



PRODUCT SPECIFICATION

DOCUMENT NO. ENS000159040

DESCRIPTION	DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY
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TVC5VB1SD-DFN0603-2LDG Engineering Specification

1. Features

- ESD Protection for line
- IEC 61000-4-2 (ESD): ±10kV(Contact)±15kV(Air)
- IEC 61000-4-5 (Lightning): 4 A (8/20µs)
- Junction Capacitance: 0.18 pF
- DFN0603-2L(0.6mm X 0.3mm X 0.3mm))
- Pb-Free/Halogen Free/BFR Free and RoHS Compliant

2. Applications

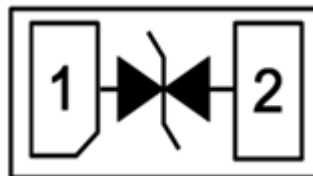
- USB 3.1/3.2/4.0
- Type-C
- Thunderbolt
- Mobile Phone

3. Explanation of Part Number

<u>TV</u>	<u>C</u>	<u>5V</u>	<u>B1</u>	<u>SD</u>	<u>-DFN0603</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: 5V=5V
- (4) Direction/Channel Code : B=Bi-directional, 1=Channel
- (5) Control Code
- (6) Package Size
- (7) Pin Code: 2L: 2 Pins
- (8) Inpaq Control Code

4. Circuit Diagram & Pin Configuration



5. Maximum Ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit	
IEC 61000-4-2 ESD Voltage	Air Model Contact Model	$V_{\text{ESD}}^{(1)}$	± 15	kV
			± 10	
Peak Pulse Current	$I_{\text{PP}}^{(2)}$	4	A	
Operating Temperature Range	T_{J}	-55 ~ +125	$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$	
Lead Soldering Temperature	T_{SOL}	260	$^{\circ}\text{C}$	

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

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

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

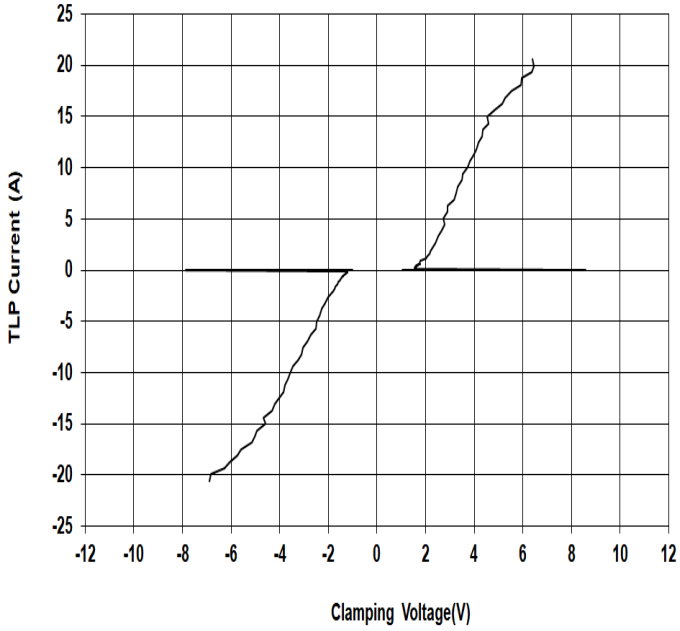
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Reverse stand-off voltage	$V_{\text{RWM}}^{(1)}$				5	V
Reverse Leakage Current	I_{R}	$V_{\text{RWM}} = 5\text{V}, T = 25^{\circ}\text{C}$			1.0	μA
Breakdown Voltage	V_{B}	$I_{\text{BR}} = 1\text{mA}, \text{Pin1 to Pin2}$	6			V
TLP Clamping Voltage ($t_{\text{period}}=100\text{ns}, t_{\text{r}}=1\text{ns}$)	V_{C}	$I_{\text{PP}} = 16\text{A}, \text{Pin1 to Pin2}$		4.7		V
Junction Capacitance	C_{ESD}	$V_{\text{R}} = 0\text{V}, f = 1\text{MHz}$		0.18		pF

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

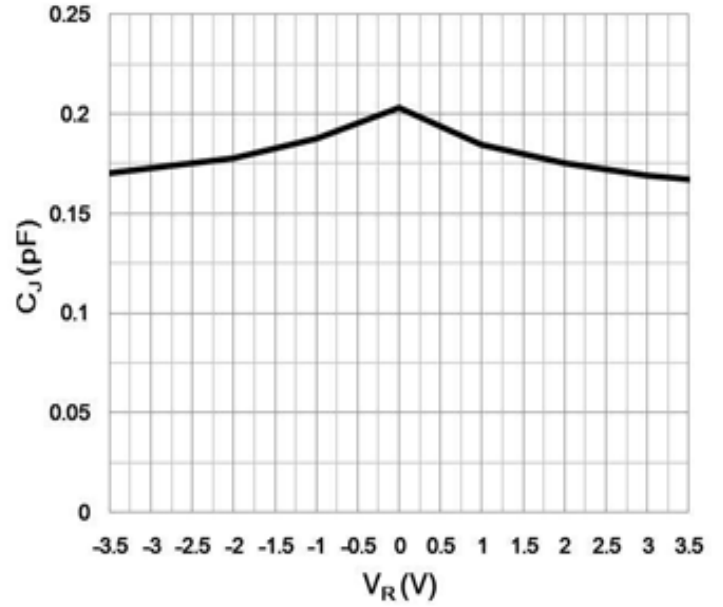
(2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

7. Typical Characteristics

TLP Clamping Voltage

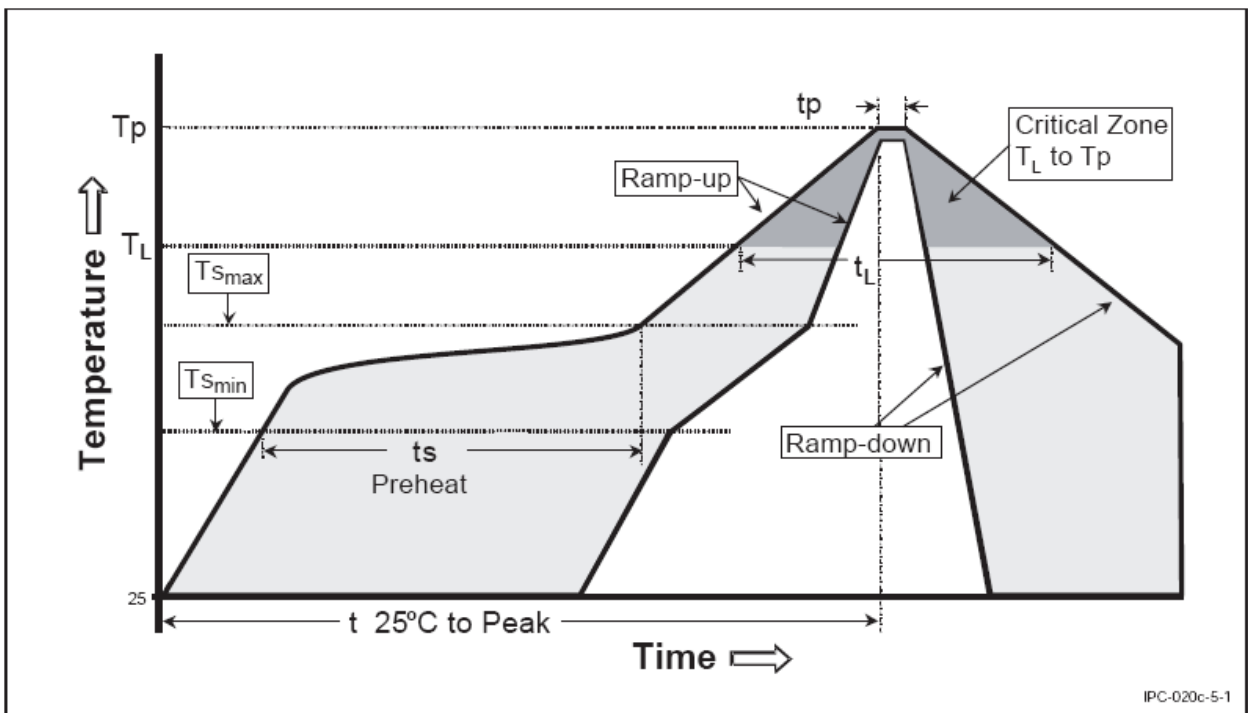


Junction Capacitance

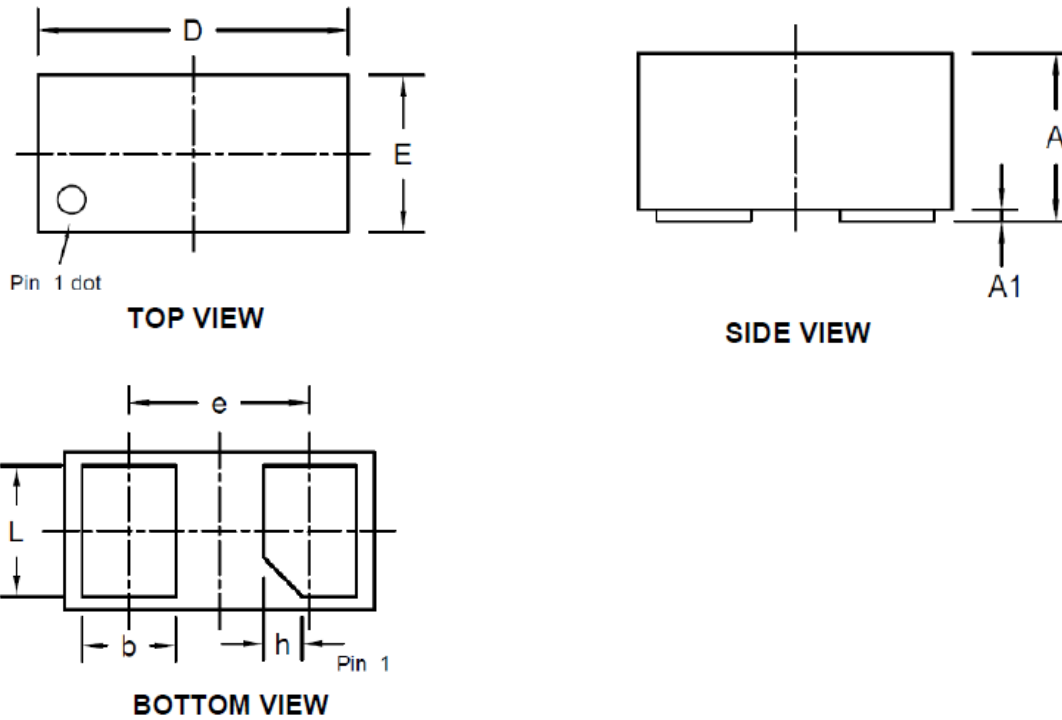


8. Soldering Parameters

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.

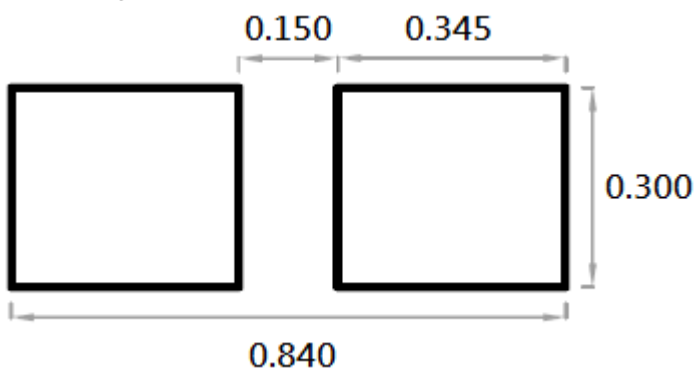


9. Package Outline



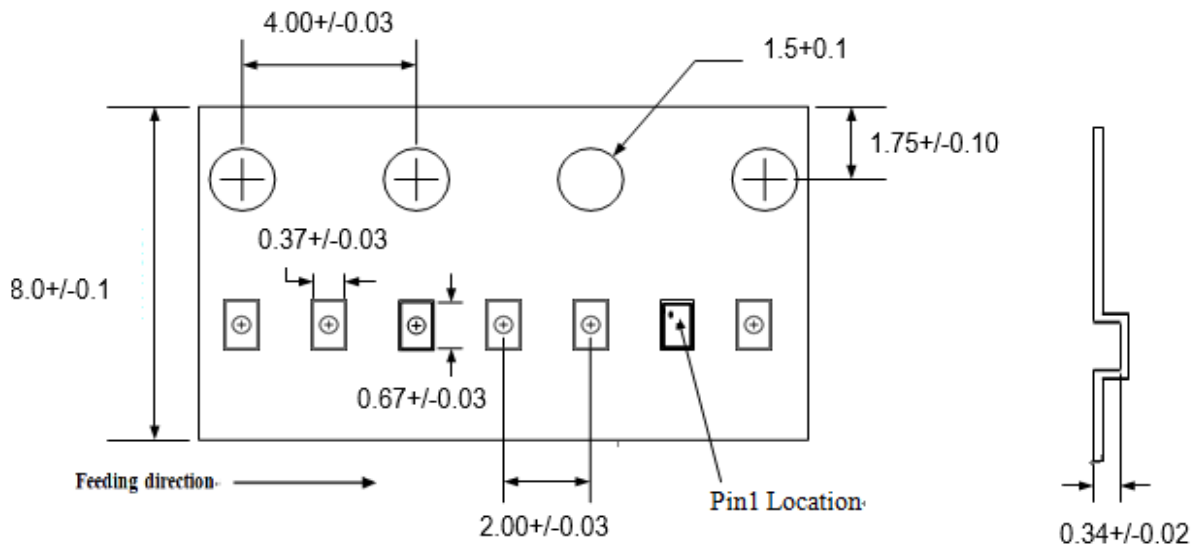
Symbol	Millimeters		
	MIN	TYP	MAX
A	0.25	0.30	0.35
A1	0	0.02	0.05
b	0.13	0.18	0.24
D	0.55	0.60	0.65
E	0.25	0.30	0.35
e	0.35 BSC		
L	0.20	0.25	0.30
h	0	0.05	0.10

10. Pad Layout



Unit : mm

11. Tape Information



12. Order Information

Marking Code



E=Device Code

Part Number	Marking Code	Quantity	Packaging Option
TVC5VB1SD-DFN0603-2LDG	.E	12,000pcs/reel	Tape & reel- 8mm tape/7"reel

13. MSL Description

MSL Level 3