

KB8002 Product Brief

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

General description

The KB8002 is part of the Matterhorn™ product family of USB Type-C® 40 Gbit/s multiprotocol switch and bidirectional bit-level retimers.

All four lanes of the KB8002 are bidirectional. This makes it a versatile signal retimer in host (source) applications.

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

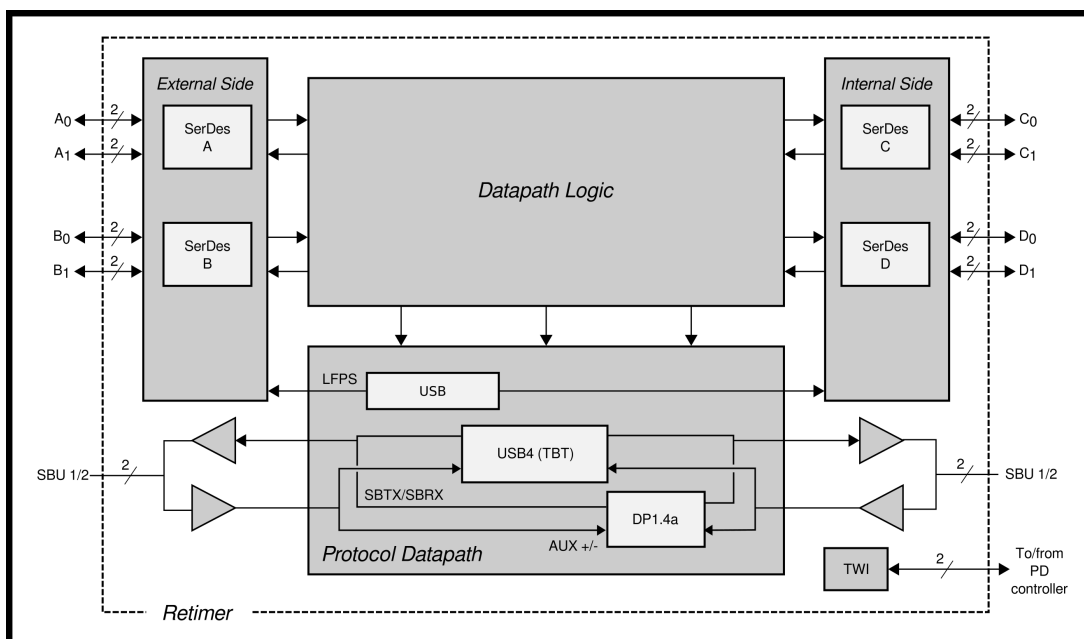


Fig. 1: Functional KB8002 block diagram

Features

- Multiprotocol reversible BLR and Separate Reference Clock with Independent SSC retimer supporting up to 40 Gbit/s:
 - USB Type-C with USB4 Gen 2/3 signaling for 10, 20, and 40 Gbit/s operation
 - USB Type-C with USB 3.2 Gen 1/2 signaling for 5 and 10 Gbit/s operation
 - USB Type-C with DP 1.4a x1, x2, x4 at HBR3, HBR2, HBR and RBR rates
 - USB Type-C Alternate Mode with USB 3.2 (Gen1x1 and Gen2x1) and DP 1.4a LTTTPR Non-transparent and transparent operation x1,

- x2 up to HBR3 rates
- USB Type-C Thunderbolt 3 (10.3125 Gbit/s and 20.625 Gbit/s) support single-lane, dual-lane unbonded, and dual-lane bonded operations
- Integrated MUX to support combined USB 3.2, DP, and Thunderbolt (USB Type-C) applications
- Crossbar switch supporting a flexible datapath
- TX de-emphasis for up to 8 dB at 10.315 GHz
- Autonomous RX Equalization with DFE tap weight adjustment for equalization up to 23 dB

- at 10.315 GHz
- On-chip diagnostics including EyeScope and Bit-Error Rate monitors
- PRBS7, PRBS15, PRBS31 pattern generation and verification
- External configuration through TWI or SBU interfaces
- Integrated DC blocking capacitors on the SBU lines
- Temperature range: 0°C to 65°C
- Package: 72p, 5x5 mm FCCSP (BGA)

Applications

- Mobile PCs, desktop PCs, and tablets
- Docking stations and adapters
- AR / VR headsets
- Gaming consoles

Device and ordering information

Two delivery forms are available for the KB8002. These differ in delivery quantity and ordering codes:

- Tape and reel
- Tray (dry-pack)

Table 1: Ordering codes

Ordering code	Package	Delivery form	Delivery quantity
KB8002-AR	72p, 5x5 mm, FCCSP	Tape and Reel	4500
KB8002-AD	72p, 5x5 mm, FCCSP	Tray (dry-pack)	490

For ordering information, contact sales@kandou.com.

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