

## Ultra Low Capacitance ESD Protection -ESD0524P

### Description

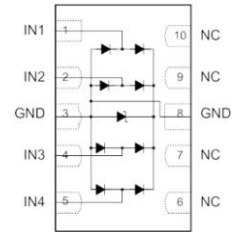
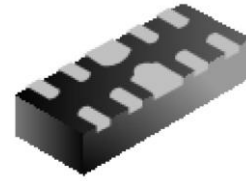
The ESD0524P have a typical capacitance of only 0.35pF between I/O pins. This allows it to be used on circuits operating in excess of 4GHz without signal attenuation. They have been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients). They used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge).

### Features

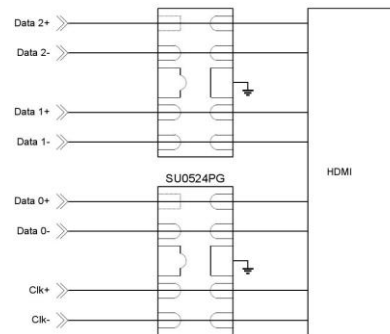
- Case :DFN-10-2.5\*1.0\*0.6-0.5
- Package design optimized for high speed lines
- Low clamping voltage
- Low capacitance :0.35 pF typical (I/O to I/O)
- Protection four I/O Lines
- Compatible with IEC 61000-4-2(ESD) :Air 15KV , Contact 8KV
- Compatible with IEC 61000-4-4(EFT) :40A ,5/50 nS
- Compatible with IEC 61000-4-5(Surge):5A ,8/20 uS

### Applications

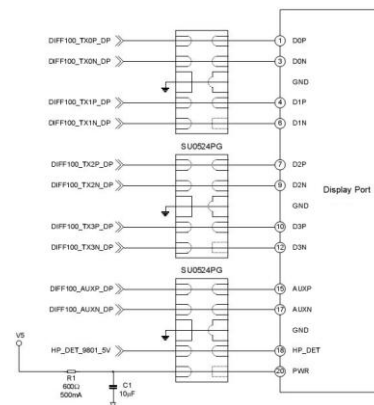
- High Definition Multi-Media Interface (HDMI)
- DisplayPort Interface
- Digital Visual Interface (DVI)
- eSATA Interfaces
- MDDI Ports
- PCI Express



Schematic and PIN Configuration



HDMI Port Protection



Display Port Protection

**Absolute Maximum Ratings**

Parameter	Symbol	Value	Units
Peak Current ( $t_p = 8/20 \mu s$ )	$P_{PK}$	150	W
Peak Current ( $t_p = 8/20 \mu s$ )	$I_{PP}$	5	A
IEC61000-4-2 (Contact)	$V_{ESD}$	8	kV
IEC61000-4-2 (Air)	$V_{ESD}$	15	kV
Lead Soldering Temperature	$T_L$	260 (10 sec)	$^{\circ} C$
Operating Temperature	$T_J$	-50 to +125	$^{\circ} C$
Storage Temperature Range	$T_{STG}$	-50 to +150	$^{\circ} C$

**Electrical Characteristics ( $T = 25^{\circ} C$ )**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	$V_{RWM}$	Any I/O pin to ground			5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_t = 1mA$ Any I/O pin to ground	6			V
Reverse Leakage Current	$I_R$	$V_{RWM} = 5.0V$ , $T = 25^{\circ}C$ Any I/O pin to ground			1	$\mu A$
Clamping Voltage	$V_C$	$I_{PP} = 1A$ , $t_p = 8/20\mu s$ Any I/O pin to ground		8.5	12	V
Junction Capacitance	$C_J$	$V_R = 0V$ , $f = 1MHz$ Between I/O pins		0.35		pF

Rating & Characteristic Curves

Figure 1- Power Derating Curve

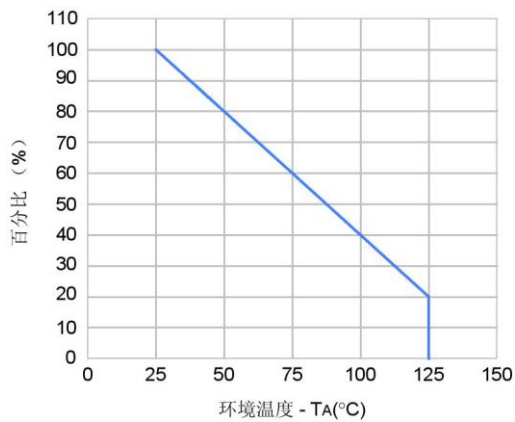


Figure 2- Clamping Voltage vs Current

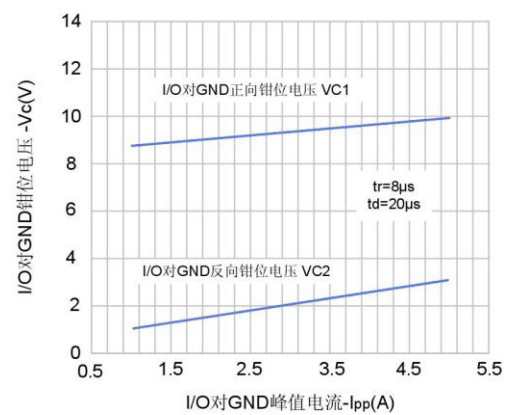


Figure 3- Typical Junction Capacitance

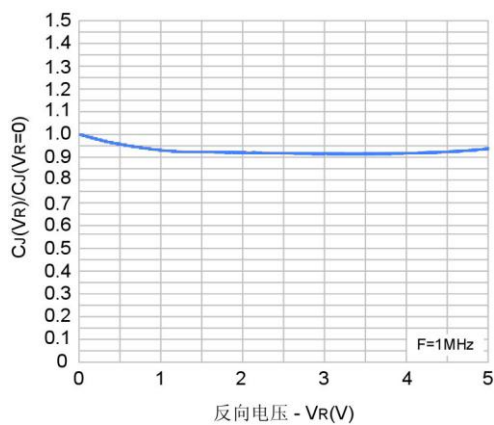


Figure 4- Pulse Waveform

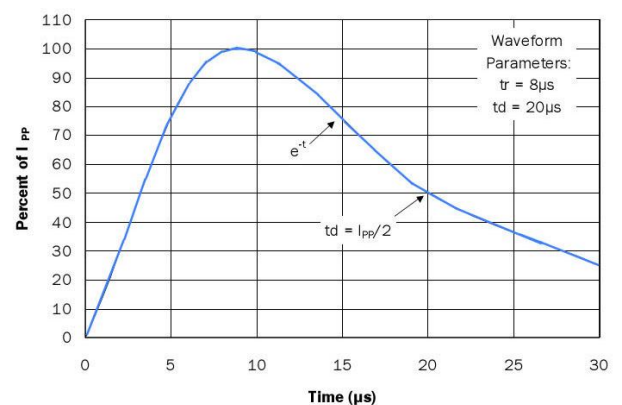
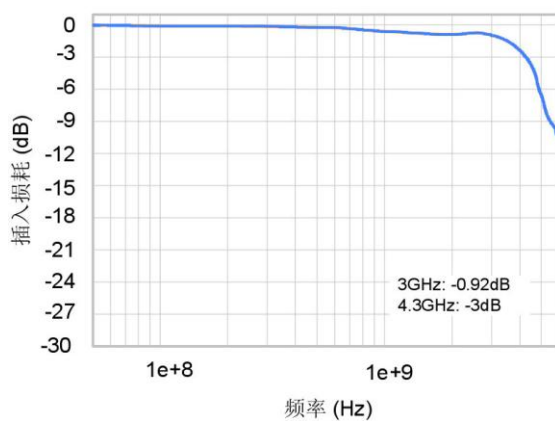
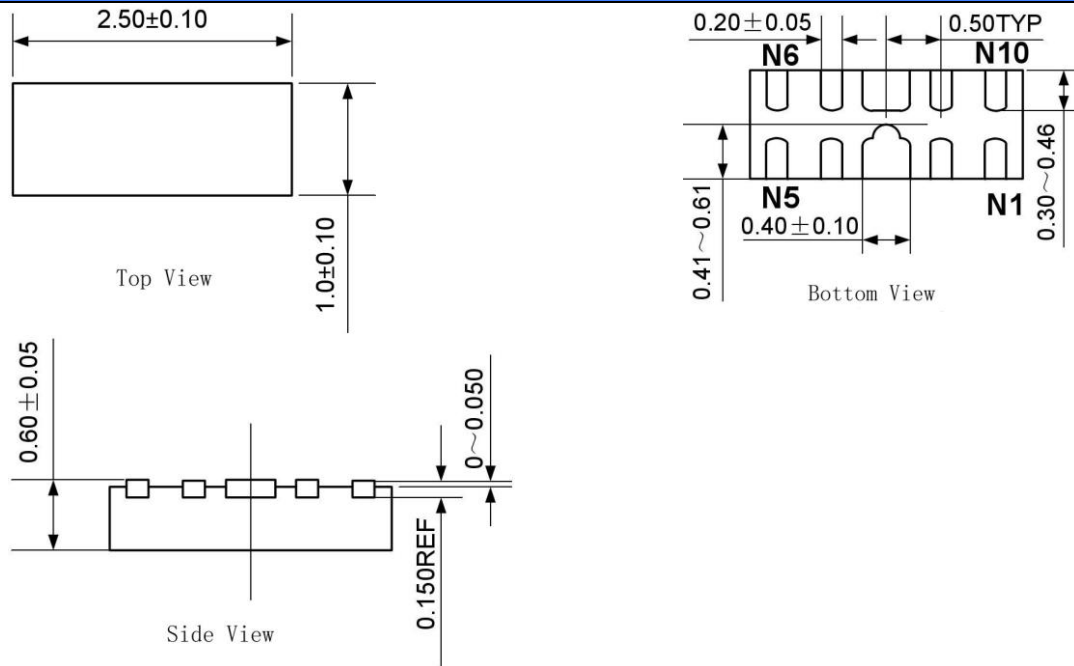


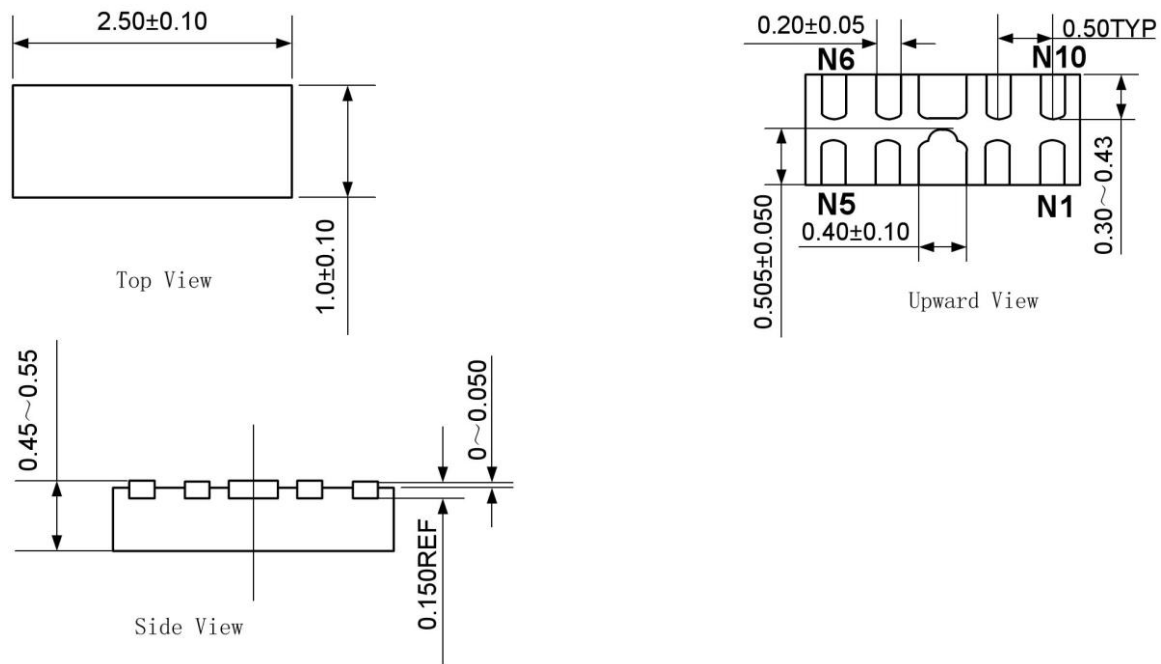
Figure 5- Insertion Loss



**DFN-10-2.5\*1.0\*0.6-0.5 (1)**



**DFN-10-2.5\*1.0\*0.6-0.5 (2)**



**Disclaimer**

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.