Infineon’s new TLE4999I3 is a dual channel linear Hall sensor designed to meet the requirements of safety critical automotive and industrial applications. It is developed in full compliance with ISO 26262 by means of two sensor elements included within one monolithic silicon design. In order to ensure diversity, the sensor cells are designed in a complementary way. Their signals follow two independent analog paths. Each signal path has its own digital signal processing unit to ensure maximum independency – redundancy, respectively.

Our XENSIV™ TLE4999I3 provides all measures that are necessary to fulfill the state-of-the-art safety requirements on system level and furthermore enables for ASIL-D system developments:

- Separate analog supply domains controlled by two regulators feed independent biasing units for the main and sub Hall sensor elements
- Two analog-digital converters ensure the separation of the sensor signals
- The integrated digital signal processors use dedicated temperature and stress parameters stored in separated EEPROM areas – for compensation of their assigned Hall sensor signals to minimize these effects
- The digital protocol contains a common 7-bit checksum ensuring error-free data transmission

Key features

- Fully ISO 26262 compliant, supports ASIL-D systems
- < 2% sensitivity drift, < 100 µT offset drift over temperature and life time specification
- Integrated digital temperature- and stress-compensation
- Fast communication protocol complies with PSII5 v2.1 with a bit rate of 189 kbps

Key benefits

- High diagnostic coverage, ISO 26262-compliancy and dual sensor cell integration enable for ASIL-D system development
- PSII5 interface saves wiring and improves EMC behavior
- SSO-3 package enables for flexible adaptation outside printed circuit boards

Key applications

- Automotive safety critical applications
- Linear movement position sensing
  - Electric Power Steering (EPS)
  - Pedal position
  - Electrical throttle control
- Industrial safety applications

www.infineon.com/linear-hall
# TLE4999I3

XENSIV™ magnetic position sensors – world’s first fully ISO 26262 compliant linear Hall sensor for high precision applications

## Infineon ISO S26262 dual channel linear Hall product portfolio

<table>
<thead>
<tr>
<th>Sales name</th>
<th>Technology</th>
<th>Interface</th>
<th>Magnetic linear range [mT]</th>
<th>Sensitivity</th>
<th>Sensitivity drift 1) [%]</th>
<th>Gain</th>
<th>Magnetic offset drift 1) [µT]</th>
<th>Supply voltage (extended range)</th>
<th>ISO 26262</th>
<th>Ordering code</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>TLE4997A8D</td>
<td>Hall</td>
<td>Analog ratiometric</td>
<td>50 100 200</td>
<td>±60 mV/mT default for 100 mT range, with gain 1.5</td>
<td>±3</td>
<td>±4</td>
<td>&lt; ±400</td>
<td>5 V ±10% (1 V)</td>
<td>ISO 26262 ready</td>
<td>SP000902760</td>
<td>TDSO-8</td>
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<tr>
<td>TLE4998P8D</td>
<td>Hall</td>
<td>Digital Interface</td>
<td>PWM</td>
<td>±48 LSB12/mT default for 100 mT range, with gain 1.5</td>
<td>±2</td>
<td>±4</td>
<td>&lt; ±400</td>
<td>5 V ±10% (16 V)</td>
<td>ISO 26262 ready</td>
<td>SP000902776</td>
<td>TDSO-8</td>
</tr>
<tr>
<td>TLE4998S8D</td>
<td>Hall</td>
<td>Digital Interface</td>
<td>SENT</td>
<td>50 100 200</td>
<td>±2</td>
<td>±4</td>
<td>&lt; ±400</td>
<td>5 V ±10% (16 V)</td>
<td>ISO 26262 compliant</td>
<td>SP000902784</td>
<td>TDSO-8</td>
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<tr>
<td>TLE4999I3</td>
<td>Hall</td>
<td>Digital Interface</td>
<td>PSI5</td>
<td>12.5 25</td>
<td>±147.5 LSB12/mT default for 25 mT range with gain 1</td>
<td>±2</td>
<td>±5</td>
<td>&lt; ±100 / &lt; ±200 2)</td>
<td>5.5-7.0 V ±10% (16.5 V)</td>
<td>ISO 26262 compliant</td>
<td>SP001689862</td>
</tr>
</tbody>
</table>

1) Maximum over drift over temperature and life time
2) Main channel/sub channel

Package drawings explaining the benefit of Infineon’s monolithic solution, versus dual die approach, enabling for space saving leaded option

![Hall cell placement](image)

**Monolithic TLE4999I**

![Hall cell](image)

**Hall cell**

**Dual sensor cell**

TLE4997A8D, TLE4998x8D

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