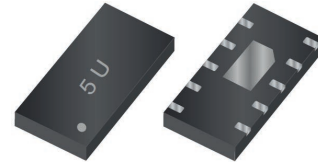


# GSEN5U0015

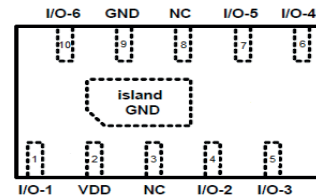
## Ultra Low Capacitance ESD Array

### Features

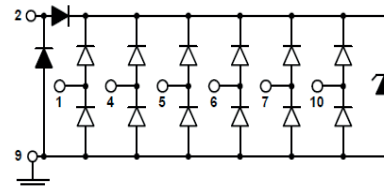
- Protects up to 6 data lines and 1 power line
- R2R + Zener technology
- Low clamping voltage
- Low leakage current
- Ultra low capacitance (0.15pF typical I/O to I/O)
- ESD Protection to:  
IEC 61000-4-2 ±10KV contact, ±15KV air



**DFN4120**



**Pin Configuration**



**Schematic Diagram**

### Applications

- USB 3.0/3.1
- HDMI 1.4/2.0, Display Port 1.3, eSATA
- Unified Display Interface (UDI)
- Digital Visual Interface (DVI)
- High speed serial interfaces

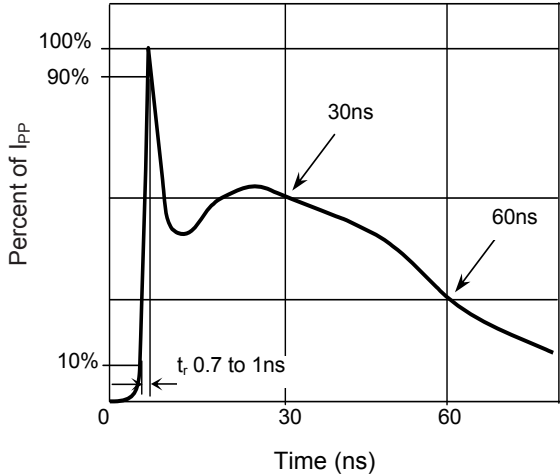
### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise specified)

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

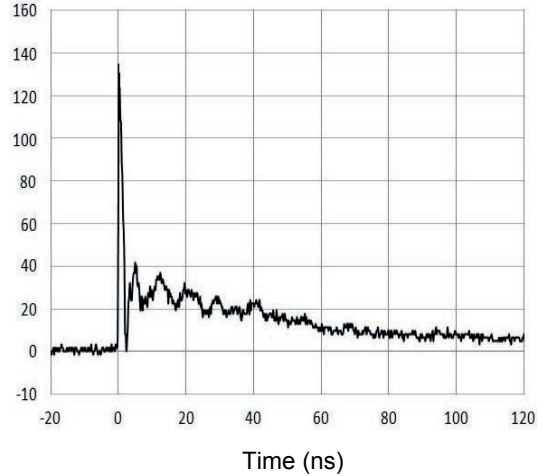
### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Reverse Stand-off Voltage	$V_{RWM}$	-	-		5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1\text{mA}$	6	7.2	-	V
Reverse Leakage Current	$I_R$	$V_R=5.0\text{V}$	-	0.01	1	$\mu\text{A}$
Clamping Voltage (IEC 61000-4-5)	$V_C$	$I_{PP}=3\text{A}$ , $T_p=8/20\mu\text{S}$	-	10	-	V
Clamping Voltage (IEC 61000-4-2)	$V_C$	$V_{ESD}=8\text{kV}$ ( $I_{TLP}=16\text{A}$ )	-	12.3	-	V
Dynamic Resistance	$R_{dyn}$	$I_{TLP}=0\text{A}-20\text{A}$	-	0.35	-	$\Omega$
Junction Capacitance	$C_J$	$V_R=0\text{V}$ , $F=1\text{MHz}$ , I/O to I/O	-	0.15	-	pF
	$C_J$	$V_R=0\text{V}$ , $F=1\text{MHz}$ , I/O to GND	-	0.35	-	pF

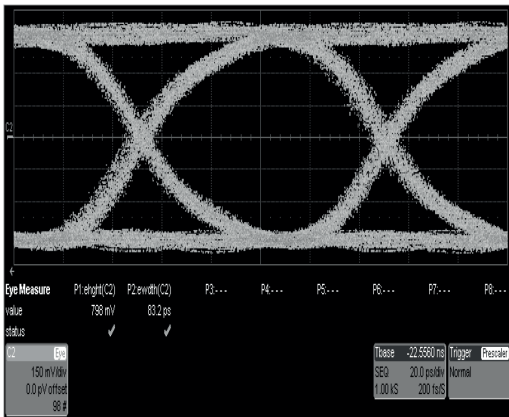
**Typical Characteristic Curves**



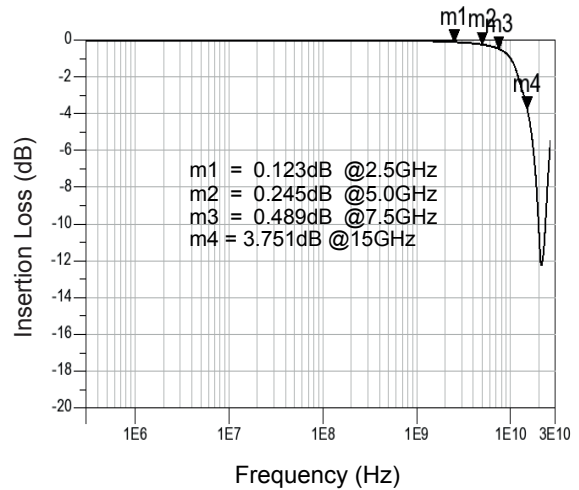
**Figure 1. Pulse Waveform-ESD (IEC61000-4-2)**



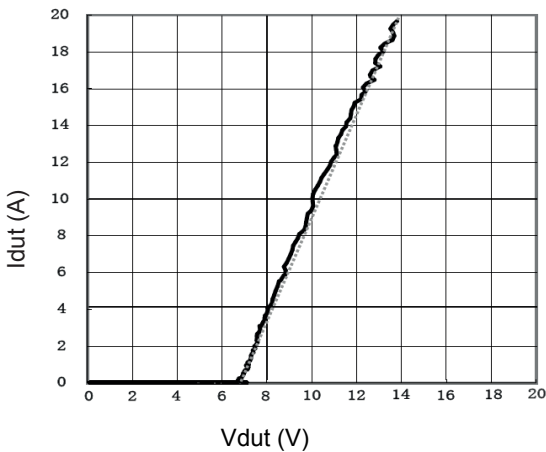
**Figure 2. IEC61000-4-2 +8kV Contact ESD Clamping Waveform**



**Figure 3. Eye Diagram-USB3.1 at 10Gbps per Channel (with GSENP5U0015)**

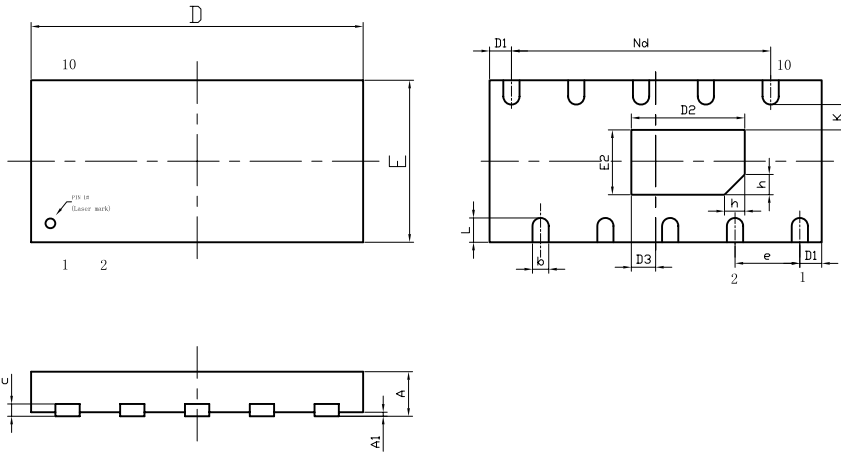


**Figure 4. Insertion Loss S21 - I/O to I/O**



**Figure 5. Transmission Line Pulse ( $t_p=100ns$ )**

**Product Outline Dimensions (DFN4120)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.50	0.60	0.020	0.024
A1	-	0.05	-	0.002
b	0.15	0.25	0.006	0.010
c	0.10	0.20	0.004	0.008
D	4.00	4.20	0.157	0.165
D1	0.20	0.30	0.008	0.012
D2	1.30	1.50	0.051	0.059
D3	0.25	0.35	0.010	0.014
e	0.80 BSC		0.031 BSC	
Nd	3.20 BSC		0.126 BSC	
E	1.90	2.10	0.075	0.083
E2	0.70	0.90	0.028	0.035
K	0.20	-	0.008	-
L	0.25	0.35	0.010	0.014
h	0.15	0.25	0.006	0.010

**Order Information**

MPN	Package	Marking	Quantity	HSF Status
GSENP5U0015	DFN4120	5U	3,000pcs / Reel	RoHS Compliant