

# LT7911UX --- Product Brief

## Type-C/DP/eDP to HDMI2.1 and Quad-port MIPI DSI/CSI with Audio

### Features

#### ● Type-C

- Compliant with DisplayPort Alt Mode on USB Type-C standard V1.0b
- Compliant with USB Power Delivery specification R3.0, V1.0
- Compliant with USB Type-C Cable and Connector specification R1.2
- Built-in dual CC controllers for charger and normal communication
- 3 data roles supported: DFP, UFP and DRP
- 2 power roles supported: source and sink

#### ● DP1.4 Receiver

- Compliant with VESA DP1.4 and Embedded DisplayPort (eDP) v1.4b
- HDCP2.3/HDCP2.2/HDCP1.3 decryption
- 1/2/4 configurable data lanes
- 1.62/2.7/5.4/8.1Gbps per data lane
- Support DSC1.2a decoder(10bit)
- Support HDR(10-bit)
- Support SSC
- 1Mbps AUX channel
- Adaptive or programmable receiver equalization
- Support lane swap(arbitrarily) and polarity inversion(independent)
- Support 8k@30Hz(YUV420 or YUV422, w DSC), 8K@60Hz (RGB, YUV444 or YUV422, w DSC)
- Support eDP Authentication: Alternative Scramble Seed Reset and Alternative Framing
- Fast and full Link Training for Embedded DisplayPort system

#### ● Single/Dual-Port/Quad-Port MIPI® DSI/CSI

##### Transmitter

- Compliant with DCS1.02, D-PHY1.3& DSI1.3 & CSI-2 1.2, CPHY1.2
  - 1 Clock Lane, and 1~4 Configurable Data Lanes per port
  - 1/2/4 configurable port
  - 80Msymbol/s~2.5Gsymbol/s per data lane
  - Data lane and polarity swapping
  - Maximum 64pixels overlap for each half
  - Both non-burst and burst video mode supported
  - Support RGB666, Loosely RGB666, RGB888, RGB565, 16-bit YCbCr4:2:2, 20-bit YCbCr4:2:2, 24-bit YCbCr 4:2:2, 12-bit YCbCr4:2:0 Video Format
  - Support 8K@30Hz(DSC), 4K@60Hz (RGB, YUV444 or YUV422)
  - Video stream copy mode for each single/dual-port
  - Side-by-side 3D support
  - Port swap
- #### ● HDMI2.1 Transmitter
- Compliant with HDMI2.1, HDMI2.0, HDMI1.4 and DV11.0
  - HDCP2.3/ HDCP2.2/ HDCP1.4 encryption
  - Data rate up to 8Gbps
  - Support 8K@30Hz(RGB or YUV444, w DSC), and 8K@60Hz(YUV420, w DSC); 8K@60Hz (RGB, YUV444 or YUV422, w DSC)
  - Support TMDS scrambling for EMI/RFI reduction
  - Support DSC(bypass)
  - Support HDR(10-bit)
  - Support SCDC
  - Support channel swap(arbitrarily) and polarity inversion(independent)
  - Programmable transmitter swing and pre-emphasis
  - Downstream receiver sensing
  - 5V tolerance DDC/HPD I/Os

**● Miscellaneous**

- USB billboard module and USB2.0 switch integrated
- Support **SPDIF and 8-channel IIS** audio output
- **Internal** or external oscillator
- Integrated microprocessor
- Embedded SPI flash for firmware
- GPIOs for VBUS/CONN/AUX and other system controls
- Integrated 100/400kHz I2C slave
- Firmware update through SPI, I2C or BB interface
- Low power consumption
- Power supply: 3.3V for I/O and 1.2V for core
- Embedded 5V to **3.3/1.8V** LDO
- ESD 4kV HBM
- Temperature range: -40°C ~ +85°C
- Package : 14mmx14mm **QFN128**

## Description

The LT7911UX is a high performance Type-C/eDP/DP1.4 to HDMI2.1 and MIPI@DSI/CSI chip for VR/Smart phone/Display application.

For DP1.4 input, LT7911UX can be configured as 1,2,4 lane, also support lane swap function. Adaptive equalization makes it suitable for long cable application and the maximum bandwidth is up to 32.4Gbps. The

LT7911UX receives both video and audio streams from DisplayPort link and converts to TMDS output. The TMDS transmitter is compliant with HDMI2.1 specification with data rate up to 8Gbps.

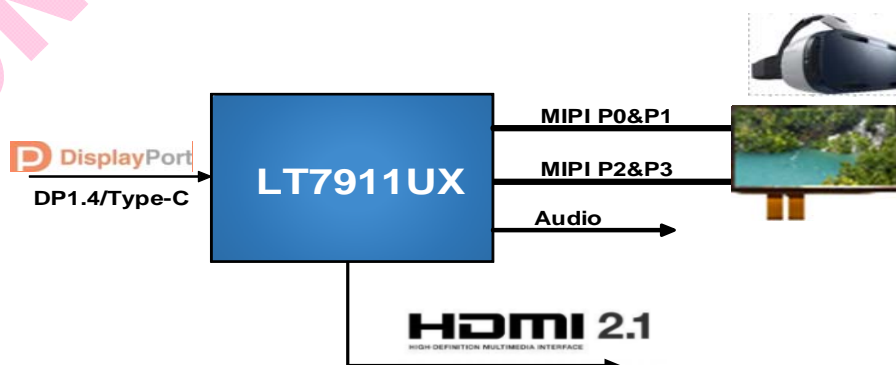
For MIPI@DSI/CSI output, LT7911UX features configurable single-port or dual-port or quad-port MIPI@DSI/CSI with 3 high-speed data lanes (1clock lane and 4data lane) operating at maximum 2.5Gsymbol/s/lane, which can support a total bandwidth of up to 68.4Gbps. LT7911UX supports Burst mode DSI video data transferring, also support flexible video data mapping path.

For 2D video stream, the same video stream can be mapped to two separated panel, for 3D video format, left side data can be sent to one panel, and right side data can be sent to another panel.

With sophisticated MCU and the Embedded Flash, LT7911UX support EDID buffer, DP/eDP input detection and determine to enter into power saving mode automatically. When the receiver of LT7911UX locks the input signal, MCU can read the recovered timing parameters by MSA registers to match the ASSR. The DPCD registers are accessible via system I2C when debugging the full link training. Once the fast link training used, system time will save at least 400ms.

## Applications

- Mobile system
- VR



**Figure 1. Application Diagram**

## Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
LT7911UX	-40°C to+85°C	QFN128 (14*14)	Tray
LT7911UX-AU	-40°C to+85°C	QFN128 (14*14)	Tray

**Note:** The suffix -AU denotes that it is an automotive grade device which is qualified by AEC-Q100 grade 3 testing.

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