LT9721 --- Product Brief

MIPI® DSI/HDMI to DP with Type-C

1. Features

- **Single-Port MIPI® DSI Receiver**
  - Compliant with D-PHY1.1 and DSI1.02
  - 1 Clock Lane and 1~4 Configurable Data Lanes
  - 80Mb/s~1.5Gb/s per Data Lane
  - Data Lane and Polarity Swapping
  - Internal Rterm Calibration with Less than 5% Error
  - Programmable Equalization
  - Only Non-Burst Mode Supported
  - Support up to 24-bit RGB/YUV Data Format
- **HDMI1.4 Receiver**
  - Compliant to HDMI1.4 Standard
  - Support 3D Video Data Stream
  - Support HDCP1.4 and DDC Slave for EDID
  - Support Resolution up to 4Kx2K@30Hz for RGB
  - Support Hot-Plug Detect
  - No HEAC and CEC Support
- **DP1.2 Transmitter**
  - Compliant to VESA DP1.2 Standard
  - Support 4 Lanes with 1.62Gbps (RBR), 2.7Gbps (HBR) or 5.4Gbps (HBR2) Data Rate
  - Support HDCP1.3 Encryption
  - Support 18/24-bit RGB
  - Build-in Pattern Generation
  - Support Hot-Plug Detect
  - Support Backlight Control for Screen Application
  - Optional SSC 0.5% Down-Spreading Output
  - Configurable Output Swing Internal Rterm Calibration with Less than 5% Error
- **USB Type-C**
  - Compatible with USB3.1 Gen1, USB Type-C R1.0, DP Alt Mode V1.0 and USB PD R2.0
  - 3 Data Roles Supported: DFP, UFP and DRP
  - 2 Power Roles Supported: Source and Sink
  - USB PD-PHY (Tx/Rx) and BMC Encoding/Decoding
  - USB PD Protocol Control by Software
  - Bi-directional Differential Passive Switch for USB3.1 Gen1 SS signal with less than 5.2-dB Insertion Loss, Controlled by Internal or External CC logic module
  - USB Full-Featured, Orientation and Role Detection
  - 3-level Current Ability Advertise (Host Mode) or Detection (Device Mode) for Type-C Power: USB Default, 1.5A@5V, 3A@5V
  - SBU Data Path Control for DP Alt Mode
  - OCP Control for External VBUS Power Switch
  - Dead Battery Supports (Sink Mode) When No Power Applied
- **Audio Input**
  - Support SPDIF or up to 8-CH I2S Audio Input in MIPI mode
- **Miscellaneous**
  - 1.8V/3.3V Dual Supply Power
  - External 25MHz Crystal Reference Clock
  - Temperature Range: -40°C to +85°C
  - Packaged in 7.5mm x 7.5mm QFN64

2. General Description

The Lontium LT9721 is MIPI/HDMI to DP converter with internal Type-C Alternate Mode switch and PD controller. For MIPI DSI® input, LT9721 features a single-port MIPI DSI receiver with 1 clock lane and 4 data lanes operating at maximum 1.5Gbps per data lane and a maximum input bandwidth of 6Gbps. The converter decodes the input 18/24-bit RGB packets and converts the formatted video data stream to a 4-lane DP1.2 compliant output, 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 HDMI input, LT9721 features a HDMI1.4 receiver with 1 clock lane and 3 data lanes operating at maximum 3.4Gbps per data lane and a maximum input bandwidth of 10.2Gbps, allowing resolution up to 4Kx2K@30Hz for RGB format. The converter also integrates a DDC controller and supports HDCP1.4.

In order to be adaptable to the latest USB Type-C ecosystem, LT9721 integrates a high performance bi-directional passive differential switch controlled by CC logic and PD management unit to relieve mobile system design complexity and BOM cost. The switch function is compliant with VESA DP Alternate Mode on USB Type-C Standard.

The LT9721 is fabricated in advanced CMOS process and implemented in 7.5mm x 7.5mm QFN64) package. This package is RoHS compliant and specified to operate from -40°C to +85°C.

3. Applications

- Mobile systems
- Cellular handsets
- Digital video cameras
- Digital still cameras

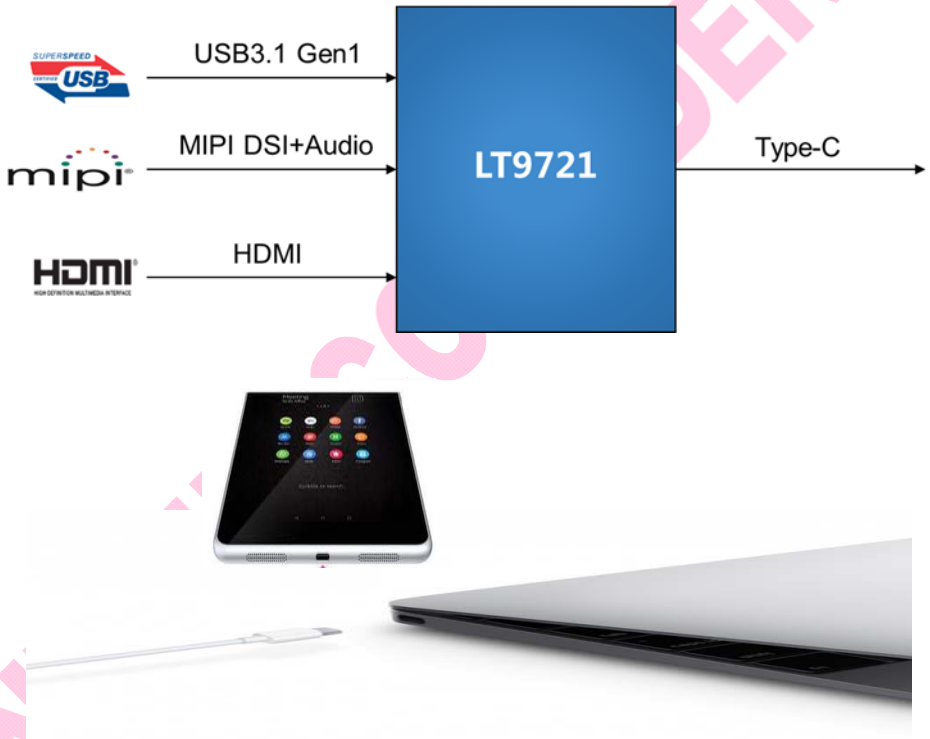

Figure 3.1 Application Diagrams

4. Ordering Information

Table 4.1 Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method	MPQ
LT9721	-40°C to +85°C	QFN64 (7.5*7.5)	Tray	2600pcs

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