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SMLVT3V3

Low voltage Transil™

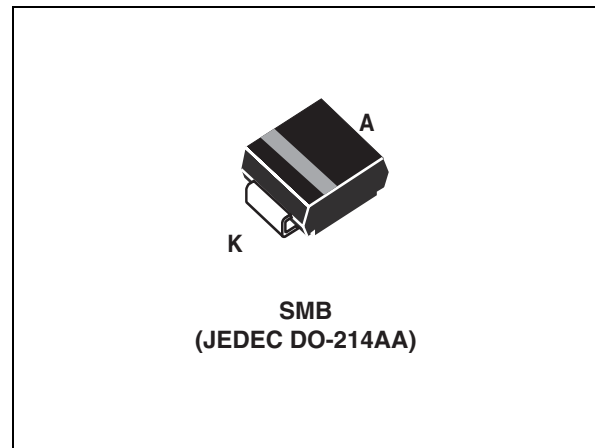
Features

- 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

Description

The SMLVT3V3 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

1 Characteristics

Table 1. Absolute maximum ratings ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation ⁽¹⁾	T_j initial = T_{amb}	600	W
P	Power dissipation on infinite heatsink	$T_{amb} = 50\text{ }^{\circ}\text{C}$	6	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	$t_p = 10\text{ ms}$ T_j initial = T_{amb}	100	A
T_{stg}	Storage temperature range		-65 to +175	$^{\circ}\text{C}$
T_j	Junction temperature range		-25 to +175	$^{\circ}\text{C}$
T_L	Maximum lead temperature for soldering during 10 s.		260	$^{\circ}\text{C}$

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	$^{\circ}\text{C}/\text{W}$
$R_{th(j-a)}$	Junction to ambient on printed circuit on recommended pad layout	100	$^{\circ}\text{C}/\text{W}$

Table 3. Electrical characteristics - parameters ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

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
R_D	Dynamic impedance

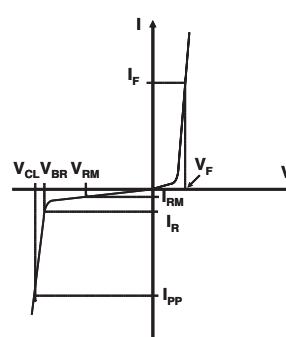


Table 4. Electrical characteristics - values ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

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

1. Pulse test : $t_p < 50\text{ ms}$
2. $V_{BR} = \alpha T \times (T_{amb} - 25) \times V_{BR}(25^{\circ}\text{C})$
3. $V_R = 0\text{ V}$, $F = 1\text{ MHz}$

SMLVT3V3

Characteristics

Figure 1. Pulse waveform

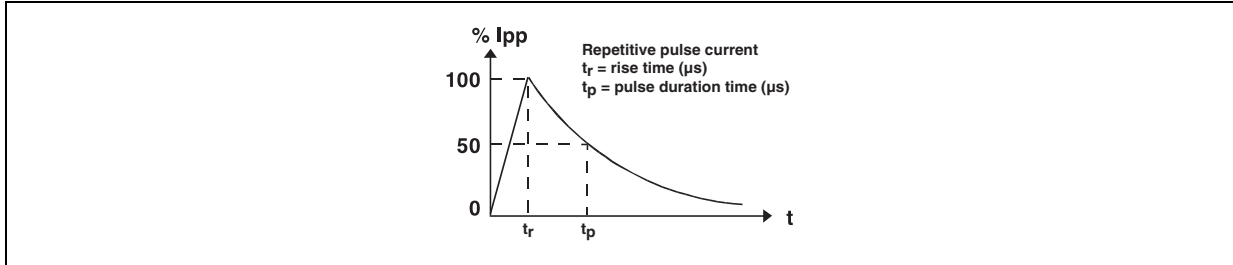


Figure 2. Peak pulse power dissipation versus initial junction temperature (printed circuit board)

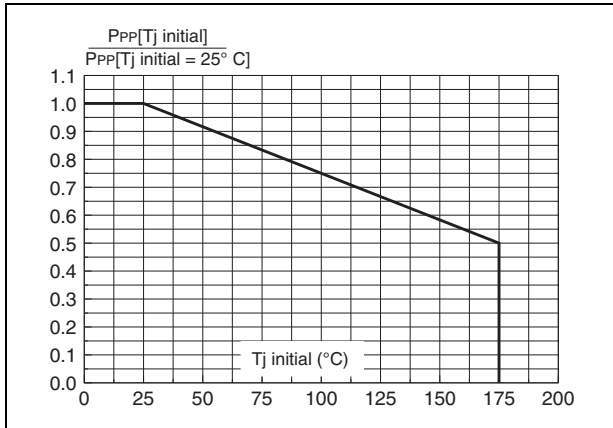


Figure 3. Peak pulse power versus exponential pulse duration

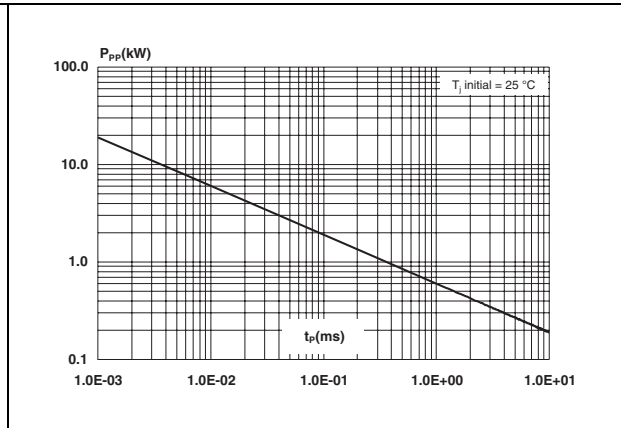


Figure 4. Clamping voltage versus peak pulse current (exponential waveform, maximum values)

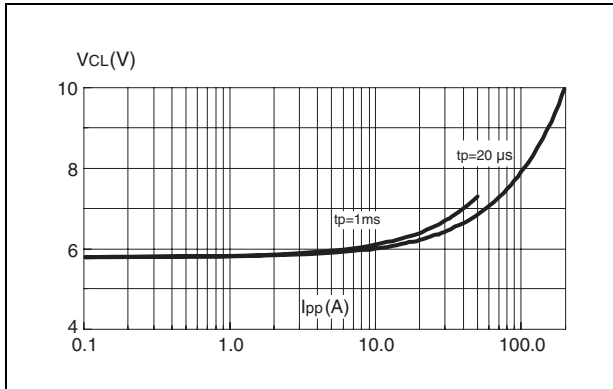
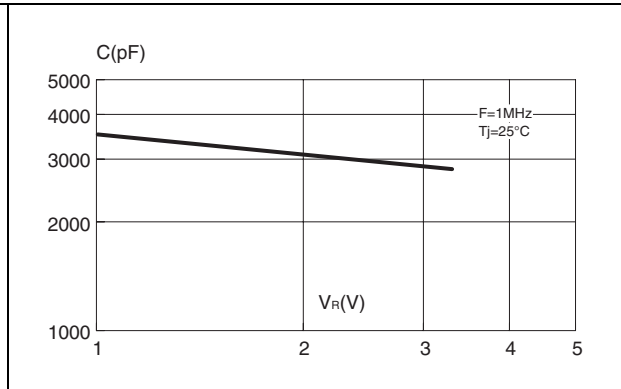


Figure 5. Junction capacitance versus reverse applied voltage (typical values)



Order information scheme

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Figure 6. Peak forward voltage drop versus peak forward current (typical values)

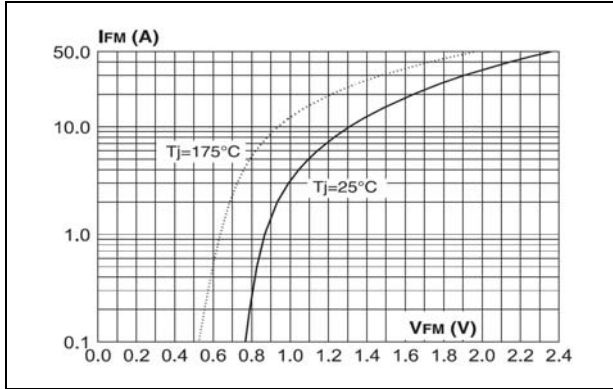


Figure 7. Transient thermal impedance, junction to ambient, versus pulse duration (PCB - FR4)

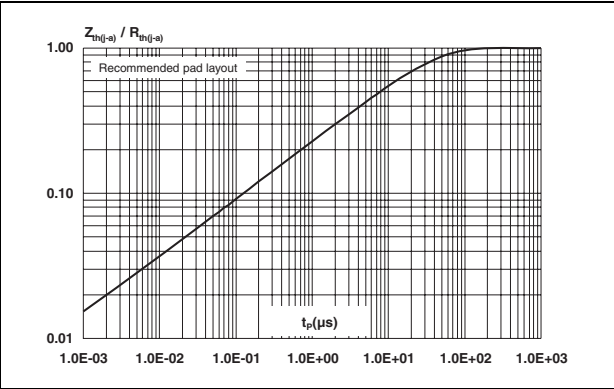
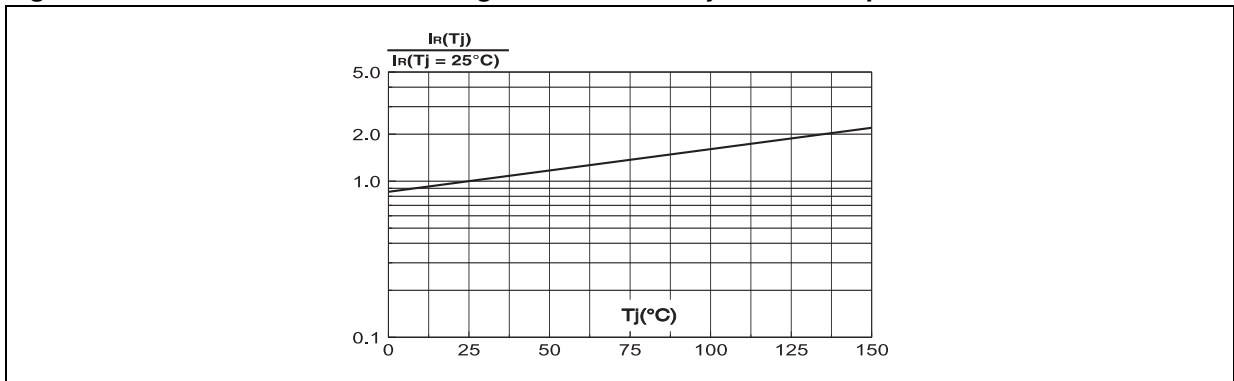
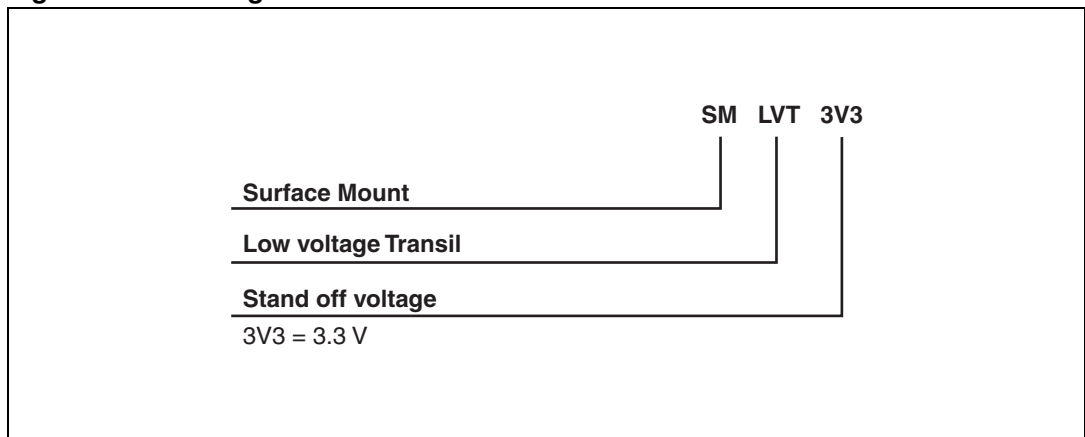


Figure 8. Relative variation of leakage current versus junction temperature



2 Order information scheme

Figure 9. Ordering information scheme



3 Package information

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

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.

Table 5. SMB Dimensions

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.40	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.50	0.030	0.059

Figure 10. Footprint dimensions (millimeter)

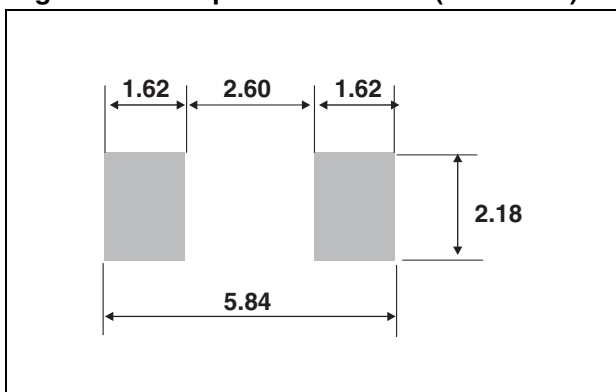
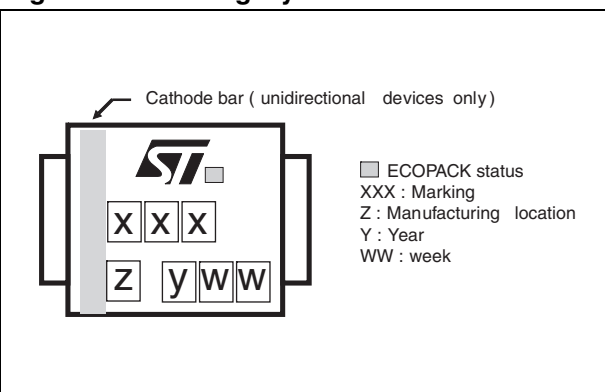


Figure 11. Marking layout



4 Ordering information

Table 6. Ordering information

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

5 Revision history

Table 7. 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 .

SMLVT3V3

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