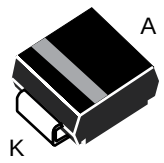
SMLVT3V3

Low voltage Transil™

Datasheet - production data



SMB

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 µs)
- 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 °C unless otherwise specified)

Symbol	Parameter		Value	Unit
P_{pp}	Peak pulse power dissipation(1)	T_j initial = T_{amb}	600	W
P	Power dissipation on infinite heatsink	T_{amb} = 50 °C	6	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	t_p = 10 ms T_j 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)

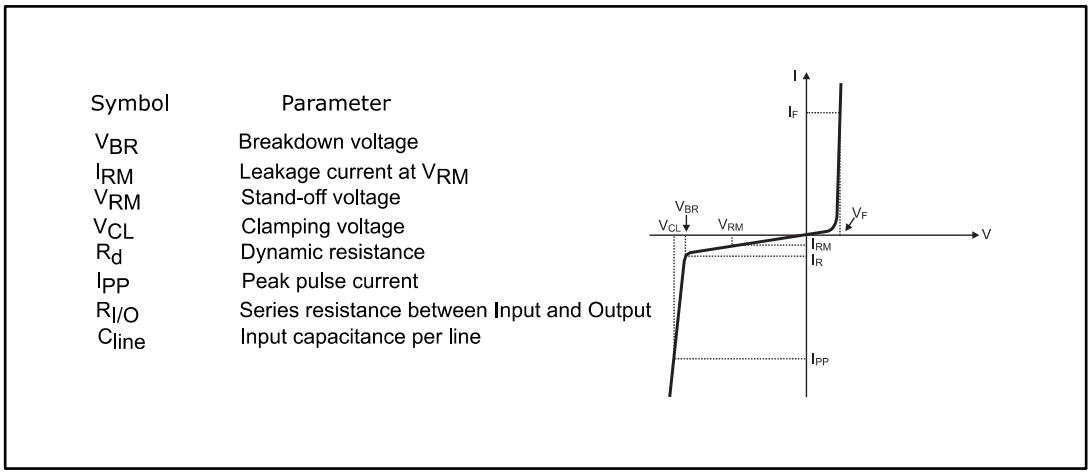


Table 3: Electrical characteristics (T_{amb} = 25 °C)

Type	I_{RM} at V_{RM} Max.		V_{BR} at I_R(1) Min.		V_{CL} at I_{PP} 10/1000 µs Max.		V_{CL} at I_{PP} 8/20 µs Max.		αT (2) Max.	C(3) Typ.
	µA	V	V	mA	V	A	V	A	10^{-4}/°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 ms

(2)V_{BR} = αT x (T_{amb} -25) x V_{BR} (25 °C)

(3)V_R = 0 V, F = 1 MHz

1.1 Characteristics (curves)

Figure 2: Pulse waveform

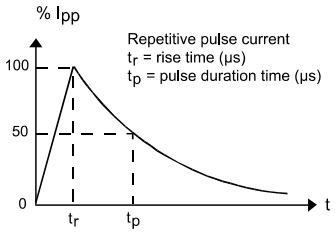


Figure 3: Peak pulse power dissipation versus initial junction temperature (printed circuit board)

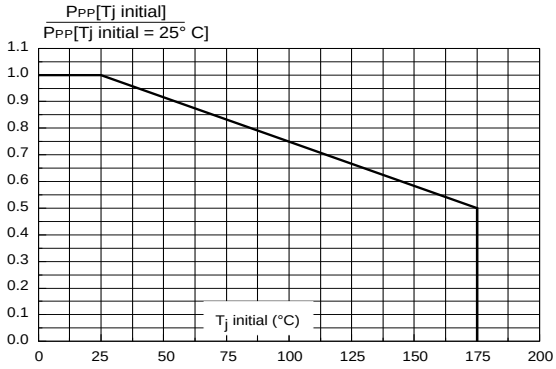


Figure 4: Peak pulse power versus exponential pulse duration

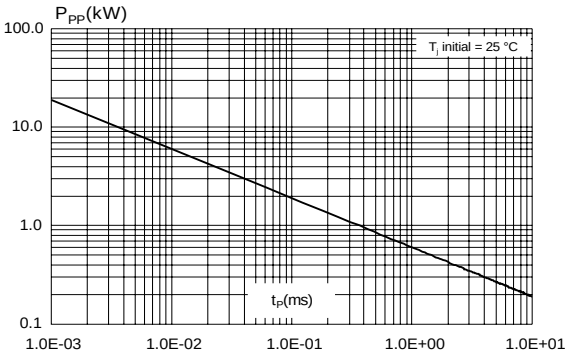


Figure 5: Clamping voltage versus peak pulse current (exponential waveform, maximum values)

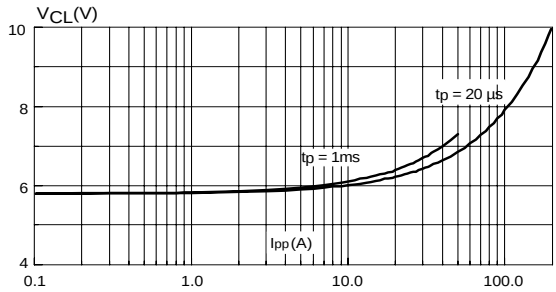


Figure 6: Junction capacitance versus reverse applied voltage (typical values)

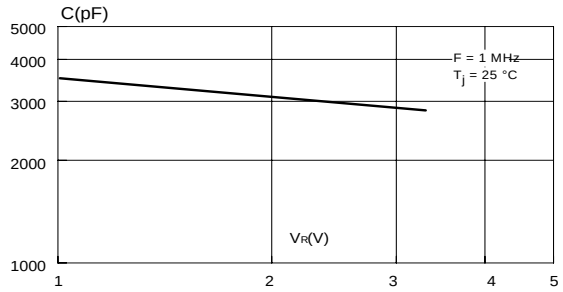


Figure 7: Peak forward voltage drop versus peak forward current (typical values)

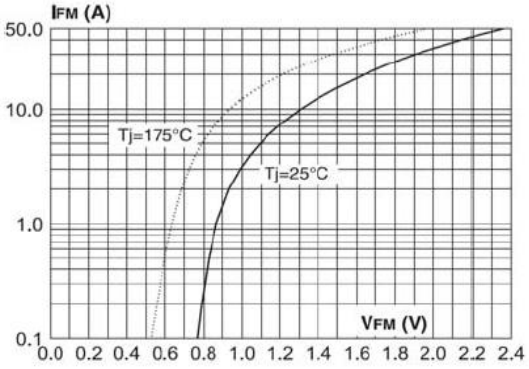


Figure 8: Transient thermal impedance, junction to ambient, versus pulse duration (PCB - FR4)

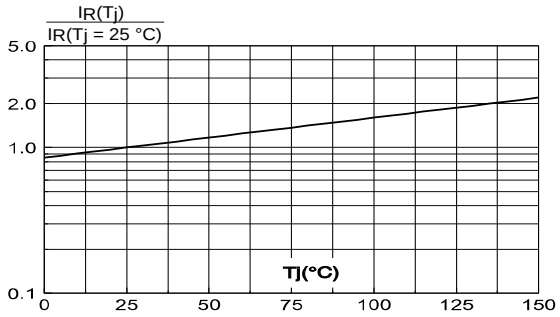
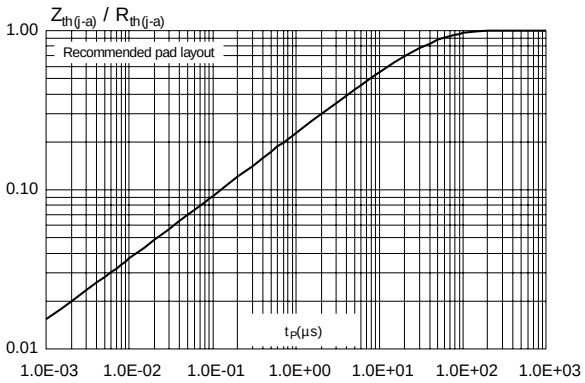


Figure 9: Relative variation of leakage current versus junction temperature



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

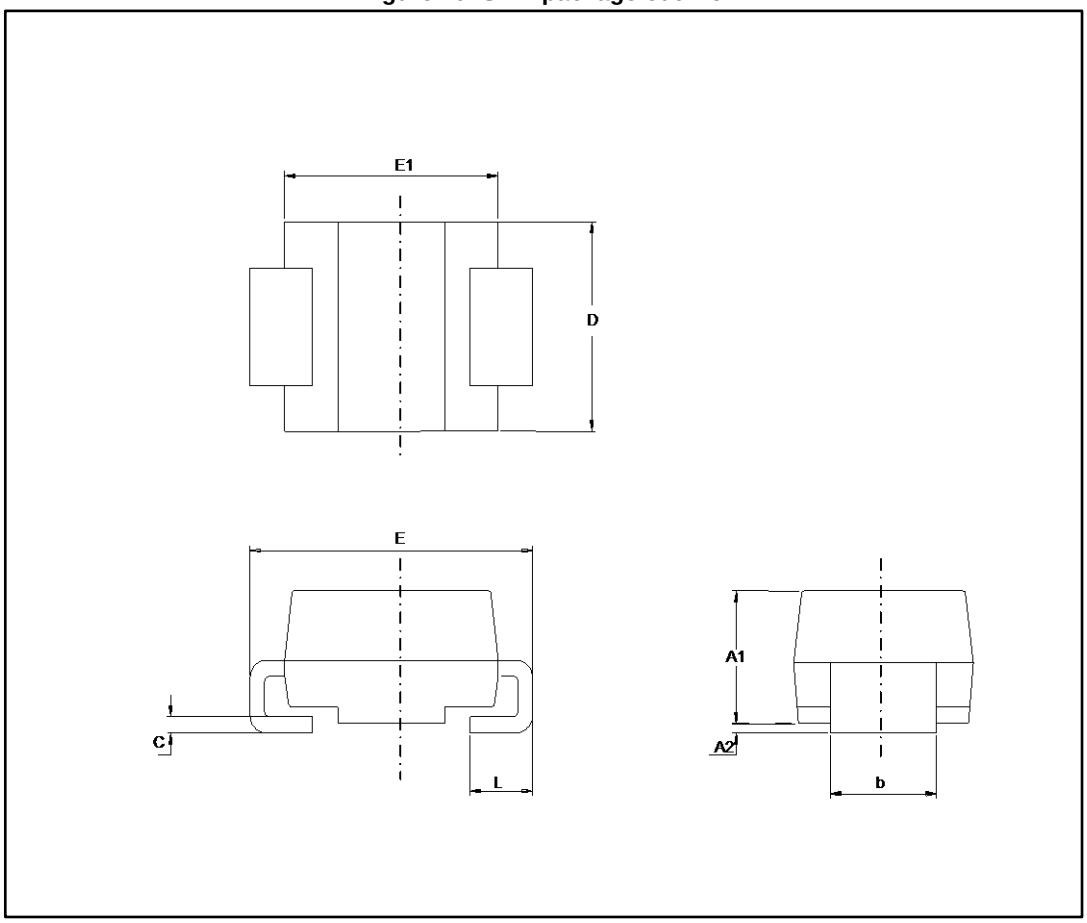


Table 4: SMB package mechanical data

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

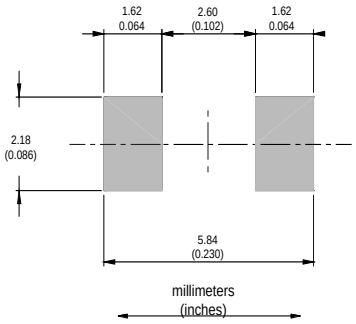
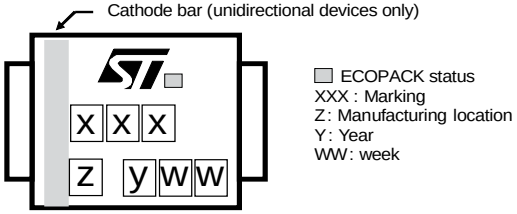


Figure 12: Marking layout



3 Ordering information

Figure 13: Ordering information scheme

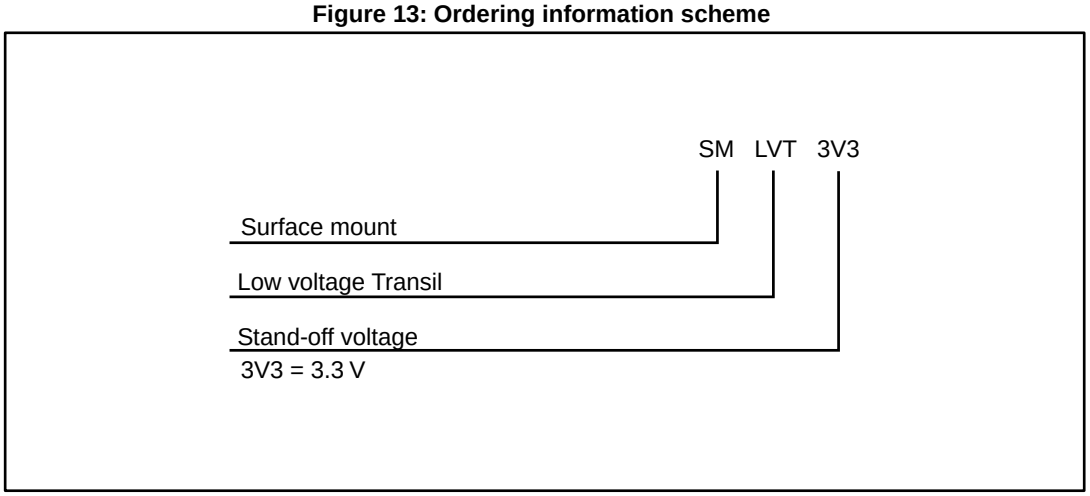


Table 5: Ordering information

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 *Figure 11*.
14-Sep-2011	4	Updated Junction temperature range in *Table 1*.
06-Apr-2017	5	Updated *Table 1: "Absolute maximum ratings (limiting values at Tamb = 25 °C unless otherwise specified)"*.

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