

PI2DPX1067
1.8V 13.5Gbps USB Type-C DP2.1 Alt Linear ReDriver with AUX Listener

Description

The PI2DPX1067 is a non-blocking USB Type-C® DP-Alt mode linear ReDriver™ in 4-to-4 configuration operated by 1.8V power supply. It supports multi operation modes through I2C bus setting for USB 3.2 Gen 2 x1 or x2, USB 3.2 Gen 2/2-lane DP2.1 (UHBR10, UHBR13.5), 4-lane DP2.1 (UHBR10, UHBR13.5) with speed up to 13.5Gbps per channel. It integrates AUX Listener and swaps AUX channels under the flip and non-flip plug in compliance to Type-C connector by crossbar switch for SBU pins.

The non-blocking linear ReDriver design ensures the differential signals conveying pre-shoot and de-emphasis equalization waveforms from transmitter side to receiver side, this can help to optimize the overall channel link adjustment conducted by the system transmitter and receiver with DFE. The CTLE equalizers are implemented at the inputs of the ReDriver to compensate the channel loss and reduce the ISI jitters. The programmable flat gain and linearity adjustments support the eye diagram opening.

The CTLE EQ gains, flat gains and linearity are individually programmable on each channel for flexible tuning via I2C register settings.

Application(s)

- Laptop PCs
- Desktop PCs
- Gaming Consoles
- VR/AR Goggles
- Active Cables

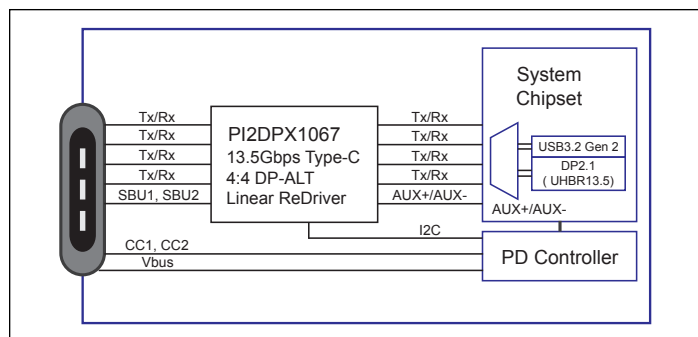


Figure 1-1 System with USB Type-C Connector Application

Features

- 4-to-4 Channel Configuration with 13.5Gbps Linear ReDriver
- Configurable for USB 3.2 Gen 2 x1 or x2, USB 3.2 Gen 2/2-Lane DP2.1 (UHBR10, UHBR13.5), 4-Lane DP2.1 (UHBR10, UHBR13.5) Operations
- Default USB Type-C Safe State (Hi-Z) After Power-On
- Ultra Low Latency (<300ps) for Better Interoperability and Data Throughput
- Individual Controls on CTLE Gain, Flat Gain and Output Linearity
- Integrated AUX Channel Crossbar Switch for Side Band Signal
- Integrated AUX Listener for Power Management and Speed Detect
- Auto Selects Per-Defined EQ/FG Setting per Data Rate for SI Optimization
- Type-C Connector Flip and Non-flip Plug Support
- I2C Slave Support with Speed Up to 1MHz
- Support DisplayPort AUX-less Advance Link Power Management (ALPM)
- Low Active Current Consumption for Output Linearity Control Setting of 900mVppd
 - USB 3.2 Gen 2 x2: 160mA (typical)
 - USB 3.2 Gen 2 x1+2-Lane DP: 160mA (typical)
 - 4-Lane DP: 160mA (typical)
- Single Power Supply: 1.8V +/-5%
- Industrial Temperature Support: -40°C to +85°C
- Packaging (Pb-free & Green):
 - Tiny 32-pin X2QFN, 2.85 x 4.5 mm (0.4 mm pitch)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.

<https://www.diodes.com/quality/product-definitions/>

Ordering Information

Orderable Part Number	Package Code	Package Description
PI2DPX1067XUAEX	XUA	32-pin, 2.85x4.5mm (X2QFN)

Notes:

- E = Pb-free and Green
- X suffix = Tape/Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.