CCE4503

Mini IO-Link Device Phy with cost-optimized Feature Set

Connecting the Next Generation of Industry 4.0 Devices with IO-Link

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.
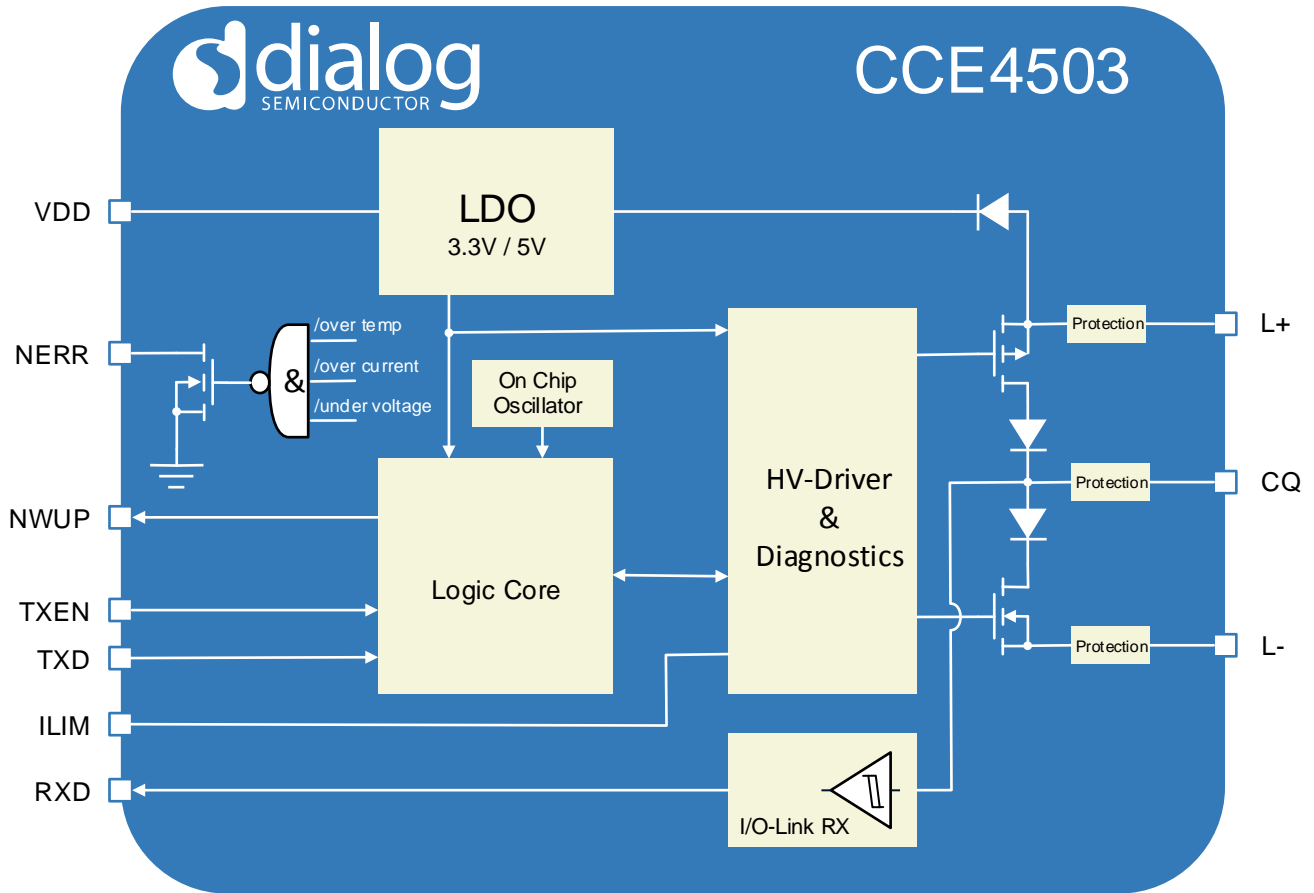
Controlled by an UART interface (TXD, RXD, TXEN), the output drivers can be configured as PNP, NPN or Push-Pull. Three LDO options and an automatic wake-up detection simplify the overall system requirements and reduce the need for additional external circuitry. The integrated protection features such 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.
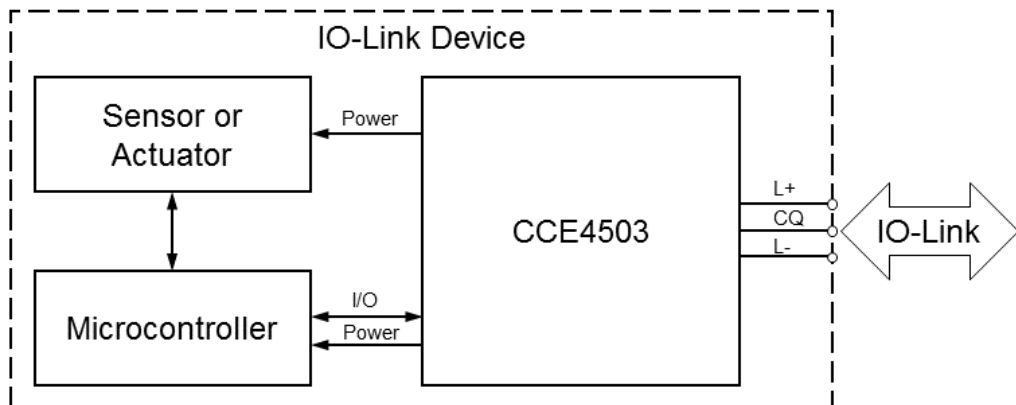
Features	Benefits	Applications
- IO-Link compliant transceiver - One IO-Link channel with up to 250 mA permanent driving current - Configurable PNP-, NPN- and Push-Pull mode - Configurable slew rate limitation - Configurable current limit - Automatic recovery function - Wake-up detection 3 LDO options with up to 20 mA 3.3V / 5V / external LDO - Reverse-polarity protection - Overcurrent detection - Undervoltage detection - Overtemperature detection - Small DFN10 3x3mm package	- 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	- IO-Link sensors - IO-Link actuators - High voltage level shifter - Industrial automation

Block Diagram

dialog SEMICONDUCTOR — CCE4503

- VDD
- NERR
- NWUP
- TXEN
- TXD
- ILIM
- RXD

LDO 3.3V / 5V

/over temp
/over current
/under voltage

&

On Chip Oscillator

Logic Core

HV-Driver & Diagnostics

I/O-Link RX

- Protection — L+
- Protection — CQ
- Protection — L-

IO-Link System Diagram

IO-Link Device

Sensor or Actuator

Microcontroller

CCE4503

Power

I/O
Power

L+
CQ
L-

IO-Link

IO-Link

dialog SEMICONDUCTOR

Evaluation Board

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

The board is divided into three sections:

- IO-Link section
  The IO-Link section contains all necessary circuitry to use one CCE4503 (with an adjustable current limit and slew rate) for IO-Link communication as well as several connectors.

- Sensor section
  The Sensor section contains three different sensors to provide a variety of signals and measurement capabilities (temperature sensor, color sensor and inductive proximity switch).

- MCU section
  The MCU section contains a LPC1347 32-bit ARM Cortex-M3 microcontroller from NXP to control the CCE4503 Device IC as well as the provided sensors.