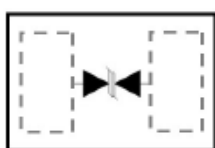


Transient Voltage Suppressor

DFN0603
WESD5V01CUX



Description

WESD5V01CUX is an Ultra Low Capacitance ESD Protection Device designed to provide electrostatic discharge (ESD) protection for high-speed differential lines. It offers desirable characteristics for board level protection including fast response time, low operating and clamping voltage, and no device degradation.

WESD5V01CUX features excellent ESD protection characteristics highlighted by low peak ESD clamping voltage, and high ESD withstand voltage per IEC 61000 4-2 (ESD) Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge). WESD5V01CUX has a typical capacitance of only 0.2pF and extremely low insertion loss allowing it to be used on high-speed lines such as Thunderbolt 4 and USB4.

WESD5V01CUX uses ultra-small DFN0603 package ($0.6 \times 0.3 \times 0.3\text{mm}$). The small package gives the designer the flexibility to protect single lines in applications where ESD arrays are not practical.

Features

- Transient protection for high-speed data line
IEC 61000-4-2 (ESD) $\pm 12\text{kV}$ (Contact)
IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
IEC 61000-4-5 (Surge) 4A
- Package optimized for high-speed line
- Ultra-small package ($0.6\text{mm} \times 0.3\text{mm} \times 0.3\text{mm}$)
- Working voltage: 5V
- Snap back featured
- Low capacitance: 0.2pF (Typical)
- Low leakage current
- Low clamping voltage

Applications

- Thunderbolt 3/4
- USB 3.0/3.1/3.2 and 4.0
- USB Type-C
- Consumer electronics

Mechanical Data

- DFN0603 package
- Flammability Rating: UL 94V-0
- Packaging: Tape and Reel
- High temperature soldering guaranteed:
 $260^\circ\text{C} / 10\text{s}$

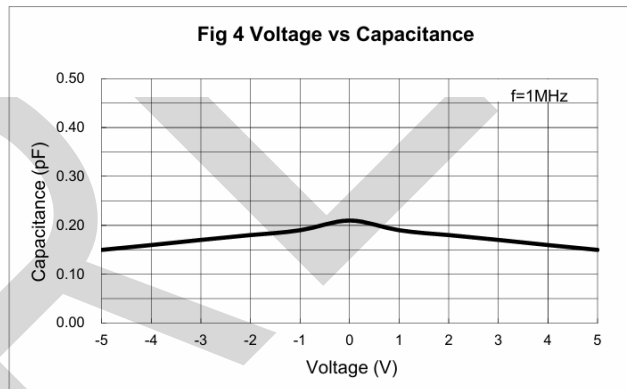
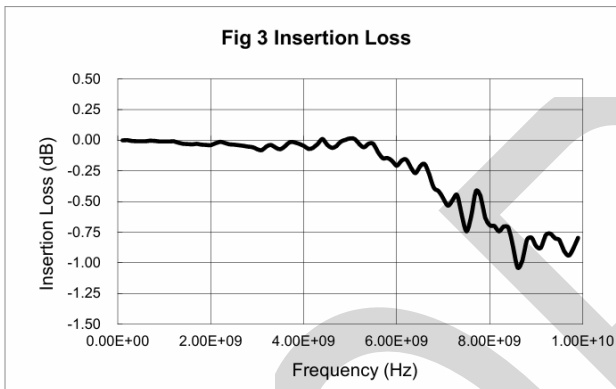
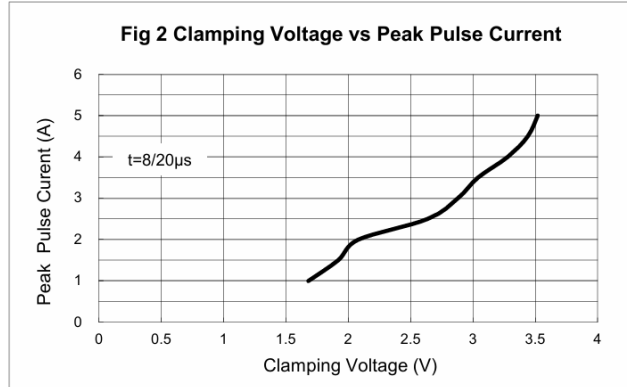
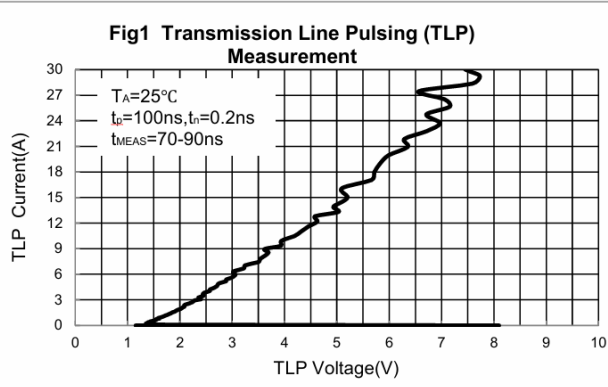
ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	± 12 ± 15	kV
P_{PP}	Peak Pulse Power (8/20 μ s)	20	W
I_{PP}	Peak Pulse Current (8/20 μ s)	4	A
T_{OPT}	Operating Temperature	-50~125	°C
T_{STG}	Storage Temperature	-55~150	°C

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}C$)

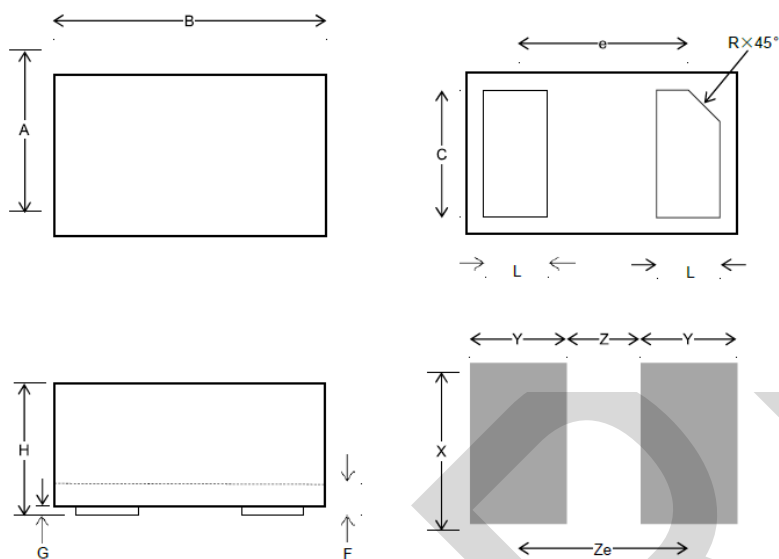
Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Pin to Pin			5	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 0.1mA$	6			V
I_R	Reverse Leakage Current	$V_{RWM} = 5V$			1	μA
V_H	Holding Reverse Voltage	Pin to Pin		1.4		V
I_H	Holding Reverse Current	Pin to Pin		20		mA
V_C	Clamping Voltage	$I_{PP} = 1A, t_p = 8/20\mu s$		1.7	3.5	V
		$I_{PP} = 4A, t_p = 8/20\mu s$		3.3	5	V
$V_{CTL P}$	TLP Clamping Voltage	TLP $I_{PP} = 8A, t_p = 100ns$		3.5		V
		TLP $I_{PP} = 16A, t_p = 100ns$		5.1		V
R_{DYN}	Dynamic Resistance	$I_{TLP} = 4A$ to $I_{TLP} = 16A$		0.14		Ω
C_J	Junction Capacitance	$V_R = 0V$ $f = 1MHz$		0.2	0.3	pF

ELECTRICAL CHARACTERISTICS CURVE



DFN1006 PACKAGE OUTLINE DIMENSIONS

DFN0603



DFN0603			
SYMBOL	Millimeters		
	MIN	NOM	MAX
A	0.29	0.32	0.34
B	0.58	0.62	0.65
C	0.2	0.25	0.3
G	-	0.02	0.05
H	0.28	0.3	0.34
L	0.14	0.19	0.24
e	0.34	0.35	0.37
R	-	0.05	0.1
X		0.27	
Y		0.19	
Z		0.19	
Ze		0.38	

Description of model and identification

W	ESD	5V0	1	C	U	X
Company code		Voltage		Bothway		Package
Product class		Route		pF		