

TQELL1123V3

Ultra-low Capacitance Bidirectional Micro Packaged TVS Diodes for ESD Protection

● Description

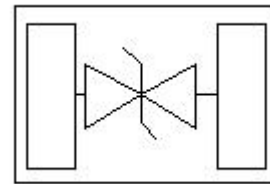
The TQELL1123V3 is designed with TECH CHIP process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium. Also because of its low capacitance, it is suited for use in high frequency designs such as USB 2.0 high speed, USB 3.0 super speed, USB 3.1 super speed ,VGA, DVI, HDMI, eSATA and other high speed line applications.

It has been specifically designed to protect sensitive components which are connected to data and transmission lines from over voltage caused by ESD(electrostatic discharge), and EFT (electrical fast transients).

● Feature

- 30W peak pulse power ($t_P = 8/20\mu s$)
- DFN0603-2L Package
- Working voltage: 5V
- Low clamping voltage
- Low capacitance
- RoHS compliant transient protection for high speed data lines to IEC61000-4-2(ESD) $\pm 15kV$ (air), $\pm 8kV$ (contact)

● PIN configuration



DFN0603-2L

● Applications

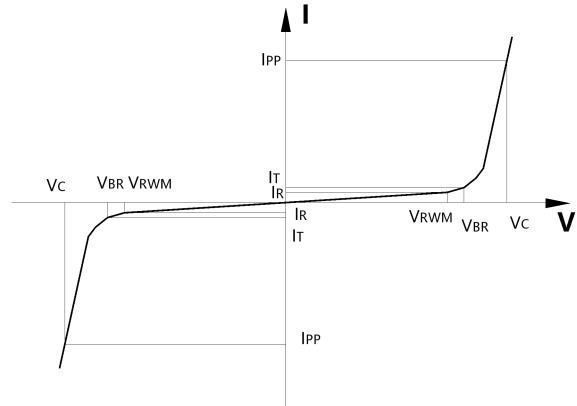
- USB 1.0/2.0/3.0/3.1,VGA,DVI,SDI
- DVI & HDMI Port Protection
- Serial and Parallel Ports
- Mobile Handsets
- Notebooks, Desktops, Servers
- High Speed Line
- Portable instrumentation

● Mechanical data

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260°C
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 μm
- Pin flatness: $\leq 3mil$

● **Electronic Parameter**

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Pulse Power
C	Junction Capacitance



● **Absolute maximum rating @TA=25°C**

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20μS)	30	W
T_{STG}	Storage Temperature	-55/+150	°C
T_J	Operating Temperature	-55/+150	°C

● **Electrical Characteristics @TA=25°C**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Peak Reverse Working Voltage	V_{RWM}			3.3		V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$		4		V
Reverse Leakage Current	I_R	$V_{RWM} = 5.0\text{V}, T = 25^\circ\text{C}$			0.1	μA
Clamping Voltage	V_C	$I_{PP} = 2\text{A}, t_P = 8/20\mu\text{s}$		14		V
Junction Capacitance	C_J	$V_R = 0\text{V}, f = 1\text{MHz}$		0.12	0.22	pF

- **Typical Performance Characteristics**

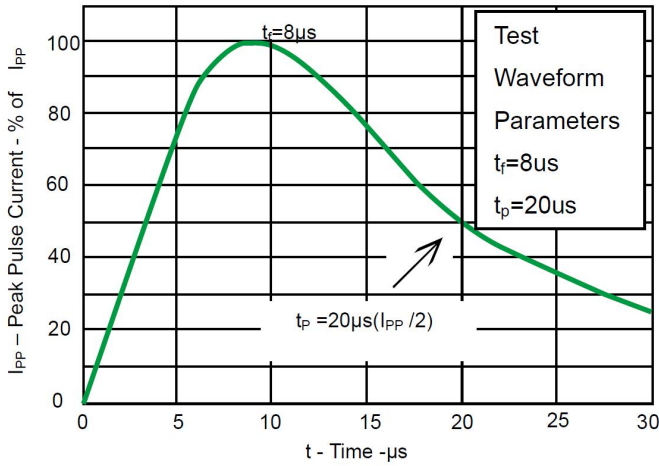


Fig 1. Pulse Waveform

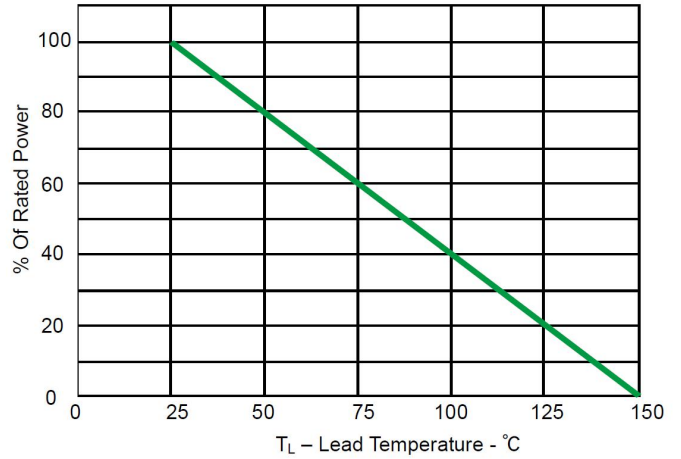
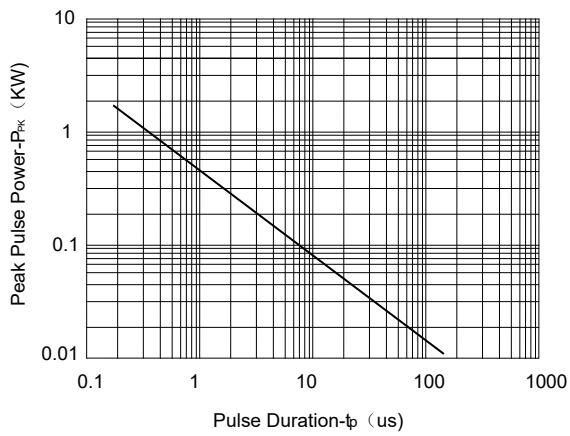


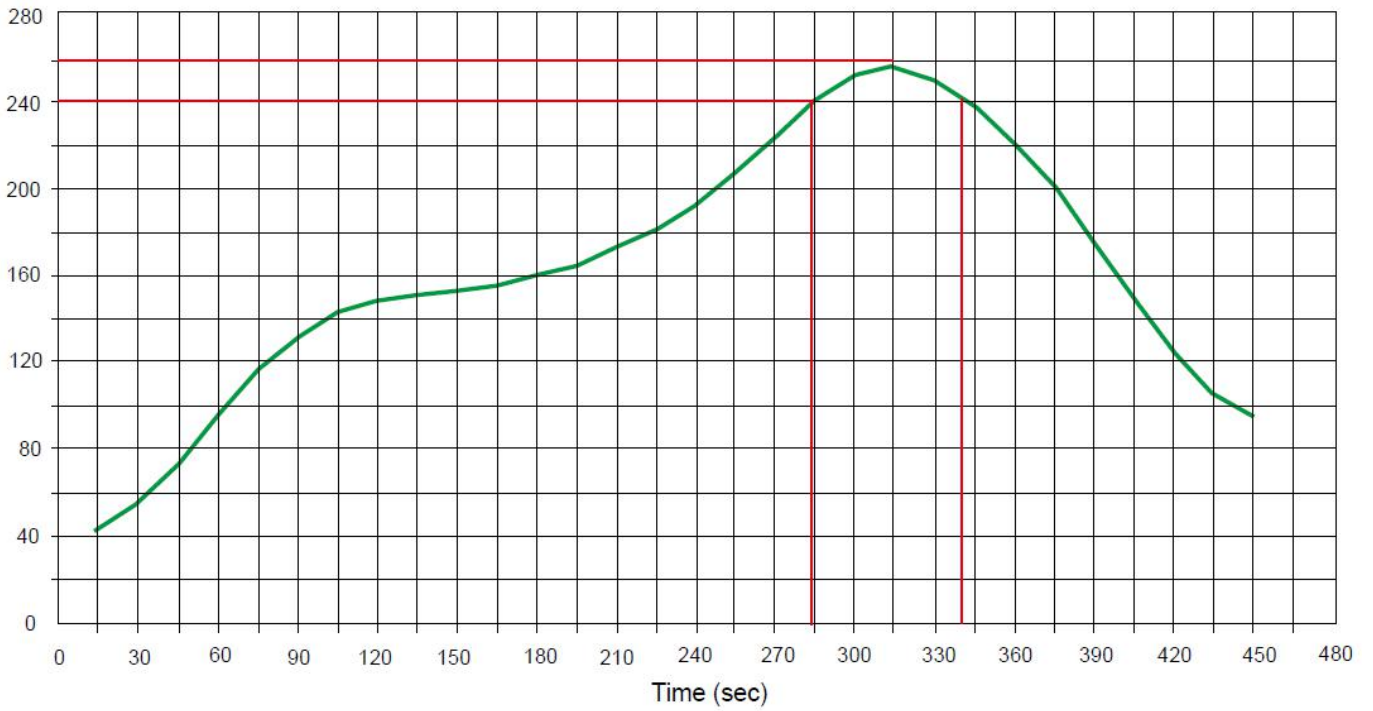
Fig 2. Power Derating Curve



Non-Repetitive Peak Pulse Power vs. Pulse Time

- **Solder Reflow Recommendation**

Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



- **Package Information**

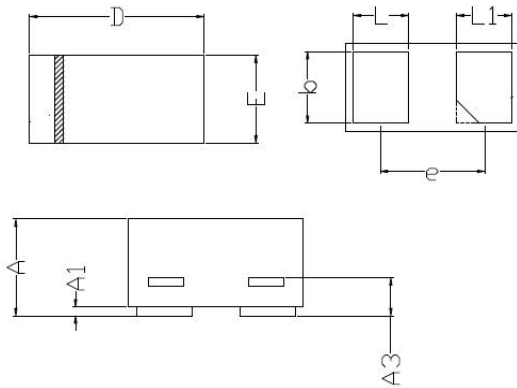
Ordering Information

Device	Package	Qty per Reel	Reel Size
TQELL1123V3	DFN0603-2L	15000	7 Inch

Mechanical Data

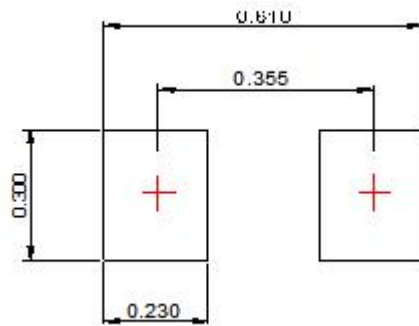
Case: DFN0603-2L

Case Material: Molded Plastic. UL Flammability



DIM	Millimeters	
	Min	Max
A	0.230	0.330
A1	0.000	0.050
A3	0.102REF	
D	0.550	0.650
E	0.250	0.350
b	0.215	0.275
L	0.115	0.175
L1	0.115	0.175
e	0.40BSC	

Recommended Pad outline



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