

DS-1/E1 Layout Recommendations

XRT86VL3x
XRT83L3x
XRT83SL3x
XRT83SH3x
XRT83VSH3x

Power and Ground

- For Long Haul applications, Exar recommends a bypass capacitor be placed on the center tap of the transformers if the center tap is available.
- Decoupling capacitors should be placed as close to the power supply pins as possible. It is recommended to have at least one capacitor for two digital power supply pins. For Long Haul applications, each analog RVdd power pin should have its own decoupling capacitor.
- Provide ample power and ground planes
- To decrease RF emissions, the ground plane should not extend beyond the line side of the transformers. The ground plane can terminate right down the middle of the transformers for best results.

Transmit and Receive

- Differential pairs such as TTIP/TRING and RTIP/RRING should be routed close together with the same approximate trace lengths.
- The trace lengths from the transmit and receive ports to the transformers and connectors should be minimized as much as the PCB architecture will allow.
- TVS components and other surge protection devices should be placed close in proximity to the disturbance source.
- Analog signals should be isolated from digital traces or minimized as much as possible. Particularly RTIP and RRING in Long Haul applications, where the input signals can be attenuated up to as much as 45dB. It is critical to route these signals in a clean, isolated area to avoid unwanted crosstalk.