



GSV2201D

DisplayPort 1.2 to HDMI 2.0 Converter with
Embedded MCU

May, 2023

Preliminary Product Specification

1. General Description

1.1 General Information

Gscoolink GSV2201D is a high-performance, low-power, USB Type-C Alternate Mode DisplayPort 1.2 to HDMI 2.0 converter. By integrating enhanced microcontroller and flash, GSV2201D has created a cost-effective solution that provides time-to-market advantages. The DisplayPort Receiver supports up to 21.6Gbps (HBR2, 4-lane) and HDMI Transmitter supports up to 18Gbps (TMDS, 6G3Lane). Integrated Power Delivery 3.0 controller handles Type-C CC interface for USB power management and DisplayPort mode entry. The superior architecture of GSV2201D provides economical smaller footprint solutions using QFN48, targeting application of Type-C Hub.

GSV2201D supports all DisplayPort SDP packets pass-through to HDMI output. HDCP 1.4 and HDCP2.2/2.3 are implemented in GSV2201D for both DisplayPort Rx and HDMI Tx. Color Space Conversion, 444/422-420 Converter are supported at HDMI Tx in TMDS mode.

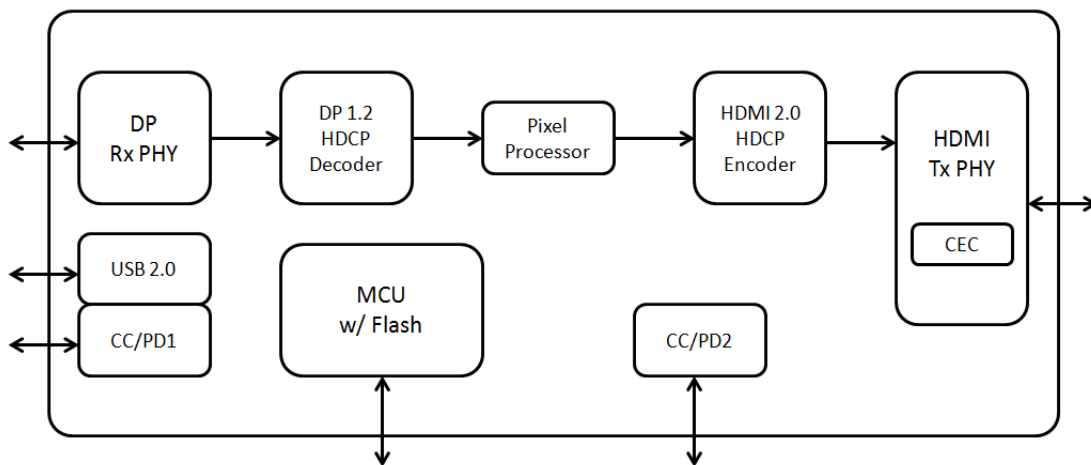


Figure 1. Top Diagram

The supported audio formats are listed in Table 1

Table 1. Supported Audio Format

| Packet ID | Packet Type | Sampling Frequency (KHz) | | |
|-----------|-------------|----------------------------------|---------------------------------|--------|
| | | 32/44.1/48/88.2/ 96/176.4/192 | 256/352.8/384/ 512/705.6/768 | 64/128 |

| | | | | |
|------|----------------------------------------------------|---|---|---|
| 0x02 | Audio Sample Packet (LPCM and Compressed Audio) | Y | | Y |
| 0x07 | One Bit Audio Sample Packet | Y | | |
| 0x08 | DST Audio Packet | Y | | |
| 0x09 | High Bit-rate Audio Stream Packet | Y | Y | |

1.2 Features

1.2.1 DisplayPort Receiver

- Compliant with VESA DisplayPort 1.2
- Compliant with HDCP 1.4
- Support HBR2, HBR and RBR (5.4/2.7/1.62 Gbps)
- Flexible 1/2/4 lane Main-Link configuration
- Programmable Adaptive Equalization
- Support Full-Link Training and No-Link Training
- Support High Dynamic Range (HDR) and Dynamic/Static Metadata
- Support Horizontal Blanking Expansion up to 4K@60Hz format
- Support Forward Error Correction (FEC)
- Embedded arbitrary EDID and MCCS
- Support Spread Spectrum Clock (SSC)

1.2.2 HDMI Transmitter

- Compliant with HDMI 2.0b, HDMI 1.4b
- Compliant with HDCP 1.4
- Data rate up to 18Gbps (TMDS 6Gbps/3 Lane)
- Programmable Voltage Swing, Slew-Rate and Pre-emphasis
- Support AC-coupling on TMDS
- Support Color Space Converter
- Support HDR (HDR10/HDR10+/Dolby Vision/HLG)
- Hardware CEC Engine for Low Level protocol decoding
- 5V tolerance on DDC/HPD/CEC pins

1.2.3 USB Type-C Interface

- Dual USB Power Delivery 3.0 Compliant controller
- 2 Configuration Channels (CC) with on-chip Rp/Rd resistors
- Dual Role Power Port (DRP)
- Fast Role Swap
- USB 2.0 Billboard Enumeration

1.2.4 System Features

- Embedded internal MCU and Flash
- External 25MHz Crystal required
- Available Pins for UART/Timer/GPIO
- Temperature Sensor Monitoring Circuit

2. Pin Description

2.1 Pin Diagram

QFN48 Pin definition is defined as below.

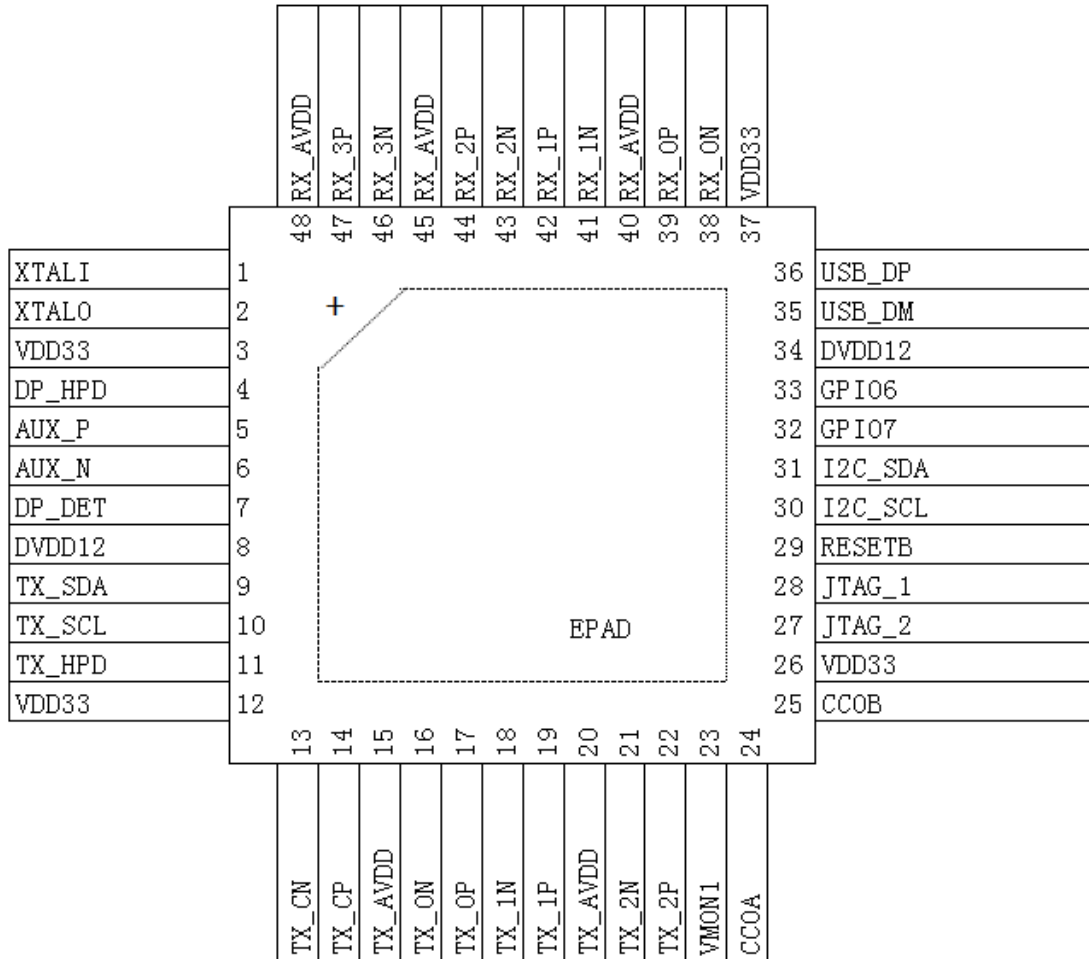


Figure 3. GSV2201D QFN48 Pin Diagram

2.2 Pin Description

Table 2. QFN48 Pin Description

| Pin Name | Direction | Pin No. | Description |
|----------------------------|-----------|---------|-------------------------------------------|
| DisplayPort Rx Pins | | | |
| DP_DET | I | 7 | RX DP Detection PAD Alternate 1: GPIO6 |

4. Package Information

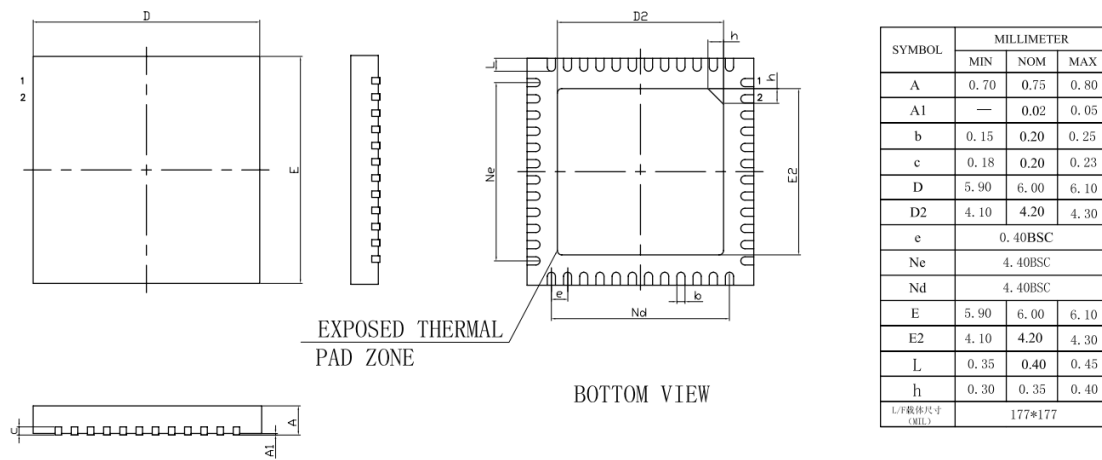


Figure 7. Package Dimensions (QFN48)

5. Ordering Guide

Table 6. Ordering Information

| Part Number. | Temperature Range | Package Description | Packing Type |
|--------------|-------------------|---------------------|--------------|
| GSV2201D | -20°C to +85°C | QFN48 | Tray |