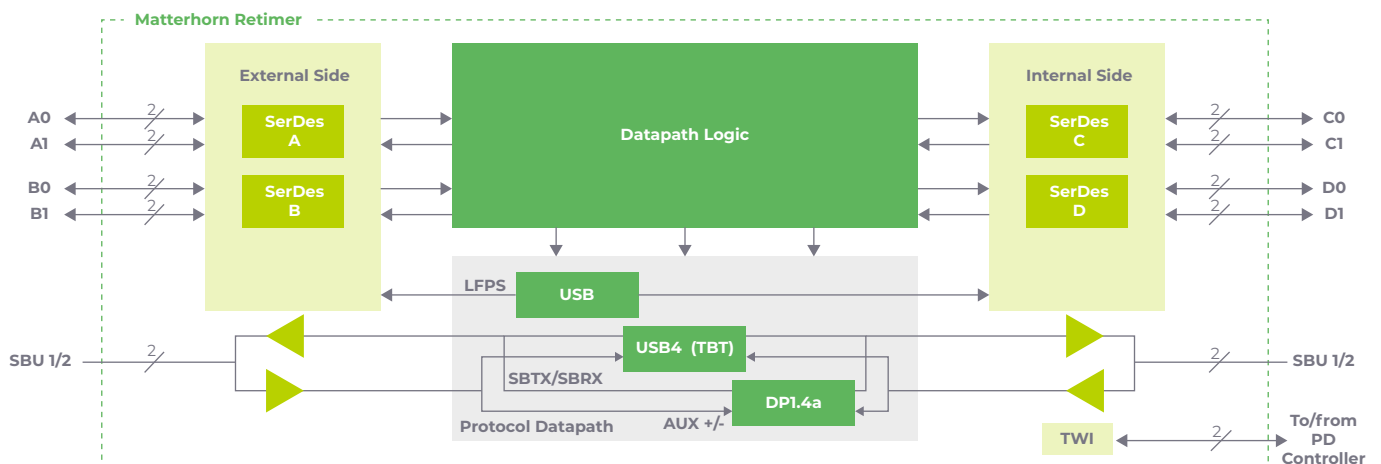# kandou

Matterhorn™
KB8001

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

The KB8001 is a USB Type-C™ 40 gigabit per second (Gbit/s) multiprotocol switch and bidirectional bit-level retimer. All four lanes of the KB8001 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)

- Display Port™ 1.4a LTTPR non-transparent and transparent up to HBR3 (8.1 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

- TWI (I^2C) to PD controller or host system for device initialization

- Integrated DC blocking capacitors

- Temperature range: 0°C to 65°C

- Package: 81p, 4x4mm FCCSP (BGA) package

Benefits

Total Solution Area

Compact 4x4mm package with smaller external components supports a total solution of <40% 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.
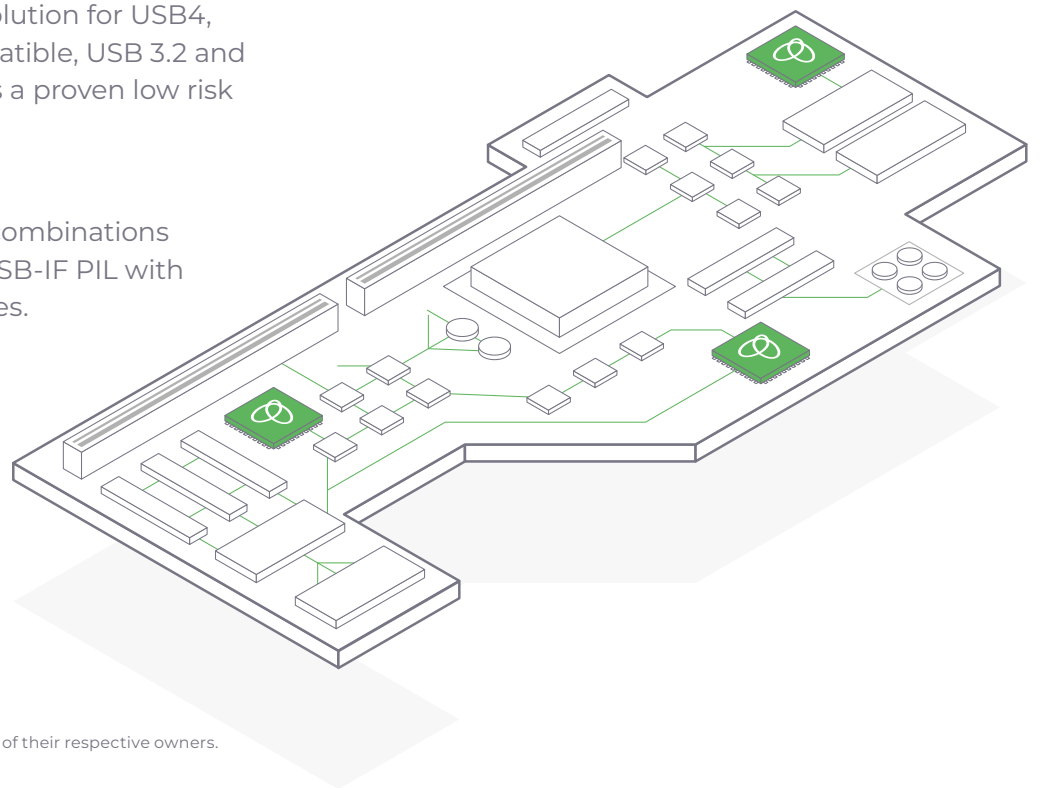
Compliance Ready

Compliant ready and proven solution for USB4, Thunderbolt 3 backward compatible, USB 3.2 and DisplayPort 1.4a, which enables a proven low risk development path.

Extensive Interop

Over 500 host / device / cable combinations tested. Interop fully tested at USB-IF PIL with no issues against golden devices.

Applications

▶ Mobile PCs, desktop PCs, and tables
▶ External hard disk and solid-state drives

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