LT9711UX --- Product Brief

Dual-Port MIPI DPHY/CPHY to HDMI2.1/DP1.4a Converter

1. Features

● **Dual-Port MIPI® DSI/CSI Receiver**

- Compliant with D-PHY2.1 & DSI-2 1.0 & CSI-2 2.0
  - 2-port, 1 clock lane and 1/2/3/4 configurable data lanes per port
  - up to 2.5Gbps per data lane
- Compliant with C-PHY1.2 & DSI-2 1.0 & CSI-2 2.0
  - 2.5Gsps per data trio
  - Total 6 configurable data trios
    - ◇ 1-port 1/2/3-trio
    - ◇ 2-port 1/2/3-trio
    - ◇ 3-port 1/2-trio
    - ◇ 4-port 1-trio
- Support up to 8K@30Hz YUV422 8bit for CSI D-PHY 8lanes mode
- Support up to 4K@120Hz
- Support up to 8K@60Hz DSC pass-through
- DSI Support 16/20/24-bit YCbCr4:2:2, 16/18/24/30/36-bit RGB
- CSI Support RGB888/666/565, YUV422 8/10bit, YUV420 8bit(legacy)
- Support side by side 3D

● **DP1.4a/eDP1.5 Transmitter**

- Compliant with DisplayPort specification 1.4a for 1.62Gbps, 2.7Gbps, 5.4Gbps, 8.1Gbps
- Compliant Embedded DisplayPort specification version 1.5
- Support DisplayPort 1/2/4 lanes
- Support HDCP 1.3/2.3
- Support HDCP repeater

- Support RGB 6/8/10/12 bpc, YCbCr4:4:4/YCbCr4:2:2/ YCbCr4:2:0 8/10/12 bpc
- Support up to 8K@30Hz RGB 6bpc, YCbCr4:2:2 10 bpc or YCbCr4:2:0 12 bpc
- Support up to 4K@144Hz RGB 6bpc, YCbCr4:2:2 10 bpc or YCbCr4:2:0 12 bpc
- Support up to 8K@60Hz DSC pass-through
- Support HDR10
- Support FEC
- Support Adaptive-Sync
- Support ASSR for eDP
- Support Horizontal Blanking Expansion
- Support SSC
- MCCS over AUX channel

● **USB Type-C**

- Compliant with VESA DisplayPort alt mode on USB Type-C standard 1.0
- DP alt mode only support pin assignment C and E
- Compliant with USB power delivery specification 3.0
- Compliant with USB Type-C cable and connector specification 1.3
- Built-in CC logic and PD controller for charger or normal communication
- Data roles supported: DFP
- Power Roles Supported: source, sink and DRP
- Support USB Billboard

● **HDMI2.1 Transmitter**

- Data rate up to 12Gbps
- Support HDCP 1.4/2.2/2.3
- Support HDCP repeater
- Support RGB 8/10/12 bpc, YCbCr4:4:4/ YCbCr4:2:2/ YCbCr4:2:0 /8/10/12 bpc
- Support up to 8K@30Hz RGB/YCbCr4:4:4/ YCbCr4:2:2 8bpc or YCbCr4:2:0 12 bpc
- Support up to 4K@120Hz RGB/YCbCr4:4:4/

YCbCr4:2:2 8bpc or YCbCr4:2:0 12 bpc

- Support up to 8K@60Hz DSC pass-through
- Support static HDR10
- Support FEC
- Support CEC

● **Digital Audio Input**

- I2S interface supports up to 8-channel audio, with sample rates of 32~192 KHz and sample sizes of 16~24 bits
- SPDIF interface supports PCM, Dolby digital, DTS digital audio at up to 192KHz frame rate
- Compliant with IEC60958 or IEC61937

● **Miscellaneous**

- CSC: RGB <-> YUV444 <-> YUV422<-> YUV420
- Hactive up to 10K
- Integrated 100/400KHz I2C slave
- External oscillator 25MHz, +/-50ppm
- Integrated microprocessor
- Embedded SPI flash for firmware and HDCP keys
- Firmware update through SPI or I2C or USB interface
- Power supply: 3.3V ,1.8V and 1.1V

2. General Description

LT9711UX is a high performance Dual-Port MIPI DPHY/CPHY to HDMI2.1 or DP1.4 converter.

For MIPI DPHY input, LT9711UX can be configured as 2 Ports and 1/2/3/4 lanes per port. Up to 12dB equalization makes it suitable for long distance application and the maximum data rate is 2.5Gbps.

For MIPI CPHY input, LT9711UX has 6 data trios up to 2.5Gsps per trio, it can be configured as 1/2/3/4 ports. The maximum equalization is 12dB.

For HDMI2.1 output, LT9711UX can be configured as 3/4 lanes. The maximum bandwidth is up to 48Gbps. It allow for the highest resolutions of 8K@30Hz or 8K@60Hz with compression data.

For DP1.4a/ eDP1.5 output, it consists of 4 data lanes, supporting 1.62Gbps, 2.7Gbps, 5.4Gbps and 8.1Gbps link rate. The build-in optional SSC function reduces EMI effect. It allow for the highest resolutions of 4K@144Hz or 8K@60Hz with compression data.

In order to be adaptable to the latest USB Type-C system, LT9711UX integrates CC logic and PD controller to relieve mobile system design complexity and BOM cost.

Two digital audio input interfaces are available, I2S or SPDIF. The I2S interface supports 8-ch LPCM and the SPDIF interface supports 2-ch LPCM or compressed audio, both at maximum 192 KHz sample rate.

The device is capable of automatic operation which is enabled by an integrated microprocessor that uses an embedded SPI flash for firmware storage. System control is also available through the configuration I2C slave interface.

3. Applications

● Notebook
● PC
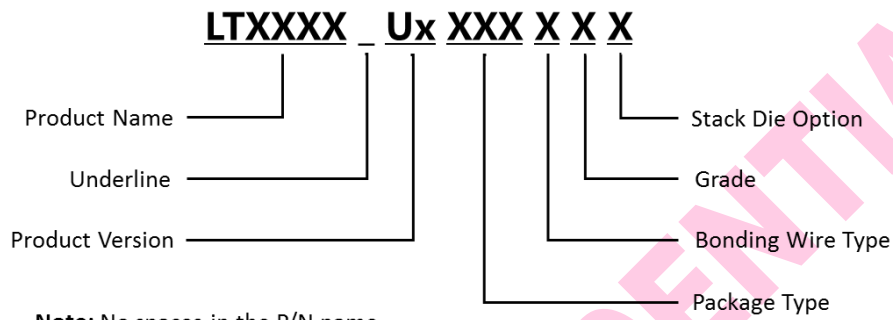● Video conference
● In-Vehicle Infotainment
● Display monitor

Figure 3.1 Application Diagram

4. Ordering Information

Table 4.1 Ordering Information

Product Name	Part Number	Product Status	Package	Bonding Wire	Grade	Operating Temperature Range	Stack Die Option	Packing Method	MPQ
LT9711UX	LT9711UX_U1Q04CED	Preview	QFN76 (9*9)Saw	Cu	E	−40°C to +85°C	D	Tray	2600pcs

LTXXXX _ Ux XXX X X X

Product Name

Underline

Product Version

Stack Die Option

Grade

Bonding Wire Type

Package Type

Note: No spaces in the P/N name.

Figure 4.1 Part Number Naming Rules

Visit our corporate web page at: www.lontiumsemi.com
Technical support: support@lontium.com
Sales: sales@lontium.com