LT9611UXC --- Product Brief

Dual-Port MIPI DSI/CSI to HDMI2.0 with Audio

Features

- **Single/Dual-Port MIPI DSI/CSI Receiver**
  - Compliant with D-PHY1.2 & DSI1.3 & CSI-2 1.3
  - Integrated DSC1.2 decoder
  - 1/2 configurable ports
  - 1 clock lane and 1/2/3/4 configurable data lanes per port
  - 80Mbps~2Gbps per data lane
  - Skew calibration
  - Programmable receiver equalizer
  - Support data lane swap(arbitrarily) and polarity inversion(independent)
  - 3D support: two ports simultaneously receiving L and R frames or odd-L/even-R alternative pixels
  - DSI support both burst mode and non-burst mode
  - DSI support video formats:
    DSC/CSC disabled: Packed 16/18/24/30/36-bit RGB, Loosely Packed 18-bit RGB, Packed 16/24-bit YCbCr4:2:2, Loosely Packed 20-bit YCbCr4:2:2, Packed 12-bit YCbCr4:2:0
    DSC disabled, CSC enabled: Packed 16/18/24/30/36-bit RGB, Loosely Packed 18-bit RGB, Packed 16/24-bit YCbCr4:2:2, Loosely Packed 20-bit YCbCr4:2:2
    DSC enabled, CSC disabled: Packed 24-bit RGB, Packed 16-bit YCbCr4:2:2, Packed 12-bit YCbCr4:2:0
    DSC/CSC enabled: Packed 24-bit RGB, Packed 16-bit YCbCr4:2:2
  - CSI support video formats:
    DSC/CSC disabled: RGB565/666/888, YUV422 8/10-bit, Legacy YUV420 8-bit
    DSC disabled, CSC enabled: RGB565/666/888, YUV422 8/10-bit
    DSC enabled, CSC disabled: RGB888, YUV422 8-bit, Legacy YUV420 8-bit
    DSC/CSC enabled: RGB888, YUV422 8-bit

- **Digital Audio Input**
  - I2S interface supporting 2-channel audio, with sample rates of 32~192 kHz and sample sizes of 16~24 bits
  - SPDIF interface supporting PCM, Dolby Digital, DTS digital audio at up to 192kHz frame rate
  - IEC60958 or IEC61937 compatible

- **HDMI2.0 Transmitter**
  - Compliant with HDMI2.0b, HDMI1.4 and DVI1.0
  - Compliant with HDCP2.2 and HDCP1.4
  - Data rate up to 6Gbps
  - On-die back termination
  - Programmable transmitter swing and pre-emphasis
  - AC-couple capable
  - Support channel swap(arbitrarily) and polarity inversion(independent)
  - Support 4k@60Hz
  - Supported 3D formats: side-by-side(full)
  - Supported video formats:
    DSC/CSC disabled: 24/30/36-bit RGB, 16/20/24-bit YCbCr4:2:2, 8-bit YCbCr4:2:0
    DSC disabled, CSC enabled: 24-bit RGB/YCbCr4:4:4, 16-bit YCbCr4:2:2
    DSC enabled, CSC disabled: 24-bit RGB, 16-bit YCbCr4:2:2, 8-bit YCbCr4:2:0
    DSC/CSC enabled: 24-bit RGB/YCbCr4:4:4, 16-bit YCbCr4:2:2
  - HDR support
  - Support TMDS scrambling for EMI/RFI reduction
  - Support SCDC
  - 5V tolerance DDC/HPD I/Os

- **Miscellaneous**
  - CSC: RGB <-> YUV444 <-> YUV422
  - Integrated CEC Controller

- External oscillator
- Integrated microprocessor
- Embedded SPI flash for firmware and HDCP keys
- GPIOs for system controls
- Integrated 100/400kHz I2C slave
- Firmware update through SPI or I2C interface
- Power supply: 3.3V for I/O and 1.2V for core
- ESD 4kV HBM
- Temperature Range: -40℃ ~ +85℃
- Package: QFN64 (7.5mm*7.5mm)

Description

The LT9611UXC is a high performance MIPI DSI/CSI to HDMI2.0 converter for STB, DVD applications.

The MIPI DSI/CSI input features configurable single-port or dual-port with 1 high-speed clock lane, and 1~4 high-speed data lanes operating at maximum 2Gbps/lane, which can support a total bandwidth of up to 16Gbps. LT9611UXC supports burst mode DSI video data transferring, also supports flexible video data mapping path. Integrated DSC decoder implements up to 1:3 visually lossless decompression which reduces bandwidth requirement for UHD video transport, also power consumption and EMI.

The HDMI2.0 output supports data rate up to 6Gbps which provides sufficient bandwidth for 4k@60Hz video. Also HDCP2.2 is supported for data encryption.

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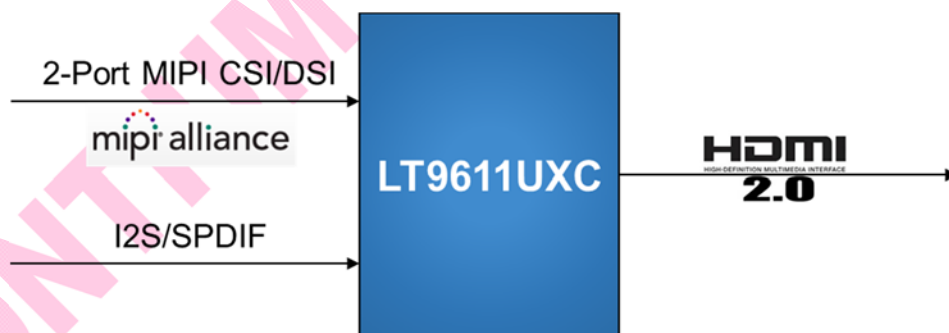
Applications

- STB
- DVD/BD
- PTV Box

Figure1. Application Diagram

Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
LT9611UXC	-40℃ to +85℃	QFN64 (7.5*7.5)	Tray

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