# GSV2705 Product Brief

# 4 In to 1 Out HDMI 2.1 Repeater with Embedded MCU

## General Description

Gscoolink GSV2705 is a high-performance, low-power 4 In to 1 Out HDMI 2.0 switch. By integrating enhanced microcontroller based on RISC-V, GSV2705 has created a cost-effective solution that provides time-to-market advantages. HDMI Receiver and HDMI Transmitter support up to 18Gbps (TMDS, 6G/3Lane). The superior architecture of GSV2705 provides economical smaller footprint solutions using QFN124, targeting applications of Consumer Switch and KVM.

## HDMI Receiver Features

- Compliant with HDMI 2.0b, HDMI 1.4b
- Compliant with HDCP 2.2/2.3 and HDCP 1.4 in repeater/receiver mode
- Data rate up to 18Gbps (TMDS 6Gbps/3 Lane)
- Programmable Adaptive Equalization
- Support High Dynamic Range (HDR) and Dynamic/Static Metadata
- Support Variable Refresh Rate (VRR), FreeSync, G-Sync
- Support ALLM
- Support Forward Error Correction (FEC)
- Support DSC pass-through for compressed input timing
- Embedded arbitrary EDID (up to 512 bytes)
- 5V tolerance on DDC/HPD pins

## HDMI Transmitter Features

- 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
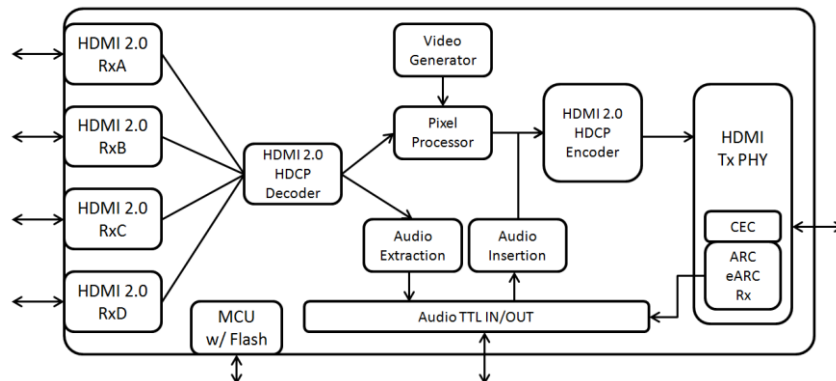- Support AC-coupling on TMDS input/output

- Support Color Space Converter in TMDS mode
- Support HDR (HDR10/HDR10+/Dolby Vision/HLG)
- Support Variable Refresh Rate (VRR), FreeSync, G-Sync
- Support ALLM
- Support DSC encoded stream pass-through from HDMI input
- Hardware CEC Engine for Low Level protocol decoding
- 5V tolerance on DDC/HPD/CEC pins
- Support eARC Rx to I2S/SPDIF audio extraction in HDMI 2.1a

## Audio Input/Output Features

- I2S and SPDIF Audio Extraction from HDMI Rx
- I2S and SPDIF Audio Extraction from downstream ARC /eARC
- I2S/SPDIF Audio Insertion to HDMI Tx
- SPDIF/I2S/HBR/DSD/TDM Format Supported for Audio Extraction and Insertion
- SPDIF to I2S Conversion using single Bi-directional TTL bus

## System Features

- Optional External MCU (via I2C)/ Internal MCU mode
- Embedded MCU and External Flash
- External pins of Flash QSPI interface
- External 25MHz Crystal required
- Available Pins for UART/Timer/GPIO control from embedded MCU
- Mailbox feature for external MCU access on chip function status
- Temperature Sensor Monitoring Circuit

## Pin Description
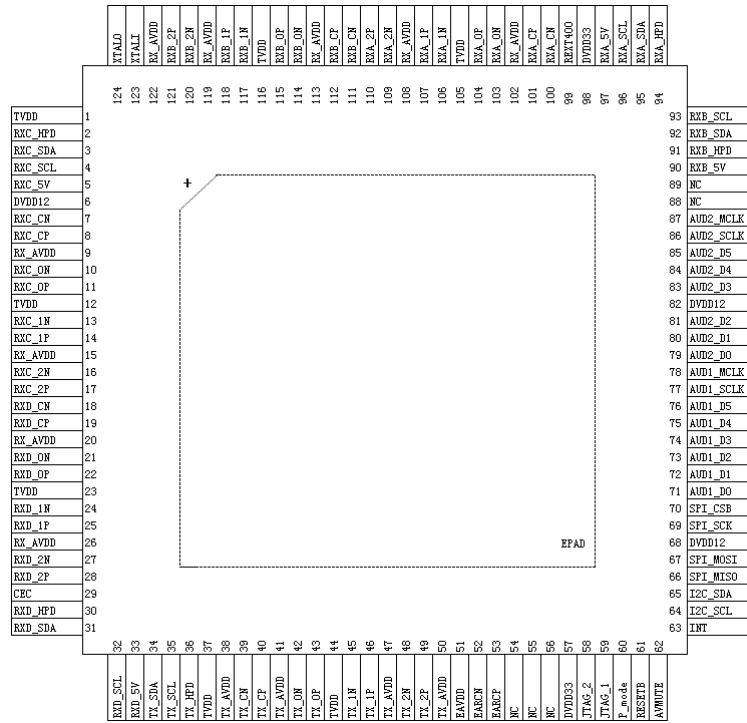
GSV2705 QFN124 Pin Diagram

Left side pins (1–31):

| Pin | Name |
|---|---|
| 1 | TVDD |
| 2 | RXC_HPD |
| 3 | RXC_SDA |
| 4 | RXC_SCL |
| 5 | RXC_5V |
| 6 | DVDD12 |
| 7 | RXC_CN |
| 8 | RXC_CP |
| 9 | RX_AVDD |
| 10 | RXC_ON |
| 11 | RXC_OP |
| 12 | TVDD |
| 13 | RXC_1N |
| 14 | RXC_1P |
| 15 | RX_AVDD |
| 16 | RXC_2N |
| 17 | RXC_2P |
| 18 | RXD_CN |
| 19 | RXD_CP |
| 20 | RX_AVDD |
| 21 | RXD_ON |
| 22 | RXD_OP |
| 23 | TVDD |
| 24 | RXD_1N |
| 25 | RXD_1P |
| 26 | RX_AVDD |
| 27 | RXD_2N |
| 28 | RXD_2P |
| 29 | CEC |
| 30 | RXD_HPD |
| 31 | RXD_SDA |

Right side pins (63–93):

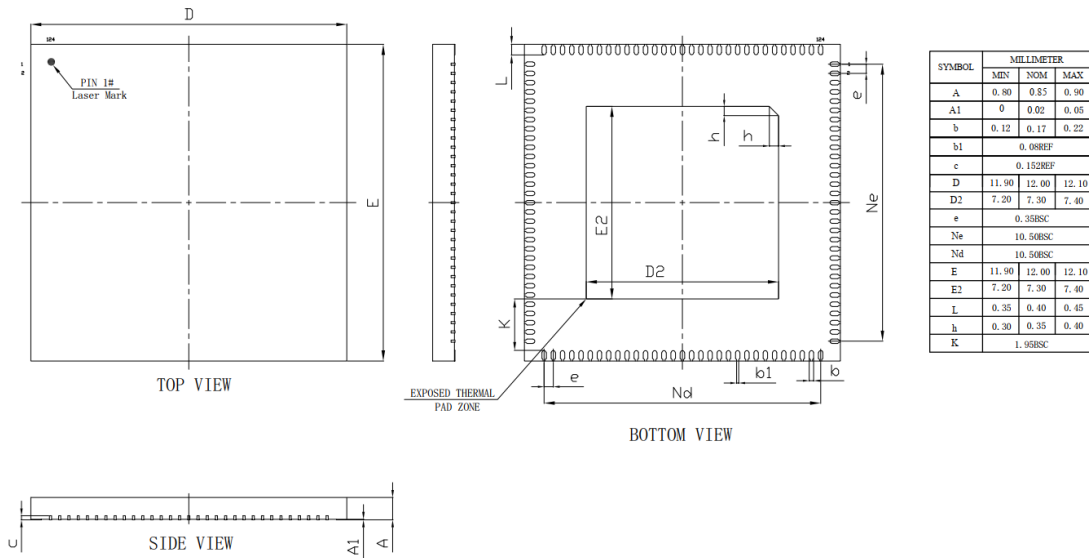| Pin | Name |
|---|---|
| 93 | RXB_SCL |
| 92 | RXB_SDA |
| 91 | RXB_HPD |
| 90 | RXB_5V |
| 89 | NC |
| 88 | NC |
| 87 | AUD2_MCLK |
| 86 | AUD2_SCLK |
| 85 | AUD2_D5 |
| 84 | AUD2_D4 |
| 83 | AUD2_D3 |
| 82 | DVDD12 |
| 81 | AUD2_D2 |
| 80 | AUD2_D1 |
| 79 | AUD2_D0 |
| 78 | AUD1_MCLK |
| 77 | AUD1_SCLK |
| 76 | AUD1_D5 |
| 75 | AUD1_D4 |
| 74 | AUD1_D3 |
| 73 | AUD1_D2 |
| 72 | AUD1_D1 |
| 71 | AUD1_D0 |
| 70 | SPI_CSB |
| 69 | SPI_SCK |
| 68 | DVDD12 |
| 67 | SPI_MOSI |
| 66 | SPI_MISO |
| 65 | I2C_SDA |
| 64 | I2C_SCL |
| 63 | INT |

Top side pins (124–94), left to right:

XTALO (124), XTALI (123), RX_AVDD (122), RXB_2P (121), RXB_2N (120), RX_AVDD (119), RXB_1P (118), RXB_1N (117), TVDD (116), RXB_OP (115), RXB_ON (114), RX_AVDD (113), RXB_CP (112), RXB_CN (111), RX_AVDD (110), RXA_2P (109), RXA_2N (108), RX_AVDD (107), RXA_1P (106), RXA_1N (105), TVDD (104), RXA_OP (103), RXA_ON (102), RX_AVDD (101), RXA_CP (100), RXA_CN (99), REXT400 (98), DVDD33 (97), RXA_5V (96), RXA_SCL (95), RXA_HPD (94)

Bottom side pins (32–62), left to right:

RXD_SCL (32), RXD_5V (33), TX_SDA (34), TX_SCL (35), TX_HPD (36), TVDD (37), TX_AVDD (38), TX_CN (39), TX_CP (40), TX_ON (41), TX_OP (42), TVDD (43), TX_1N (44), TX_1P (45), TX_AVDD (46), TX_2N (47), TX_2P (48), TX_AVDD (49), EAVDD (50), EARCN (51), EARCP (52), NC (53), NC (54), NC (55), NC (56), DVDD33 (57), JTAG_1 (58), JTAG_2 (59), P_node (60), RESETB (61), AVMUTE (62)

EPAD (center exposed pad)

## Package Information

Package Dimensions (QFN124)

TOP VIEW — PIN 1# Laser Mark

BOTTOM VIEW — EXPOSED THERMAL PAD ZONE

SIDE VIEW

| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| A | 0.80 | 0.85 | 0.90 |
| A1 | 0 | 0.02 | 0.05 |
| b | 0.12 | 0.17 | 0.22 |
| b1 | 0.08REF | | |
| c | 0.152REF | | |
| D | 11.90 | 12.00 | 12.10 |
| D2 | 7.20 | 7.30 | 7.40 |
| e | 0.35BSC | | |
| Ne | 10.50BSC | | |
| Nd | 10.50BSC | | |
| E | 11.90 | 12.00 | 12.10 |
| E2 | 7.20 | 7.30 | 7.40 |
| L | 0.35 | 0.40 | 0.45 |
| h | 0.30 | 0.35 | 0.40 |
| K | 1.95BSC | | |