

# LT86121RXE --- Product Brief

## HDMI2.0 Repeater with DSC Decoder

### Features

#### ● HDMI2.0 Receiver

- Compliant with HDMI2.0b, HDMI1.4 and DV11.0
- No HDCP2.2 decryption
- Data rate up to 6Gbps
- Adaptive receiver equalization
- AC-couple capable
- Optical input capable(single-ended connection to photodiode)
- 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:  
DSC/CSC/2ch-to-3ch disabled: all video formats  
DSC/CSC/2ch-to-3ch 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
- 2/3 data channels option(2ch-to-3ch, paired with LT86121TXE)
- Integrated DSC decoder(paired with LT86121TXE)
- FEC support(paired with LT86121TXE)

#### ● HDMI2.0 Transmitter

- Compliant with HDMI2.0b, HDMI1.4 and DV11.0
- 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:  
DSC disabled: all 3D formats  
DSC enabled: frame packing(progressive/interlaced), side-by-side(half/full), top-and-bottom, field alternative
- Supported video formats:  
DSC/CSC/2ch-to-3ch disabled: all video formats  
DSC/CSC/2ch-to-3ch 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

#### ● Digital Audio Input/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 LT86121TXE)
- 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°C ~ +85°C
- Package: QFN76(9mm\*9mm)

## Description

The LT86121RXE is a high performance HDMI2.0 repeater designed for long cable application. It should be paired with LT86121TXE 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 encryption.

In paired mode, YCbCr4:1:1 conversion and DSC

decoder 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. 2ch-to-3ch 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.

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

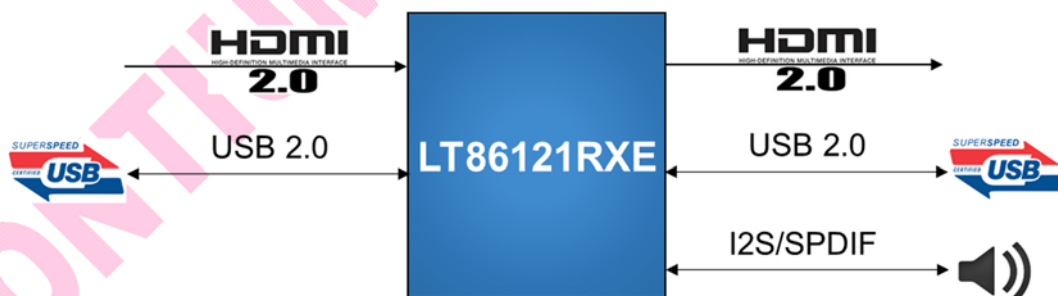


Figure1. Application Diagram

## Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
LT86121RXE	-40°C to +85°C	QFN76 (9*9)	Tray

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