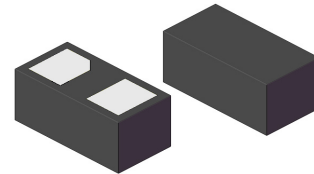


## Features

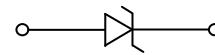
- Unidirectional configurations
- R2R + Zener technology
- Low clamping voltage
- Low leakage current
- Ultra low capacitance ( $C_j=0.3\text{pF typ.}$ )
- Protection one data/power line to:
  - IEC 61000-4-2  $\pm 10\text{kV}$  contact  $\pm 15\text{kV}$  air
  - IEC 61000-4-4 (EFT) 40A (5/50ns)
  - IEC 61000-4-5 (Lightning) 3A (8/20 $\mu\text{s}$ )
- RoHS compliant



DFN0603-X1

## Applications

- USB3.0, Firewire, DVI, HDMI, S-ATA
- Thunderbolt, Display Port
- Mobile HDMI Link, MDDI, MIPI, SWP / NFC



Schematic Diagram

## Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Junction Temperature	$T_J$	-55 to +125	$^\circ\text{C}$
Storage Temperature	$T_{\text{STG}}$	-55 to +150	$^\circ\text{C}$
Lead Soldering Temperature	$T_L$	260 (10sec.)	$^\circ\text{C}$
Peak Pulse Current ( $t_P = 8/20\mu\text{S}$ )	$I_{\text{PP}}$	3	A
IEC 61000-4-2 Contact (ESD)	$V_{\text{ESD}}$	$\pm 10$	kV
IEC 61000-4-2 Air (ESD)	$V_{\text{ESD}}$	$\pm 15$	kV

## Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Reverse stand-off Voltage	$V_{\text{RWM}}$				6.8	V
Reverse Breakdown Voltage	$V_{\text{BR}}$	$I_T=1\text{mA}$	7.3	7.6	9.5	V
Reverse Leakage Current	$I_{\text{R}}$	$V_{\text{R}}=5\text{V}$		0.01	1	$\mu\text{A}$
Clamping Voltage (IEC 61000-4-5)	$V_{\text{C}}$	$I_{\text{PP}}=3\text{A}, T_P=8/20\mu\text{S}$		10		V
Trigger Voltage (IEC 61000-4-2)	$V_{\text{T}}$	$V_{\text{ESD}}=8\text{kV}$		135		V
Clamping Voltage (IEC 61000-4-2)	$V_{\text{C}}$	$V_{\text{ESD}}=8\text{kV}$		20		V
Junction Capacitance	$C_J$	$V_{\text{R}}=0\text{V}, f=1\text{MHz}$		0.3		pF

## Typical Characteristic Curves

Fig.1 Pulse Waveform-ESD(IEC61000-4-2)

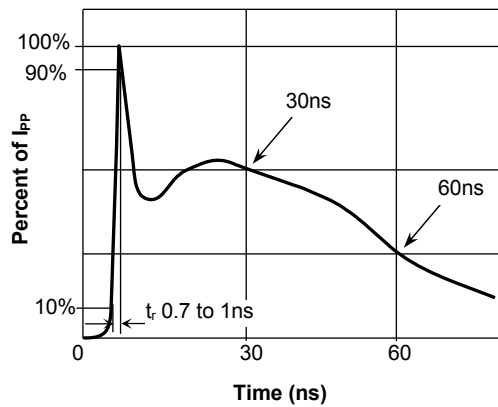


Fig.2 IEC61000-4-2 +8kV Contact ESD Clamping Waveform

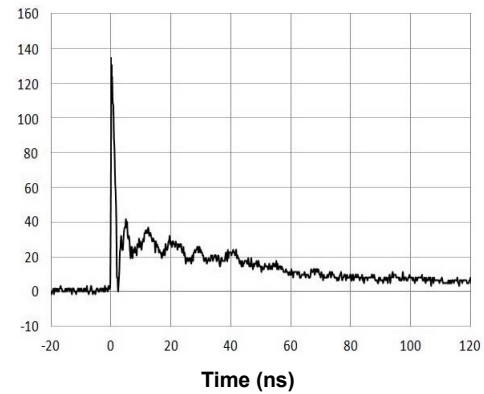


Fig.3 Eye Diagram - USB3.1 at 10Gbps per channel (with SPESUC7VD0603-2U)

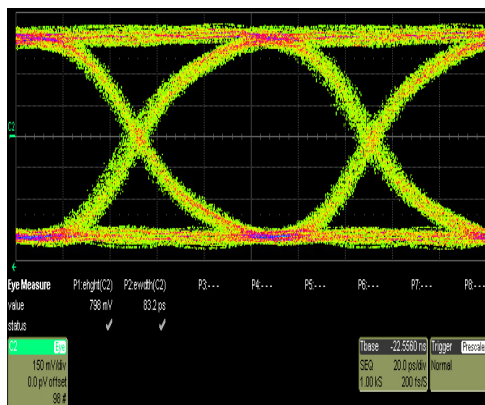
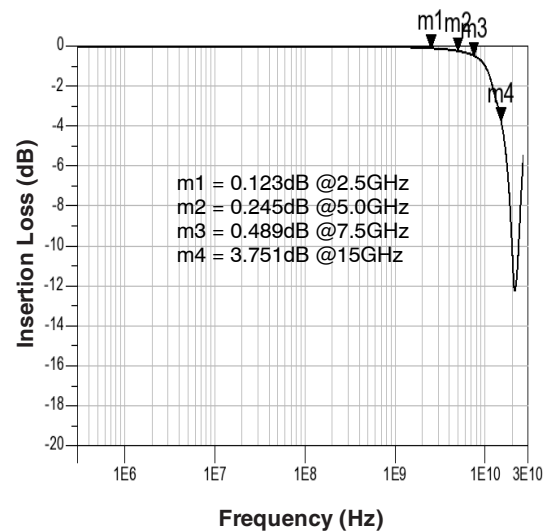
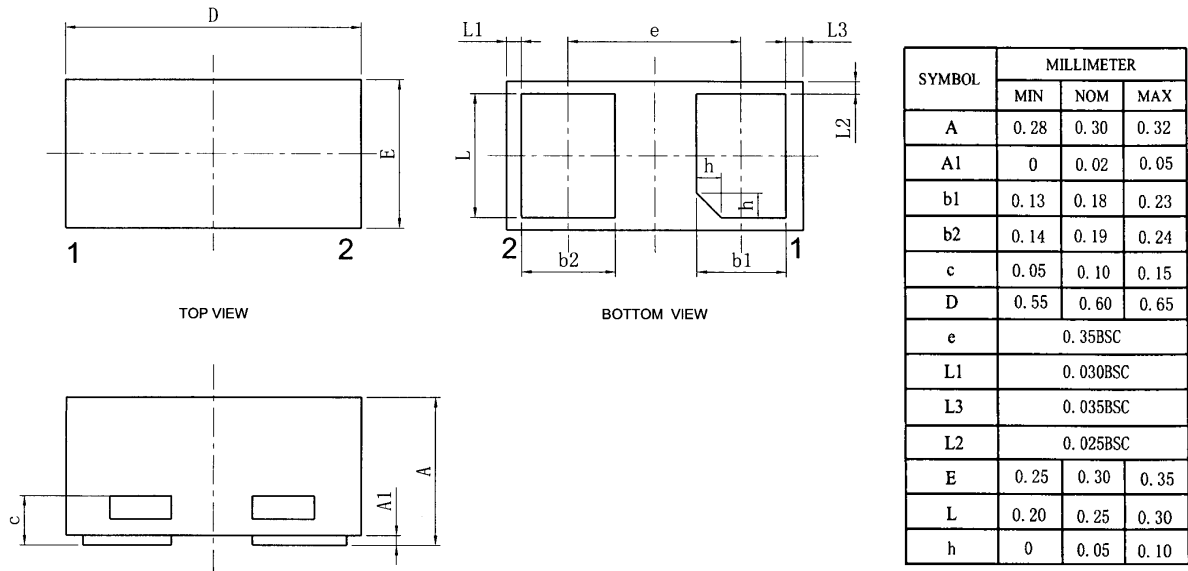


Fig.4 Insertion Loss S21 - I/O to I/O



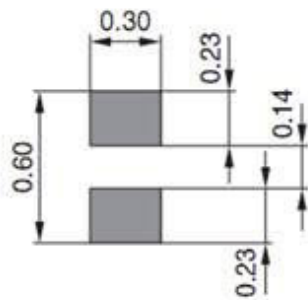
## Package Outline Dimensions

DFN0603-X1



## Recommended Footprint

Unit: mm



## Order Information

Device	Package	Carrier	Quantity	HSF Status
SPESUC7VD0603-2U	DFN0603-X1	Tape & Reel	15000pcs / Reel	RoHS Compliant