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SP3208 and SP3213 Diode Arrays in 0201 DFN Bidirectional Discrete TVS

Ultimate Ultra-Low Capacitance

for Ultra High Speed Interfaces



The Market's First Silicon-Based ESD Protection Devices with <0.1 pF Capacitance

AEC-Q101-qualified Devices Outperform Polymer-based Technologies And Spark Gaps

Compared to other ESD protection solutions on the market, the SP3208 and SP3213 Series provide 50 percent lower nominal capacitance, which helps preserve signal integrity and minimize data loss. Providing a passband in excess of 30 GHz allows signal integrity engineers to create a high speed, data capable environment

Target Application:

- Ultra-high speed data lines and interfaces, such as USB 3.2, 3.1, 3.0,
- 2.0, HDMI 2.1, 2.0.1.4a, DisplayPort™, Thunderbolt and V-by-One®
- Low power antenna ports
- Consumer, mobile and portable electronics
- Tablet PCs and external storage with high speed interfaces

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SP3208 and SP3213 Diode Arrays in 0201 DFN Bidirectional Discrete TVS

First silicon-based ESD Protection Devices with Less Than 0.1 pF Capacitance

Features

- Sub-0.1 pF silicon-based ESD protection
- 0201DFN packaging with internal construction enhancements that reduce parasitic capacitance, inductance, and resistance
- Lower parasitic capacitance and inductance

Benefits

- Allows for passbands as high as 30 GHz, enabling high signal integrity for high speed data interfaces
- Makes these devices easier to model into a protection scheme
- Improves dynamic resistance performance, protecting the circuit faster and better

Rising data rate speeds present significant challenges to design engineers who need to maintain high signal integrity. The SP3208 and SP3213 Series TVS Diode Arrays provide 50 percent lower nominal capacitance than other ESD protection solutions, which helps preserve signal integrity and minimize data loss

Figure 1. Insertion Loss I/O to GND (S21) Permits passbands as high at 30 GHz

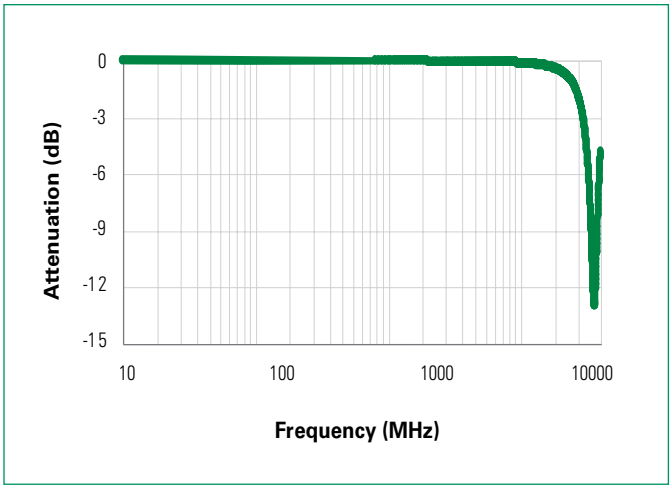


Figure 2. Capacitance vs. Reverse Bias Sub-0.1 pF silicon-based ESD protection

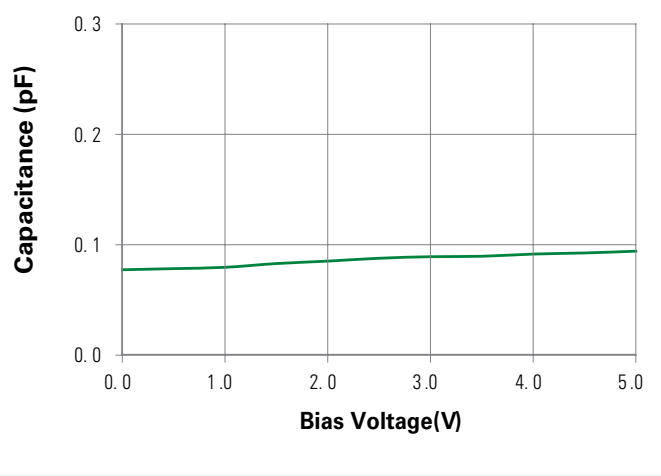


Figure 3. 10Gbps, USB 3.1, GEN 2, Thunderbolt

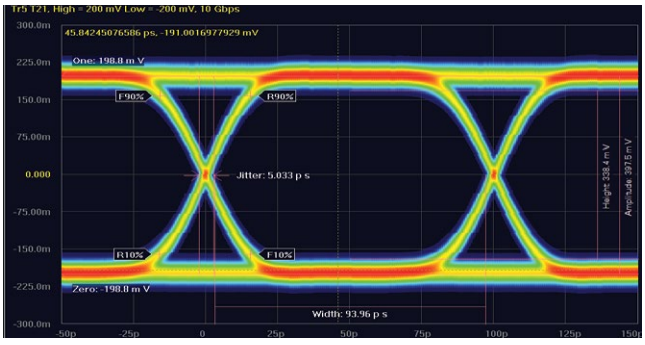
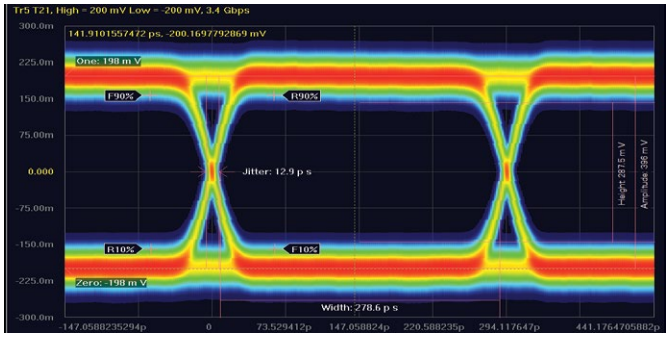


Figure 4. 3.4 Gbps, High Speed Display interfaces



Ordering Number	Ipp (A)	Reverse Breakdown Voltage (V)	Clamping Voltage (V)	Dynamic Resistance (Ω)	V_{ESD} Contact (kV)	Diode Capacitance (pF)	Package	AEC-Q101 Qualified
SP3208-01UTG	2	7.5(Typ)	12(Typ)	1.2 (Typ)	±12	0.08 (Typ)	µDFN-2	YES
SP3213-01UTG	2	7.5(Typ)	12(Typ)	1.2 (Typ)	±12	0.09 (Typ)	µDFN-2	YES