HDMI to USB Type-C™ Bridge (Port Controller with MUX)

ANX7688 is an ultra-low power 4K Ultra-HD (4096x2160p60) mobile HD transmitter designed for portable devices, such as smartphones, tablets, Ultrabooks, docking stations, sports cameras, camcorders, etc. ANX7688 supports simultaneous audio, video, and data transfer from a mobile device. ANX7688 converts HDMI™ 2.0 to DisplayPort™ 1.3 Ultra-HD (4096x2160p60) including an intelligent crosspoint switch to support USB Type-C™ (USB-C™). The integrated crosspoint switch supports USB 3.1 data transfer along with the DisplayPort Alternate Mode signaling over USB Type-C. Additionally, an on-chip microcontroller (OCM) is available to manage the signal switching, Channel Configuration (CC) detection, USB Power Delivery (USB-PD), Vendor Defined Message (VDM) protocol support and other functions as defined in the USB Type-C and USB Power Delivery specifications. Overall, the ANX7688 is designed as a single bridge IC from the HDMI2.0 and USB 3.1 interfaces of the Application Processors to enable a USB Type-C connector on mobile devices.

Features

- **Standard compliance**
  - DisplayPort1.3, HDMI2.0/1.4b, HDCP2.2/1.4, USB PD 2.0
- **Integrated USB Type-C support**
  - USB3.1 Gen1 (5.0Gbps)
  - DisplayPort Alternate Mode
  - Simultaneous USB 3.1 Gen1 (5.0Gbps) and DisplayPort Alternate Mode
  - USB-PD 2.0 on CC wire
  - On-chip microcontroller to implement USB-PD messaging and DisplayPort related functions
- **DisplayPort transmitter**
  - DisplayPort transmitter (2-lanes @6.75Gbps)
  - Configurable 1-lane or 2-lane output supports: HBR2.5, HBR2, HBR, and RBR data rates
  - Ultra-HD (3840x2160p60) or 4K (4096x2160p60) maximum video resolution
  - Stereo (3D) video output support
- **HDMI 2.0 receiver**
  - Supports max pixel clock rates up to 600 Mpixels/sec
  - Up to 36bpp color depth support
  - Up to Ultra-HD (3840x2160p60) or 4K (4096x2160p60) maximum video resolution
  - Up to 8-channels digital audio support
- **System operation**
  - Reference input clock: 27MHz
  - Slave I²C device control interface
  - Built-in video BIST patterns and audio tone generator for system self-test
- **Power supply requirements**
  - 1.0V, 1.8V, and 3.3V
- **Package:** VFBGA
## Related Products

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<tr>
<th>Part Number</th>
<th>Description</th>
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<tr>
<td>ANX7625</td>
<td>MIPI-DSI/DPI to USB Type-C Bridge (Port Controller with MUX)</td>
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<tr>
<td>ANX7805</td>
<td>SlimPort Transmitter (Full-HD, 1080p60) with RGB-24, MIPI-DSI, SPDIF, I²S and SLIMbus inputs</td>
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<tr>
<td>ANX7816</td>
<td>SlimPort Transmitter (Ultra-HD, 2160p30) with HDMI input</td>
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