



# GSV1201D

DisplayPort 1.2 to HDMI 1.4 Converter with  
Embedded MCU

May, 2023

## Preliminary Product Specification

# 1. General Description

## 1.1 General Information

Gscoolink GSV1201D is a high-performance, low-power, USB Type-C Alternate Mode DisplayPort 1.2 to HDMI 1.4 converter. By integrating enhanced microcontroller and flash, GSV1201D 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 9Gbps (TMDS, 3G3Lane). Integrated Power Delivery 3.0 controller handles Type-C CC interface for USB power management and DisplayPort mode entry. The superior architecture of GSV1201D provides economical smaller footprint solutions using QFN48, targeting application of Type-C Hub.

GSV1201D supports all DisplayPort SDP packets pass-through to HDMI output. HDCP 1.4 is implemented in GSV1201D for both DisplayPort Rx and HDMI Tx. Color Space Conversion, 444/422-420 Converter are supported at HDMI Tx in TMDS mode.

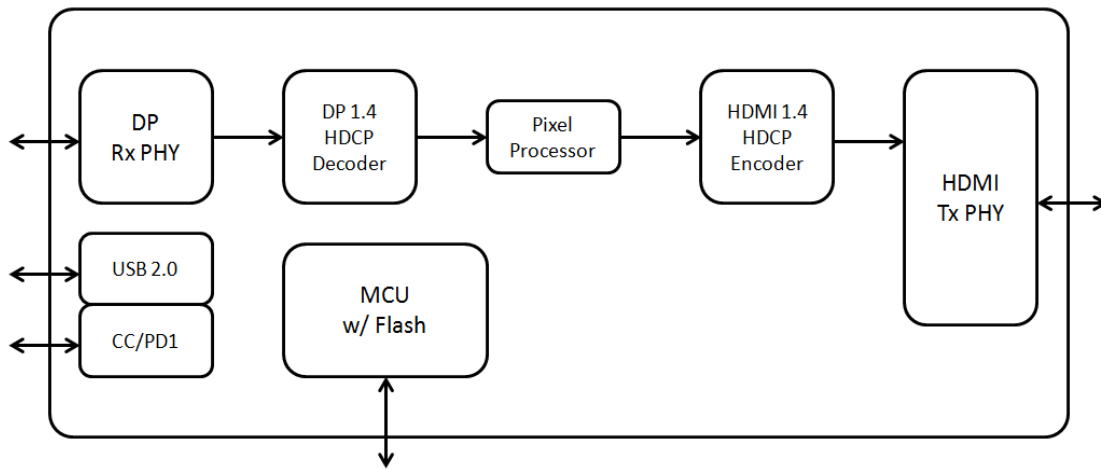


Figure 1. Top Diagram

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 1.4b
- Compliant with HDCP 1.4
- Data rate up to 9Gbps (TMDS 3Gbps/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

## 1.3 Chip Application Modes

### 1.3.1 DP to HDMI Conversion in Type-C Hub Application

Based on the DisplayPort input and output requirement, GSV1201D can output in HDMI 1.4 mode for the best compatibility in 4K/2K timings.

After CC/PD controller tunes Type-C UFP into Alternative DP mode, GSV1201D handles Type-C UFP's TX/RX/SBU for DisplayPort to HDMI conversion. GSV1201D's internal USB 2.0 controller can enumerate Billboard for source identification.

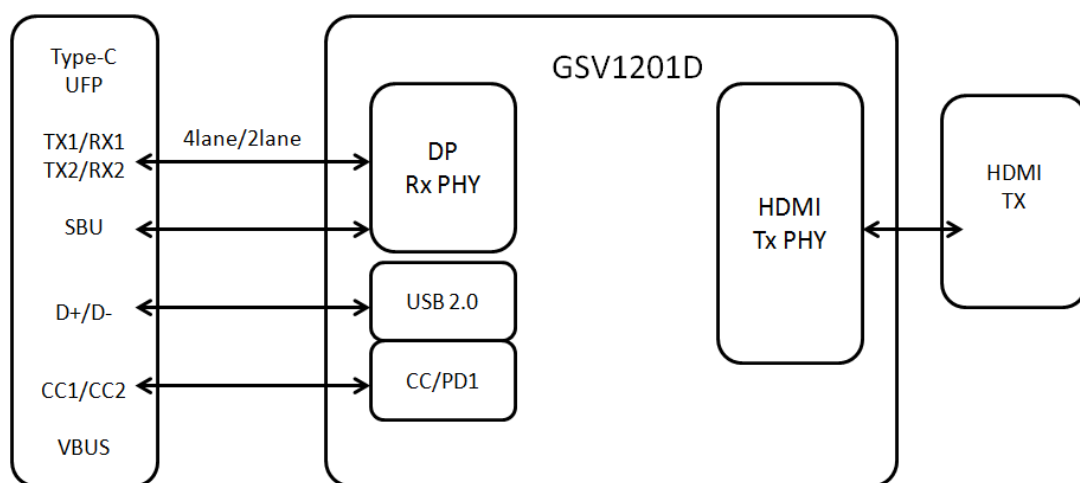


Figure 2. DisplayPort to HDMI TMDS mode Conversion in Hub Application

# 4. Package Information

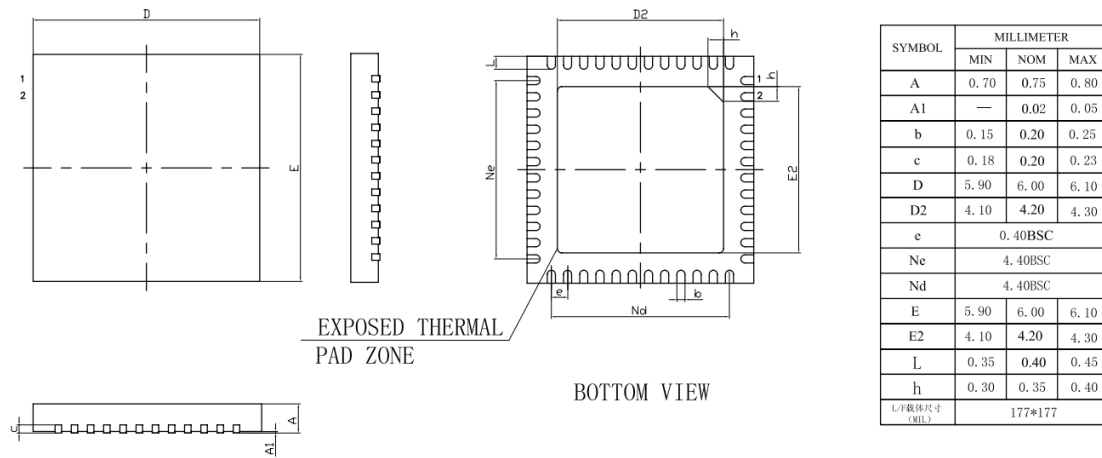


Figure 7. Package Dimensions (QFN48)

## 5. Ordering Guide

Table 6. Ordering Information

Part Number.	Temperature Range	Package Description	Packing Type
GSV1201D	0°C to +70°C	QFN48	Tray