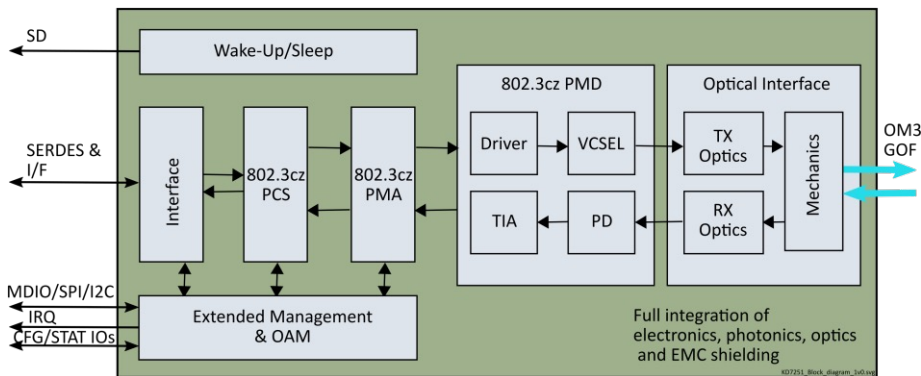
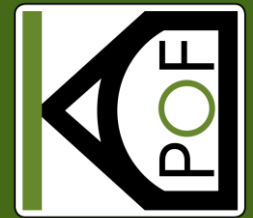


KD7251

Automotive Optical 10GBASE-AU Quad-Speed Bridge Transceiver



FEATURES

- Single-chip solution
- Support for the following bitrates:
 - 10 Gb/s, 10GBASE-AU PHY, according to the IEEE Std 802.3cz™
 - 5 Gb/s, 5GBASE-AU PHY, according to the IEEE Std 802.3cz™
 - 2.5 Gb/s, 2.5GBASE-AU PHY, according to the IEEE Std 802.3cz™
 - 1 Gb/s, with PCS 64B/65B encoding according to the IEEE Std 802.3bv™-2017
- Ethernet data interfaces supported
 - 10GBASE-R
 - 5GBASE-R
 - 2.5G/1000BASE-X
 - USXGMII
- CSI-2® & DSI-2SM over D-PHYSM bridging for sensor and display connectivity, with support for asymmetric links
- Additional bridging functionality: PCIe up to 8 GT/s
- Optimized for OM3 MM-GOF with the channel characteristics specified by IEEE Std 802.3cz™
- Long reach: 40 m with 4 inline connectors @10 Gb/s
- Guaranteed BER < 10⁻¹² for all bitrates
- Latency < 1us at 10 Gb/s
- Start time < 100 ms
- Low power consumption, support for EEE
- Reduced BOM
- Small PCB area (~22 x16 mm², including the connector)
- Enables small and low-cost connectors
- Uses the same cables and connectors for all bitrates
- MACsec support
- ASIL-B
- Wake-up & Sleep, interruption generation
- PTP, SyncE
- Advanced monitoring, dependability functions and OAM
- Integrated EMC shielding
- Galvanic isolation
- Automotive AEC-Q100 grade-2, withstanding -40 to +105°C operating ambient temperature
- 117-pin BGA (11 x 8 mm²) package

OVERVIEW

The KD7251 is the new KDPOF ASIC that implements the nGBASE-AU physical layers, compliant with the IEEE Std 802.3cz™ standard specification for automotive multi-gigabit optical communications over multi-mode glass optical fiber (MM- GOF) links.

It is a single-chip solution supporting 10, 5, 2.5 and 1 Gb/s, and including bridging functionalities to enable the connectivity of sensors (CSI-2®), displays (DSI-2SM) or processors (PCIe) in the vehicle.

The KD7251 reaches 40 m with 4 inline connectors over standard duplex OM3 multi-mode glass optical fiber (MM-GOF) at 10 Gb/s in the whole temperature range. The same cables and connectors Will be reused for higher bitrates (25, 50 Gb/s and higher in the future).

With its integrated EMC shielding, the KD7251 transceiver guarantees the highest component-level EMC compliance without the need for any external additions. This translates into a port with a small PCB área and a reduced Bill of Materials (BOM), with no need for ESD protections, common mode chokes, EMI filters or DC blocks.

The KD7251 is a native automotive part, with support for MACsec, ASIL-B FuSa, TSN, Wake-Up & Sleep, OAM and dependability functions.

This transceiver enables new use cases with optical technology, such as the multi-gigabit Ethernet backbone, zonal Gateway connectivity, Smart antenna link, and connectivity for radars, cameras, lidar, displays and high-performance computing units.