**Brief Description**

The ZIOL2401 is a line driver/level shifter IC that provides two independent HV* I/O channels with a wide range of configurable system features. It addresses the physical layer of sensor/actuator systems in factory automation applications and is specifically designed to support the communication standard IO-Link †.

The output drivers are push-pull stages, which in tandem mode reach an $R_{D_{\text{son}}}$ of less than 3.3Ω at all operational temperatures.

The configuration is stored in an on-chip EEPROM and automatically loaded into the ZIOL2401's control register during power up. The ZIOL2401 also provides status information, such as overload and over-temperature conditions. An integrated SPI interface supports access to configuration and status registers.

The ZIOL2401 is fabricated in a powerful CMOS mixed-signal technology that allows supply voltages up to 40V. The EEPROM read/write functionality is guaranteed within the full operating temperature range in combination with a low-voltage core supply of 3.3V.

**Features**

- Configurable output current limitation 56mA to 410mA per channel
- Standard cable driver/ physical layer transceiver for IO-Link (master and device)
- Slew-rate controlled drivers
- Wide range for configurable feature set, which is automatically loaded after power on reset
- Onboard DC/DC converter
- IO-Link-specific WURQ‡ detection
- On-chip registers and EEPROM for system configuration and status information
- SPI interface for accessing on-chip registers and EEPROM
- Digital interface: 3.3V output, 5V tolerant inputs
- IC temperature monitoring/diagnosis
- Over-current and over-temperature indication

**Benefits**

- Configurable feature set
- Nonvolatile storage of system configuration
- Excellent electromagnetic compatibility (EMC) performance due to adjustable output slew rate control
- Low $R_{D_{\text{son}}}$ of 3.3Ω in tandem mode
- Programmable limitation of driver output current
- DC/DC converter on-chip
- EEPROM read/write functionality within full operating temperature range
- Space saving 4x4mm² 24-pin QFN

**Available Support**

- Evaluation Kits
- Application Notes

**Physical Characteristics**

- Operation temperature: -40 to +85 °C
- Supply voltage 8.0V to 36.0V
- RoHS-compliant QFN 24 (4x4 mm) package

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Typical Applications

In field applications, the ZIOL2401 acts as a universal cable driver. The ZIOL2401 can support IO-Link communications as a physical-layer transceiver (PHY) for IO-Link devices and IO-Link masters.

Common applications:
- 24V line driver/level shifter
- IO-Link-compliant devices
- IO-Link-compliant masters

See the ZIOL2xxx IC Family Data Sheet for detailed technical information.

ZIOL2401 Block Diagram

Ordering Information

<table>
<thead>
<tr>
<th>Product Sales Code</th>
<th>Description</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZIOL2401BI1R</td>
<td>Dual Channel IO-Link compliant HV Line Driver, 4x4mm QFN24</td>
<td>13” reel</td>
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<tr>
<td>ZIOL2401BI1W</td>
<td>Dual Channel IO-Link compliant HV Line Driver, 4x4mm QFN24</td>
<td>7” reel</td>
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<tr>
<td>IO-Link Lab Kit V2.0 #3600100858</td>
<td>ZIOL2401 Lab Kit for detailed laboratory evaluation: configurable IC/Communication/Controller Board, USB cable; software is available for download from <a href="http://www.IDT.com">http://www.IDT.com</a> with a free customer login (see data sheet for details).</td>
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<tr>
<td>ZIOL2401 Starter-Kit #3600100369</td>
<td>ZIOL2401 Starter Kit for product demonstration: USB stick, extension board, downloadable software</td>
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Document Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description</th>
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| 2.20     | August 28, 2015 | Update for template and contact information.  
Update for kit order number and information about software download.  
Update for current limitation minimum.  
Minor edits for clarity. |
|          | January 27, 2016 | Changed to IDT branding. |
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