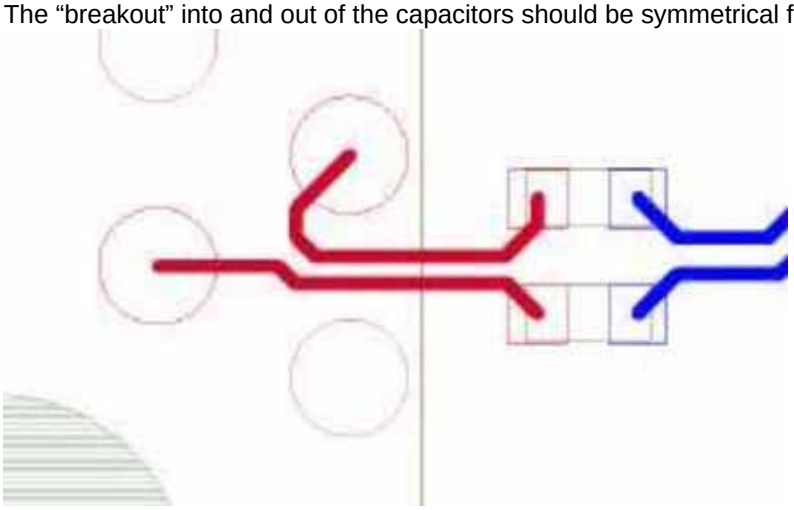
# Express Interface AC-Coupling Application Note

## 1. Introduction

This application brief provides a concise and practical guide for the board designers to add AC-coupling in the implementation of the PCI Express interface in their designs. This brief includes instruction to use AC-coupling in the differential and reference clock signals to avoid problems and to achieve optimal performance in their systems.

## 2. Differential Signals (Tx/Rx)

AC coupling capacitors of 100 nF should be placed at the same location (as close as possible) and should not be staggered from one trace to the other within the pair. While size 0603 capacitors are acceptable, size 0402 capacitors are strongly encouraged. C-packs are not allowed for AC coupling capacitors. The exact same package size of capacitor should be used for each signal in a differential pair. Pad sizes for each of the capacitors should be minimized. The “breakout” into and out of the capacitors should be symmetrical for both signal traces in a differential pair.



## 3. Reference Clock Input Pairs

The reference clock input pins connect to external 100MHz differential clock. The signal must match to LVPECL or HCSL spec.

A 100nF capacitor should be placed between the clock source and the packet switch. The purpose of this capacitor is to achieve AC coupling. This AC Coupling ensures the Packet Switch is compatible with the differential clock signals regardless the type of the clock. The input clock signals must be delivered to the clock buffer cell through an AC-coupled interface so that only the AC information of the clock is received, converted, and buffered.