



Transient Voltage Suppressors

ESD Protection Diodes with Ultra–Low Capacitance

The FTVL3.3BUL2 is designed to protect voltage sensitive components that require ultra low capacitance from ESD and transient voltage events. Excellent clamping capability, low capacitance, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed and antenna line applications.

Specification Features:

- Ultra Low Capacitance 0.5 pF
- Low Clamping Voltage
- Small Body Outline Dimensions:
0.039" x 0.024" (1.00 mm x 0.60 mm)
- Low Body Height: 0.020" (0.5mm)
- Stand–off Voltage: 3.3 V
- Low Leakage
- Response Time is Typically < 1.0 ns
- IEC61000–4–2 Level 4 ESD Protection
- This is a Pb–Free Device

QUALIFIED MAX REFLOW TEMPERATURE: Device Meets MSL 1 Requirements 260 °C



Ordering information

Device	Marking	Shipping
FTVL3.3BUL2	S	10000/Tape&Reel

MAXIMUM RATINGS

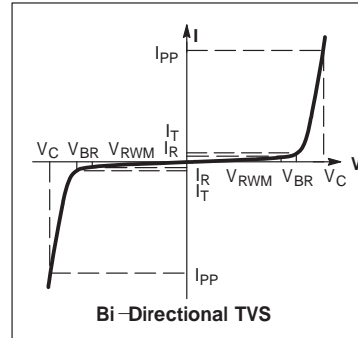
Rating	Symbol	Value	Unit
IEC 61000–4–2 (ESD) Contact Air		± 10 ± 15	kV
Total Power Dissipation on FR–5 Board (Note 1) @ TA = 25 °C	P _D	150	mW
Storage Temperature Range	T _{stg}	–55 to +150	°C
Junction Temperature Range	T _J	–55 to +125	°C
Lead Solder Temperature–Maximum (10 Second Duration)	T _L	260	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR–5 = 1.0 x 0.75 x 0.62 in.

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_F	Forward Current
V_F	Forward Voltage @ I_F
P_{pk}	Peak Power Dissipation
C	Capacitance @ $V_R = 0$ and $f = 1.0$ MHz



ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

Device	Device Marking	V_{RWM} (V)	I_R (μ A) @ V_{RWM}	V_{BR} (V) @ I_T (Note 2)	I_T	C (pF)		V_C (V) @ $I_{PP} = 1$ A (Note 3)	V_C Per IEC61000-4-2 (Note 4)
		Max	Max	Min		mA	Typ	Max	
FTVL3.3BUL2	S	3.3	1.0	4.8	1.0	0.5	0.9	10	Figures 1 and 2 See Below

- V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C.
- Surge current waveform per Figure 4.
- For test procedure see Figures 3.

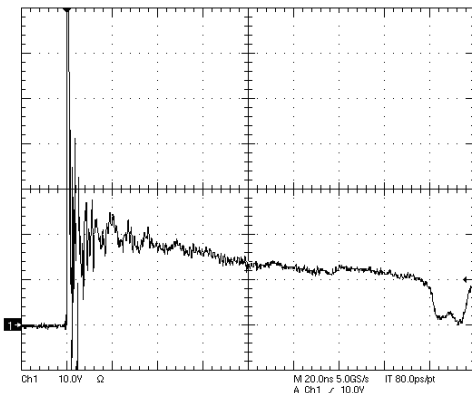


Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV Contact per IEC61000-4-2

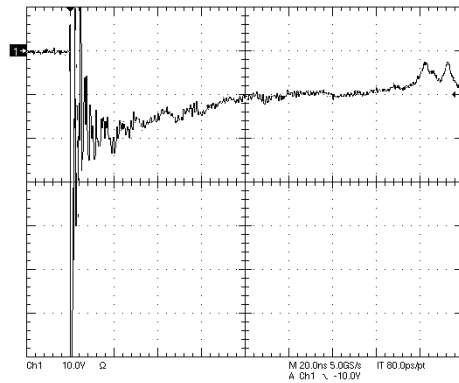


Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV Contact per IEC61000-4-2

IEC 61000-4-2 Spec.

Level	Test Voltage (kV)	First Peak Current (A)	Current at 30 ns (A)	Current at 60 ns (A)
1	2	7.5	4	2
2	4	15	8	4
3	6	22.5	12	6
4	8	30	16	8

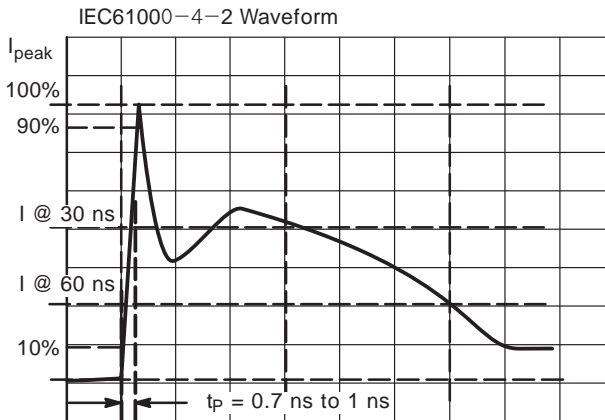


Figure 3. IEC61000-4-2 Spec

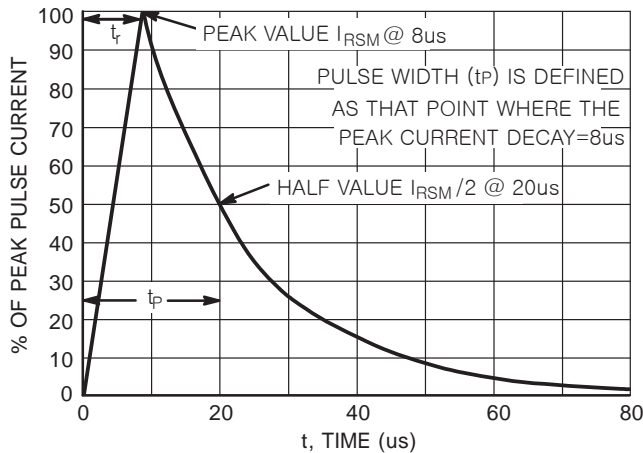


Figure 4. 8 X 20us Pulse Waveform

SOD-882 / ULP-2

DIMENSION OUTLINE

Unit:mm

