



TVL12VB1S-DFN1006-2LDG

Data Sheet

Product Name	TVL12VB1S-DFN1006-2LDG
Series	TVS Diodes
Size	DFN1006
Version	A0

1. Features

- Bi-directional ESD protection of one line
- IEC 61000-4-2 (ESD) $\pm 25kV(\text{Contact})\pm 25kV(\text{Air})$
- IEC 61000-4-5 (Surge) 5A (8/20 μ s)
- For 7V and Below the Operating Voltage
- Low capacitance: 8.5pF(Typical)
- Excellent package:1.0mm \times 0.6mm \times 0.5mm

2. Applications

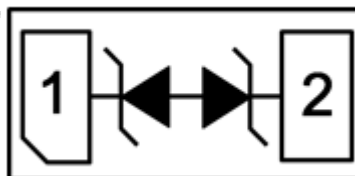
- Control signal lines protection
- Power line protection
- Serial and parallel port protection
- Generic Interface Lines
- Notebooks, desktops and servers

3. Explanation of Part Number

<u>TV</u>	<u>L</u>	<u>12V</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⁾	5	A
Junction Temperature	T _J	-55 to +125	°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.

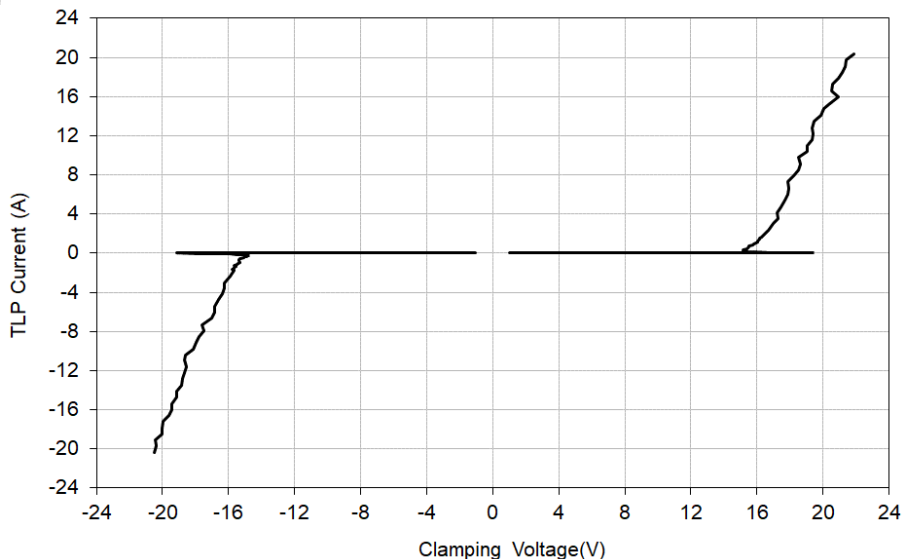
6. Electrical Characteristics (T=25 °C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM} ⁽¹⁾	T=25 °C			12	V
Breakdown Voltage	V _B	I _B =1mA; I/O to GND	13.4	18	22.4	V
Reverse Leakage Current	I _R	V _{RWM} =12V; T=25 °C			0.1	µA
Clamping Voltage	V _{TLP}	I _{TLP} = 16A(100ns transmission line)		19.5		V
Junction Capacitance	C _J	V _R = 0V, f = 1 MHz,		8.5	10	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.

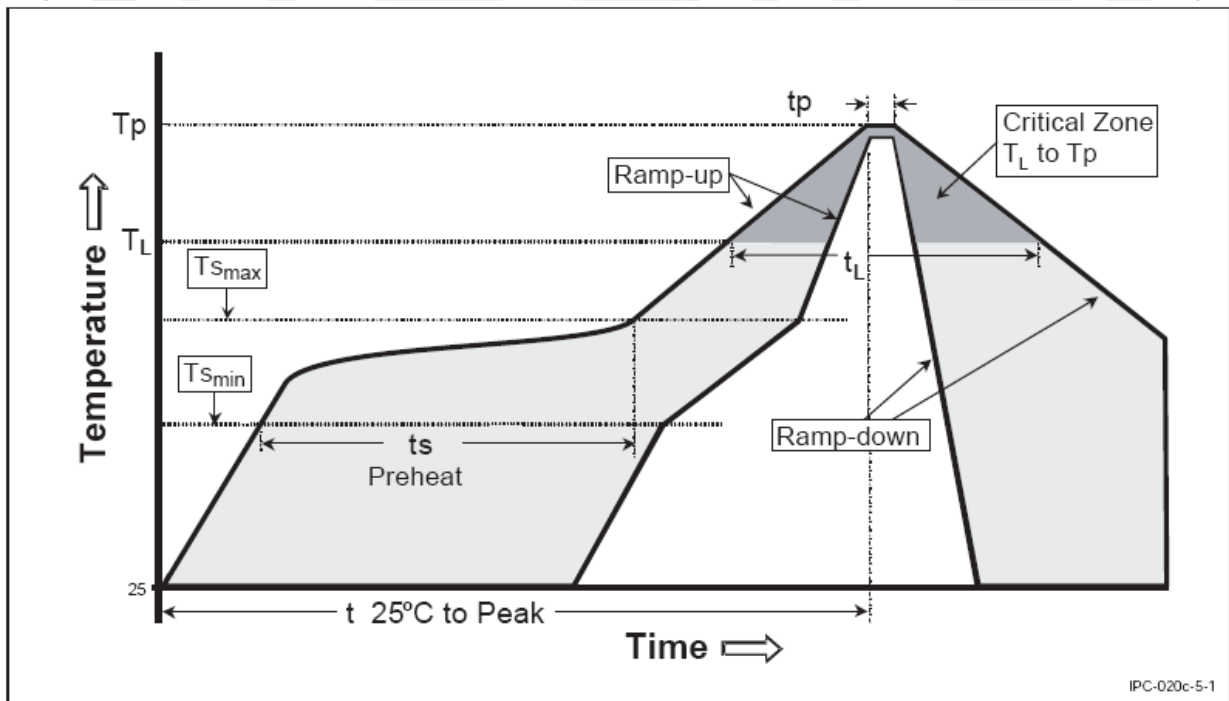
7. Typical Characteristics



8. 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

9. General specifications

Environmental Specifications

Item	Specifications	Test condition	Reference
Bias Humidity	$I_L \leq 10 \mu A$	90%RH, 40°C, Rated voltage, 1000hr	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, 1000hr	MIL-STD-202 Method 108
Solder Leach Resistance	$I_L \leq 10 \mu A$	260°C, 10sec	MIL-STD-202 Method 210F

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

10. Storage Condition with Package

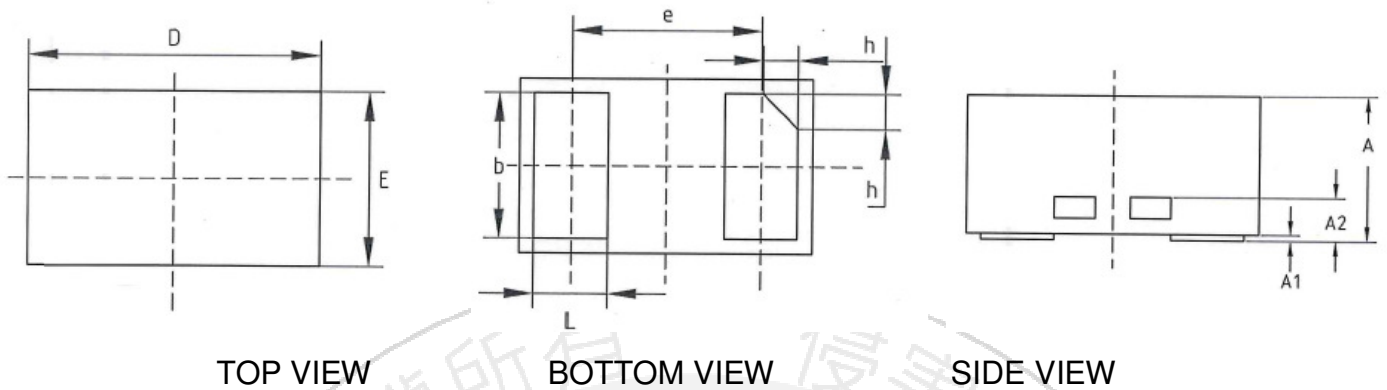
Storage Time: 24 months max

Storage Temperature : 5 to 40°C

Relative Humidity: 0 to 60 %

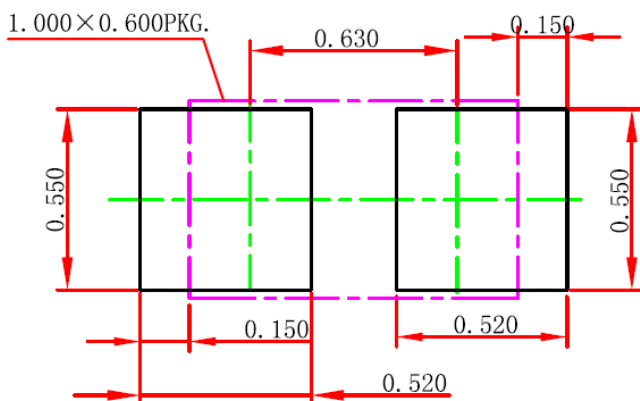


11. Outline Dimensions



Symbol	Dimensions (mm)		
	Min	Typical	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

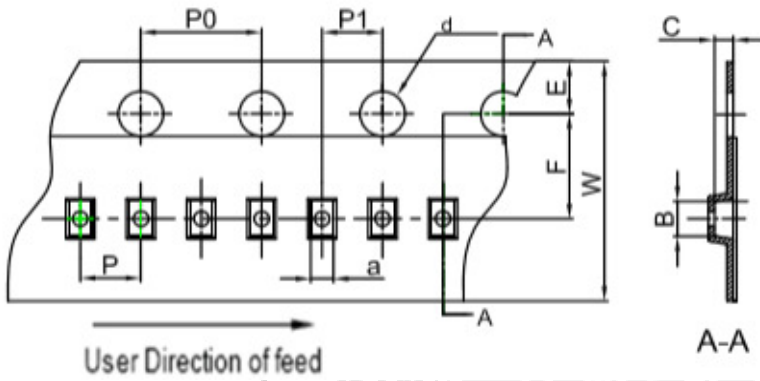
12. Pad Layout



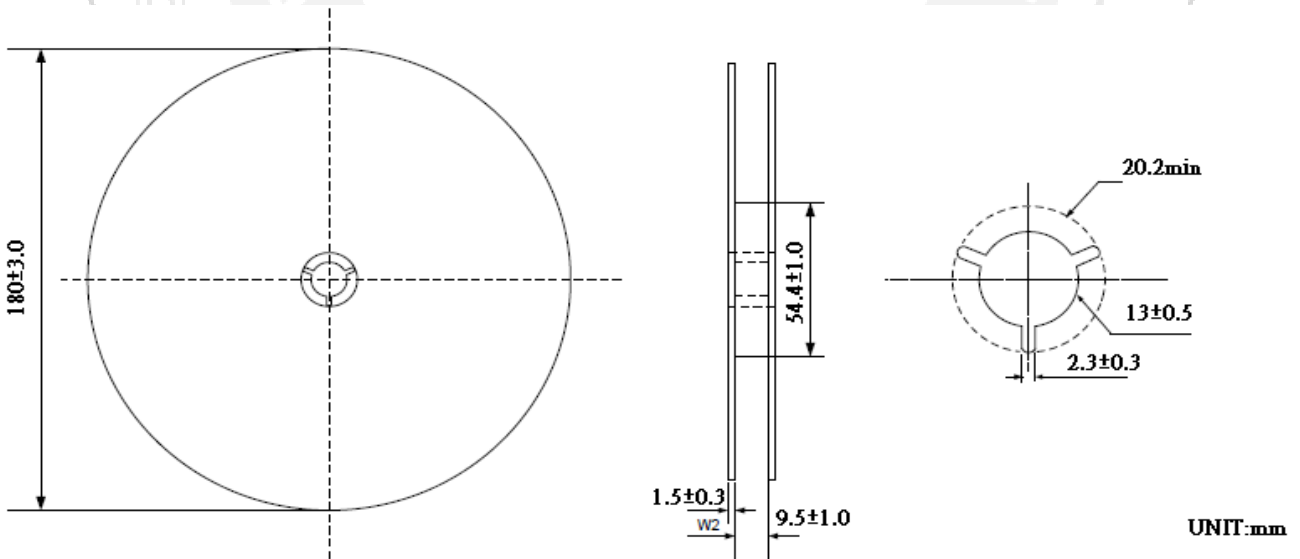
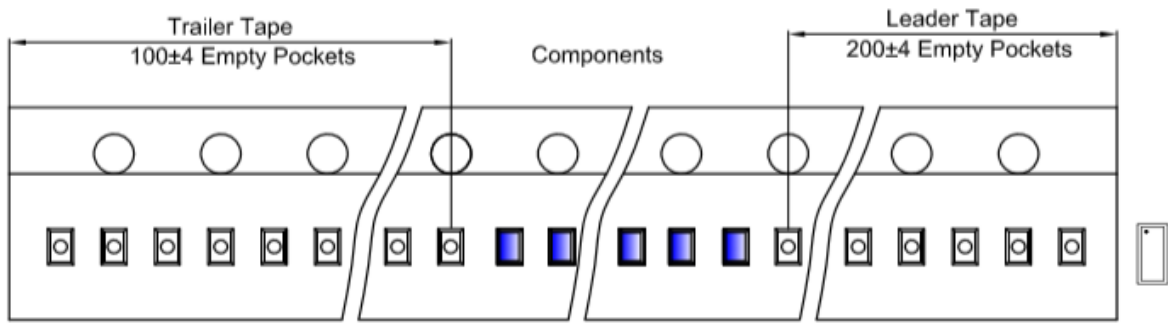
Note

- Controlling dimension: in millimeters.
- General tolerance: $\pm 0.050\text{mm}$.
- The pad layout is for reference purposes only.

13. Tape & Reel Information



Dimensions (mm)										
Symbol	a	B	C	d	E	F	P0	P	P1	W
DFN/FBP(1.0x0.6)	0.66	1.15	0.66	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00



UNIT:mm

14. Order Information:

Marking Code



AD = Device code

Part Number	Marking Code	Quantity	Packaging Option
TVL12VB1S-DFN1006-2LDG	.AD	10,000	Tape & reel- 8mm tape/7"reel

15. MSL Level:

Level 1

