PI3USB31531

3.3V, Type-C™ USB3.1 Gen2/DP1.4 6:4 Crossbar Switch

Description

The PI3USB31531 is a 6:4 differential channel bidirectional Crossbar switch solution for switching USB3.1 Gen1/Gen2 (-3db @ 10Gb/s) and/or DP1.2/DP1.4 (-3.7db @ 8Gb/s) signals through USB3.0 Type-C connector.

It multiplexes either one lane of USB3.1 Gen1/Gen2, one lane of USB3.1 Gen1/Gen2 and two channels of DP1.2/1.4, or four channels of DP1.2/DP1.4 to the USB Type-C connector.

In addition, AUX+/- channels are also multiplexed to the Type-C connector. PI3USB31531 offers excellent signal integrity for high-speed signals and low power dissipation. Insertion loss is -3dB, and return loss is -15dB (TBD) at 10Gb/s speed of USB3.1.

Applications

➜ Routing USB3.1 Gen1/Gen2 SuperSpeed and DP1.2/DP1.4 Signals Through the USB Type-C Connector

➜ Intended for Sink Applications such as Monitor

Functional Block Diagram
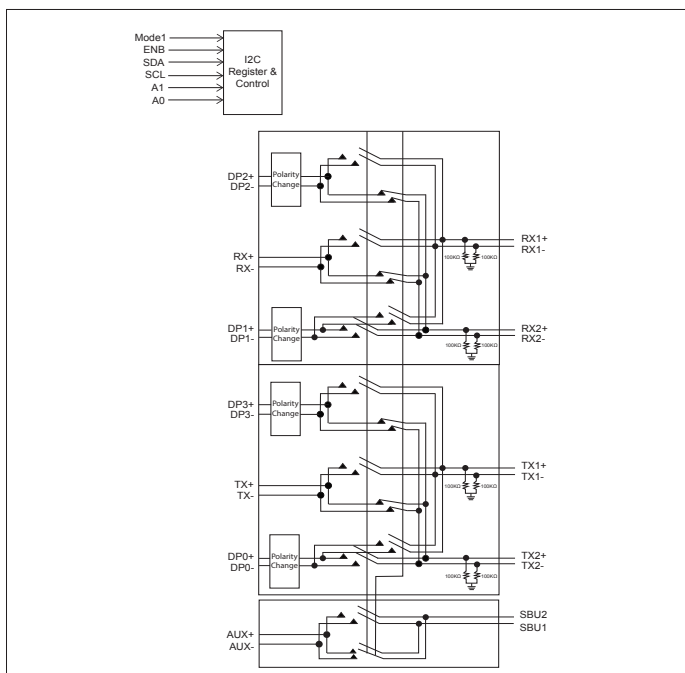
Features

➜ Six Differential Channels to 2/4 Differential Channel Crossbar Switch

➜ Support Pin Assignment C, D, E for Sink

➜ USB 3.1 Gen2 10Gb/s (-3db) Super Speed and DP 1.4 8Gb/s (-3.7db) Switching to USB Type-C Connector

➜ I²C Control to Configure the Mux

➜ Low Insertion Loss: -3dB @ 10Gb/s

➜ Return Loss: -8dB @ 10Gb/s

➜ CrossTalk: -53dB @ 10Gb/s

➜ Off Isolation: -31dB @ 10Gb/s

➜ -3dB Bandwidth : 6GHz

➜ Multiplexes one of the Following to USB Type-C Connector:

   ▫ USB3.1 Gen1/Gen2 Signal Only
   ▫ One Lane of USB3.1 Gen1/Gen2 Signal and Two Channels of DP1.2/DP1.4 or 4 Channels of DP1.2 DP1.4 Signal

➜ With DP1.2/DP1.4 Operating, AUX+ and AUX- are Muxed to SBU Pins; Max Swing on SBU Pins are from -0.35V to 3.95V

➜ 3.0V to 3.6V Power Supply

➜ Industrial Temperature Range: -40°C to 85°C

➜ Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)

➜ Halogen and Antimony Free. "Green" Device (Note 3)

➜ Packaging (Pb-Free & Green):

   ▫ 40-Contact, UQFN (ZTFA)
   ▫ 40-Contact, TQFN (ZLC)