

STN101050BL25

TVS Diode ESD suppressor



Product features

- Protects one bi-directional I/O line
- Low clamping voltage
- Low operating voltage: 5.0 V
- Low leakage current
- Ultra low capacitance
- Meets moisture sensitivity level (MSL) 3
- Molding compound flammability rating: UL 94V-0
- Termination finish: Ni/Pd/Au

Applications

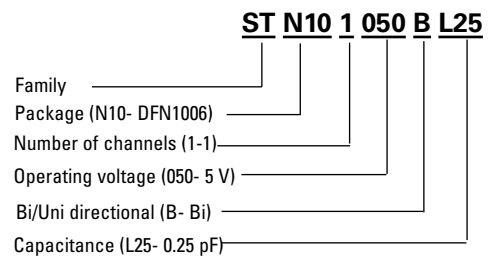
- USB ports
- Display port
- Desktops, servers and notebooks
- Digital visual interface (DVI)
- Cellular phones
- High definition multi-media interface (HDMI)

Environmental compliance and general specifications

- IEC61000-4-2 (ESD)
 - ±25 kV (air)
 - ±25 kV (contact)
- IEC61000-4-5 (Lightning) 5 A (8/20 μs)



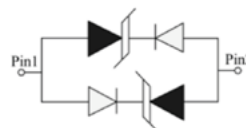
Ordering part number



Pin out/functional diagram



DFN1006-2L



PIN Configuration

Absolute maximum ratings

(+25 °C, RH=45%-75%, unless otherwise noted)

STN101050BL25

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 8/20 μ s waveform	P_{PP}	60	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	+/-25	kV
ESD per IEC 61000-4-2 (Contact)		+/-25	
Lead soldering temperature	T_L	+260 (10 seconds)	°C
Operating junction temperature range	T_J	-55 to +125	°C
Storage temperature range	T_{STG}	-55 to +150	°C

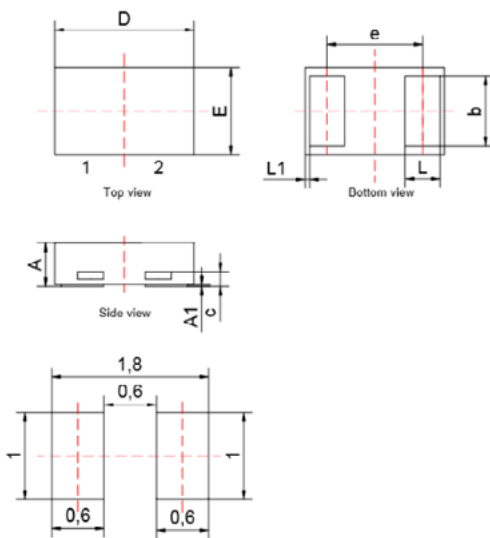
Electrical characteristics

(+25 °C)

STN101050BL25

Parameter	Test condition	Minimum	Typical	Maximum	Symbol (Units)
Reverse working voltage	-	-	-	5.0	V_{RWM} (V)
Reverse breakdown voltage	$I_T = 1$ mA	6.0	-	-	V_{BR} (V)
Reverse leakage current	$V_{RWM} = 5$ V	-	-	0.1	I_R (μ A)
Peak pulse current	$t_p = 8/20$ μ s	-	-	5	I_{PP} (A)
Clamping voltage	$I_{PP} = 1$ A, $t_p = 8/20$ μ s	-	9.5	10	V_C (V)
	$I_{PP} = 3$ A, $t_p = 8/20$ μ s	-	10	11	V_C (V)
	$I_{PP} = 5$ A, $t_p = 8/20$ μ s	-	12.5	13.5	V_C (V)
Junction capacitance	$V_{RWM} = 0$ V, $f = 1$ MHz	-	0.25	0.35	C_J (pF)

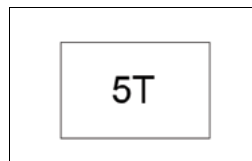
Mechanical parameters, pad layout- mm/inches



Recommended Soldering Footprint

Dimension	Millimeters			Inches		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
C	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e		0.65 BSC			0.02 6BSC	
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012
L1		0.05 REF			0.002 REF	
h	0.07	0.12	0.17	0.003	0.005	0.007

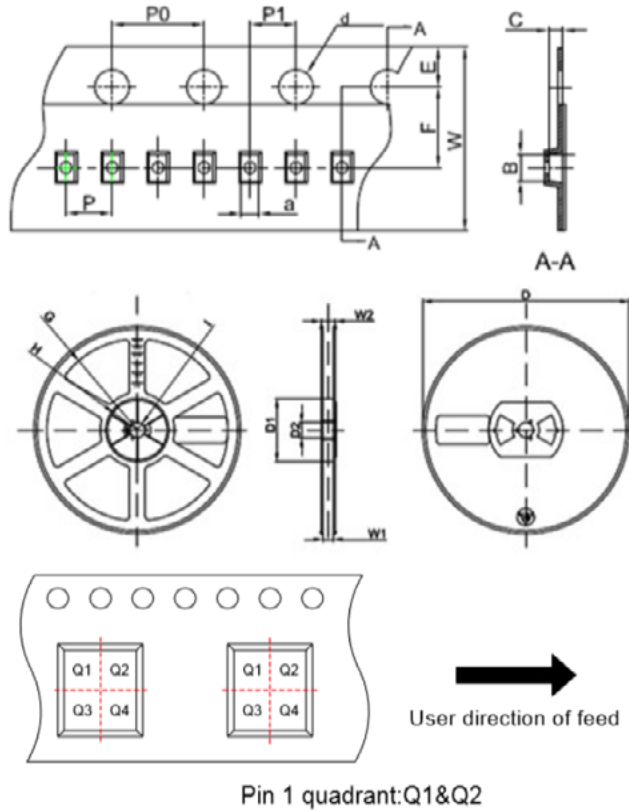
Part marking



Packaging information mm/inches

Drawing not to scale.

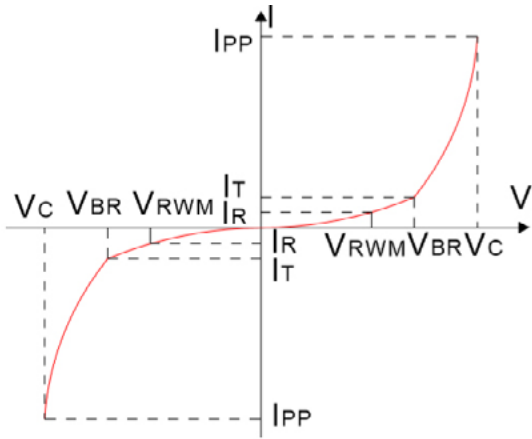
Supplied in tape and reel packaging, 10,000 parts per 7" diameter reel (EIA-481 compliant)



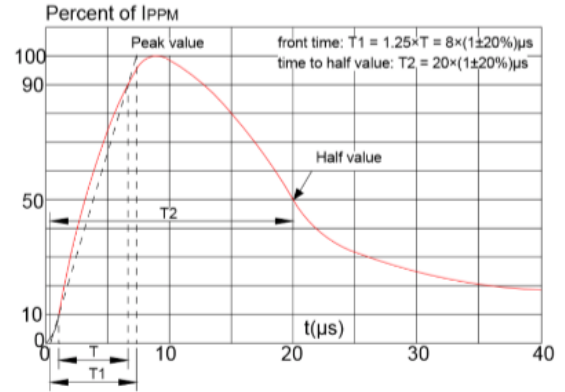
Symbol	Millimeters	Inches
	Typ.	Typ.
a	0.66	0.026
B	1.15	0.045
C	0.66	0.026
d	Φ1.50	Φ0.059
E	1.75	0.069
F	3.50	0.138
P0	4.00	0.157
P	2.00	0.079
P1	2.00	0.079
W	8.00	0.315
D	Φ178	Φ7.008
D1	54.40	2.142
D2	13.00	0.512
G	R78.00	R3.071
H	R25.60	R1.008
I	R6.50	R0.256
W1	9.50	0.374
W2	12.30	0.484

Ratings and V-I characteristic curves (+25 °C unless otherwise noted)

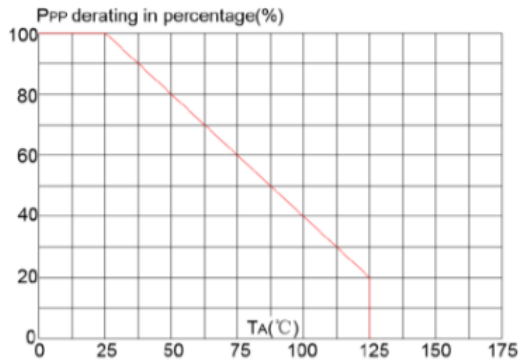
V- I curve characteristics (Bi-directional)



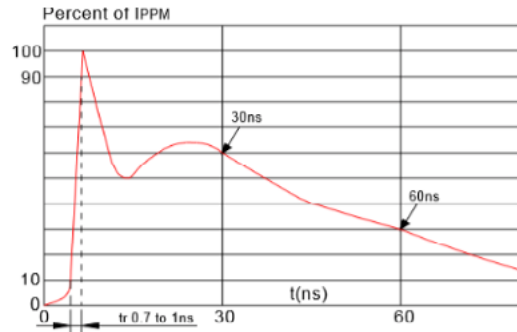
Pulse waveform (8/20 μ s)



Pulse derating curve



ESD waveform



Solder reflow profile

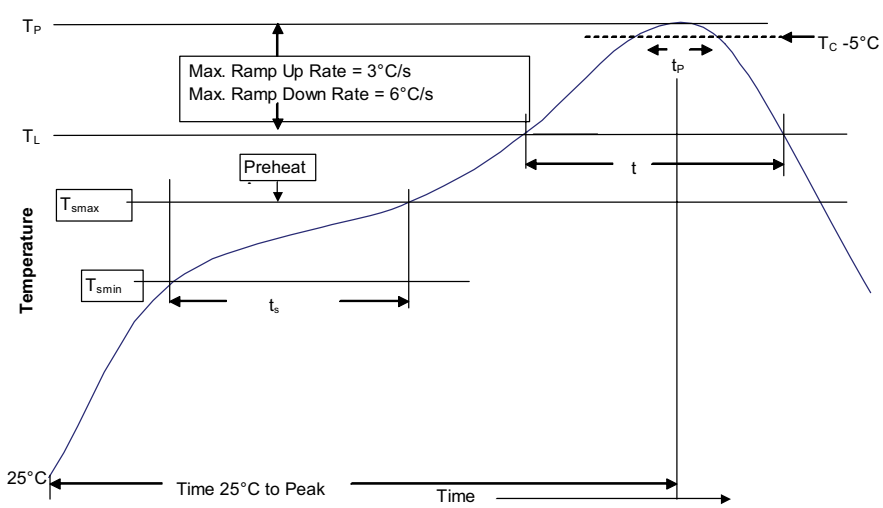


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T _{smin})	100 °C	150 °C
• Temperature max. (T _{smax})	150 °C	200 °C
• Time (T _{smin} to T _{smax}) (t _s)	60-120 seconds	60-120 seconds
Ramp up rate T _L to T _p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T _L)	183 °C	217 °C
Time (t _L) maintained above T _L	60-150 seconds	60-150 seconds
Peak package body temperature (T _p)*	Table 1	Table 2
Time (t _p)* within 5 °C of the specified classification temperature (T _C)	20 seconds*	30 seconds*
Ramp-down rate (T _p to T _L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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