

## 13.5Gbps USB Type-C DP2.1/USB3 6:4 Crossbar Linear ReDriver with Built-In Aux/SBU Switch

### Description

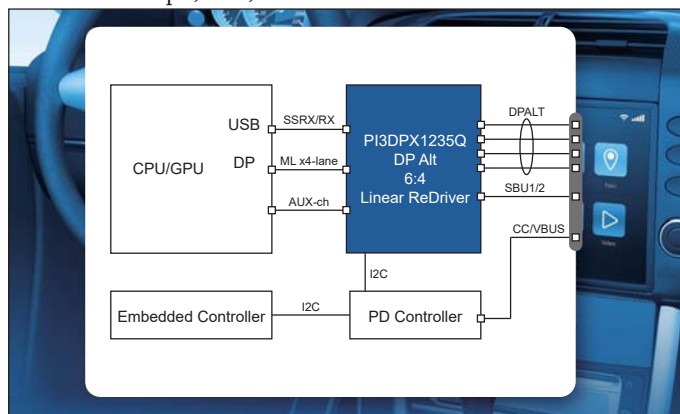
The PI3DPX1235Q is the USB Type-C DP-Alt DP 2.1 UHBR13.5/USB 3.2 Gen 2 6:4 Linear ReDriver supporting DP Link-Training Transparent for Source-side application. The device is compliant to the VESA DP Alt 2.1 UHBR13.5 and USB 3.2 Gen 2 industry standard.

Each of the DP 2.1 UHBR13.5 and USB 3.2 Gen 2 differential signals can be easily adjustable with equalization, output swing and gain values by the I2C control setting. It can optimize the DP/USB signal performance over a variety of physical mediums by reducing Inter-symbol interference jitters.

Non-blocking Linear ReDriver provides better additive jitter performance than the conventional CMOS Limiting ReDriver. Linear Equalization does not block the Receiver DFE's adaptive channel controls, supporting DisplayPort Transparent LT(Link Training) without dependency of the DP-Aux channels listener.

### Application(s)

- Smart Cockpit, RSE, ADAS



**Figure 1-1 RSE Application Diagram**

### Features

- Flexible DP 2.1 UHBR13.5/USB 3.2 Gen 2 Type-C Switching for DP-Alt Output
- Latency-Free DisplayPort ReDriver for Variable Video Frame Rate Control
- DP 1.4 (8.1Gbps), DP 2.1 UHBR10 (10Gbps), UHBR13.5 (13.5Gbps) and USB 3.2 Gen 2 (10Gbps) Standard Compliant
- Receiver Equalization, Flat Gain, -1dB Compression Output Swing for Each DP/USB Mode
- Non-Blocking Ultra Low Latency Linear Re-Driving with Transparent DisplayPort Link Training Support
- Built-In Control Logic for Type-C Plug/Unplug Normal and Flipping Orientations with I2C Programming Mode
- Slave I2C Mode Speed Up to 1MHz
- Single Power Supply : 3.3V
- Supports AEC-Q100 Grade 2: -40°C to +105°C
- Packaging (Pb-free & Green):
  - 40-Pin, 4x6mm, WQFN (ZLB)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The PI3DPX1235Q is suitable for automotive applications requiring specific change control; this part is AEC-Q100 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

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

### Ordering Information

| Orderable Part Number | Package Code | Package Description      |
|-----------------------|--------------|--------------------------|
| PI3DPX1235Q2ZLBEX     | ZLB          | 40-Contact, W-QFN6040-40 |

#### Notes:

- Q = Automotive Compliant
- 2 = AEC-Q100 Grade Level
- E = Pb-free and Green
- X suffix = Tape/Reel

#### Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- Automotive products are AEC-Q100 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.

PI3DPX1235Q

Document Number DS46454 Rev 3-2