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ESD Solutions for USB 3.0

RClamp[®]3346P **KEY FEATURES**

- 3.3V working voltage
- Protects six lines
- ±17kV contact/±20kV air
- Dynamic resistance: 0.15Ω
- Low capacitance: 0.65pF I/O to I/O
- Flow-through package (2.7 x 0.8 x 0.50mm)

Alternative Solutions RClamp®3324P KEY FEATURES

- 3.3V working voltage
- Protects four lines
- ±17kV contact/±20kV air
- Dynamic resistance: 0.15Ω
- Low capacitance: 0.65pF I/O to I/O
- Flow-through package(2.5 x 1.0 x 0.60mm)

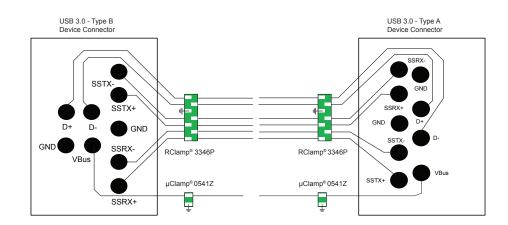
RClamp[®]3552T KEY FEATURES

- 3.5V working voltage
- Protects two lines
- ±17kV contact/±20kV air
- Dynamic resistance: 0.3Ω
- Low capacitance: 0.4pF I/O to I/O
- Flow-through package (1.0 x 0.6 x 0.50mm)



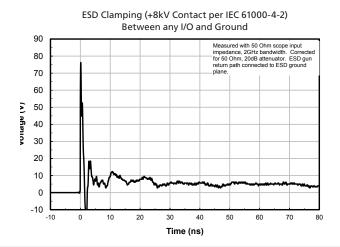
ESD Protection To Safeguard High-Speed USB 3.0 Data Lines

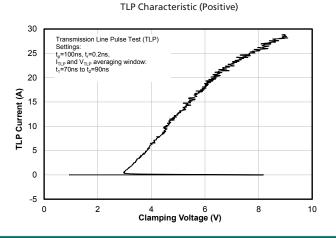
High-speed USB 3.0 data-line transceivers are vulnerable to frequent threats from ESD, EFT and Cable Discharge events. USB 3.0 ICs require state of the art transient voltage suppression (TVS) protection solutions that can both arrest dangerous fast rise-time transient threats while also presenting sufficiently low junction capacitance to not adversely impact signal integrity. Semtech has pioneered and led the way in transient protection for high speed data lines, offering industry leading TVS technology to safeguard the most sensitive USB 3.0 data lines.



USB 3.0 Protection with RClamp3346P

RClamp®3346P ESD & TLP Clamping Response





Device Parameter Summary (USB 3.0 Protection) ESD Rating Cap lpp @ Package size Part Number V_{rvm} Lines Schemetic Reference (I/O - I/O) 8/20µs (mm) Air Contact 2.7 x 0.8 x 0.5 Ł RClamp3346P 3.3 6 ±20kV ±17kV 0.6pF 5A \pm 4 ±20kV RClamp3324P 3.3 ±17kV 0.6pF 4.5A 2.5 x 1.0 x 0.6 3.8 20 RClamp3552T 3.5 2 ±20kV ±17kV 0.3pF 4A 1.0 x 0.6 x 0.4 -0 3 1.3 x 0.8 x 0.4 RClamp7524T 5 4 ±30kV ±25kV 0.5pF 5A RClamp3521P 3.5 1 ±17kV ±12kV 0.33pF 4A 1.0 x 0.6 x 0.5 2 RClamp3331ZA 3.3 1 ±18kV ±18kV 0.35pF 4A 0.6 x 0.3 x 0.25 RClamp3361Z 3.3 1 ±15kV ±12kV 0.2pF 7A 0.62 x 0.32 x 0.3 2



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