GSCOOLINK

GSV2202D

DisplayPort 1.4 to HDMI 2.0 Converter with Embedded MCU

May, 2023

Preliminary Product Specification

1. General Description

1.1 General Information

Gscoolink GSV2202D is a high-performance, low-power, USB Type-C Alternate Mode DisplayPort 1.4 to HDMI 2.0 converter. By integrating enhanced microcontroller and flash, GSV2202D has created a cost-effective solution that provides time-to-market advantages. The DisplayPort Receiver supports up to 32.4Gbps (HBR3, 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 GSV2202D provides economical smaller footprint solutions using QFN48, targeting application of Type-C Hub.

GSV2202D supports all DisplayPort SDP packets pass-through to HDMI output. HDCP 1.4 and HDCP2.2/2.3 are implemented in GSV2202D for both DisplayPort Rx and HDMI Tx. Color Space Conversion, 444/422-420 Converter are supported at HDMI Tx in TMDS mode.
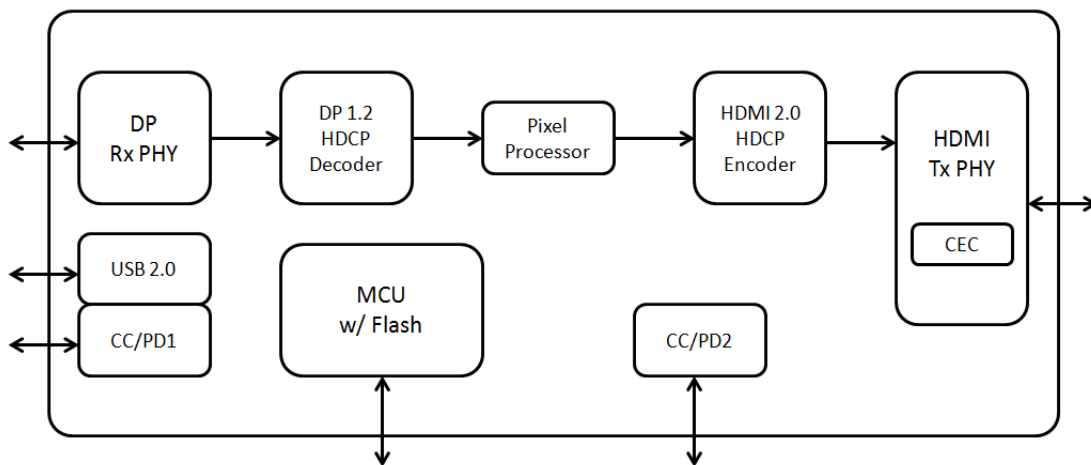

Figure 1. Top Diagram

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 1.4
- Compliant with HDCP 2.2/2.3 and HDCP 1.4
- Support HBR3, HBR2, HBR and RBR (8.1/5.4/2.7/1.62 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)
- 3D format support of frame sequential, stacked frame, side-by-side, top-to-bottom

1.2.2 HDMI Transmitter

- Compliant with HDMI 2.0b, HDMI 1.4b
- Compliant with HDCP 2.2/2.3 and 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
- 3D format support of frame packing, side-by-side, top-and-bottom

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
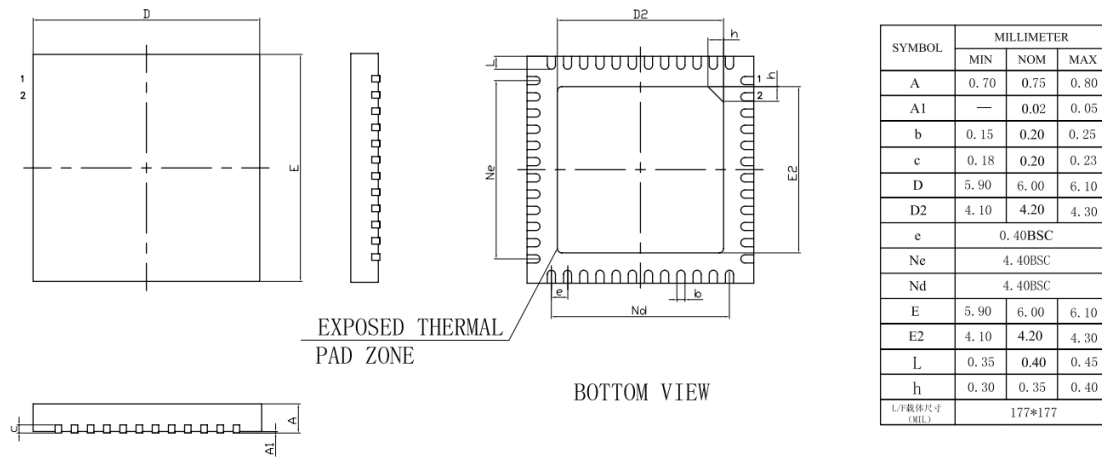
4. Package Information

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.15	0.20	0.25
c	0.18	0.20	0.23
D	5.90	6.00	6.10
D2	4.10	4.20	4.30
e	0.40BSC		
Ne	4.40BSC		
Nd	4.40BSC		
E	5.90	6.00	6.10
E2	4.10	4.20	4.30
L	0.35	0.40	0.45
h	0.30	0.35	0.40
L/F载体尺寸 (MIL)	177*177		

EXPOSED THERMAL PAD ZONE

BOTTOM VIEW

Figure 7. Package Dimensions (QFN48)

5. Ordering Guide

Table 6. Ordering Information

Part Number.	Temperature Range	Package Description	Packing Type
GSV2202D	-10°C to +85°C	QFN48	Tray