

LT8712X --- Product Brief

Type-C/DP1.2 to HD-DVI2.0 and VGA Converter with Audio

1. 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
 - 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
- **DP1.2 Receiver**
 - Compliant with VESA DP1.2 and Embedded DisplayPort (eDP) v1.4
 - No HDCP decryption
 - 1/2/4 configurable data lanes
 - 1.62/2.7/5.4Gbps per data lane
 - Support SSC
 - 1Mbps AUX channel
 - Adaptive or programmable receiver equalization
 - Support lane swap(arbitrarily) and polarity inversion(independent)
 - Support 4k@60Hz
 - Support eDP Authentication: Alternative Scramble Seed Reset
- **HD-DVI2.0 Transmitter**
 - Compliant with HD-DVI2.0, HD-DVI1.4 and DVI1.0
 - Data rate up to 6Gbps
 - Support 4k@60Hz
 - Support TMDS scrambling for EMI/RFI reduction
 - Support ACDC (Auxiliary and Control Data Channel)
 - Programmable transmitter swing and pre-emphasis
- Downstream receiver sensing
- 5V tolerance DDC/HPD I/Os
- **Triple-Channel Video DAC**
 - Compliant with VESA VSIS1.2
 - 200MSPS throughput and WUXGA timing support
 - Amplitude calibration
 - Load sensing
 - 5V tolerance DDC I/Os
- **Digital Audio Input/Output**
 - One I2S interface supporting 2-channel audio, with sample rates of 32~192 kHz and sample sizes of 16~24 bits
 - SPDIF interface supporting LPCM, Dolby Digital, DTS digital audio at up to 192kHz sample rate
 - IEC60958 or IEC61937 compatible
- **Miscellaneous**
 - External oscillator
 - Integrated microprocessor
 - Embedded SPI flash for firmware
 - GPIOs for VBUS/VCONN/AUX and other system controls
 - Integrated 100kHz I2C slave
 - Firmware update through SPI, I2C interface
 - Low power consumption
 - Power supply: 3.3V for I/O and 1.2V for core
 - ESD 2kV HBM
 - Temperature range: -40°C ~ +85°C
 - Package : 9mmx9mm QFN76

2. General Description

The LT8712X is a high performance Type-C/DP1.2 to HD-DVI2.0 and VGA converter, designed to connect a USB Type-C source or a DP1.2 source to an HD-DVI2.0 and a VGA sink.

The LT8712X integrates a DP1.2 compliant receiver, an HD-DVI2.0 compliant transmitter and a high-speed triple-channel video DAC. 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.

Two digital audio output interfaces are available, I2S and SPDIF. The I2S interface supports 2-ch LPCM and the SPDIF interface supports 2-ch LPCM or 8-ch compressed audio, both up to 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 use of a dedicated configuration I2C slave interface.

LT8712X also support EDID buffer, DP/eDP input detection and determine to enter into power saving mode automatically. When the receiver of LT8712X locks the input signal, the MCU can read the recovered timing parameters by the MSA registers. The DPCD registers are accessible via system I2C when debugging the full link training.

3. Applications

- Docking Station
- Dongle

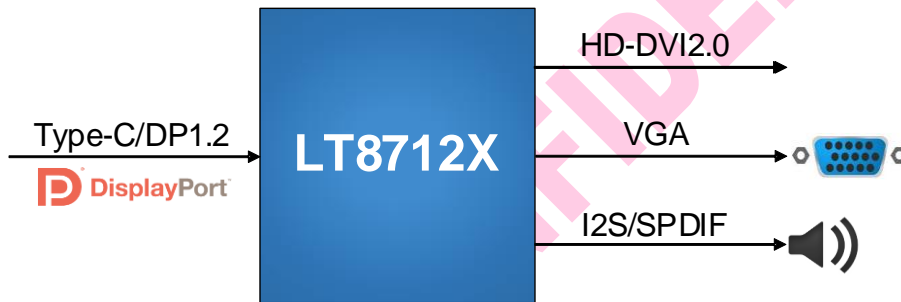


Figure 3.1 Application Diagram

4. Ordering Information

Table 4.1 Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method	MPQ
LT8712X	-40°C to+85°C	QFN76 (9*9)	Tray	2600pcs



LT8712X ADVANCE INFORMATION – CONFIDENTIAL AND PROPRIETARY

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