

AC coupling LVDS outputs of ZL40230, ZL40321, ZL40234 and ZL40235

Introduction

The LVDS drivers of the ZL40230, ZL40231, ZL40234, and ZL40235 are current mode drivers, and require a DC path between the P and the N outputs to operate properly. Most LVDS interconnects are DC-coupled, with a 100Ω impedance terminating the differential trace, but in some cases an IC manufactures will specify that their LVDS inputs be AC-coupled. This application note shows how to AC couple the current mode LVDS drivers of the above devices while providing a DC current path.

Externally Terminated Internally Biased Receiver

When the receiver is internally biased, but requires external termination, the circuit in Figure 1 should be used. The circuit provides a DC path between the P and N outputs of the differential pair through the 100Ω resistor. The resistor and the AC coupling capacitors are located as close to the receiver as possible. The 100Ω resistor terminates the line and minimizes reflections. The stubs between the resistor and the AC coupling caps should be kept as small as possible (otherwise reflections could occur).

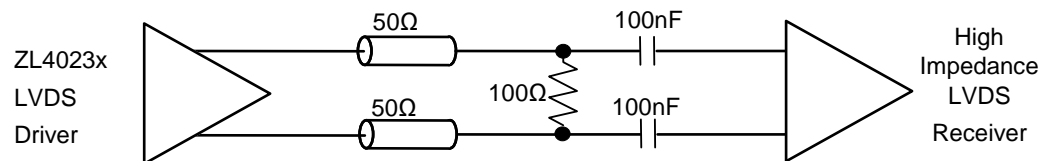


Figure 1 AC-coupling for Externally Terminated LVDS Receivers

Internally Terminated and Biased Receiver

When the receiver is both internally biased and terminated, a 400Ω resistor can be added on the driver side of the AC-coupling capacitors, as shown in Figure 2. This provides the DC path for the driver circuit. Reflections are suppressed by the 100 ohm termination in the receiver. The amplitude of the signal at the circuit will be attenuated compared to the amplitude of the LVDS signal reported in the data sheet, since the 400Ω and 100Ω will form a current divider. Only about 80% of the driver current will flow through the 100Ω load, resulting in about a 20% reduction in amplitude.

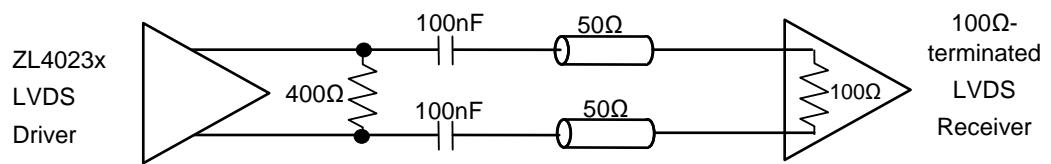


Figure 2 **AC-coupling for Internally Terminated LVDS Receivers**

Note that the circuit in Figure 2 is applicable for signals with frequencies above 1MHz. Lower frequency signals will tend to be further attenuated by the termination network.

