



TVN3V3B1S-DFN1006-2LDG

Specification

Product Name	TVN3V3B1S-DFN1006-2LDG
Series	TVS Diodes
Size	DFN1006
Version	A2

TVN3V3B1S-DFN1006-2LDG Engineering Specification

1. Features

- ESD Protection for High-Speed Data Lines
- IEC 61000-4-2(ESD): $\pm 25\text{kV}$ (Contact) $\pm 25\text{kV}$ (Air)
- IEC 61000-4-5(Surge): 8A (8/20us)
- For 3.3V and Below Operating Voltage
- Protects Four Data Lines
- Low Capacitance (I/O to GND): 11.5pF(Typical)
- Ultra-small Package: 1.0mmx0.6mmx0.5mm

2. Applications

- Computers and peripherals
- Data line Protection
- Audio and video equipment
- Cellular handsets and accessories
- Subscriber identity module(SIM) card protection
- Portable electronics
- FireWire

3. Explanation of Part Number

<u>TV</u>	<u>N</u>	<u>3V3</u>	<u>B1</u>	<u>S</u>	<u>-DFN1006</u>	<u>-2L</u>	<u>DG</u>
-1	-2	-3	-4	-5	-6	-7	-8

- (1) Product Type : TV=TVS Diode
- (2) Capacitance Code
- (3) Working Voltage:
- (4) Direction/Channel Code : B=Bi-directional, 1=Channel
- (5) Control Code
- (6) Package Size
- (7) Pin Code : 2L=2 Pin
- (8) Inpaq Control Code

4. Circuit Diagram & Pin Configuration



5. Maximum Ratings (Ta=25°C unless otherwise noted)

Characteristics	Symbol	Ratings	Unit
ESD Per IEC61000-4-2 (Air)	V _{ESD} ⁽¹⁾	±25	kV
ESD Per IEC61000-4-2 (Contact)		±25	kV
Peak pulse Current	I _{PP} ⁽²⁾	8	A
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Lead Soldering Temperature	T _{SOL}	260	°C

(1) Device stressed with ten non-repetitive ESD pulses.

(2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

6. Electrical Characteristics (T=25°C)

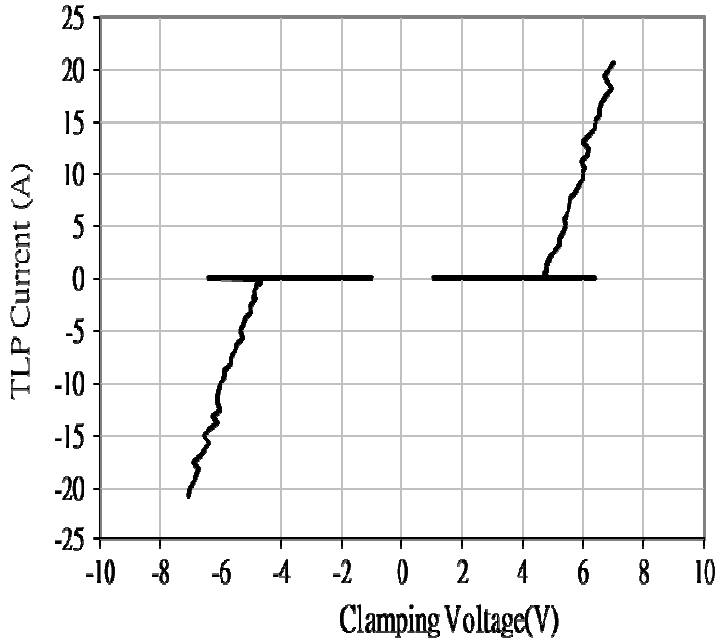
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM} ⁽¹⁾	T=25°C			3.3	V
Breakdown Voltage	V _B	I _B =1mA; I/O to GND	4	6.8	8	V
Reverse Leakage Current	I _R	V _{RWM} =3.3V; T=25°C			0.5	μA
Clamping Voltage	V _{TLP}	I _{TLP} = 1A (100ns transmission line)		5.3		V
		I _{TLP} = 16A(100ns transmission line)		6.6		
Junction Capacitance	C _J	V _R = 0V, f = 1 MHz,		11.5		pF

(1) Guaranteed by design and not subject to production test.

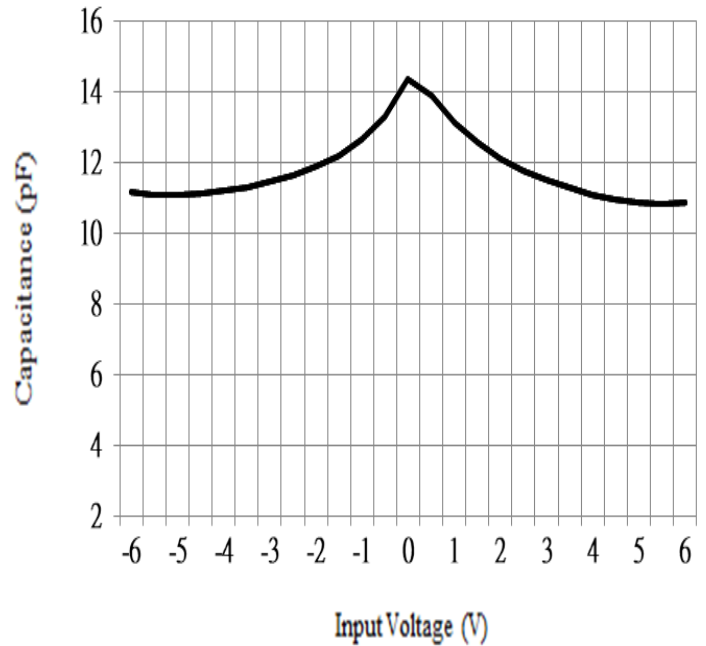
(2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

7. Typical Characteristics

TLP Clamping Voltage



Capacitance vs. Input Voltage



8. General specifications

Environmental Specifications

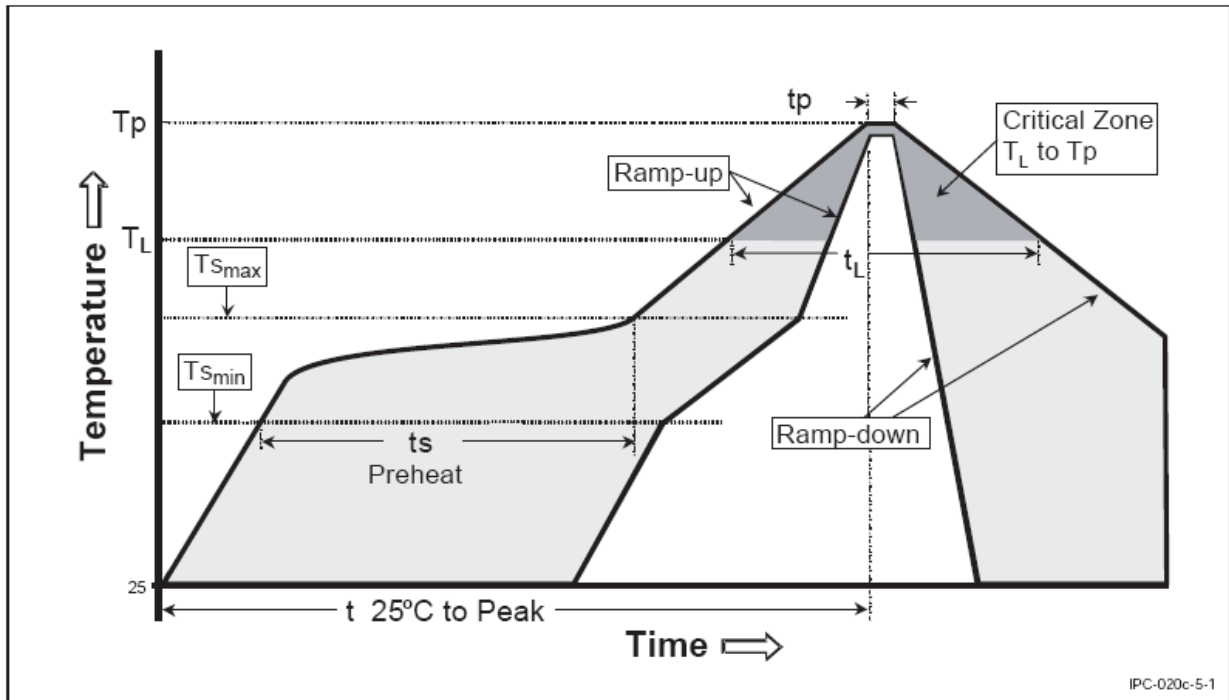
Item	Specifications	Test condition	Reference
Bias humidity	$I_L \leq 10 \mu A$	90%RH, 40°C, Rated voltage, 1000hrs	MIL-STD-202 Method 103
Thermal Shock	$I_L \leq 10 \mu A$	-55°C to 125°C, 30 min. cycle, 500 cycles	JIS C 0025 (1998) Test Na
High Temperature load voltage	$I_L \leq 10 \mu A$	Rated voltage, 125°C, 1000 hrs	MIL-STD-202 Method 108
Solder leach resistance	$I_L \leq 10 \mu A$	260°C, 10s	MIL-STD-202 Method 210F

I_L – Leakage current at rated voltage, the maximum leakage current was measured after reliability test.

9. Soldering Parameters

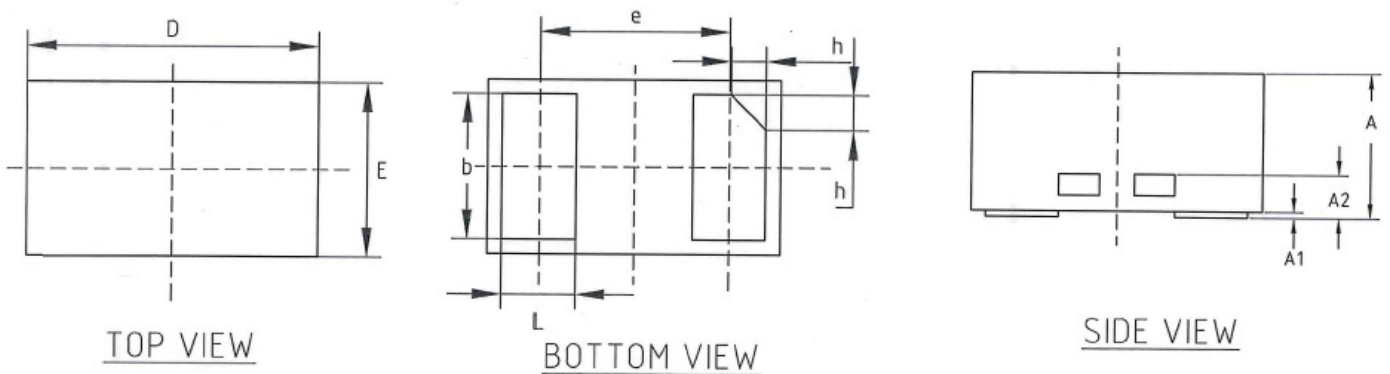
Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T _{smax} to T _p)	3°C/second max.
Preheat – Temperature Min (T _{smin}) – Temperature Max (T _{smax}) – Time (t _{smin} to t _{smax})	150°C 200°C 60-120 seconds
Time maintained above: – Temperature (T _L) – Time (t _L)	217°C 60-150 seconds
Peak/Classification Temperature (T _p)	260°C
Time within 5°C of actual Peak Temperature (t _p)	30 seconds
Ramp-Down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Note: Heat Resistance to Reflow Soldering 3 Cycles



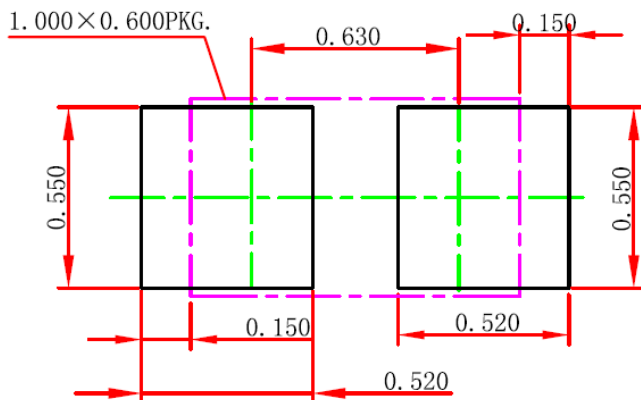
*According to J-STD-020C

10. Outline Dimensions



MILLIMETER /mm			
SYMBOL	MIN	NOMINAL	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
A2	0.127 REF		
b	0.45	0.50	0.55
D	0.95	1.00	1.05
e	0.65 BSC		
E	0.55	0.60	0.65
L	0.20	0.25	0.30
h	0.07	0.12	0.17

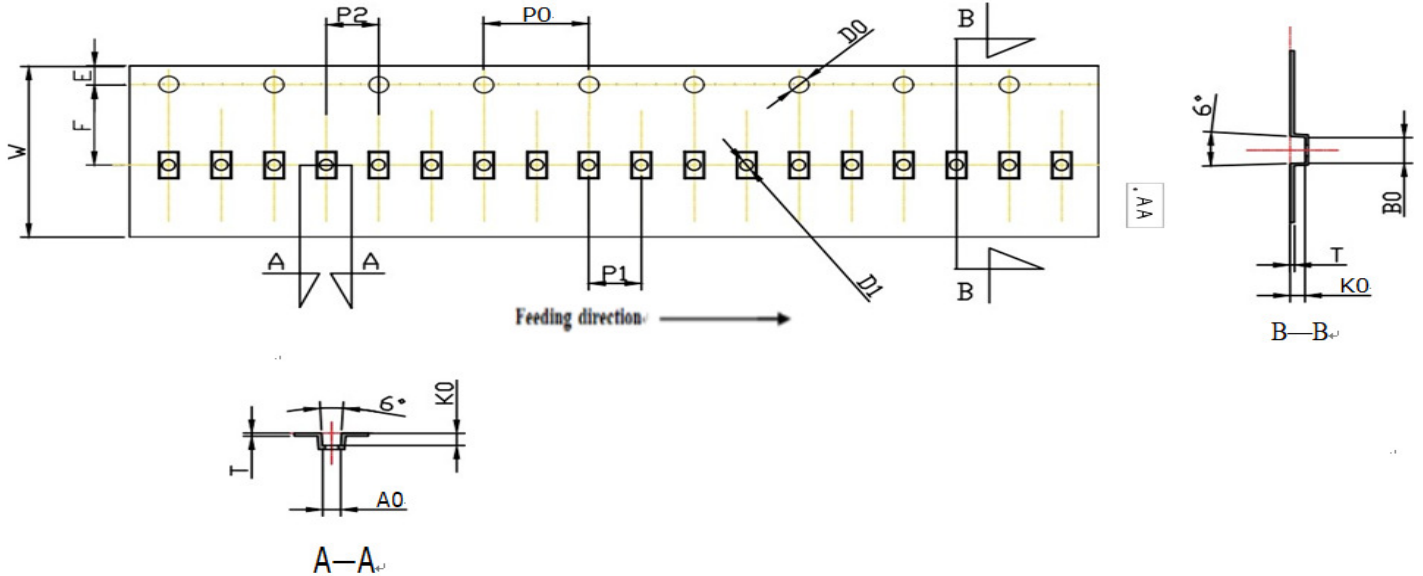
11. Pad Layout



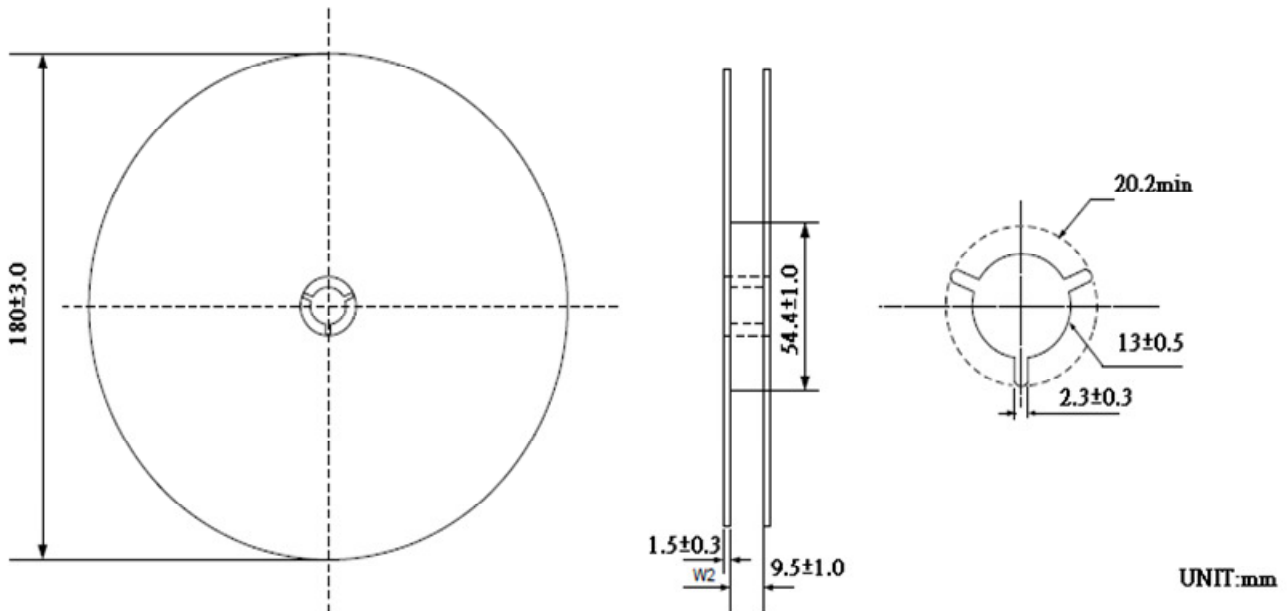
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.050 mm.
3. The pad layout is for reference purposes only.

12. Tape&Reel Information



Symbol	A0	B0	K0	P0	P1	P2
Unit : mm	0.69±0.05	1.18±0.05	0.58±0.05	4±0.1	2±0.05	2±0.05
Symbol	W	T	E	F	D0	D1
Unit : mm	8±0.1	0.2±0.05	1.75±0.1	3.5±0.05	Φ1.55±0.05	Φ0.5±0.1



13. Order Information:

Marking Code:



AA = Device code

Part Number	Marking Code	Quantity	Packaging Option
TVN3V3B1S-DFN1006-2LDG	.AA	10,000	Tape & reel- 8mm tape/7"reel

14. MSL Level:

Level 1

