LT86121TX --- Product Brief

HDMI2.0 Repeater with DSC Encoder

Features

- **HDMI2.0 Receiver**
  - Compliant with HDMI2.0b, HDMI1.4 and DVI1.0
  - Compliant with HDCP2.2 and HDCP1.4
  - Data rate up to 6Gbps
  - Adaptive receiver equalization
  - AC-couple capable
  - Support channel swap(arbitrarily) and polarity inversion(independent)
  - Support 4k@60Hz
  - Supported 3D formats:
    DSC disabled: all 3D formats
    DSC enabled: frame packing(progressive/interlaced), side-by-side(half/full), top-and-bottom, field alternative
  - Supported video formats:
    CSC/DSC/3ch-to-2ch disabled: all video formats
    CSC/DSC/3ch-to-2ch enabled: 24-bit RGB/YCbCr4:4:4, 16/20/24-bit YCbCr4:2:2, 8-bit YCbCr4:2:0
  - HDR support
  - Support TMDS descrambling for EMI/RFI reduction
  - Support SCDC
  - 5V tolerance DDC/HPD I/Os
  - Integrated EDID shadow

- **HDMI2.0 Transmitter**
  - Compliant with HDMI2.0b, HDMI1.4 and DVI1.0
  - No HDCP encryption
  - Data rate up to 6Gbps
  - On-die back termination
  - Programmable transmitter swing and pre-emphasis
  - AC-couple capable
  - Optical output capable(differential connection to laser diode)
  - Support channel swap(arbitrarily) and polarity inversion(independent)
  - Support 4k@60Hz
  - Supported 3D formats:
    DSC disabled: all 3D formats
    DSC enabled: frame packing(progressive/interlaced), side-by-side(half/full), top-and-bottom, field alternative
  - Supported video formats:
    CSC/DSC/3ch-to-2ch disabled: all video formats
    CSC/DSC/3ch-to-2ch enabled: 24-bit RGB/YCbCr4:4:4, 16/20/24-bit YCbCr4:2:2, 8-bit YCbCr4:2:0
  - HDR support
  - Support TMDS scrambling for EMI/RFI reduction
  - Support SCDC
  - 5V tolerance DDC/HPD I/Os
  - 2/3 data channels option(3ch-to-2ch, paired with LT86121RX)
  - Integrated DSC encoder(paired with LT86121RX)
  - FEC support(paired with LT86121RX)

- **Digital Audio Output**
  - 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

- **Miscellaneous**
  - Integrated USB HS/FS/LS repeater(paired with LT86121RX)
  - CSC: RGB <-> YCbCr4:4:4 <-> YCbCr4:2:2
  - 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: QFN76(9mm*9mm)

Description

The LT86121TX is a high performance HDMI2.0 repeater designed for long cable application. It should be paired with LT86121RX for longest cable reach. In paired mode, several unique features can be enabled to reduce bandwidth requirement and optimize performance.

Both the HDMI2.0 input and output support data rate up to 6Gbps which provides sufficient bandwidth for 4k@60Hz video. Also HDCP2.2 is supported for data decryption.

In paired mode, YCbCr4:1:1 conversion and DSC encoder can be used to reduce data rate and hence bandwidth requirement. Furthermore, FEC can be activated to correct data error and help to enhance system error tolerance level. These unique techniques together will significantly extend transmission distance. 3ch-to-2ch conversion eliminates the necessary of 3 differential data pairs as required by HDMI specification. But data rate will increase by 50%. In applications of low and middle bandwidth, 2 data pairs are enough for data transmission.

Integrated USB repeater supports high speed, full speed and low speed modes. It is suitable for USB signal extension. User defined packet is also supported which provides a path for sideband data communication.

Two digital audio output 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
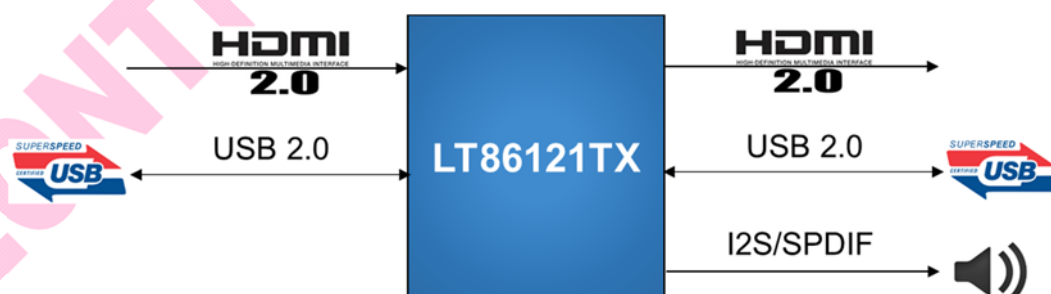
- Active Cables
- Surveillance
- KVM Extension

Figure1. Application Diagram

Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
LT8621TX	-40℃ to +85℃	QFN76 (9*9)	Tray

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