PRODUCT BRIEF

XENSIV™ TLE4977 Hall current sensors

Simplify current sensing with integrated safety: ASIL B-classified, high bandwidth, high-precision for high-frequency systems in automotive and industrial applications

Infineon's XENSIV™ TLE4977 family of highly precise coreless current sensors is designed with a hybrid Hall + coil architecture. These sensors deliver bi-directional ACDC measurements with simultaneous Over-Current Detection (OCD). Developed in accordance with ISO 26262 for safety requirements rated up to ASIL-B, its high >1 MHz bandwidth offers exceptional accuracy across automotive, industrial, and telecom applications. This enables you to simplify system design and reduce component count. Accelerate time-to-market with a single certified solution that ensures reliable power management and safety protection.

The XENSIV™ TLE4977 current sensor comes in a PG-DSO-16 300 mil, Grade 1 wide-body package to meet basic and reinforced isolation requirements. Pre-calibrated, highly accurate AC/DC current sensor features a high 1 MHz bandwidth with pre-programmed sensitivity. With exceptionally low noise (typ. 38 mA_{RMS}), minimal sensitivity error over temperature and lifetime (Grade A: max. ±1.2%, Grade B: max. ±3.8%), and low offset error over temperature and lifetime (Grade A: max. 200 mA, Grade B: 420 mA), it sets a new standard in coreless current sensing technology.

The Digital Control and Diagnostic Interface (DCDI) provide users with the ability to fully customize sensor settings according to their specific requirements, for example:

- Multi-sensor communication (allows connection of up to 8 sensors per bus)
- Sensor diagnostics
- Adjustment of OCD thresholds (can be adjusted using an external resistive divider as well)
- OCD deglitch filter time.

Potential applications

DCDC converters, on-board charging, EV charging, PV inverters, battery charging & discharging, servo drives, SMPS, data centers

Key features

- High bandwidth of >1 MHz
- Current measurement from 22.5 A to 81 A
- Supply voltage: 3.3 V and 5 V
- Dedicated pin for OCD
- Operating ambient temperature: -40°C to 125°C (Grade 1)
- ASIL B-classified
- DSO-16 300 mil package with basic and reinforced isolation

Key benefits

- High versatility for different power ranges, with OCD programming capabilities
- High bandwidth, enabling use across a wide range of applications
- Highly precise measurement over temperature and lifetime
- Exceptionally low current measurement capabilities, thanks to low noise performance
- Easy integration with pre-calibrated and pre-programmed sensitivity



On-board charger | DC-DC HV/12V | LV-drives | Solar

www.infineon.com/current-sensors

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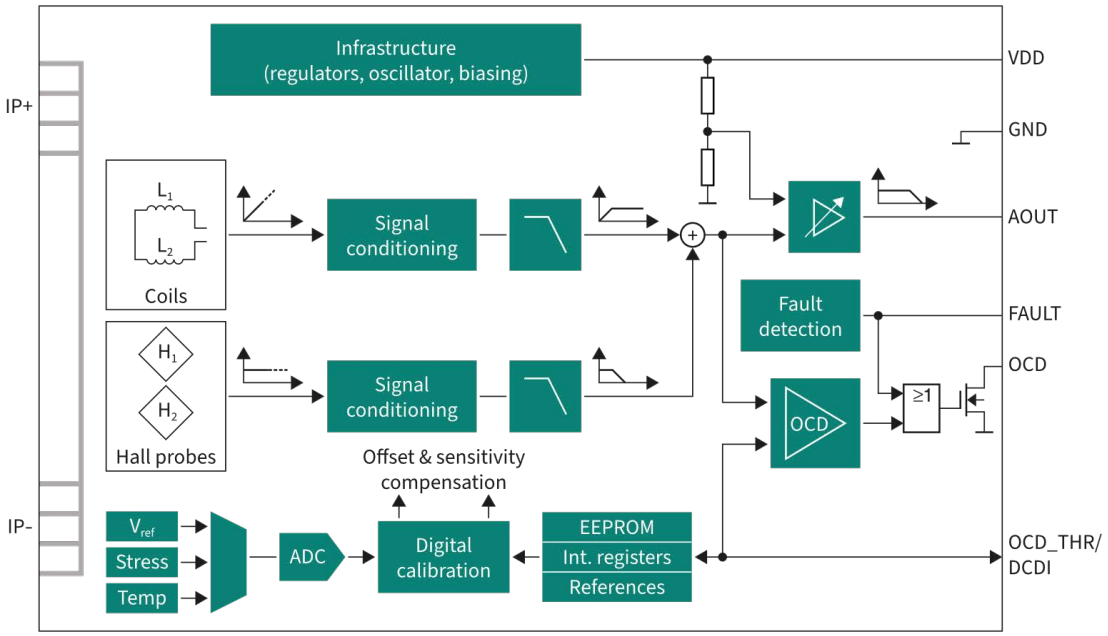
Block diagram



Product overview

Product	Supply [V]	Current range [A_{peak}]	Sensitivity [mV/A]	Accuracy grade	Output mode	Package
TLE4977-R060W5-O-S0010	5.0	67.5	32.5	Grade A	Single-ended	PG-DSO-16
TLE4977-R050W5-O-S0010	5.0	56.0	39.0	Grade A	Single-ended	PG-DSO-16
TLE4977-R040W5-O-S0010	5.0	45.0	48.75	Grade A	Single-ended	PG-DSO-16
TLE4977-R060W5-O-S1010	5.0	67.5	32.5	Grade B	Single-ended	PG-DSO-16
TLE4977-R050W5-O-S1010	5.0	56.0	39.0	Grade B	Single-ended	PG-DSO-16
TLE4977-R040W5-O-S1010	5.0	45.0	48.75	Grade B	Single-ended	PG-DSO-16
TLE4977-R020W3-O-S0010	3.3	22.5	60.0	Grade A	Single-ended	PG-DSO-16
TLE4977-V080W3-O-S1010	3.3	81.0	16.7	Grade B	Single-ended	PG-DSO-16
TLE4977-V040W3-O-S1010	3.3	45.0	30.0	Grade B	Single-ended	PG-DSO-16

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