} = 25\text{ °C}$)

| Type | I_{RM} at V_{RM} | | V_{BR} at I_R ⁽¹⁾ | | V_{CL} at I_{PP} 10/1000 μ s | | V_{CL} at I_{PP} 8/20 μ s | | αT ⁽²⁾ | C ⁽³⁾ |
|----------|----------------------|-----|----------------------------------|----|--------------------------------------|----|-----------------------------------|-----|---------------------------|--------------------|
| | Max. | | Min. | | Max. | | Max. | | Max. | Typ. |
| | μ A | V | V | mA | V | A | V | A | $10^{-4}/\text{°C}$ | pF |
| SMLVT3V3 | 200 | 3.3 | 4.1 | 1 | 7.3 | 50 | 10.3 | 200 | -5.3 | 5200 |

Notes:

⁽¹⁾Pulse test : $t_p < 50\text{ ms}$

⁽²⁾ $V_{BR} = \alpha T \times (T_{amb} - 25) \times V_{BR}(25\text{ °C})$

⁽³⁾ $V_R = 0\text{ V}$, $F = 1\text{ MHz}$

1.1 Characteristics (curves)

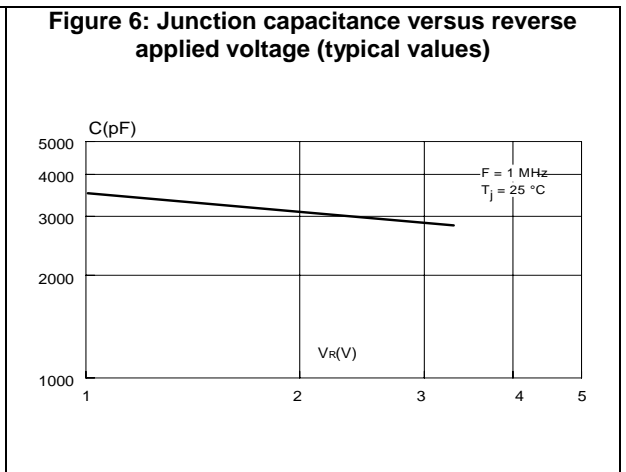
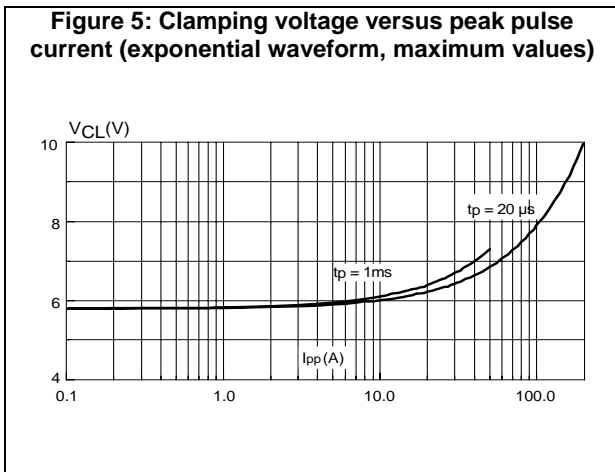
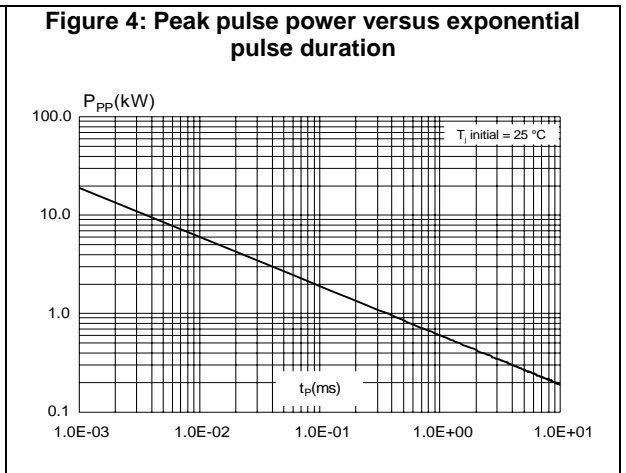
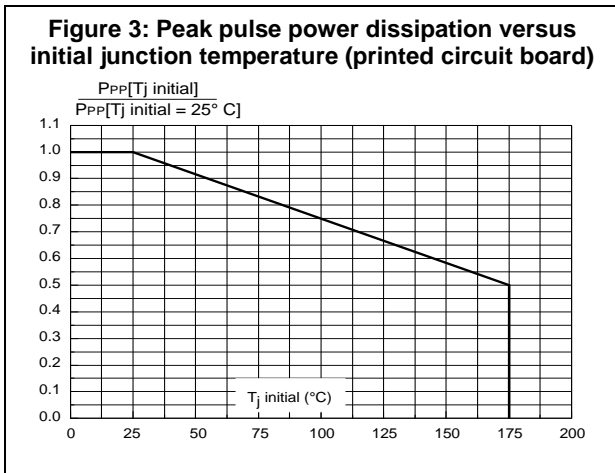
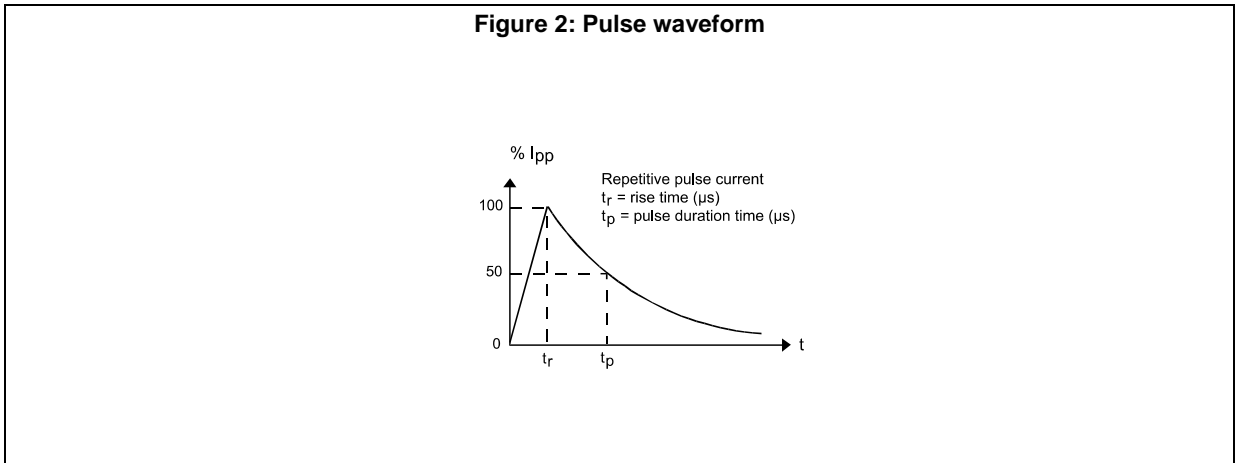


Figure 7: Peak forward voltage drop versus peak forward current (typical values)

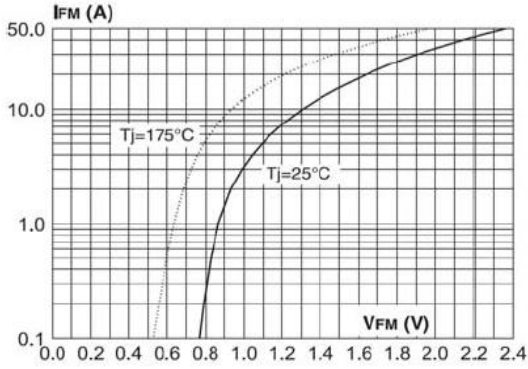


Figure 8: Transient thermal impedance, junction to ambient, versus pulse duration (PCB - FR4)

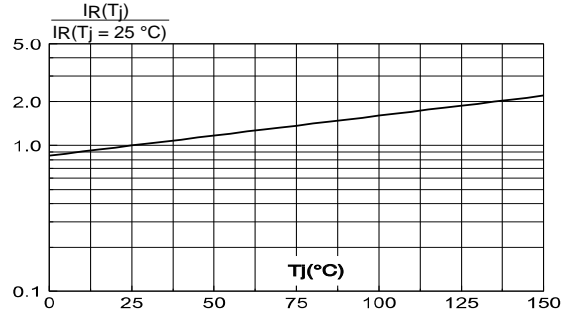
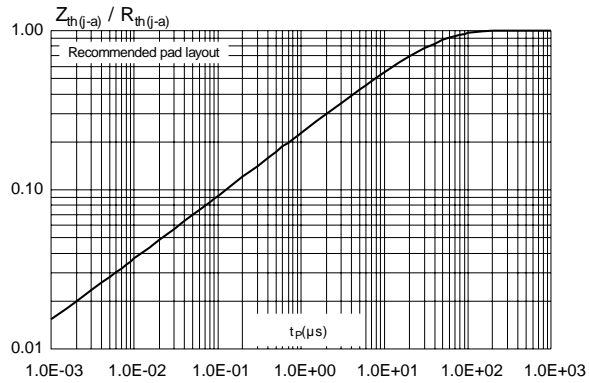


Figure 9: Relative variation of leakage current versus junction temperature



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.

- Case: JEDEC DO-214AA molded plastic over Planar junction
- Epoxy meets UL94, V0
- RoHS compliant package

2.1 SMB package information

Figure 10: SMB package outline

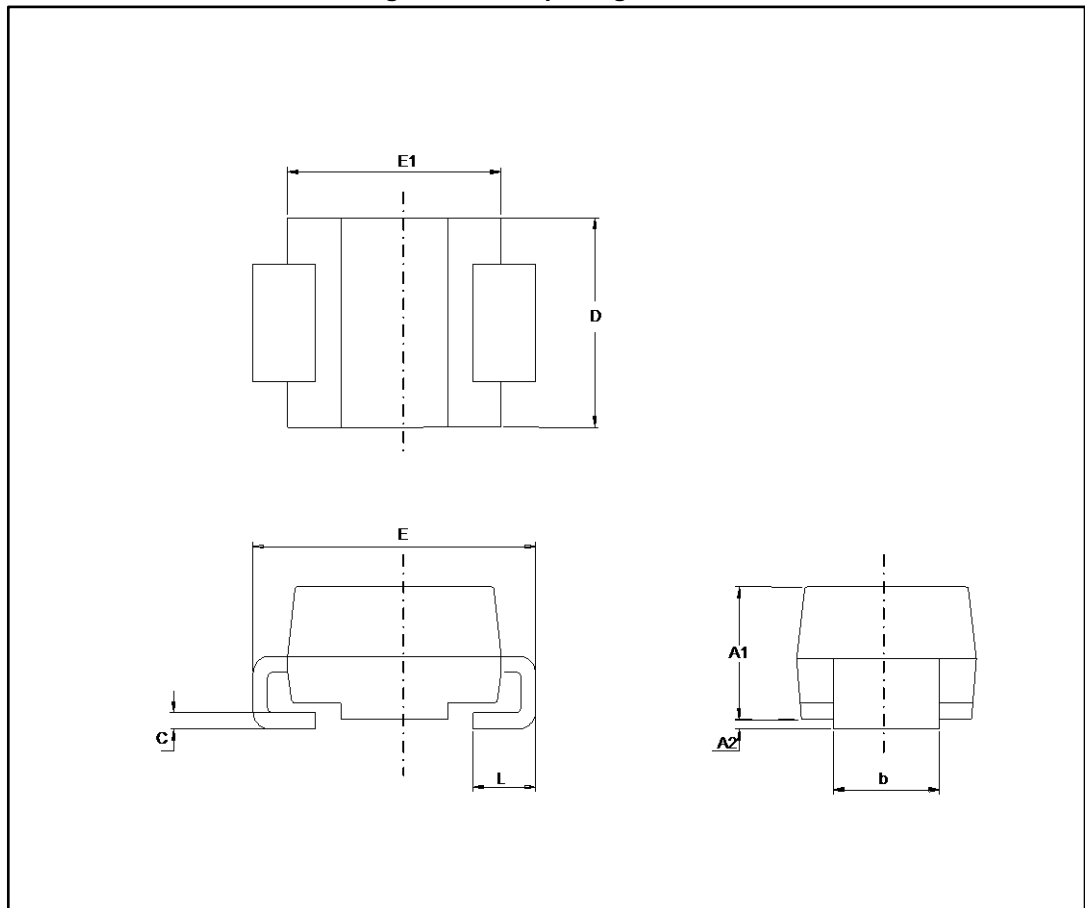


Table 4: SMB package mechanical data

| Ref. | Dimensions | | | |
|------|-------------|------|--------|--------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.0748 | 0.0965 |
| A2 | 0.05 | 0.20 | 0.0020 | 0.0079 |
| b | 1.95 | 2.20 | 0.0768 | 0.0867 |
| c | 0.15 | 0.40 | 0.0059 | 0.0157 |
| D | 3.30 | 3.95 | 0.1299 | 0.1556 |
| E | 5.10 | 5.60 | 0.2008 | 0.2205 |
| E1 | 4.05 | 4.60 | 0.1594 | 0.1811 |
| L | 0.75 | 1.50 | 0.0295 | 0.0591 |

Figure 11: SMB recommended Footprint

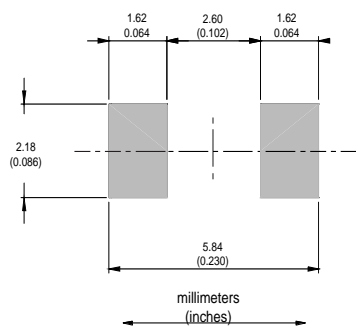
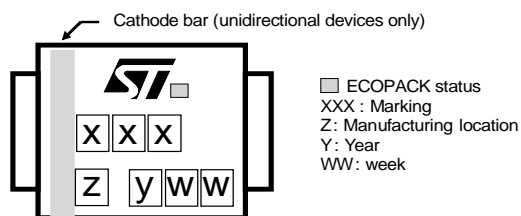


Figure 12: Marking layout



3 Ordering information

Figure 13: Ordering information scheme

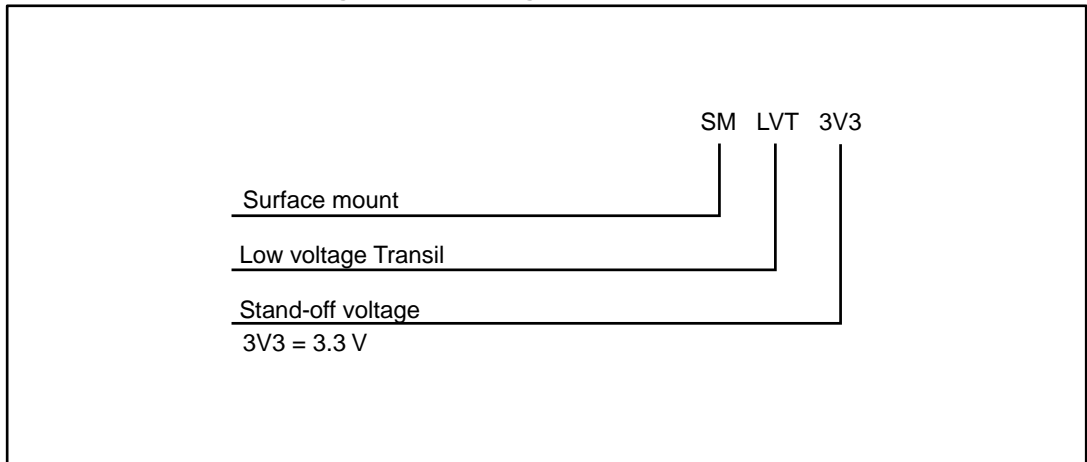


Table 5: Ordering information

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|------------|---------|---------|--------|-----------|---------------|
| SMLVT3V3 | CD | SMB | 0.12 g | 2500 | Tape and reel |

4 Revision history

Table 6: Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| Aug-2001 | 2 | Previous issue |
| 25-Apr-2007 | 3 | Reformatted to current standards. Added cathode bar marker in cover page graphics and <i>Figure 11</i> . |
| 14-Sep-2011 | 4 | Updated Junction temperature range in <i>Table 1</i> . |
| 06-Apr-2017 | 5 | Updated <i>Table 1</i> : " <i>Absolute maximum ratings (limiting values at Tamb = 25 °C unless otherwise specified)</i> ". |

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