

Sensor System

Magnetic Position & Current Sensors

Daniel Khoo (SMD I2C3 AP RM IR)
Industrial & Renewables (IR) – UPS / Batt. Prod. / Smart-Metering / EV Charging (AC & LEV)

restricted

Agenda

1 Infineon XENSIV Overview 3

2 Target Applications 10

3 Magnetic Position Sensors 18

4 Magnetic Current Sensors 32

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Agenda

1 **Infineon XENSIV Overview** **3**

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Infineon SURF serves all markets with a broad sensor portfolio to provide best solutions in Auto, Industrial and Consumer



Automotive



Industrial



Consumer

Magnetic Sensors			MEMS				RF	
Speed	Current	Position	Pressure	Gas	Sound	Innovation	Radar 3D-Imaging	Mobile & Wireless IF
Wheel speed Trans-mission speed Engine speed	Internal rail External rail **Today's Focus**	3D Angle Linear Inductive Switches	Consumer Pressure Sensor Side airbag (SAB) Manifold (MAP) Barometric (BAP) Tire pressure monitoring (TPMS)	Air quality CO_2 Gas H_2 Refrigerant leakage R290* R454B*	Automotive MEMS microphone Consumer MEMS microphone	Laser beam scanner (LBS) MEMS ultrasound (CMUT**)	Radar 24GHz 60GHz 77GHz 3D optical Time-of-Flight	RF Communication Wireless Infrastructure

* R290: Propane / R454B: Hydrofluorocarbon/olefines

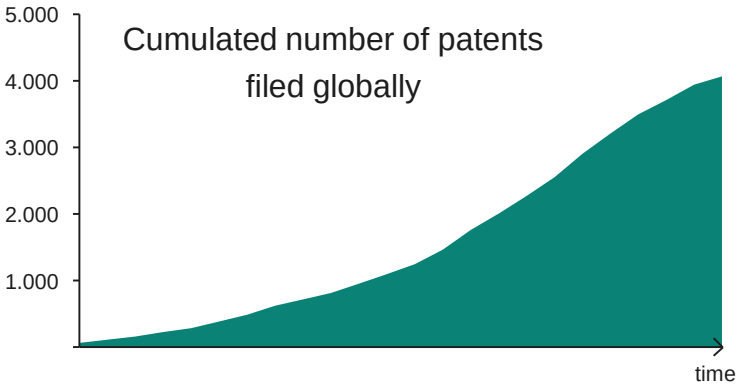
** Capacitive Micromachined Ultrasonic Transducer

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As a major sensor player, we are a reliable partner for innovation and high-volume manufacturing for our customers

Technology Leadership

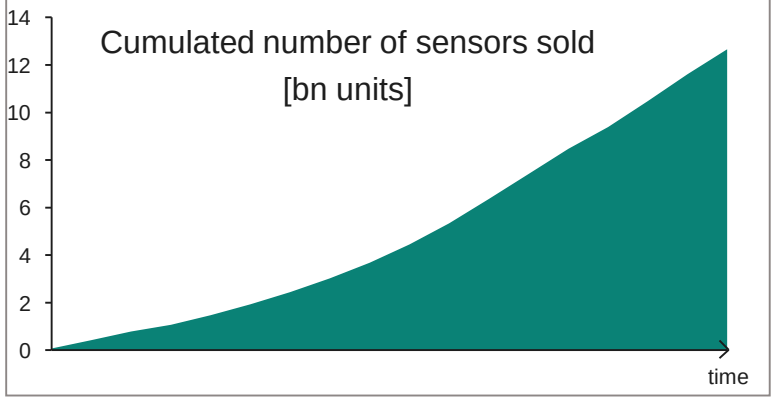




Our strong patent portfolio ensures future technology leadership

Capacity throughout the cycle

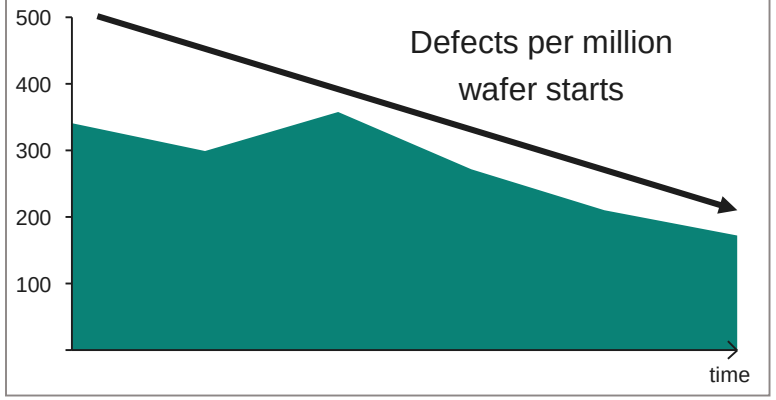




Our capacity management helps us to fulfill customer demand

Quality in everything we do

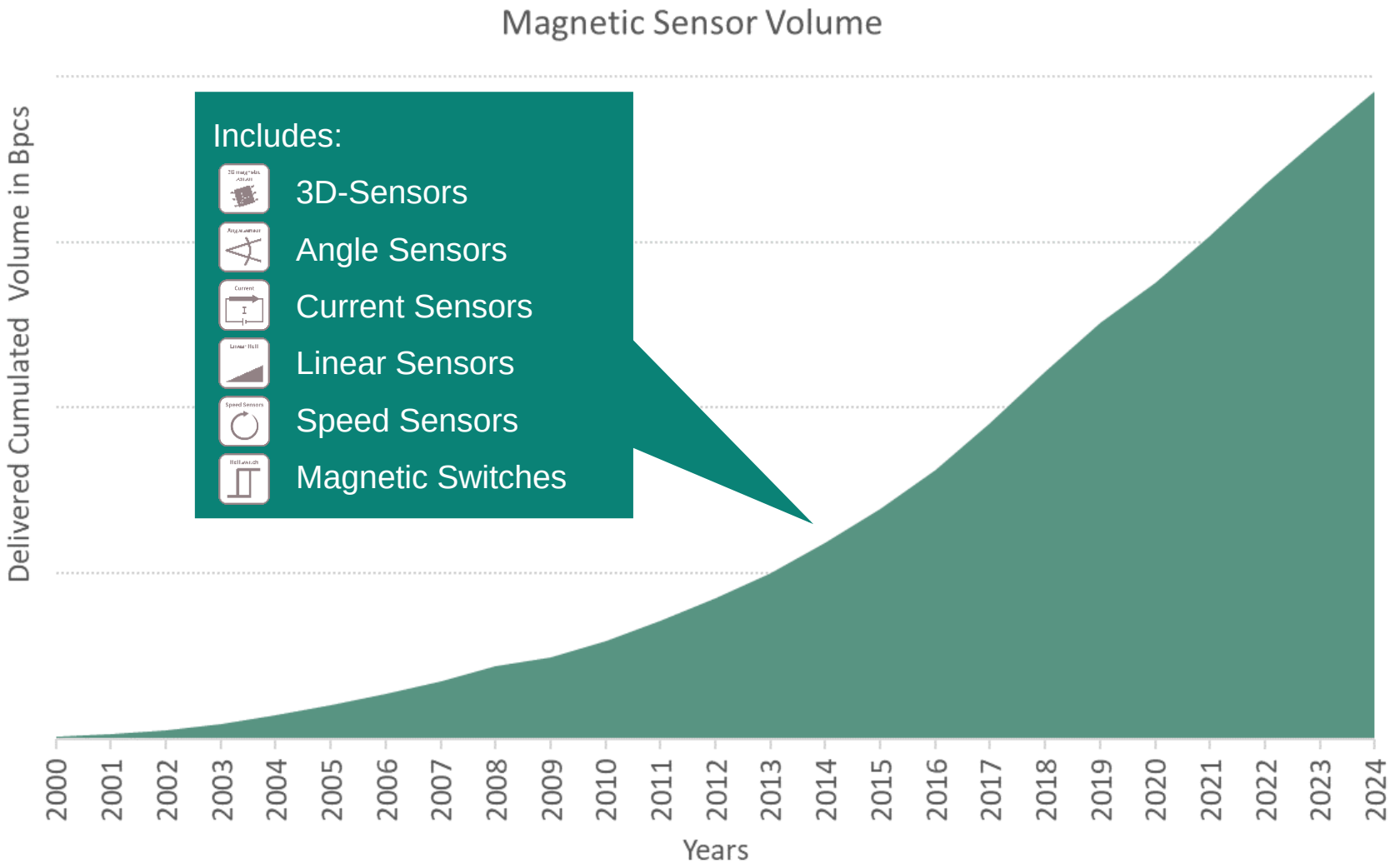




Our high manufacturing standards guarantee excellent product quality

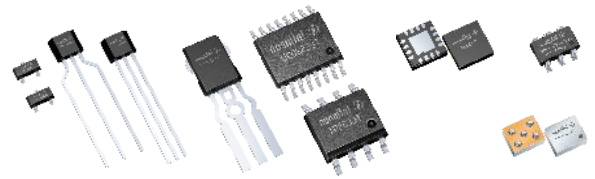
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We sold about 10 billion magnetic sensors with an outstanding field-return level below <0.1 dpm



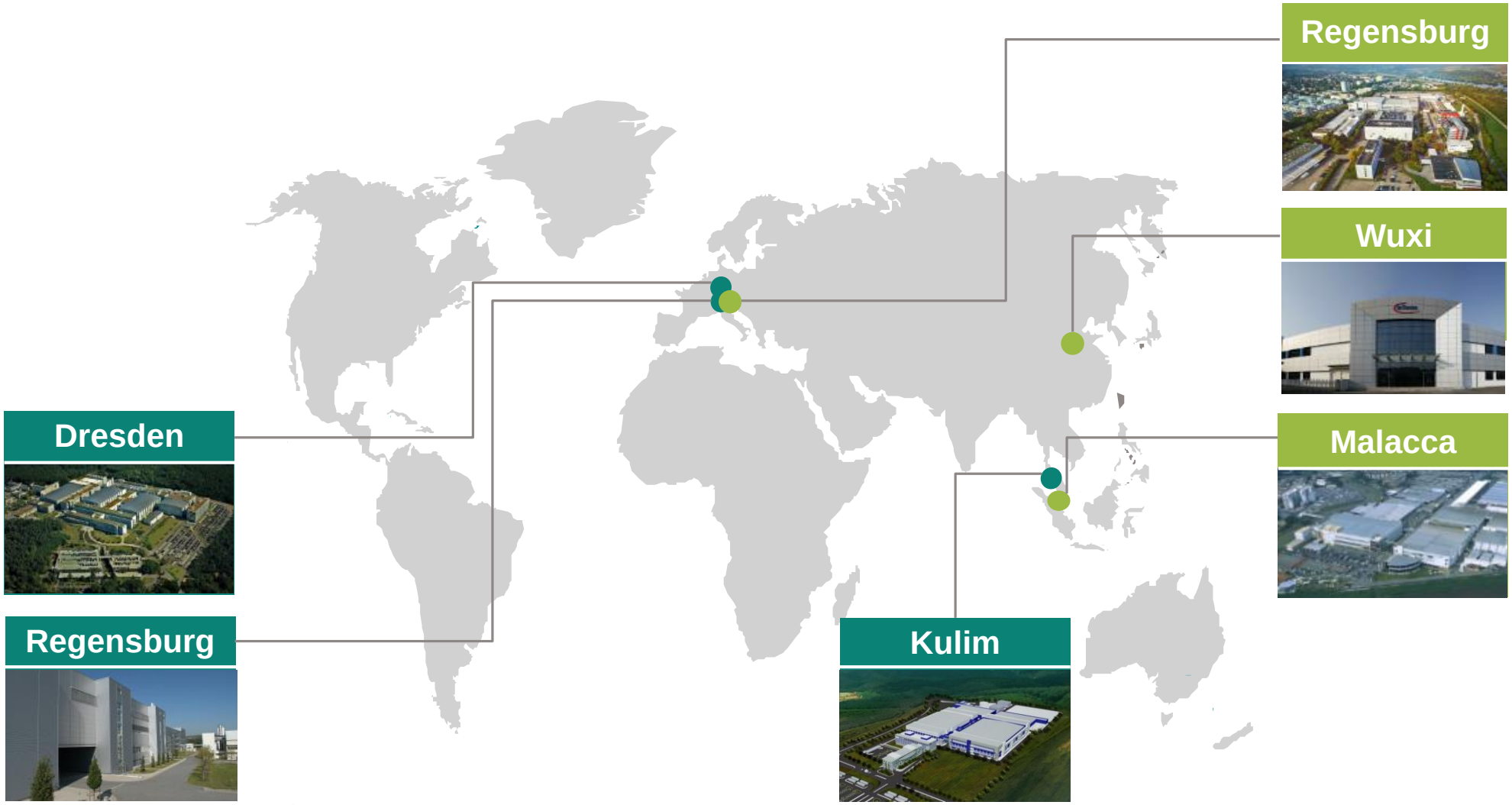
Portfolio

- Leading magnetic sensor portfolio covering all major technologies:
  - Hall
  - xMR (AMR, GMR, TMR)
- Serving the automotive, consumer and industrial market
- Broad package portfolio, like:



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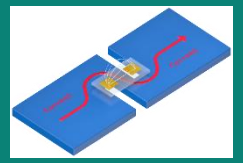
We leverage the broad Infineon production base for magnetic sensors, incl. dual site strategy – a big advantage in supply security



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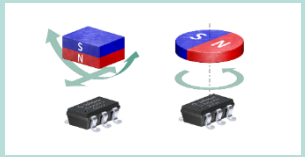
We serve the market with a broad magnetic sensor portfolio to provide the best solutions to our customers

Current Sensors



Position Sensors

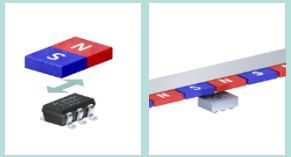
3D Sensors



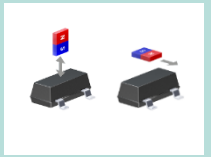
Angle Sensors



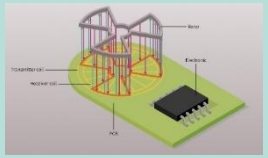
Linear Sensors



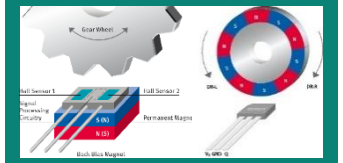
Magnetic Switches



Inductive Sensors



Speed Sensors



Developed for automotive, industrial & consumer markets

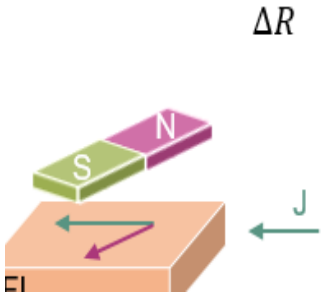
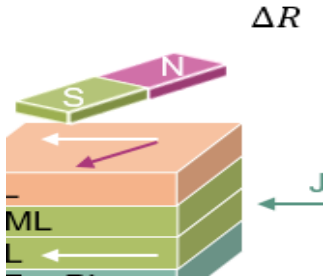
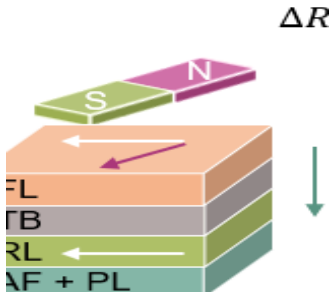
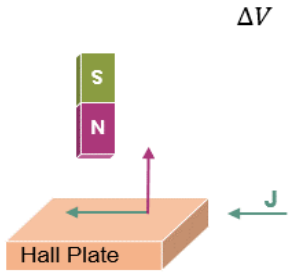






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Infineon offers a broad range of XENSIV™ sensor technologies for magnetic sensing solutions

Technology	AMR TLx51, TLx53	GMR TLx50, TLx53	TMR TLx55	Hall TLx49	
Product Families	Angle		Current	3D	Switch
			Linear		
Principle					
Sensitivity	Moderate 1 – 3%/mT	High 10%+/mT	Very High 100%+/mT	Low 0.1 – 1%/mT	
Magnetic Field Range	±10 mT – ±100 mT	±10 mT – ±50 mT	±10 mT – ±30 mT	Few mT – several T	
Accuracy	High – Very High ±1 – 2% FS	High ±0.5 – 1% FS	Very High ±0.1 – 0.5% FS	Moderate – High ±2 – 5% FS	
Angle Range	180°	360°	360°	360° for 3D	
Current Consumption	Low few mA, 2 – 3 mA	Low few mA, 7 mA	Low ~2 mA	Higher few mA, 5 – 10 mA	

AMR: Anisotropic MagnetoResistance **GMR:** Giant MagnetoResistance **TMR** Tunnel MagnetoResistance **FL:** Free Layer **NML:** Non-Magnetic Layer **RL:** Reference Layer **AF:** Anti-Ferro Magnet **TB:** Tunnel Barrier **PL:** Pinned Layer

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Agenda

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2 **Target Applications** **10**

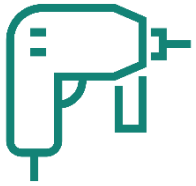
3 Magnetic Position Sensors 18

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Infineon addresses industrial and consumer applications with a growing portfolio of magnetic position and current sensors

Consumer focus applications



Home & Professional Tools



Health & Lifestyle



Home Appliances



Smart Home & Building



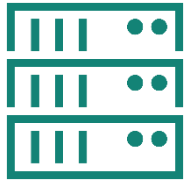
Gaming & PC Accessories



Robotics & Drones



Smart Metering



Data Center

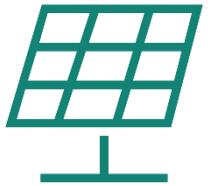
Industrial focus applications



Industrial Drives



Power Supply & Distribution



PV Inverter & Energy storage

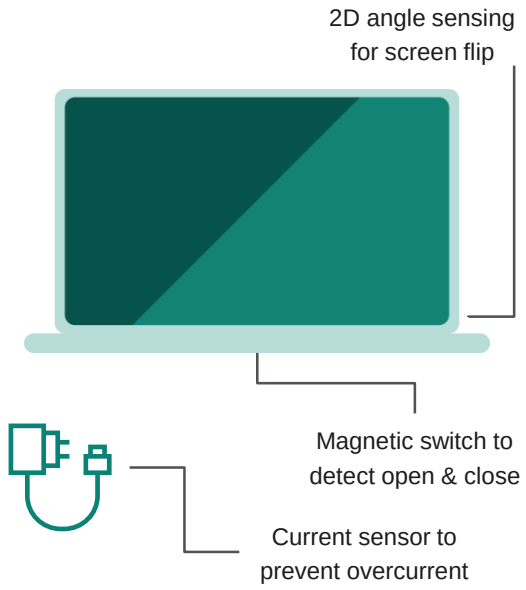


HVAC

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XENSIV™ magnetic sensors remove drift performance and improve performance in gaming and PC accessories

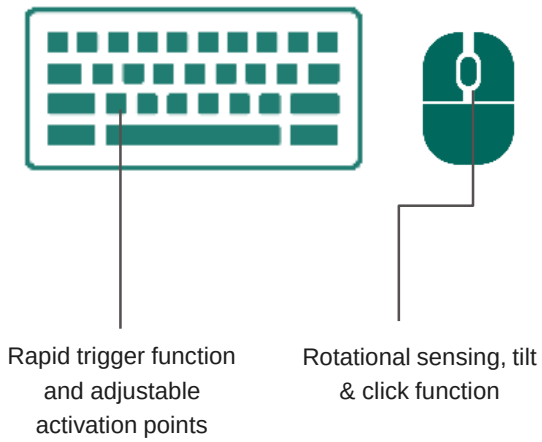
Notebooks



Recommended products

- Magnetic Switch
  - TLE4913 – low power Hall switch
- Current sensor
  - TLI5570 – shunt replacement

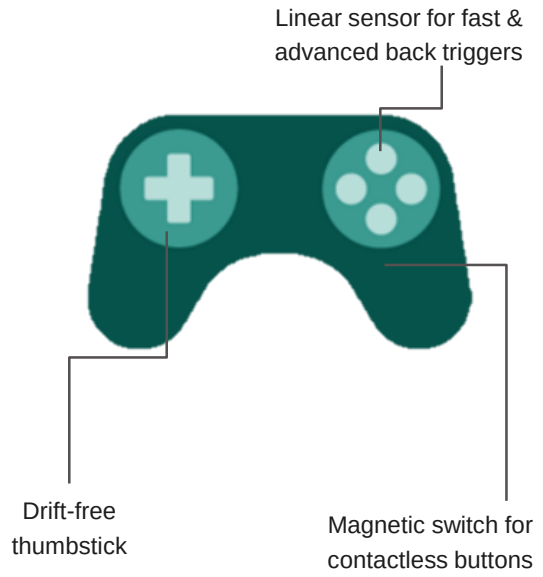
PC Peripherals



Recommended products

- Keyboard
  - *Linear Hall - TLI49901**
- Mouse-wheel
  - Angle sensor - TLI5012B, TLI5501
  - 3D Hall sensor – TLI493D-A2B6

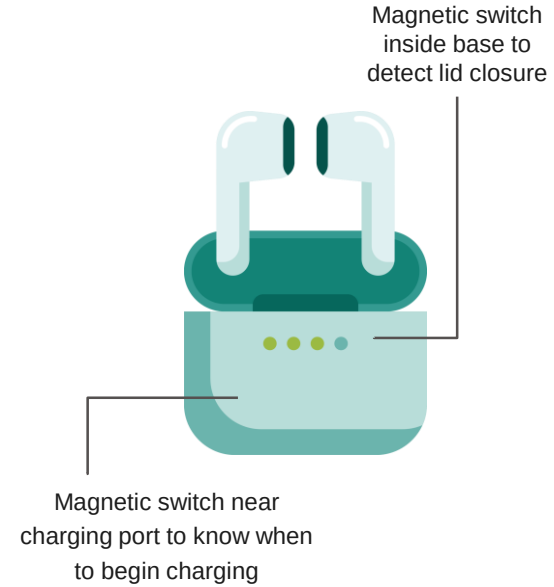
Game controllers



Recommended products

- Thumbstick
  - 3D Hall sensor – TLI493D-A2B6
- Trigger & buttons
  - Linear sensor – TLI55910, *TLI49901**
  - Low power Hall switch - TLE4913

Hearables



Recommended products

- Magnetic Switch
  - Low power Hall switch - TLE4913

*upcoming

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Application example: Magnetic XENSIV™ sensors in power tools

Position Sensing

- **Drill trigger**
- **Direction indication**

TLx493D-x2Bx – 3D Hall sensor

TLI49901 – Linear Hall sensor, **SOP Q1/26, ES available**

TLI55910 – Linear TMR Sensor

TLI4965-5M – Magnetic switch

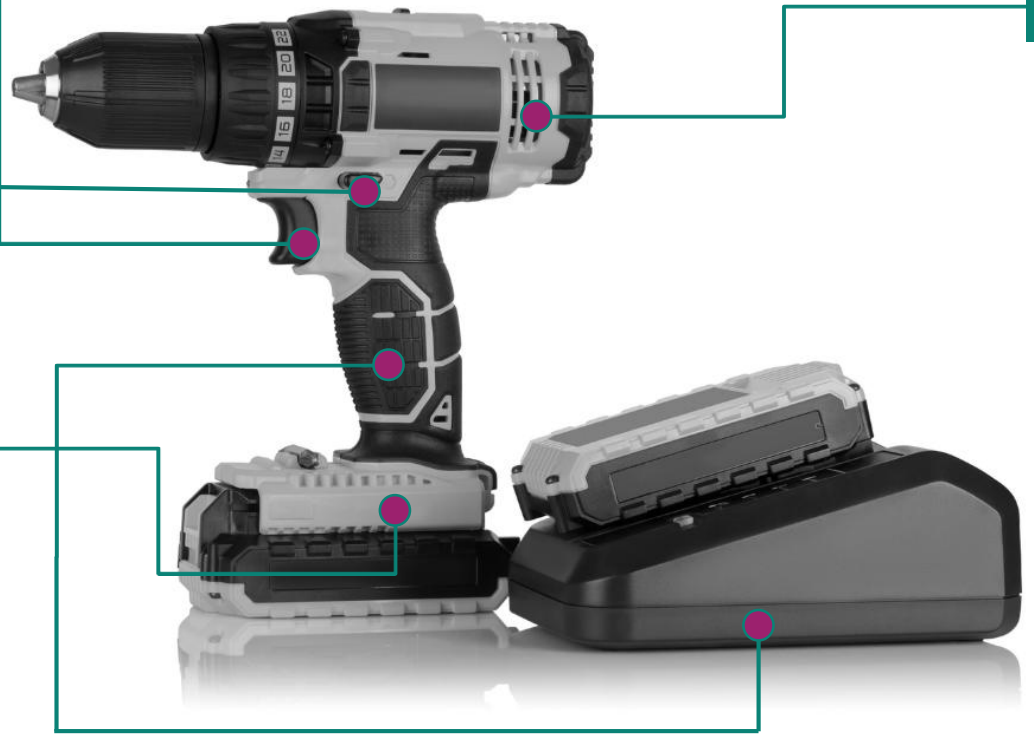
Current Sensing

- **Motor torque measurement**
- **Battery management**
- **Overload / -current protection**
- **Charging (AC/DC conversion)**

TLI5571/0 – (Differential) TMR sensor

TLI5572 – TMR sensor with integrated OpAmp, **SOP Q1/26, ES available**

TLx4971/2 – Integrated Hall sensors



BLDC Motor Control

- **Rotor position sensing**

TLI4961/3/8-x – magnetic latches

TLI5012B – digital angle EoS sensor

TLI49012 – digital angle EoS/OoS[1] sensor, **SOP Q2/26, ES available**

TLE5501 – analog angle EoS sensor

[1] supporting **E**nd **o**f **S**haft, **O**ut **o**f **S**haft design flexibility

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Application example: Magnetic XENSIV™ sensors in home appliances

Current Sensing

- **Drive / Motor torque control**

TLx4971/72/73 – High precision Hall sensor

TLI5570/72 – Cost-effective TMR sensor, **SOP Q1/26, ES available**

TLI5571 – TMR sensor for overcurrent protection, **SOP Q1/26, ES available**











Position Sensing

- **Door / flap / lid / drawer open/close contact**
- **Water level sensing**
- **Control Elements (e.g. jog-wheels, control buttons)**

TLx4964x – Hall switch

TLx4966x – Hall switch

TLx493D-x2B6 – 3D Hall sensor

TLI55910 – Linear TMR sensor

BLDC Motor Commutation

- **Rotor Position Detection in:**
  - Electric drawers and doors
  - Vacuum cleaners suction motor
  - Robo Chef [2]: legs, arms, fingers, grippers

TLx4961x – Hall switch

TLE5501 – Angle Sensor “Dual Bridge”

TLI5012B – Digital angle sensor

TLI49012 – Angle sensor EoS/OoS[1]
SOP Q2/26, ES available

[1] supporting **E**nd **o**f **S**haft, **O**ut **o**f **S**haft design flexibility

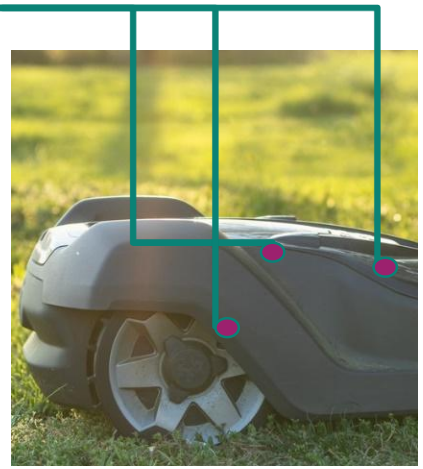
[2] Source for Robo Chef

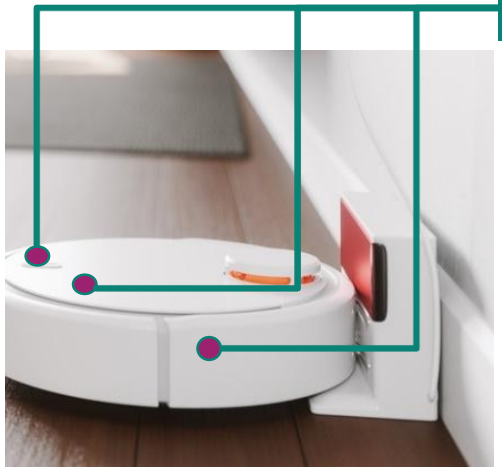
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Application example:
Magnetic XENSIV™ sensors in domestic robots

Position detection

- **Control Elements** (e.g. jog-wheels, emergency stop buttons)
- **Collision detection**
- **Attachment detection** for: water/dust tank, mop
- Dust container: presence detection, filling level status
- Adjustment of blade/chassis heights
- **Contact detection**:
  - Door / flap / lid open/close/fill-level
  - Charging port/plug contact





Motor commutation / metering

- Vacuum motor
- Cooling fan
- Lidar laser tower rotation
- Flow-metering of mop water
- Blade motor
- Cooling fan
- Propulsion/wheel-motor

Sensor solution

TLx4961/4/8-xM/xL
Magnetic switches and latches family in standardized leaded & SMD packages

TLx493D-A2B6/W2B6
Family of magnetic 3D linear Hall sensors for HMIs and control of slower motors

TLI5012/TLI49012
Digital Angle sensor for higher performance in motor commutation

TLI49901/ TLI55910
Linear Hall/TMR sensor, **SOP Q1/26, ES available**

TLx5570 / 72
TMR current sensor for shunt replacement, **SOP Q1/26, ES available**

Customer value

- **Contactless, reliable and cost-efficient** sensor with wide operating temperature range
- Low cost, reliable, easy to use including option for **wake-up functionality**
- Higher accuracy and efficiency in motor commutation for **higher torque and longer battery runtime,** TLI49012**: sophisticated autocal algorithm**
- Analog interface, **high accuracy over lifetime, low noise**
- Miniature SMD package, high bandwidth, **high sensitivity and high signal to noise ratio @ attractive price level** make it a optimum shunt replacement

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Application example: Magnetic XENSIV™ sensors in commercial robots

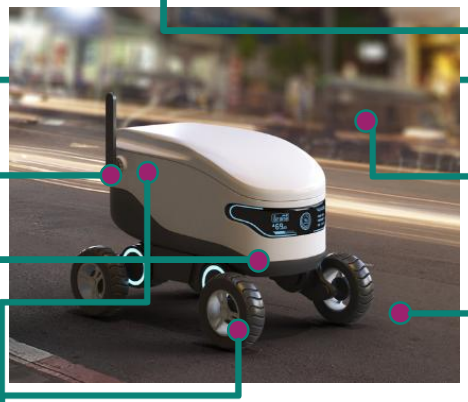
Current Sensing

- **Motor torque control:** Detection of force on head, legs, arms, fingers and grippers
- **Charger**
- **BMS**
- **Circuit Breaker**

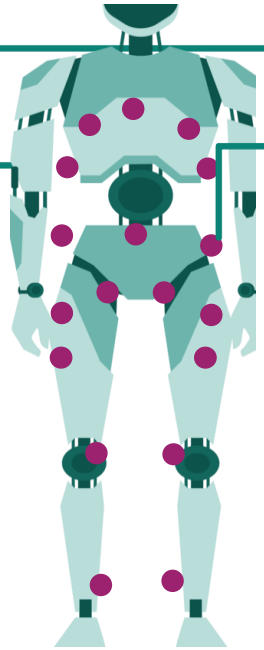
TLx4971/72/73 – High precision Hall sensor

TLI5570/72 – Cost-effective TMR sensor, **SOP Q1/26, ES available**

TLI5571 – TMR sensor for overcurrent protection, **SOP Q1/26, ES available**







Position Sensing

- **Control Elements** (e.g. joystick, jog-wheels, emergency stop)
- **Robot joints**
- **Charging port contact**
- **Gimbal (camera stabilization)**
- **Collision detection**
- **Door/flap/lid open/close contact**

TLx4964x – Hall switch

TLx4966x – Hall switch

TLI5012B – Digital angle sensor

TLx493D-x2B6 – 3D Hall sensor

TLI55910 – Linear TMR sensor

TLI49901 – Linear Hall sensor, **SOP Q1/26, ES available**

BLDC Motor Commutation

- **Rotor Position Detection in:**
  - Wheel Motor
  - Head, legs, arms, fingers, grippers

TLx4961x – Hall switch

TLE5501 – Angle Sensor “Dual Bridge”

TLI5012B – Digital angle sensor

TLI49012 – Angle sensor EoS/OoS[1] **SOP Q2/26, ES available**

[1] supporting **E**nd **o**f **S**haft, **O**ut **o**f **S**haft design flexibility

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Application example: Magnetic XENSIV™ sensors in industrial drives

Current Sensing

TLx4971/72/73 – High precision Hall sensor

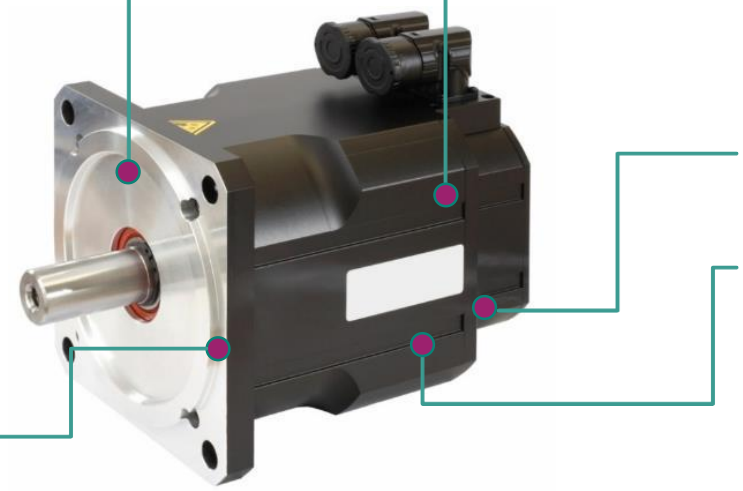
TLI5570 – Cost-effective TMR sensor for shunt replacement

TLI55772 – Cost-effective TMR sensor for shunt + OpAmp replacement, **SOP Q1/26, ES available**

TLI5571 – TMR sensor for overcurrent protection, **SOP Q1/26, ES available**

Lower Resolution Rotor Position Sensing

TLx4961/63/65/68 – Hall latch and high precision bipolar switch



High Resolution Rotor Position Sensing

TLE5014 – Digital angle Sensor (GMR)

TLI5012B – Digital angle sensor (GMR)

TLI49012 – Angle sensor EoS/OoS[1] (Hall)
SOP Q2/26, ES available

TLE5109(D) – Digital angle sensor (AMR)

TLE5501 – Analog angle sensor (TMR)

[1] supporting **E**nd **o**f **S**haft, **O**ut **o**f **S**haft design flexibility

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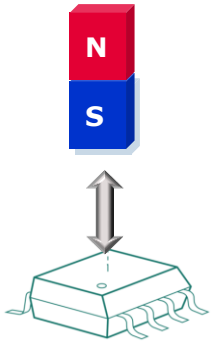
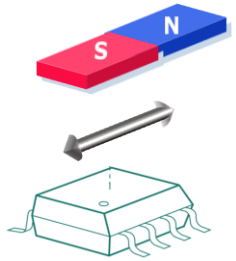
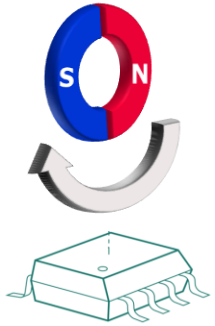
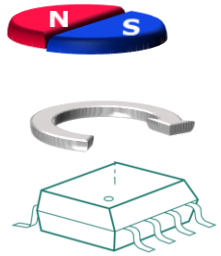
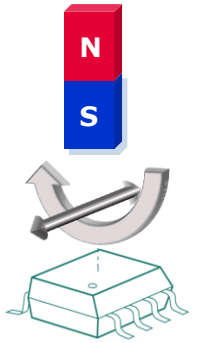
2 Target Applications 10

3 **Magnetic Position Sensors** **18**

4 Magnetic Current Sensors 32

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XENSIV™ magnetic position sensors serve various use cases for a broad range of applications

Use case	Presence	Linear Position	Rotational speed and direction	Angular Position	Multi dimensional movement
					
	Detecting absence and presence of a magnetic field	Detecting and measuring the position of linear movements	Measuring rotational speed and direction of a magentic field via index counting	Detecting and measuring the position angular movements	Detecting and measuring the position 3-dimensional movements
Suitable product families	– **Magnetic switch** – **3D magnetic sensors**	– **Linear sensors** – **3D magnetic sensors**	– **Magnetic switch**	– **Magnetic switch** – **Linear sensors** – **3D magnetic sensors** – **Angle sensors**	– **Linear sensors** – **3D magnetic sensors**
Exemplary applications	Smart building, Health & Lifestyle, Home appliance, Robotics, Smart metering	Industrial robots, Gimbal, Game controller, HVAC	Smart building, Home appliance	Power tools, Robotics, Industrial robots, Gimbal	Game controller, Power tools, Health & Lifestyle, Home appliance

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XENSIV™ – Magnetic switches and latches

Switches / Latches

INDUSTRIAL / CONSUMER

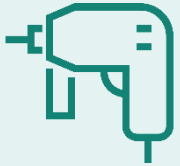
Position detection

IFX home appliances website



BLDC commutation

IFX motor control website
IFX power tools webpage



Index counting and direction detection

IFX smart buildings website



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Hall switch

XENSIV™ – Magnetic switch families
Tailored to your needs

	Product	Description	Supply voltage	Package	Customer value
Position detection	*TLx4964*	**Unipolar magnetic switch** with various thresholds	3.0 – 32 V	SOT23, PSSO	**Design flexibility due to various sensor options**
	TLI4965	**Unipolar magnetic switch** with various thresholds	3.0 – 5.5 V	SOT23	**Enables cost-effective PCB based designs**
	TLE4913	**Omnipolar magnetic switch** with low current consumption	2.4 – 5.5 V	SC59	**Low current consumption for battery powered applications**
2D	*TLx4966*	**Double Hall magnetic latch** with speed/speed or speed/direction output	2.7 – 24 V	TSOP, PSSO	**Save PCB space and reduce cost**
Motor commutation	*TLx4961*	**Magnetic latch** with various thresholds	3.0 – 32 V	SOT23, PSSO	**Design flexibility due to various sensor options**
	TLI4963	**Magnetic latch** with various thresholds	3.0 – 5.5 V	SOT23	**Enables cost-effective PCB based designs**
	TLx4968	**Magnetic latch** with extreme high sensitivity	3.0 – 32 V	SOT23, PSSO	**Small hysteresis → highly sensitive → small and cost-effective designs**

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Infineon XENSIV™ Magnetic switches and latches
Quick links

Know our product offering

TLx4961/8	TLI4963/65	TLx4976	TLx4966	TLx4964	TLE4913
Datasheet_TLI4961-1M Datasheet_TLE4961-2M Datasheet_TLV4961-3M Datasheet_TLE4961-4M Datasheet_TLE4961-5M Datasheet_TLE4968-1M Datasheet_TLV4961_1TA/B	Datasheet_TLI4963-1M Datasheet_TLI4963-2M Datasheet_TLI4965-5M	Datasheet_TLE4976-1K Datasheet_TLV4976-2K	Datasheet_TLI4966G Datasheet_TLE4966L Datasheet_TLE4966V	Datasheet_TLV4964-1M Datasheet_TLV4964-2M Datasheet_TLE4964-4M Datasheet_TLE4964-5M	Datasheet

Trainings

- XENSIV™ - Double Hall TLE4966x evaluation kit incl. magnetic field mapping
- Smart sensing in power tools enabled by XENSIV™ magnetic sensors

Application notes

- Position feedback for motor control
- PG-SSO module assembly Dos and Don'ts
- Recommendation for Handling and Assembly of Infineon PG-SSO Sensor Packages
- Tiny Contactless Finger Trigger Control for handheld appliances
- Magnetic Circuit Design for Correct Direction Detection of TLE4966
- Innovative Features Integrated in Hall Switches

Important links & support

Main page

Released datasheets, package information, application notes, and EVB information

Developer community

FAQs from developer community, comments from Infineon experts

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XENSIV™ – Magnetic linear sensors

Linear Sensors

INDUSTRIAL / CONSUMER

IFX industrial applications webpage

Robotics and encoders



Camera



Linear measurement



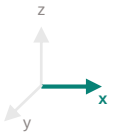
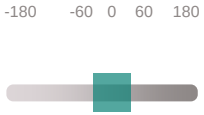
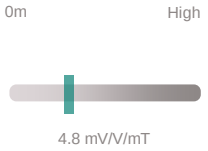
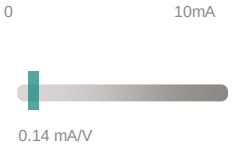
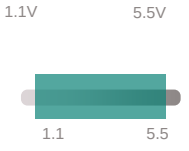
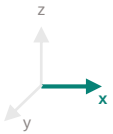
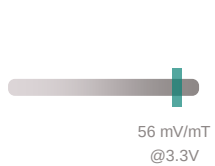
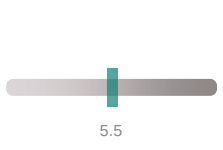
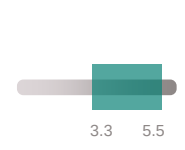
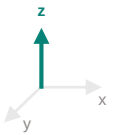
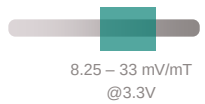
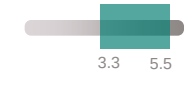
Valve control



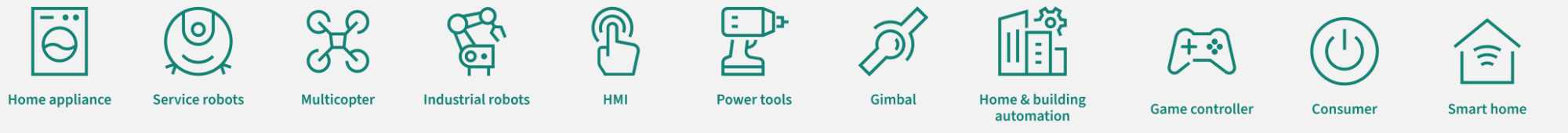
Variable valve control

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Our comprehensive linear sensor portfolio fulfill requirements of different industrial and consumer applications

	Product	Description	Sensing direction	Magnetic range	Output sensitivity	Current Consumption*	Voltage	Package	Status
TMR based	*TLI55910*	**Balanced bridge TMR sensor, high sensitivity** in SOT23 package						 SOT23-6 (2.9 x 2.4 x 1.0)	Mass Production
TMR based	*TLI55950*	**Balanced bridge TMR sensor** with **internal OpAmp** and temperature compensation						 SOT23-6 (2.9 x 2.4 x 1.0)	Samples available SOP Q1 2026
Hall-based	*TLI49901*	**Linear Hall sensor** with various sensitivity settings						 SOT23-3 (2.9 x 2.4 x 1.0)	Samples available SOP Q1 2026

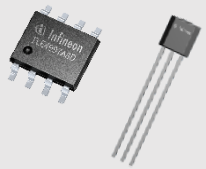
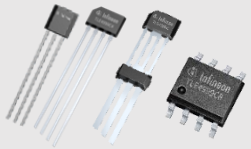
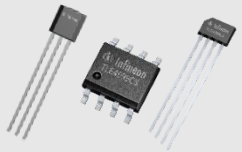
Applications



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Infineon XENSIV™ Linear Sensors
Quick links

Know our product offering

TLE4997	TLE4998	TLE4999	TLx49901	TLI55910	TLI55950
					
Datasheets	Datasheets	Datasheets	Datasheets	Datasheets	Datasheets

Articles

- Position sensors in parking lock and gear fork
- Magnetic sensor solutions for power tools
- Magnetic sensor solutions for efficient transmission systems
- Sensor use cases in transmission systems

Trainings

- Smart sensing in power tools enabled by XENSIV™ magnetic sensors
- Introducing Infineon´s portfolio for PC and Gaming Accessories

Application notes

- Measuring liquids levels using Hall sensors
- Pedal position sensing
- Electric power steering
- Throttle position sensing
- TLE4998 temperature compensation

Application notes

- PG-SSO module assembly do´s and don´ts
- Handling PG-SSO sensor packages
- TLE4999Cx master nibble low time

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XENSIV™ – Magnetic angle sensors

Angle Sensors

INDUSTRIAL / CONSUMER

Drives

IFX General drive webpage



Robotics

IFX robots webpage



Encoder



High end Drone



Factory Automation

IFX ind. automation webpage



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Angle sensor

XENSIV™ – Magnetic angle sensor families

End of shaft or out of shaft: flexibility for your application

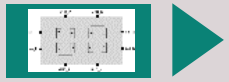
Angle sensor portfolio



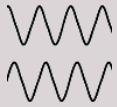
digital angle



TLE5014SP
TLI5012B
TLI49012[1]



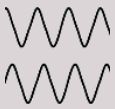
amplified
analog sin/cos



TLE5x09

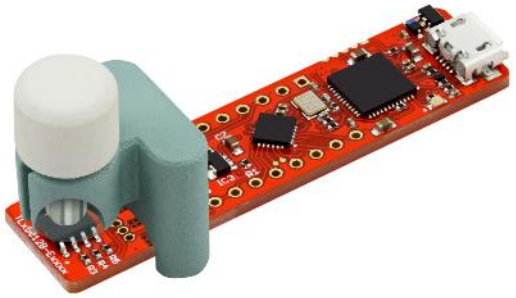


analog sin/cos



TLE5501

Experience our
evaluation boards



Product	Technology	Interface	Temperature	Package
TLI5012B	GMR	SPI, IIF	-40 to 125°C	DSO - 8
TLI49012[1]	Hall	SPI, ABZ, UVW, PWM	-40 to 125°C	VSON-8
TLE5014SP16(D)	GMR	SPI, IIF	-40 to 125°C	TDSO – 16
TLE5x09	GMR/AMR	analog sin/cos	-40 to 125°C	TDSO – 16
TLE5501	TMR	analog sin/cos	-40 to 150°C	DSO - 8

[1] SOP Q2/2026

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Infineon XENSIV™ Angle sensors
Quick links

Know our product offering

TLI5012B



Datasheet
Product Brief

TLE5501



Datasheet
Product Brief

TLE5x09A16



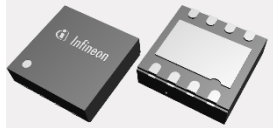
Datasheet

TLE5014SP16



Datasheet

TLI49012



Coming soon

Articles

- Product Selection Guide
- XENSIV™ – Efficient actuation and motor commutation

Trainings

- Unlocking superior motion control performance with Infineon´s XENSIV™ angle accuracy
- Infineon's standardized and specialized XENSIV™ magnetic angle sensors

Application notes

- TLE5xxx(D) calibration
- Position feedback for motor control
- Magnet Design
- Recommendation for Handling and Assembly of Infineon PG-SSO Sensor Packages

Support Tools

- Magnetic Design Tool for Angle Sensors
- TLx5012B Evaluation Kit
- TLE5501 Evaluation Kit
- TLE5014 Evaluation Kit
- Motor Control Kit

Important links & support

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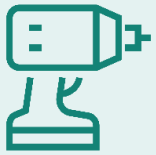
Developer community
FAQs from developer community, comments from Infineon experts

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XENSIV™ – Magnetic 3D sensors

3D Hall Sensors

INDUSTRIAL / CONSUMER

- Gaming Joystick 
- Power Tools 
- E-Meter (anti tampering) 
- Service Robots & Drones 

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XENSIV™ – Magnetic 3D sensor family

High-accuracy and low power consumption in a compact design

3D magnetic sensor

Product Highlights

- Accurate linear **sensing** in **3 dimensions**
- **Magnetic field** range: **±160 mT**
- Four preconfigured address types (A0 to A3)
- **Green** packages
- Broad microcontroller compatibility
- Min. **power consumption: 7 nA**
- **Temperature** range: **-40 to 125°C**
- **I²C** digital **interface**
- Best accuracy-package size fit
- High flexibility and configurability to support **platform approach**
- **ISO26262 ready**



Product	Linear range [mT]	Sensitivity [LSB_{12}/mT]	Wake up	Package
TLI493D-A2B6	±135 and 200	15.4 and 7.7	No	TSOP6
TLV493D-A1B6	±130	10.2	No	TSOP6
TLE493D-W2B6	±135 and 200	15.4 and 7.7	Yes	TSOP6

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Infineon XENSIV™ 3D Hall sensors
Quick links

Know our product offering

TLE493D-W2B6	TLI493D-A2B6	TLV493D-A1B6
Datasheet Product Brief	Datasheet Product Brief	Datasheet Product Brief

Trainings

- 3D Hall sensors for gaming controller joysticks
- Sensor solutions for drones and gimbals
- Sensing the world in all 3 dimensions

Application notes

- Joystick design with 3D Hall sensors
- E-Meter anti tampering solution with 3D Hall
- Trigger control with 3D sensors

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Agenda

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3 Magnetic Position Sensors 18

4 **Magnetic Current Sensors** **32**

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XENSIV™ – Magnetic current sensors

Coreless current sensors for measuring 15A to 2kA

Current sensor

Product Highlights

Silicon features

- **Wide ampacity range** - Current range of ±25 A to ±2000A at 5 V & 3.3 V supply
- **High accuracy** & stray field robustness
- **High bandwidth**
- **Ratiometricity (on/off)**
- **Flexibility through programmability** - parameter tuning incl. current range, sensitivity etc.
- **Programmable fast overcurrent detection & functional safety** (ISO26262)

Package features

- **TISON-8** (internal current rail) **- Best-in-class thermal dissipation behavior** up to 120Apk
- **DSO300mil-16** (internal current rail) - **8mm clearance and creepage & Isolation up to 1.7kVpk**
- **TDSO-16, VSON-6, SOT23-6 and 3rd party modules** (external current rail) **- For measuring 2 kA**

Experience our evaluation boards



120A 3-phase Eval board with TLE4971

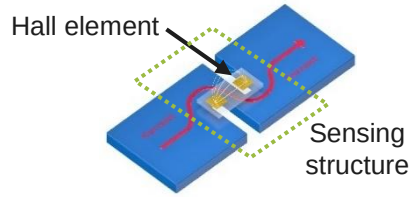
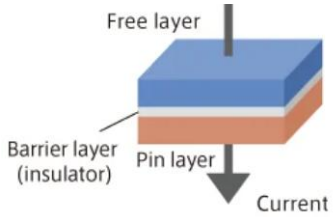


200A 3-phase Eval board with TLE4972

Product	Package	Current rail	Ampacity (Apk)	Isolation (Vpk)
TLx4971	TISON-8 DSO300mil-16	Internal	25A – 120A 15A – 60A	975V TISON-8 1.7kV DSO300mil-16
TLE4972	TDSO-16, VSON-6	External	100A – 2kA	User defined
TLE4973	TISON-8 TDSO-16, VSON-6	Internal External	25A – 130A 100A - 2kA	975V TISON-8 User defined (external)
TLI5570	SOT23-6	External	30A – 2kA	User defined

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Our current sensing portfolio comprises high-accuracy Hall as well as TMR-based sensors

	High accuracy integrated sensors	Shunt replacement & Circuit breakers
Technology	Hall based sensors In-future, high accuracy TMR[1)] 	TMR bridge 
Applications	– **Industrial applications** - drives incl. inverters, Robots and Cobots – **PV inverters, charging solutions**	– **Shunt replacements** - Power tools, Home appliances
Products	Sensors – TLx4971 – TLE4972/ 73 Packages – TISON, DSO (25A-130A) – TDSO, VSON (200A-2000A)	Sensors – TLI5570/2 as shunt replacements in SOT23 package – TLx5571 for solid-state circuit breaking in DSO package
Features	– **High accuracy** (2%) and **sensitivity** at current ranging from **±15A to ±2000A** – **Bandwidth** of **c. 210 kHz** – **Robust** (up to 125 C), **reinforced isolation, compact** – Two supply voltages of **3.3 V and 5.0 V** – **ASIL** and **SIL qualification**	– **Medium accuracy** (c. 3%-5%)**, SNR** and **fast response times** (<300 ns, > 1 MHz) – **Compact design** (< 3mm x 3 mm) with operating **temperature** of **up to 125 C**

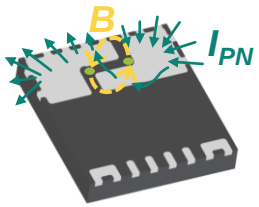
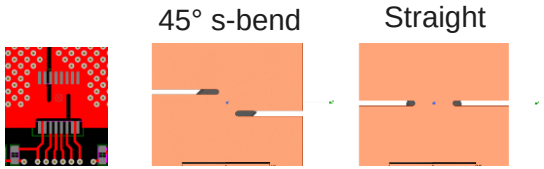
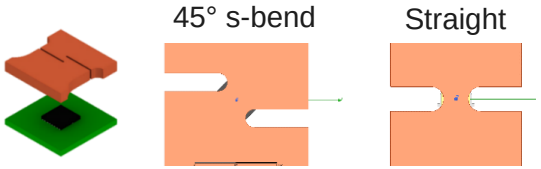
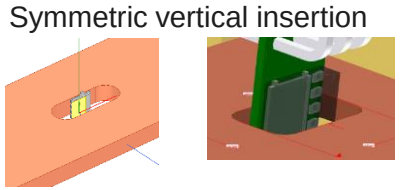
1) Tunnel MagnetoResistance

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Different packages & sensing structures enable multiple measurement ranges from 15A on PCB to 2kA on external busbar

Ampacity range based on sensor & package combination

Current sensor simulation tool - currentsensorsim

Measure-ment geometry	Integrated current rail	External current rail		
	Lateral insertion	Lateral insertion		Vertical insertion
	PCB	PCB	Busbar	Busbar
	– Integrated current rail & sensing structures	– Recommended sensing structure 45° s-bend or straight – Slit width 0.5mm (typical)	– Recommended sensing structure 45° s-bend or straight – Slit width = bus bar thickness	– Recommended symmetrical structure
				
Package & current range	TISON, DSO (in dev.) 15A – 130A	TDSO, VSON 100A – 600A	VSON, TDSO 500A – 2kA	VSON, SSO4-53, Modules 600A – 2kA
Sensor	TLx4971 TLE4973 TLE4978 / 77 (in dev)	TLE4972 TLE4973	TLE4972 TLE4973	TLE4972, TLE4973 CSM510HP2x TLE4975 (in dev.)

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The superior thermal performance & built-in overcurrent detection of our current sensors have led to numerous design wins

EV Charging



DWin details

Customer: Finnish DC EV Charger
Application: 25kW modules PFC stage
Product: TLI4971 in TISON-8 pack.

Success factor

- **Size, price** and **in-built overcurrent detection feature**
- **High accuracy** after End-of-line calibration (~1%, 3σ) for **currents up to 120A**

PV Inverter



DWin details

Customer: American Hybrid inverter
Application: PV AC/DC and Battery
Product: TLI4971 in DSO-16 300 mil package

Success factor

- **Best-in-class accuracy in a standard** 8mm clearance and creepage **package**
- **Size, price** and **in-built overcurrent detection feature**

Commercial HVAC



DWin details

Customer: German HVAC & Drives
Application: AC/DC stage
Product: TLE4971 in TISON-8 package

Success factor

- **Size, price** and **in-built overcurrent detection feature**
- **Best-in-class thermal performance**

Home & Professional Tools



DWin details

Customer: German Power tools
Application: Battery protection
Product: TLE4972-AE35D5

Success factor

- **Fast In-built overcurrent detection feature** (2 pins with response time <700ns)

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Existing portfolio TLx497x current sensor family spec sheet (webpage)

Explanation spec summary

	Internal current rail (iCR)				External current rail		iCR		External current rail
Device / Feature set	TLI4971	TLE4971	TLE4971	TLE4971	TLE4972	TLE4972	TLE4973	TLE4973	TLE4973
Package with webpage links	TISON-8-5	TISON-8-5	TISON-8-6	DSO-16 (300mil)[1)]	TDSO16	VSON	TISON-8-6	TDSO16	VSON
Current Sensing Max Range [A]	**±120**	**±120**	**±120**	**±60**	**±600**	**±2000**	**±120**	**±600**	**±2000**
Current Sensing Min Range [A]	**±25**	**±25**	**±25**	**±16**	**±100**	**±100**	**±25**	**±100**	**±100**
Accuracy (Aout)	**2%**	**2%**	**2%**	**1.5%**	**1.5%**	**1.5%**	**2%**	**1.5%**	**1.5%**
Temperature range [°C]	-40 to +105	-40 to +125		Tbd.	-40 to +150	-40 to +150	-40 to +130	-40 to +150	-40 to +150
Supply voltage [V]	**3.3**	**3.3**		**3.3**	**3.3**		**5**		
Clearance and creepage [mm]	4			8	-	-	4	-	-
Isolation voltage [Vpk]	975			1.7kV & 1.3kV	-	-	975	-	-
Impedance of integrated current rail [µΩ]	220			550	-	-	220	-	-
Analog Output	yes (all products)								
Bandwidth (Aout) [kHz]	240	210	210	210	210	210	210	210	210
OCD-channels	2	2	2	2	2	2	1	1	1
Reaction time OCD [µs]	0.7 (all products)								
DCDI	-	-	-	-	-	-	yes	yes	yes

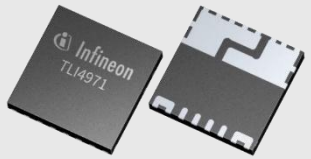
[1] Preliminary, specs under development

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Infineon XENSIV™ Current sensors TLx497y-family
Quick links

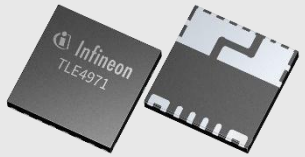
Know our product offering

TLI4971



Datasheet
Product Brief

TLE4971



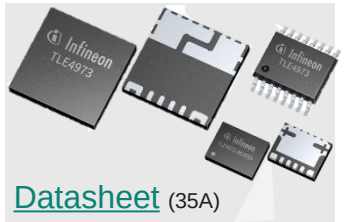
Datasheet
Datasheet SAFETY

TLE4972



Datasheet VSON-6
Datasheet TDSO-16

TLE4973



Datasheet (35A)
Ratiometric var. (35A)

TLE4971



Datasheet

Articles

- Ultra low impedance current sensor (myInfineon)
- TLE4972 magnetic current sensor (myInfineon)
- Shields 2 go (my Infineon)
- Power and Sensing Selection 2024 (myInfineon)
- Industrial Current Sensors

Trainings

- TLI4971 - eLearning #1 (Industrial)
- TLx4971 - eLearning #2 (WBG-design)
- TLE4971 - eLearning #3 (Automotive)
- TLE4973 - eLearning for OBC and BMS
- 22kW General Purpose Drive
- Low Voltage SOMANET-Drive

App' notes Integrated Current Rail

- PCB recommendations
- Programming Guide and User Manual
- EMC & ESD recommendations
- 120A 3-phase evaluation board
- Intrinsic stray field cancellation
- Ultra-Low impedance (myInfineon)
- GPD22kW Insulation Coordination

App' notes External Current Rail

- Sensing Structure Guidelines (myInfineon)
- Accurate 2-wheeler motor control
- Traction Inverter
- Online Simulation Tool
- 3-phase evaluation board 200A
- 3-phase evaluation board 400A
- 3-phase evaluation board 600A

Important links & support

Main page
Released datasheets, package information, application notes, and eval board information

Available products
Information on product (families) and released datasheets

Developer community
FAQs from developer community, comments from Infineon experts

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Support / Information





Daniel Khoo
AP Regional Application Marketing (UPS, Smart-metering, EV Charging (AV & LEV) & Battery Production)
Email: daniel.khoo@infineon.com

Infineon Website:

- Product
  - Sensors & Radio Frequency
    - Magnetic Position Sensors
    - Magnetic Current Sensors
    - RF Switches
  - Memory
    - FRAM
    - NOR Flash
  - MCU
    - XMC
    - PSoC
  - Connectivity
  - CoolSET™ (SMPS)
    - Integrated Power Stage
    - PWM (FF & QR)
  - MOSFET
    - High-Voltage
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