

LT8668SX --- Product Brief

High Definition Display Controller

Features

● HDMI2.1 Receiver

- Compliant with the HDMI 2.1 specification
- Support FRL mode with 3, 6 or 8Gbps Data Rate
- Support HDCP 1.4/2.2/2.3
- Support HDR
- Support FEC
- Support SCDC
- Support 8k@30Hz, 8k@60Hz with DSC

● USB Type-C

- Compliant with VESA DisplayPort Alt Mode on USB Type-C standard V1.0
- Compliant with USB Power Delivery specification R3.0, V1.0
- Compliant with USB Type-C Cable and Connector specification R1.3
- 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

● DP1.4 Receiver

- Compliant to VESA DP1.4 Standard
- Support Four Lanes with 1.62, 2.7, 5.4 or 8.1Gbps Data Rate
- Support HDCP 1.3/2.2/2.3
- Support HDR
- Support FEC
- Support Adptive-sync
- Support 8k@30Hz, 8k@60Hz with DSC

● HDMI2.1 Transmitter

- Compliant with the HDMI 2.1 specification
- Support FRL mode with 3, 6 or 8Gbps Data Rate
- Support HDCP 1.4/2.2/2.3
- Support HDR

- Support FEC

● DP1.4 Transmitter

- Compliant to VESA DP1.4 Standard
- Support Four Lanes with 1.62, 2.7, 5.4 or 8.1Gbps Data Rate
- Data Lane and Polarity Swapping
- Support HDCP 1.3/2.2/2.3
- Support HDR
- Support FEC
- Support Adptive-sync
- Support Backlight Control & MCCS over AUX for eDP
- Support ASSR for eDP
- Build-in Pattern Generation

● Single/Dual/Four-Port LVDS Transmitter

- Compatible with VESA and JEIDA standard
- 1/2/4 configurable ports
- 1 clock lane and 3/4/5 configurable data lanes per port
- 1.2Gbps per data lane
- Programmable transmitter swing
- Support lane swap and polarity inversion
- Support RGB&YUV 6/8/10-bit Video Format
- 3D support: direct 3D output, 2-way 2D L/R output

● Single/Dual/Four-Port MIPI® DSI/CSI Transmitter

- Compliant with D-PHY1.2 & DSI 1.3 & CSI-2 1.3
- Compliant with C-PHY1.0 & DSI-2 1.0 & CSI-2 2.0
- 1/2/4 configurable ports
- D-PHY: 1~4 Configurable Data Lanes per port
- C-PHY: 1~3 Configurable Data Lanes per port
- D-PHY: 2.5Gb/s per data lane
- C-PHY: 5.7Gb/s per data lane
- Support video overlap
- Support RGB/YUV4:2:2/YUV4:4:4/YUV4:2:0 8/10bit Video Format
- Video stream copy mode for each port
- Side-by-side 3D support

- Support CSI D-option 8 Lane output
- Port swap
- Data lane and polarity swapping

● eDP / eDPx Transmitter

- Support Resolution up to 4Kx2K@60Hz
- Support RGB/YUV 8/10-bit Video Format
- Support eDP transmitter up to 8 lane with 5.4Gbps Link Rate
- Support 8 pairs eDPx@3Gbps interface
- Data Lane and Polarity Swapping
- Support Backlight Control & MCCS over AUX for eDP
- Support ASSR for eDP

● LPDDR 3/4 Controller

- Compliant with JESD209-3C and JESD209-4
- Band Width up to 2133Mbps
- Support X16 SDRAM Organization
- Programmable CAS Latency
- BL8 Supported Only
- Programmable Output Driver Impedance
- Support ZQ Calibration
- Byte and Lane Swappable

● Miscellaneous

- 3.3V/1.1V Supply Power
- VESA DSC v1.2a (v1.1 compatible)
- Zoom scaling up and down
- Support Rotation and Keystone correction
- Support FRC and VBI
- CSC: RGB <-> YUV444 <-> YUV422 <-> YUV420
- Support SPDIF and 8-channel IIS audio output
- Support 100KHz and 400KHz I2C slave
- Power from phone or adapter mode selection
- Integrated Microprocessor
- Embedded EDID shadow.
- Temperature Range: -40°C ~ +85°C
- ESD 4kV HBM

- Embedded LPDDR3/4 DRAM
- Packaged in BGA288 12mm x 12mm

Description

LT8668SX can be configured to work under HDMI2.1 standard with maximum 8Gb/s data rate to allow for the highest resolutions of 8Kx4K 60Hz with DSC or 8Kx4K 30Hz.

LT8668SX also can be configured to work under DP1.4 with up to 8.1Gb/s data rate to allow for the highest resolutions of 8Kx4K 60Hz with DSC or 8Kx4K 30Hz.

For LVDS output, LT8668SX can be configured as single-port, dual-port or four-port LVDS with 1 high-speed clock lane, and 3~5 high-speed data lanes, which can support a total bandwidth up to 24Gbps.

For MIPI output, LT8668SX can be configured as single-port, dual-port or four-port MIPI with high-speed data lanes operating at maximum 2.5Gb/s/lane with D-PHY, which can support a total bandwidth of up to 40Gbps, Or support 5.7Gb/s/lane with C-PHY, which can support a total bandwidth of up to 68.4Gbps.

For eDP output, it consists of 8 data lanes, supporting RBR (1.62Gbps), HBR (2.7Gbps) and HBR2 (5.4Gbps) link speeds. The build-in optional SSC function reduces EMI effect on EMI-concerned system application.

For eDPx output, it consists of 8 data lanes, with operating at maximum 3Gb/s per lane, which can support 4K@60Hz.

LT8668SX internally integrates an 8-bit OCM and SPI flash memory (stacked die) to run program. Online software upgrade is also supported for LT8668SX.

LT8668SX is fabricated in advanced CMOS process and implemented in 12mmx12mm BGA288 package. This package is RoHS compliant and specified to operate from -40°C to +85°C.

Applications

- Mobile system
- Cellular handsets, PAD/Tablets

- Display
- AR/VR



Figure1. Application Diagram

Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
LT8668SX	-40°C to+85°C	BGA288 (12*12)	Tray

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