USB Type-C™ Crosspoint Switch with On-chip Microcontroller

ANX7447 is an intelligent crosspoint switch that supports switching at data rates of up to 10Gbps. ANX7447 supports high-speed interfaces, such as USB 3.1 (Gen 1 – 5Gbps, Gen 2 – 10Gbps) and DisplayPort™ (DP) 1.4 at up to HBR3 (8.1Gbps). ANX7447 is designed as a companion IC to various CPUs and Application Processors (APs) to enable notebooks, desktops, and 2-in-1 PCs to use the reversible USB Type-C (USB-C™) connectors. An On-chip Microcontroller (OCM) is available to manage the signal switching, Channel Configuration (CC) detection, USB Power Delivery (USB-PD) charging and Vendor Defined Message (VDM) protocol, and other functions, as defined in the USB Type-C v1.2 and USB Power Delivery v3.0 specifications. ANX7447 can be configured for a Downstream Facing Port (DFP) or Dual-Role Port (DRP) to support a USB-C receptacle. In the DFP configuration, ANX7447 supports the DisplayPort Alternate Mode as defined by VESA® to carry high-definition audio and video (A/V) contents at 1, 2, or 4-lanes DP over the USB-C connector.

Features

- 4-lanes DisplayPort inputs with link speed of 1.62Gbps, 2.7Gbps, 5.4Gbps, 6.75Gbps, 8.1Gbps
- USB 3.1 signal (SSTX and SSRX) with Gen1 (5Gbps) and Gen2 (10Gbps) link speed
- DisplayPort Alternate Mode (SlimPort®) communication support through USB-PD structured VDM messaging
- Native TCPC-compliant hardware register interface
- Supports DFP and DRP modes for Host-only or Dual-Role applications
- Integrated VCONN FETs
- Built-in 10-bit ADC to monitor VBUS voltage and current
- Dedicated control signals for VBUS Source FET, VBUS sink FET, and VBUS auto discharge circuity
- Serial and debug interface
  - Slave interface
  - Direct Connect Interface (DCI) debug support
- Industry standard compatibility
  - USB Type-C r1.2 specification
  - USB Power Delivery v3.0 r1.0 specification
  - DisplayPort 1.4 specification
  - DisplayPort Alternate Mode over USB Type-C r1.1 specification
  - Universal Serial Bus (USB) Type-C Port Controller Interface r1.0 specification
- Low-power design
  - Single supply at 3.3V
  - Dedicated supply power pin for flexible I/O power – 1.8V or 3.3V
  - Ultra-low power consumption (typical 77uW) in standby mode
- OCM to implement signal switching, USB-PD messaging, and DisplayPort related functions
  - 64K bytes SRAM for firmware execution
  - 128K bytes Flash for firmware storage
  - PDFU function for firmware updating
- Dead battery detection support
- Packages
  - BGA-49 3.2mm x 3.2mm, 0.91mm Z-height, 0.4mm pin-pitch
  - QFN-48 6mm x 6mm, 0.90mm Z-height, 0.4mm pin-pitch

Applications

Notebooks, desktops, and 2-in-1s

USB 2.0 signals will be routed externally of ANX7447 directly to the USB Type-C connector
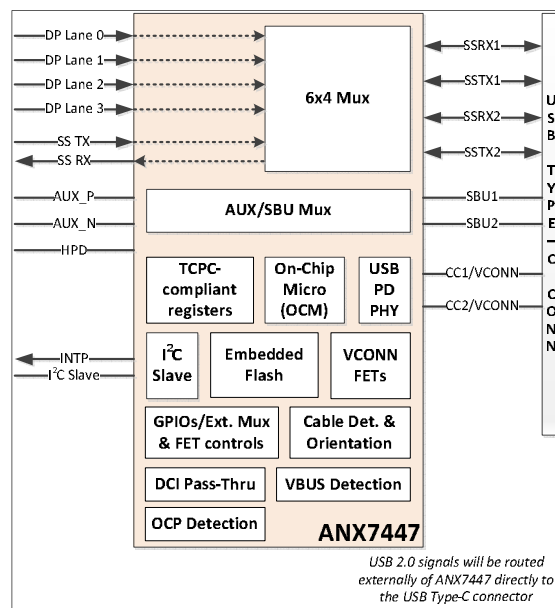
Related Products

Part Number	Description
ANX7411	USB-C Port Controller