Matterhorn™ - KB8010

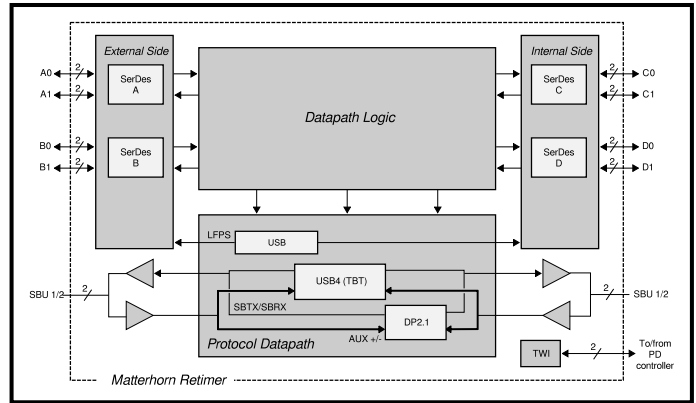*A USB Type-C™ 40 Gbit/s Multiprotocol Switch and Bidirectional Bit-Level Retimer*

Product Overview

The KB8010 is a USB Type-C™ 40 gigabit per second (Gbit/s) multiprotocol switch and bidirectional bit-level retimer. All four lanes of the KB8010 are bidirectional. This makes it a versatile signal retimer applicable in both host (source) and device (sink) applications.

A Two-Wire Interface (TWI) connects to the Power Delivery (PD) microcontroller for initialization and configuration operations. The Sideband Use (SBU) interface carries sideband information used by the USB Type-C Alt Mode.

Features

- USB4 Gen2/3 signaling (20 and 40 Gbit/s)
- USB 3.2 SuperSpeed+ signaling (5 and 10 Gbit/s)
- DisplayPort™ 1.4a LTTPR non-transparent and transparent up to HBR3 (8.1 Gbit/s) x1, x2, x4
- DisplayPort 2.1 LTTPR Non-Transparent and Transparent up to UHBR 20 Gbit/s x1, x2, x4
- Thunderbolt™ 3 and 2 (20.625 and 10.3125 Gbit/s)
- On-chip diagnostics include Eye Scope and bit error rate (BER) monitors
- TX de-emphasis for up to 8 dB at 10.315 GHz
- RX equalization with DFE tap weight adjustment for equalization up to 23 dB at 10.315 GHz
- External configuration through TWI (I^2C) for up to four device addresses
- Integrated DC blocking capacitors on SBU lines
- Temperature range: 0ºC to 65ºC
- Package: 72p, 5x5mm FCCSP (BGA) package
- Package and pin compatible with KB8002

KB8010 Block Diagram

Benefits

Total Solution Area
Compact 5x5mm package with smaller external components supports a total solution of <50% PCB area versus competitors. This enables smaller form factor designs where PCB area is a premium such as tablets and ultra-slim notebooks.

Longer PCB Traces
Superior channel performance by dynamically correcting for extreme channel characteristics with no tuning. This enables designs that require a longer PCB trace length to use more cost-effective materials and more flexible PCB routing.

Low Active Power
<50% low active power in USB4 and DP-ALT mode, which enables a more efficient and cost-effective thermal solution for smaller form factor designs.

Low System Cost
Integrated DC Blocking capacitors, analog MUX, pull-up / pull-down resistors for multiple protocols and no requirement for serial memory. Package and

pinout enables Type 3 standard PCB technology and simple PCB routing.

Compliance Ready
Compliant ready and proven solution for USB4, Thunderbolt 3 backward compatible, USB 3.2 and DisplayPort 2.1, which enables a proven low risk development path for customer adoption and rollout.

Applications

- Mobile, Tablets and Desktop PCs
- Docking stations and adapters
- AR / VR headsets
- Gaming consoles

Ordering Information

For ordering or more information, contact: sales@kandou.com.

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