L6364Q, L6364W

2-channel transceivers for IO-Link and SIO sensor applications

Embracing the Industry 4.0 revolution

ST's compact L6364Q and L6364W IO-Link or general-purpose transceivers are ready for Smart Industry (Industry 4.0) with easy configurability, wide application spectrum, increased efficiency and full diagnostic and protection functions.

These monolithic ICs are designed for efficient and robust operation, able to satisfy the 3-wire or 4-wire interface (PHY2) requirements of modern sensors and actuators, including dual communication channels for optional output doubling to provide extra drive strength, as well as a DC/DC converter and dual-mode UART.

In SIO mode, the devices are configured at start-up by the MCU via SPI interface, while in IO-Link mode, an IO-Link master can initiate IO-Link communication through a wake-up request.

KEY FEATURES & BENEFITS
- Supply voltage from 5 V to 35 V
- 5 V and 3.3 V compatible I/Os
- 5 V and 3.3 V, 50 mA linear regulators
- 50 mA DC-DC regulator with configurable voltage and frequency
- Low dissipative (5 Ω) CQ and DIO output stages configurable in high side, low side, push/pull
- CQ/DIO lines config. current limitation threshold
  - 0.11 A - 0.25 A or 0.22 A - 0.5 A (Join Mode)
- Fully protected
- 8 V Zener limits for fast demagnetization of inductive loads
- Two LED drivers configurable up to 8 mA

KEY APPLICATIONS
- Industrial Sensors
- Industrial Actuators
- Factory automation
- Process control

The L6364 devices support IO-Link at COM2 (38.4 kbaud) and COM3 (230.4 kbaud) modes, as well as standard Single-Input/Output (SIO) communication.

Sensor data can be exchanged with the MCU via UART or by using single-byte or multi-byte (SPI) modes.

The dual communication output channels (IO-Link CQ pin and standard DIO pin) can be configured to deliver up to 250 mA, which can be paralleled to supply up to 500 mA, with surge-pulse and reverse-polarity protection on both outputs.

The integrated UART, which supports IO-Link message sequencing (M-Sequencing), can be programmed to operate in IO-Link or standard Single-Input/Output (SIO) mode and allows an unlimited M-Sequence size in single-octet IO-Link. An internal data buffer supports up to 15 octets.

There are also 3.3 V and 5 V LDOs with 50 mA output current, which can be powered from an external supply voltage or through the embedded DC/DC converter.

The devices feature immediate short-circuit and ground/Vcc disconnection protection, and can signal undervoltage, overvoltage, and overload detection events with configurable thresholds for undervoltage lock out (UVLO) and the 7-bit calibrated temperature-sensor reading to initiate thermal shutdown.

The package options are the tiny 4 mm x 4 mm QFN-20L (L6364Q) package or the even smaller 2.5 mm x 2.5 mm 19-bump wafer-level chip-scale package (L6364W).

IO-Link Sensor (CQ) with load (DIO)
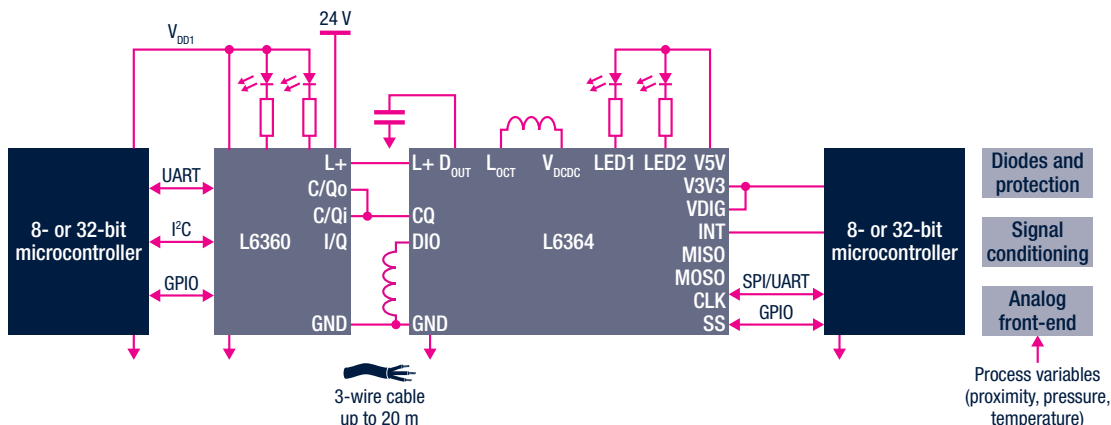
Product range

Part number	Supply voltage (V)	Output current (A)	Linear regulator (3V3 and 5V0) and DC-DC output capability	Number of I/O Ports	Package
L6364Q	5 - 35	0.25 A / 0.5 A*	50 mA	2	QFN
L6364W	5 - 35	0.25 A / 0.5 A*	50 mA	2	CSP

Note: * 0.5A in join mode

Evaluation Boards

Order Code	Description
X-NUCLEO-IOD02A1	Dual channel IO-Link device expansion board based on L6364Q for STM32 Nucleo
STEVAL-IOD002V1	Dual channel IO-Link device expansion board based on L6364W compatible with STM32 Nucleo
P-NUCLEO-IOD02A1	IO-Link Industrial multi-sensor node
STDES-IOD002V1	Dual channel IO-Link device reference design based on L6364Q and STM32L051
STEVAL-IOD04KT1	Industrial smart sensor kit based on L6364W dual IO-Link device transceiver