

NXP 6-line ESD protection for USB3.0 and SD-card PUSB3TB6

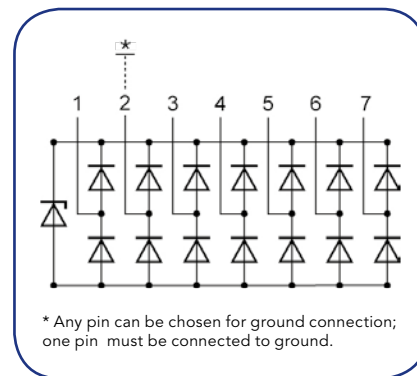
Very compact ESD protection for six high-speed data lines

Designed for use with high-speed differential interfaces such as USB3, this space-saving device, housed in a very compact DFN2111-7 package, delivers 10 kV of contact ESD protection, a pass-band well above 8 GHz, very low crosstalk, and pass-through routing for simpler board layouts.

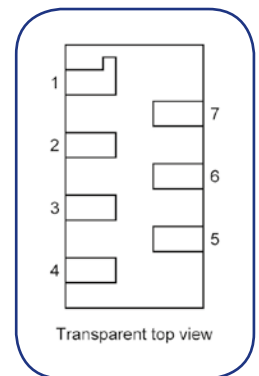
FEATURES AND BENEFITS

- ▶ Extremely low capacitance of 0.27 pF (typ) @ 0 V
- ▶ Very good SoC protection due to deep snap-back and very low dynamic resistance (0.5 Ω)
- ▶ Very compact DFN2111-7 package (2.1 x 1.1 x 0.5 mm)
- ▶ Survives > 1000 drop test cycles, ideal for portable devices
- ▶ Supports the new USB Type-C receptacle interface with a minimal Bill Of Material (BOM)
- ▶ Very flexible pass-through routing enables high-performance RF designs
- ▶ Pin pitch of 0.5 mm for relaxed assembly rules
- ▶ High ESD robustness: $V_{ESD} = 10$ kV contact (IEC61000-4-2)

Simplified circuit design



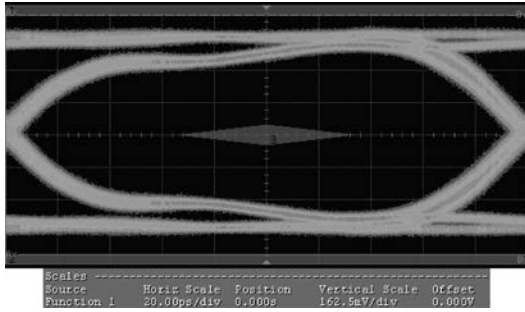
Pin layout



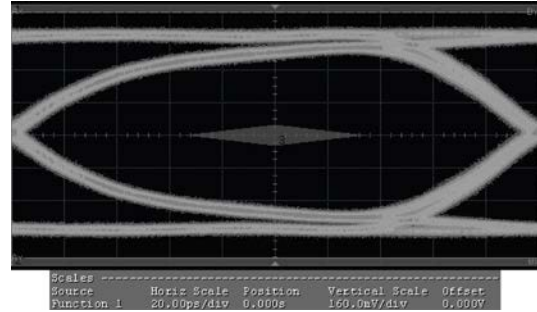
DFN2111-7 (SOT1358) package



USB3.0 eye diagrams: 5 Gbit/s

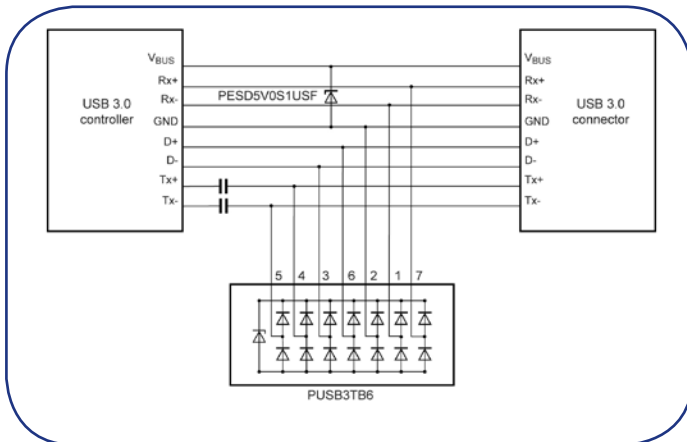


Test board without DUT

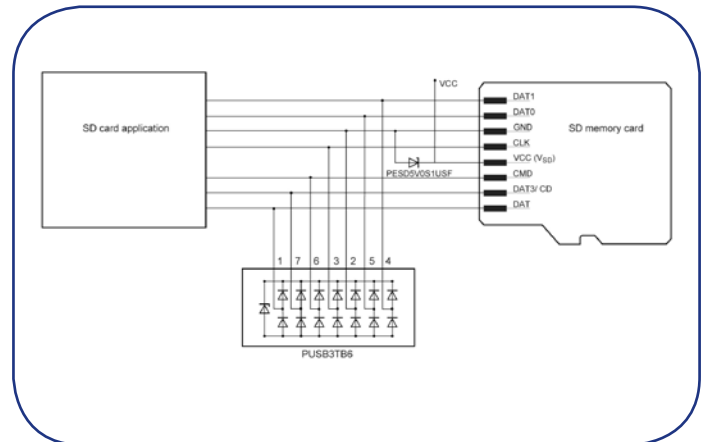


Test board with PUSB3TB6

Example routing applications, using only one board layer

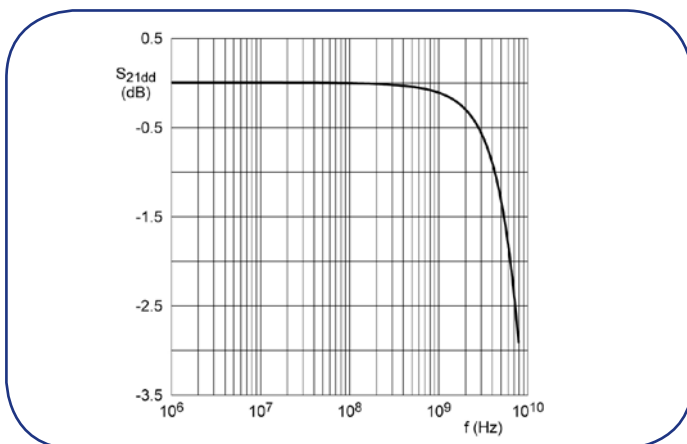


Combined USB3.0 and USB2.0 protection



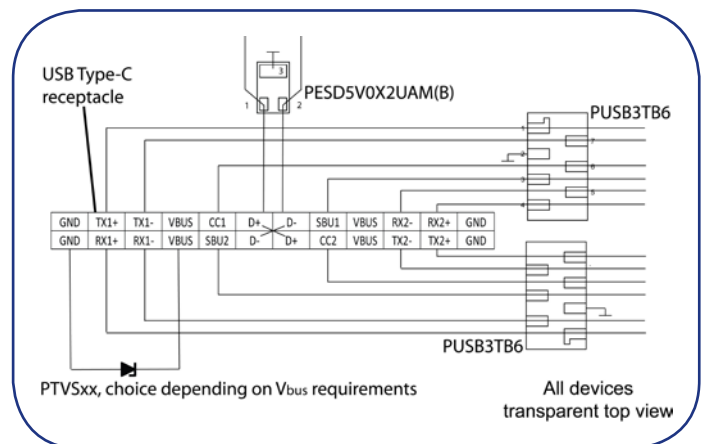
SD-card application

Differential pass-band performance (PUSB3TB6)



Differential 3-dB cutoff-frequency over 8 GHz

PUSB3TB6 for USB Type-C receptacle



PUSB3TB6 protects the new USB Type-C receptacle interface with a minimal BOM