CCE4503 IO-Link Device Transceiver with cost-optimized feature set

Description

The CCE4503 is an easy-to-use device side IO-Link compliant transceiver. It combines IO-Link compliant communication capability with advanced protection circuitry and additional features while keeping the application small and simple. Controlled by an UART interface (TXD, RXD, TXEN), the output drivers can be configured as PNP, NPN or Push-Pull. Three LDO options and an automatic wake-up detection simplify the overall system requirements and reduce the need for additional external circuitry. The integrated protection features such as reverse-polarity protection, overcurrent protection, undervoltage detection and thermal protection ensure a robust functionality and communication. With the small 3mm x 3mm DFN10 package size, it is especially suitable for space limited sensor and actuator applications.

Features

- IO-Link compliant transceiver
- One IO-Link channel with up to 250 mA permanent driving current
- Configurable PNP-, NPN- and Push-Pull mode
- Configurable slew rate limitation
- Configurable current limit
- Automatic recovery function
- Wake-up detection
- 3 LDO options with up to 20 mA
- 3.3V / 5V / external LDO
- Reverse-polarity protection
- Overcurrent detection
- Undervoltage detection
- Overtemperature detection
- Small DFN10 3x3mm package

Benefits

- All IO-Link frame types supported
- Optimized feature set for best in market cost efficiency
- Improved protection features
- Low power dissipation
- Minimal need for external circuitry
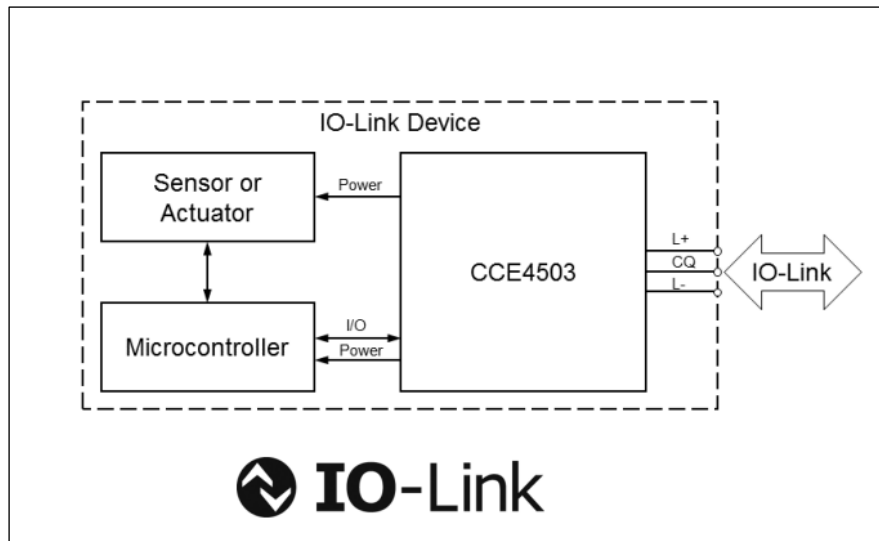- Especially suitable for space-constricted applications

Applications

- IO-Link sensors
- IO-Link actuators
- High voltage level shifter
- Industrial Automation

Block Diagram
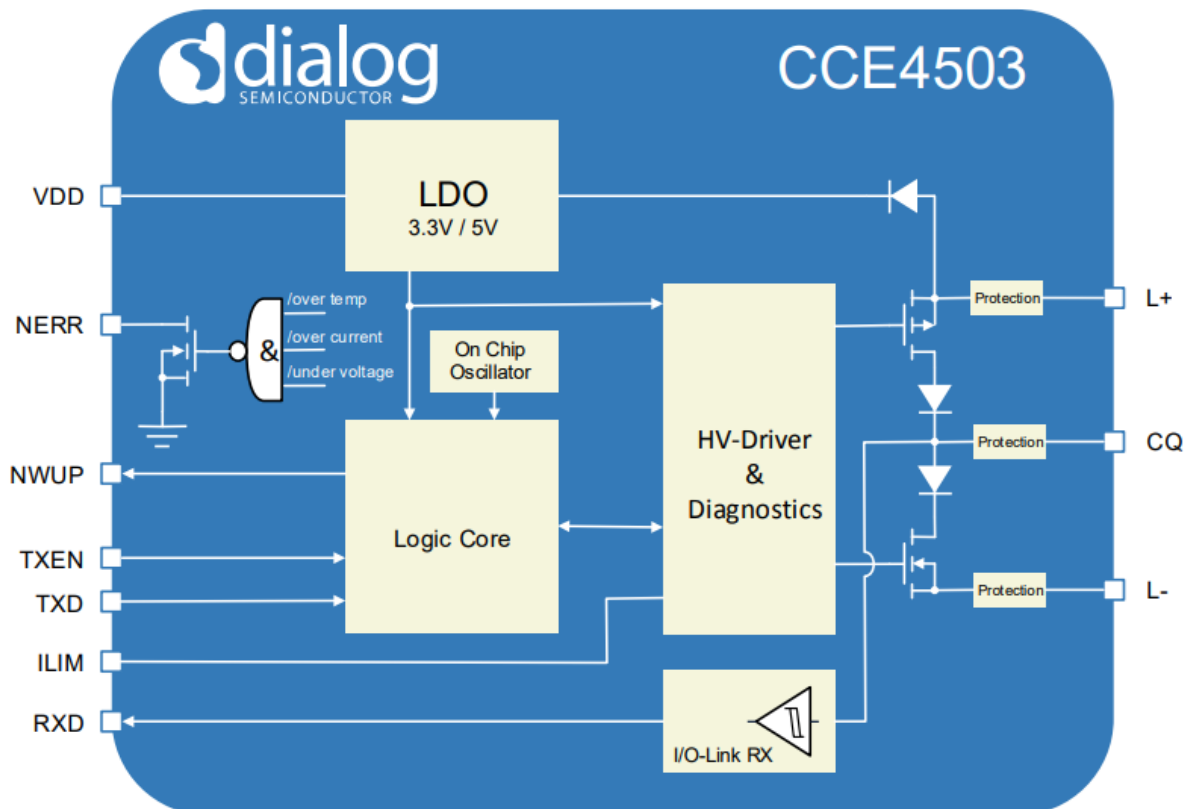
IO-Link System Diagram

Evaluation Board

The CCE4503 evaluation board is designed for demonstrating and evaluating the CCE4503 IO-Link Device Transceiver.

The Board is divided into three sections:

- **IO-Link Section**

  The IO-Link section contains all necessary circuitry to use one CCE4503 3.3V (with an adjustable current limit and slew rate) including an M12 A-Coded connector and terminal block for IO-Link communication. Pin headers enable the user to control and monitor the CCE4503 externally.

- **Sensor / Actuator Section**

  The sensor section contains an HS3001 temperature and humidity sensor to provide an example for measurement signals and a SLG46826V GreenPAK which is configured as multicolor LED driver to act as actuator.

- **MCU Section**

  The MCU section contains a RA4M2 ARM Cortex-M33 microcontroller from Renesas to control the CCE4503 Device Transceiver as well as the provided sensor and actuator. It also contains an 8 kB EEPROM, USB and SWD debug connector and user and power LED indicators as well as a reset button.

Corporate Headquarters

Trademarks

Contact information