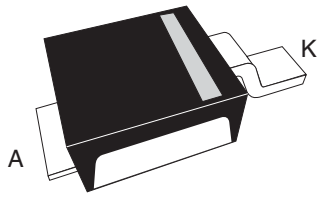
SM2T3V3A

Low voltage Transil™

Datasheet - production data



DO-216AA
(STmite)

Description

The SM2T3V3A is a Transil diode designed specifically for portable equipment and miniaturized electronic devices subject to ESD transient overvoltages. It's 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 µs)
- 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 @ VRM.
I_{PP}	Peak pulse current.
αT	Voltage temperature coefficient
V_F	Forward voltage drop

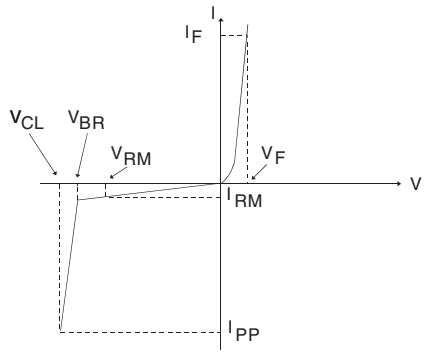
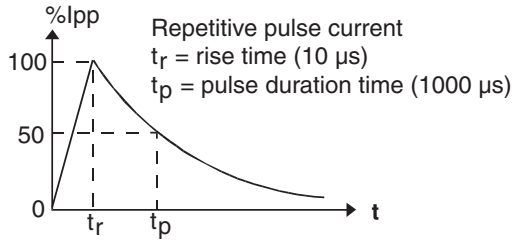


Table 4. Electrical characteristics - values (T_{amb} = 25 °C)

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. $\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}$ (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

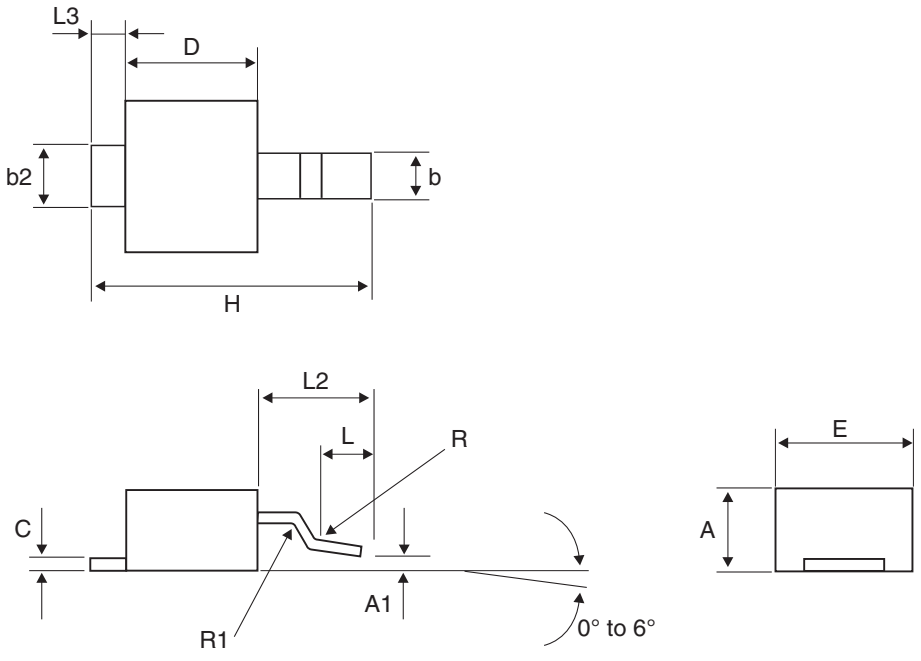
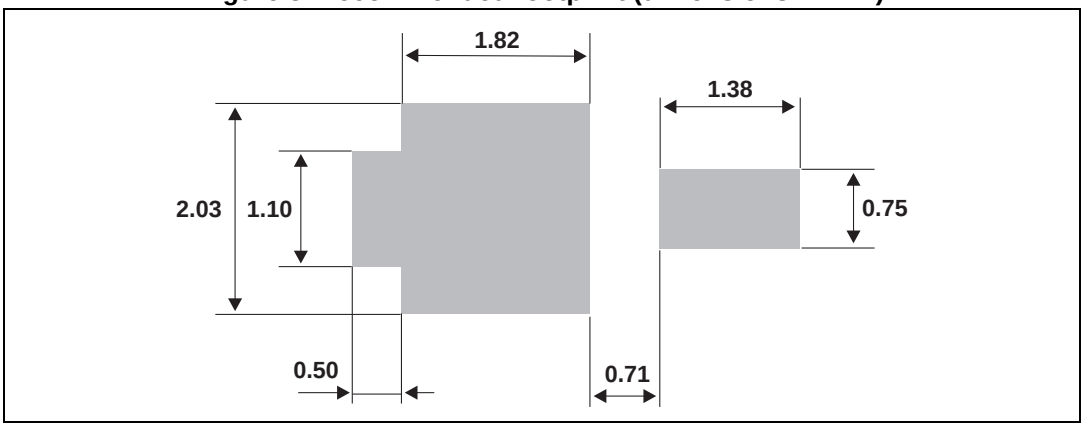


Table 5. Package dimensions - values

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