



# PRODUCT SPECIFICATION

DOCUMENT NO.ENS000153070

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
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# TVN5VB1S-DFN1006-2LDG Engineering Specification

## 1. Features

- Bi-directional ESD protection of one line
- IEC 61000-4-2 (ESD)  $\pm 20\text{kV}$ (Air)  $\pm 20\text{kV}$ (Contact)
- IEC 61000-4-5 (Surge) 8A (8/20 $\mu\text{s}$ )
- For 5.0V and Below the Operating Voltage
- Low capacitance: 18pF(Typical)
- Excellent package:1.0mm $\times$ 0.6mm $\times$ 0.5mm

## 2. Applications

- Computers and peripherals
- Audio and video equipment
- Cellular handsets and accessories
- Subscriber identity module(SIM) card protection
- Portable electronics
- FireWire
- Other electronics equipments communi- cation systems

## 3. Explanation of Part Number

<u>TV</u>	<u>N</u>	<u>5V</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 ( $T_a=25^{\circ}\text{C}$ unless otherwise noted )

Characteristics	Symbol	Ratings	Unit
ESD Per IEC61000-4-2 (Air)	$V_{\text{ESD}}^{(1)}$	$\pm 20$	kV
ESD Per IEC61000-4-2 (Contact)		$\pm 20$	kV
Peak pulse Current	$I_{\text{PP}}^{(2)}$	8	A
Junction Temperature	$T_{\text{J}}$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{\text{STG}}$	-55 to +125	$^{\circ}\text{C}$
Lead Soldering Temperature	$T_{\text{SOL}}$	260	$^{\circ}\text{C}$

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

(2) Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

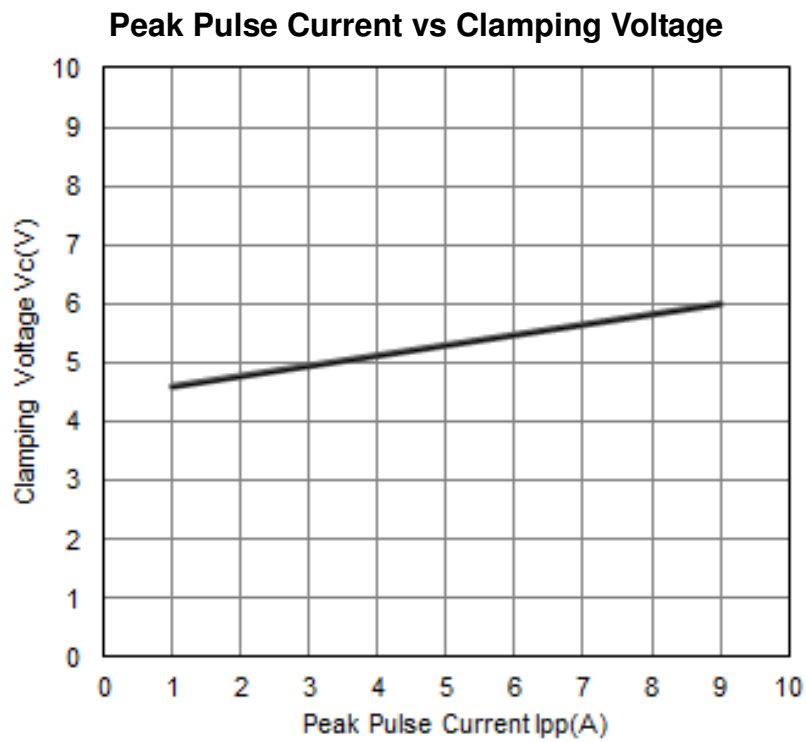
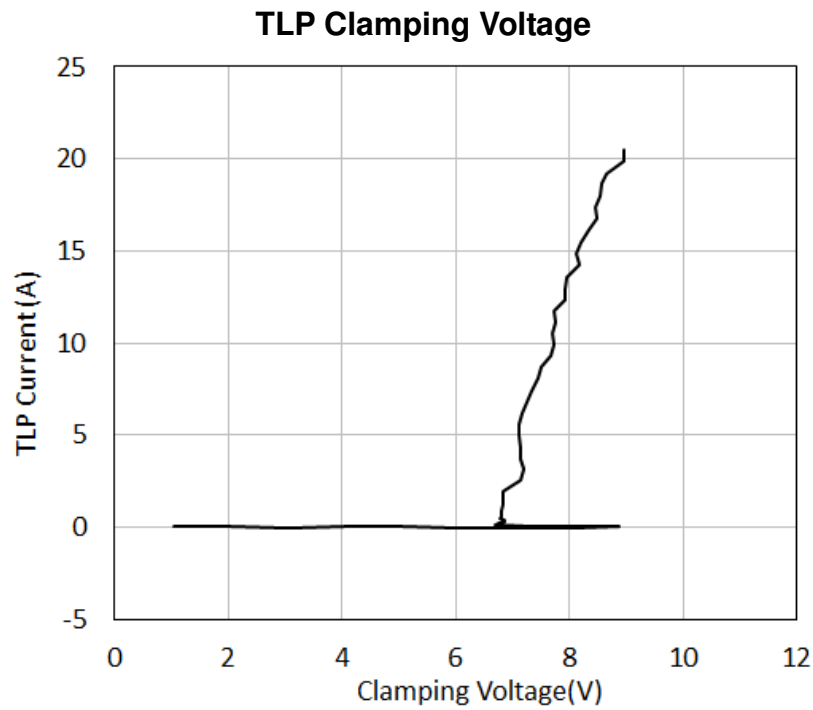
## 6. Electrical Characteristics ( $T=25^{\circ}\text{C}$ )

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	$V_{\text{RWM}}^{(1)}$	$T=25^{\circ}\text{C}$			5	V
Breakdown Voltage	$V_{\text{B}}$	$I_{\text{B}}=1\text{mA}$ ; I/O to GND	7	9	12	V
Reverse Leakage Current	$I_{\text{R}}$	$V_{\text{RWM}}=5\text{V}$ ; $T=25^{\circ}\text{C}$			1	$\mu\text{A}$
Clamping Voltage	$V_{\text{TLP}}$	$I_{\text{TLP}} = 1\text{A}$ (100ns transmission line) $I_{\text{TLP}} = 16\text{A}$ (100ns transmission line)		6.8 8.3		V
Junction Capacitance	$C_{\text{J}}$	$V_{\text{R}} = 0\text{V}$ , $f = 1\text{MHz}$ ,		18		pF

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

(2) Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

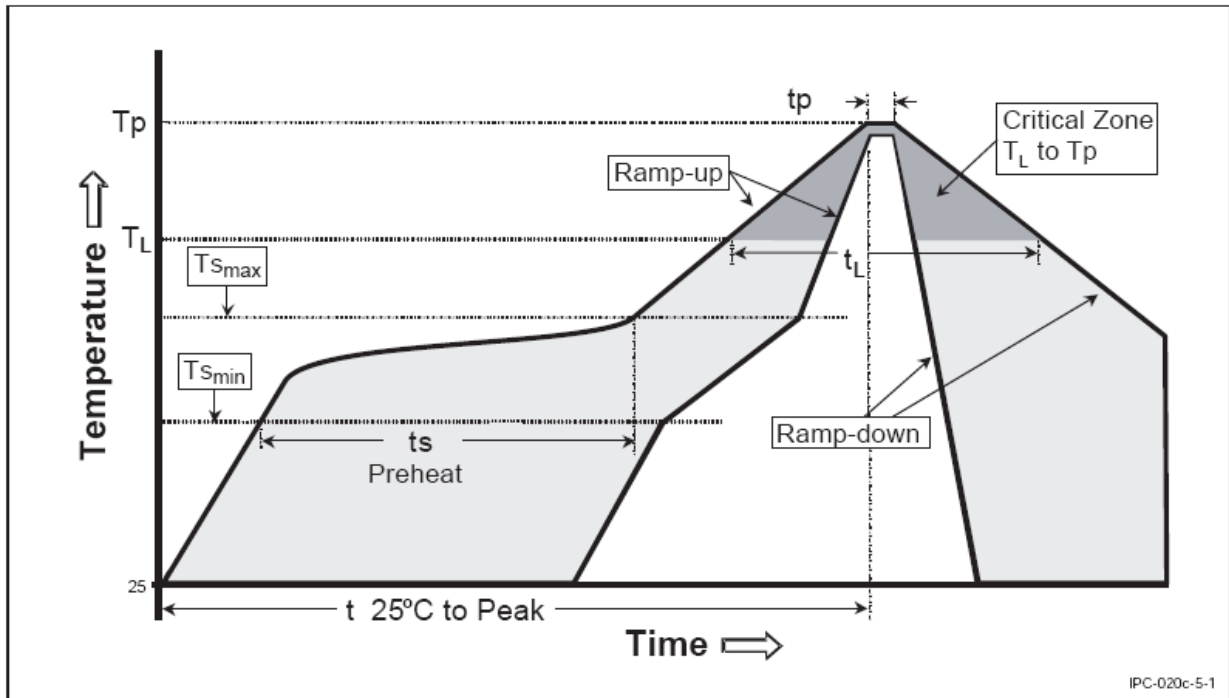
## 7. Typical Characteristics



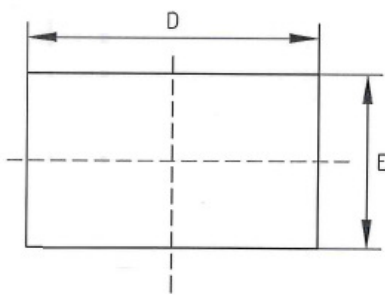
### 8. Soldering Parameters

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

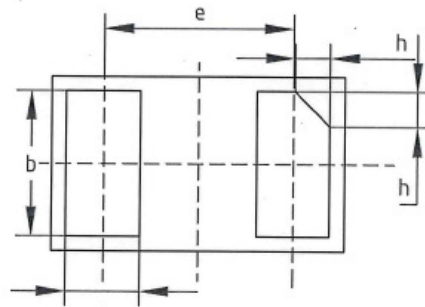
Note: Heat Resistance to Reflow Soldering 3 Cycles



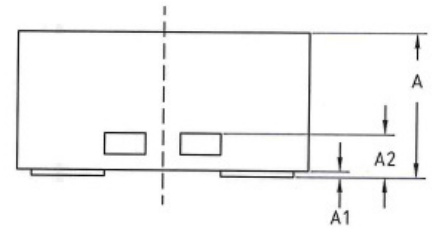
### 9. Outline Dimensions



TOP VIEW



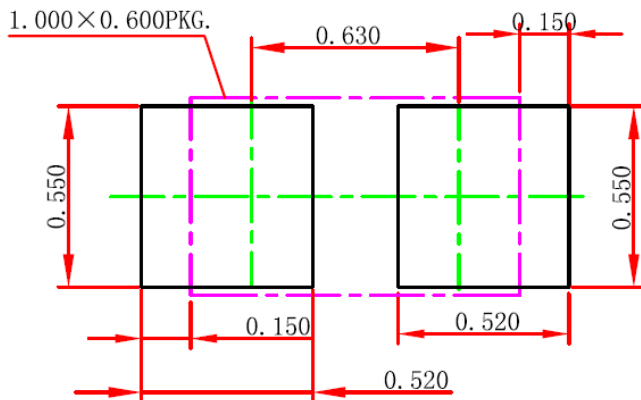
BOTTOM VIEW



SIDE VIEW

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

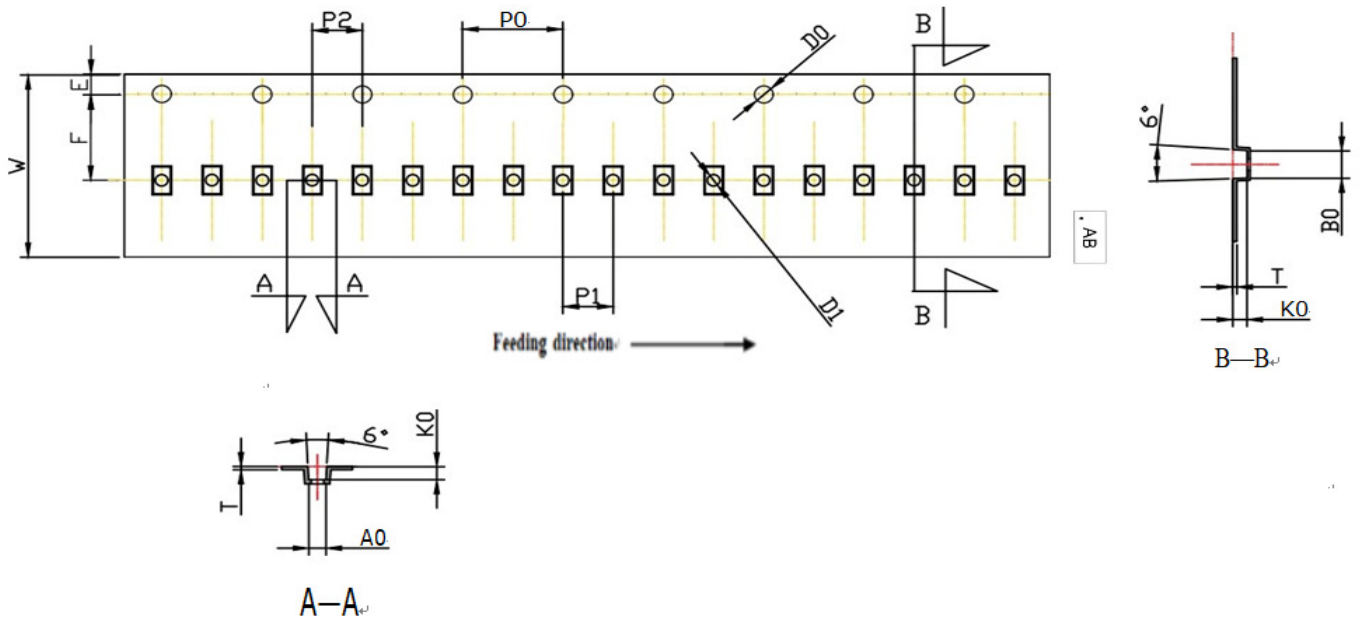
### 10. Pad Layout



**Note:**

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

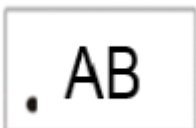
### 11. Tape Information



<b>Symbol</b>	<b>A0</b>	<b>B0</b>	<b>K0</b>	<b>P0</b>	<b>P1</b>	<b>P2</b>
Unit : mm	0.69±0.05	1.18±0.05	0.58±0.05	4±0.1	2±0.05	2±0.05
<b>Symbol</b>	<b>W</b>	<b>T</b>	<b>E</b>	<b>F</b>	<b>D0</b>	<b>D1</b>
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

### 12. Order Information:

Marking Code:



AB = Device code

Part Number	Marking Code	Quantity	Packaging Option
TVN5VB1S-DFN1006-2LDG	.AB	10,000	Tape & reel- 8mm tape/7"reel

### 13. MSL Level:

Level 1