

# LT8712EX --- Product Brief

## Type-C/DP1.2 to HDMI2.0/VGA Converter

### Features

#### ● USB Type-C

- Compliant with VESA DisplayPort Alt Mode on USB Type-C Standard V1.0
- Compliant with USB Power Delivery Specification R2.0, V1.0
- Compatible with USB Type-C Cable and Connector Specification R1.2
- Built-in dual CC controllers for charger and normal communication
- Flexible USB Type-C switching for USB3.0 5Gbps and DisplayPort Alt Mode up to 5.4Gbps (for package LT8712EXI only)
- Compliant with HDMI 1.4b Alt Mode on USB Type-C Specification V1.0

#### ● DP1.2 Receiver

- Compliant with VESA DP1.2
- Support 1.62/2.7/5.4Gbps
- Support 1/2/4 lanes
- Support SSC
- 1Mbps AUX channel
- Compliant with HDCP1.3
- SST/MST mode
- Adaptive receiver equalization for PCB, cable and connector losses
- Support lane swap(arbitrarily) and polarity inversion(independent)
- Receiver PHY is HDMI signal compatible

#### ● Dual HDMI2.0 Transmitters

- Compliant with HDMI2.0, HDMI1.4 and DVI1.0
- Dual HDMI ports
- Integrated one HDCP2.2 engine and one HDCP1.4 engine, each for one HDMI transmitter
- Support separate SYNC or embedded SYNC (SOG/SOY)

#### ● Miscellaneous

- DP receiver to HDMI transmitter bypass to support HDMI Alt Mode
- Internal or external oscillator
- Integrated microprocessor
- Embedded SPI flash for firmware and HDCP keys
- GPIOs for VBUS/VCONN/AUX and other system controls
- Integrated 100/400kHz I2C slave

#### ● Digital Audio Outputs

- I2S and SPDIF interface
- 8-channel LPCM or compressed audio

- Firmware update through SPI, AUX or I2C interface
- Low power consumption
- Power supply: 3.3V for I/O and 1.2V for core
- ESD 4kV HBM
- Temperature Range: -40°C to +85°C
- Package: 128-pin LQFP 14\*14 for LT8712EX and 128-pin QFN 14\*14 for LT8712EXI

## Description

The LT8712EX is a high performance Type-C/DP1.2 to HDMI2.0/VGA converter, designed to connect a USB Type-C source or a DP1.2 source to a VGA sink and up to two HDMI2.0 sinks simultaneously.

The LT8712EX integrates a DP1.2 compliant receiver (MST capable), a high-speed triple-channel video DAC and two HDMI2.0 compliant transmitters. Also, two CC controllers are included for CC communication to implement DP Alt Mode and power delivery function, one for upstream Type-C port and another for downstream port.

On-chip USB3.0 switch is a high-speed bi-directional passive switch which provides flexible switching to accommodate connector flipping. This switch also handles muxing between 2-ch data / 2-ch video and all 4-ch video. Note that the USB switch is only available on package LT8712EXI.

Two digital audio output interfaces are available, I2S and SPDIF. Both support 8-ch LPCM or compressed audio at maximum 192kHz sample rate.

The device is capable of automatic operation which is

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