

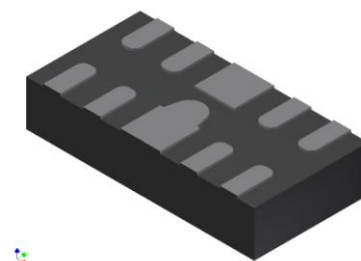
TQ0524P Ultra Low Capacitance Array for ESD Protection

The TQ0524P provides a typical line to line capacitance of 0.3pF between I/O pins and low insertion loss up to 3GHz providing greater signal integrity making it ideally suited for HDMI applications, such as Digital TVs, DVD players, Computing, set-top boxes and MDDI applications in mobile computing devices.

This series has 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).

Features

- Protects two or four I/O lines
- Low capacitance:0.3pf Typical between I/O channel
- Working voltages : 5V
- Low leakage current
- Response Time is < 1 ns
- Meets MSL 1 Requirements
- **Solid-state silicon avalanche technology**
- ROHS compliant
- Tech chip technology



Main applications

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Display Port Interface
- Serial ATA
- PCI Express
- USB 1.1/2.0/3.0/OTG
- IEEE 1394 Firewire Ports
- Projection TV Monitors and Flat Panel Displays
- Notebook Computers
- Set Top Box
- Projection TV

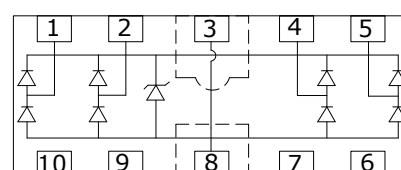
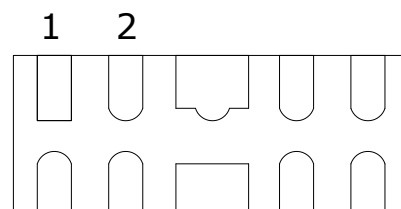
DFN2510

Protection solution to meet

- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 5A (8/20μs)

Ordering Information

Device	Qty per Reel	Reel Size
TQ0524P	3000	7 Inch



Maximum ratings (Tamb=25°C Unless Otherwise Specified)

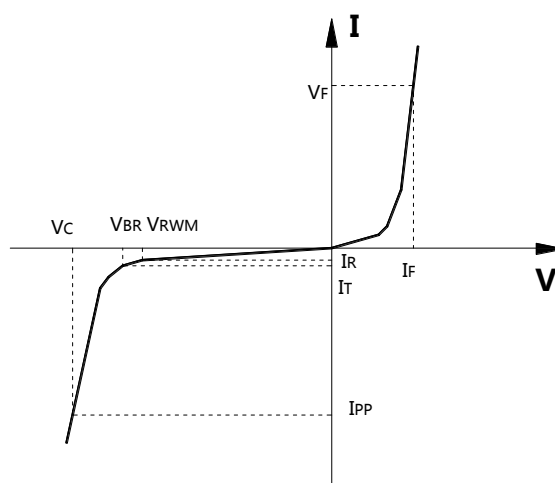
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20μs waveform)	P _{PPP}	150	Watts
Peak Pulse Current(tp=8/20μs waveform)	I _{PP}	5	A
ESD Rating per IEC61000-4-2:			
Contact		8	KV
Air		15	
Lead Soldering Temperature	T _L	260 (10 sec.)	°C
Operating Temperature Range	T _J	-55 ~ 150	°C
Storage Temperature Range	T _{STG}	-55 ~ 150	°C

Electrical characteristics (Tamb=25°C Unless Otherwise Specified)

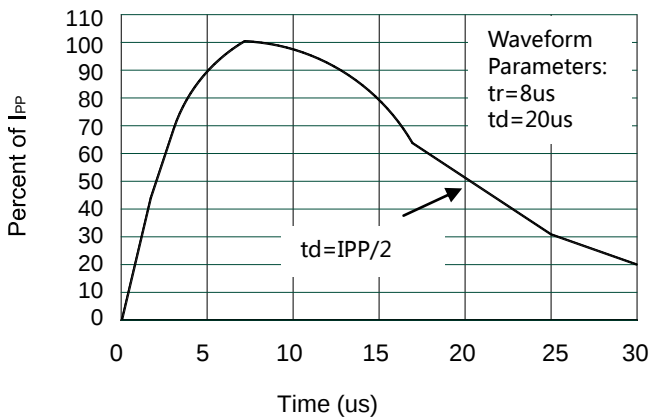
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V _{RWM}	Reverse Working Voltage	Any I/O to Ground			5.0	V
V _{BR}	Reverse Breakdown Voltage	I _T = 1mA, Any I/O to Ground	6.0			V
I _R	Reverse Leakage Current	V _{RWM} = 5V, Any I/O to Ground			1	μA
V _F	Diode Forward Voltage	I _F = 15mA		0.85	1.2	V
V _C	Clamping Voltage	I _{PP} = 1A, tp =8/20μs, any I/O pin to Ground			15.5	V
		I _{PP} = 5A, tp =8/20μs, any I/O pin to Ground			25	V
C _J	Junction Capacitance	V _R = 0V, f = 1MHz, between I/O pins		0.3	0.4	pF
		V _R = 0V, f = 1MHz, any I/O pin to Ground		0.45	0.8	pF

Junction capacitance is measured in VR=0V,F=1MHz

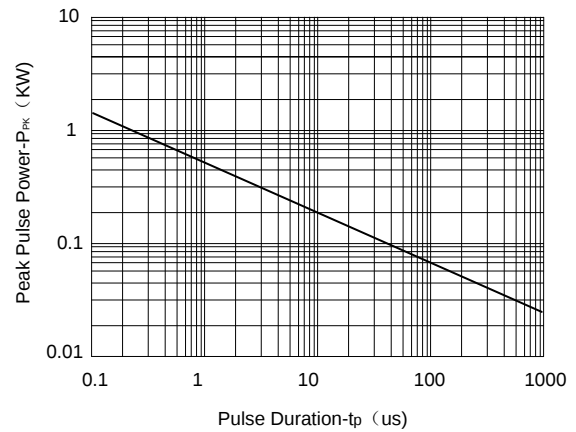
Symbol	Parameter
V _{RWM}	Working Peak Reverse Voltage
V _{BR}	Breakdown Voltage @ I _T
V _C	Clamping Voltage @ I _{PP}
I _T	Test Current
I _{RM}	Leakage current at V _{RWM}
I _{PP}	Peak pulse current
C _O	Off-state Capacitance
C _J	Junction Capacitance



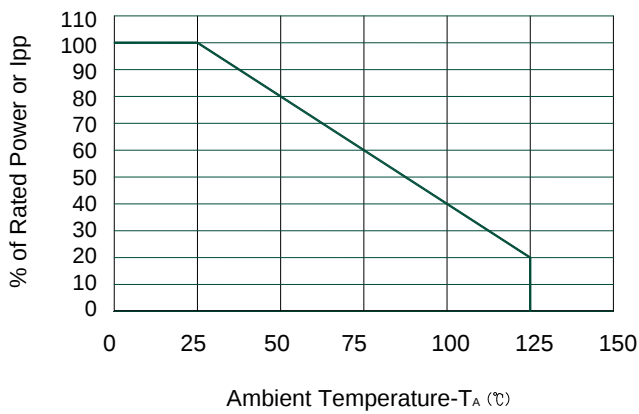
Typical electrical characterist applications



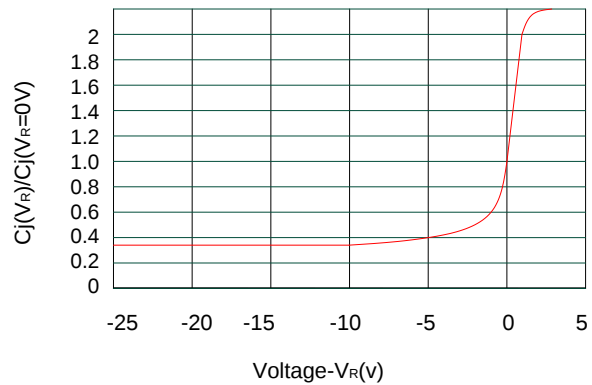
Pulse Waveform



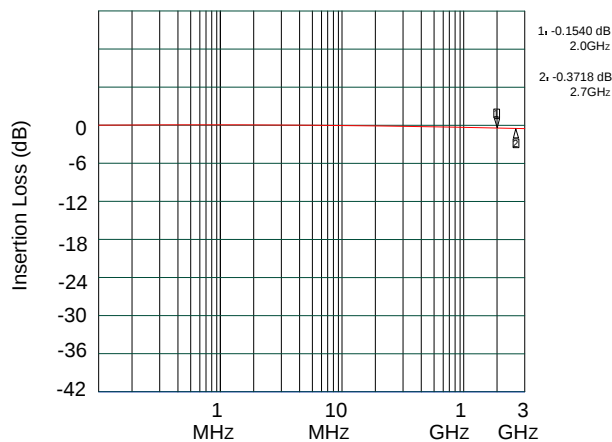
Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve



Junction Capacitance vs. Reverse Voltage

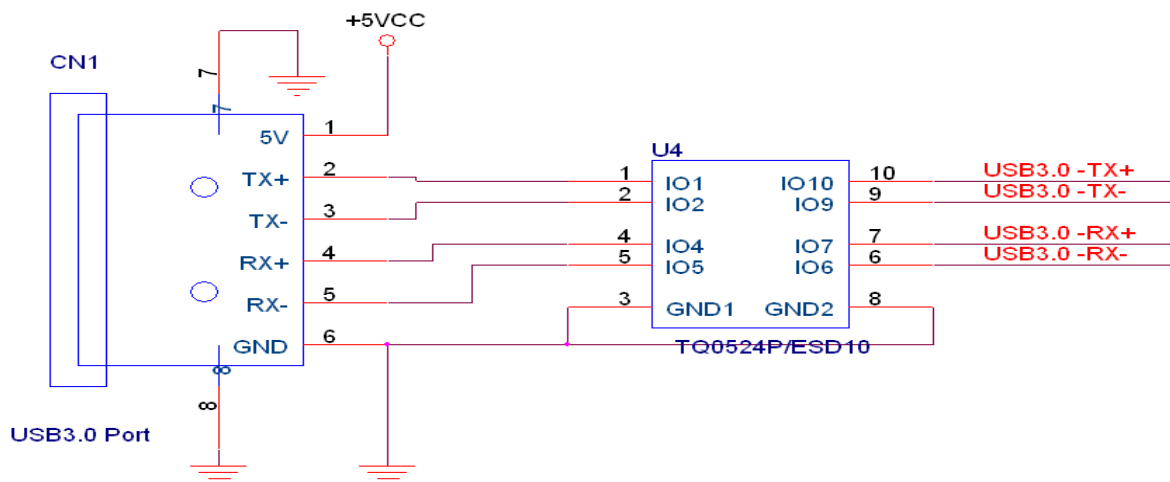
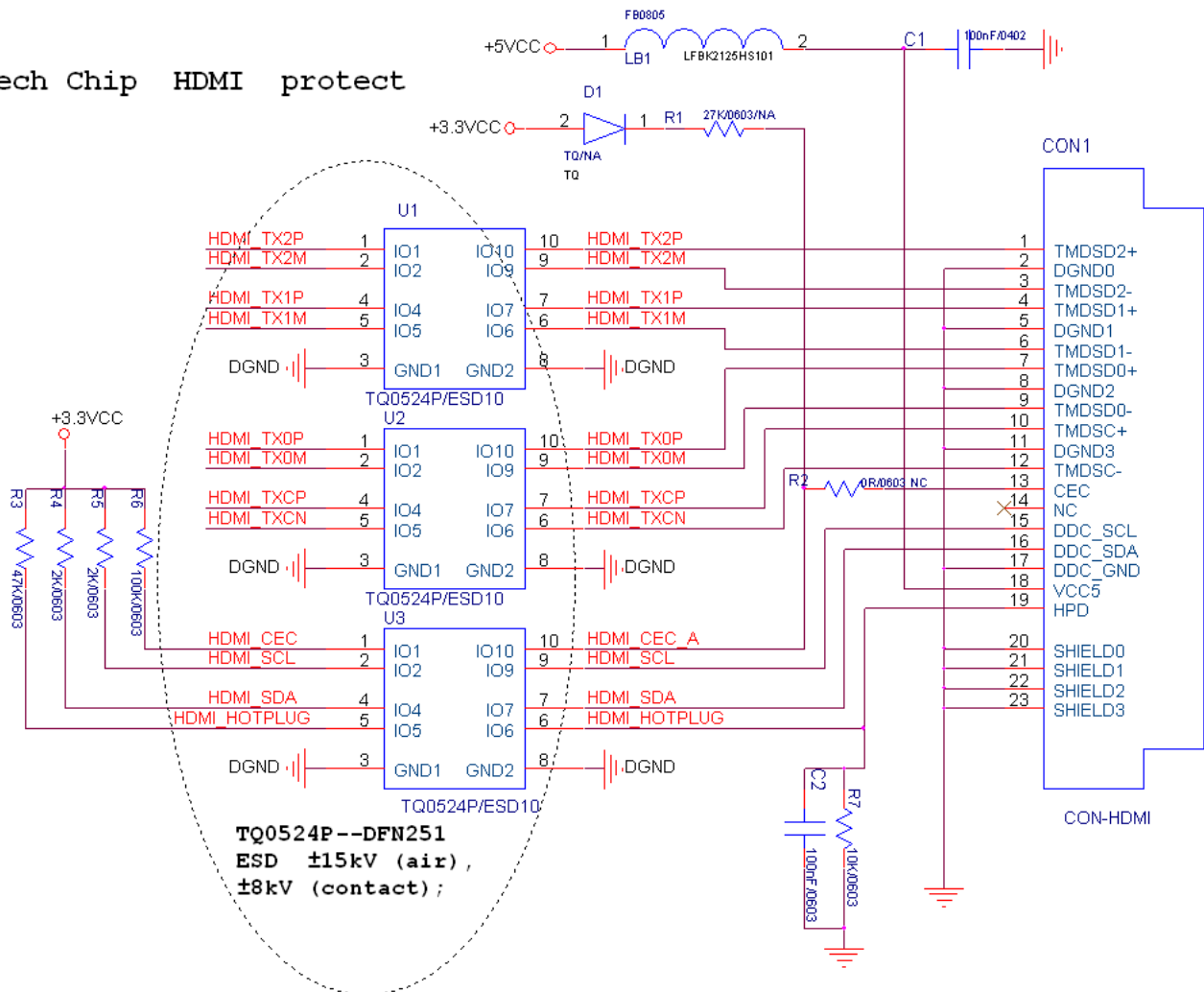


Insertion Loss S21

Typical applications

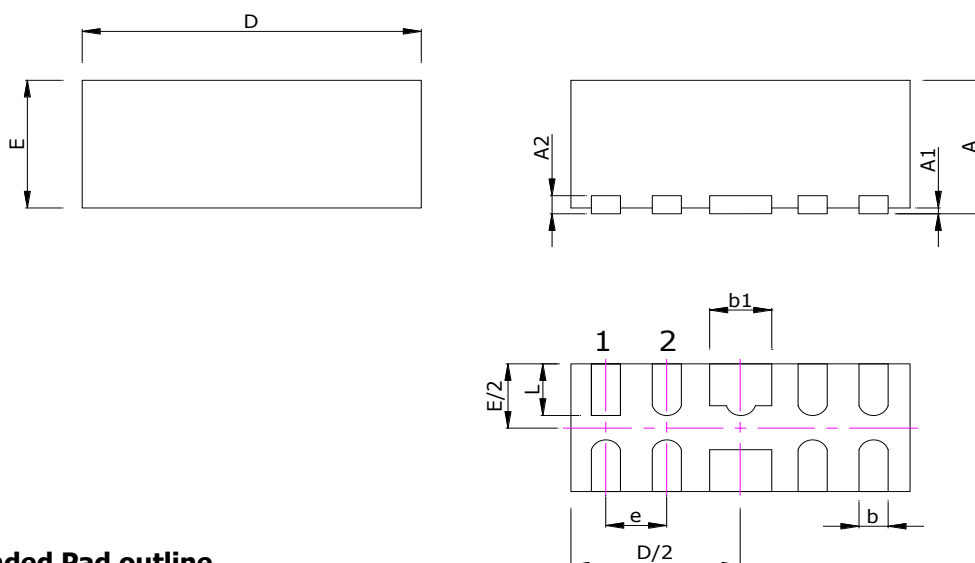
ESD protection for HDMI /USB3.0 port

Tech Chip HDMI protect

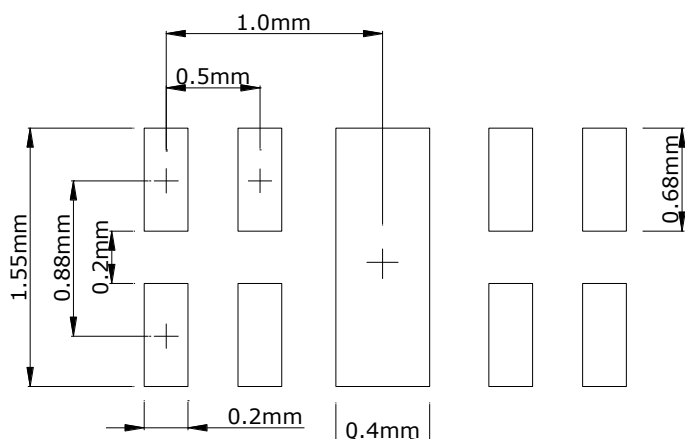


Package information

DFN2510



Recommended Pad outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.5	0.65	0.020	0.023
A1		0.05		0.002
A2	0.13		0.005	
b	0.15	0.25	0.006	0.010
b1	0.35	0.45	0.014	0.018
D	2.40	2.60	0.094	0.102
E	0.90	1.10	0.035	0.043
e	0.5		0.020	
L	0.30	0.43	0.012	0.017