PRODUCT BRIEF

XENSIV™ - TLE4973 Magnetic current sensor

High precision coreless current sensor family for automotive and industrial applications

The TLE4973 product family offers high-precision, coreless current sensors for uni- or bi-directional measurement of AC and DC currents ranging from 0 A to 2,000 A. These sensors feature an analog output and a fast Over Current Detection (OCD) pin to protect systems against overcurrent events and short circuits. Designed for automotive applications, the TLE4973 family complies with ISO 26262 and is classified as ASIL B with built in self-tests, providing advanced diagnostic capabilities via a UART-based Digital Control and Diagnosis Interface (DCDI).

To accommodate a wide measurement range, the family is available in various package options. The TLE4973 in a TISON-8 package is fully calibrated to measure currents up to 160 A on a PCB, featuring a low 220 µΩ integrated current conductor and large soldering pads for efficient heat dissipation. In contrast, the PG-TDSO-16 and PG-VSON-6 options offer intrinsic isolation from the current conductor, enabling the measurement of mid to high currents on external thick copper layer PCBs or busbars without heat limitations.

The device settings, such as sensitivity and overcurrent thresholds, can be adjusted using the DCDI interface to optimize performance in end-customer applications. This dedicated low-voltage UART interface also allows for programming of the internal EEPROM, reading of safety status and temperature data via a microcontroller, and can support up to eight sensors with a single pin. This reduces interconnections, resulting in cost savings and improved system reliability.



TISON-8

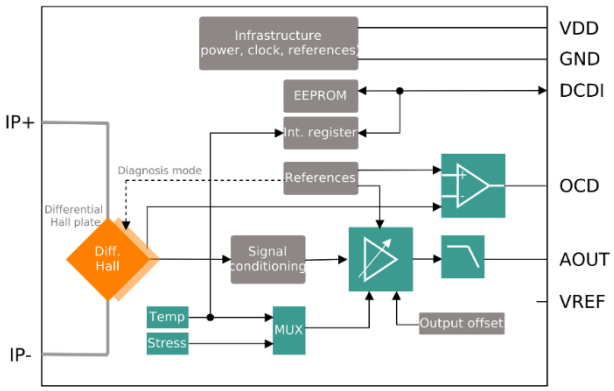


PG-TDSO-16



PG-VSON-6-4

Device block diagram



Key features

- **High accuracy:** 1.3% drift over temperature and lifetime
- **Low offset**: As low as 60 µT
- **Fast Over Current Detection:** <1 µs response time
- **Low-voltage DCDI:** Up to 8 sensors programmed with just 1 microcontroller pin
- Advanced diagnostics: **ASIL B** compliant (**ISO 26262**)
- **TISON-8 package:** Low-ohmic 220 µΩ internal current rail
- **VSON-6 and TDSO-16:** Compact, intrinsically isolated packages
- **Leadless package:** With Lead Tip Inspection (LTI) capability
- **Quality certifications:** AEC-Q100 qualified, UL certified

Key benefits

- **Precise measurement** with no **need of** magnetic core
- **Protect high-power devices:** Fast overcurrent detection for SiC and GaN transistors
- **Cost savings:** Simple digital interface reduces interconnection costs
- **Flexible measurement:** 0 A to 2000 A on PCB or external busbar

AEC Qualified

Current

xEV

Drives

On-board charger

www.infineon.com/current-sensors

PRODUCT BRIEF

The standard version of the TLE4973, featuring an external current rail, offers high design flexibility with programmable sensitivity across a wide range of settings (53 mV/mT to 254 mV/mT). For applications requiring high accuracy at low currents, pre-programmed variants are available, optimized to achieve minimal offset drift over temperature and lifetime.

Product table (overview)

Product	Sensing range	Band-width typ [kHz]	Sensitivity	Total accuracy [%]	Output noise density	UL 1577 certified	Current rail	Package
TLE4973-x025T5-S00xx[1)]	33.6 [A]	210	65.5 [mV/A]	2.3	290 [µA/√Hz]		Internal	TISON-8-6
TLE4973-x050T5-S00xx[1)]	67 [A]	210	32.8 [mV/A]	2.3	290 [µA/√Hz]		Internal	TISON-8-6
TLE4973-x075T5-S00xx[1)]	101 [A]	210	21.8 [mV/A]	2.3	290 [µA/√Hz]		Internal	TISON-8-6
TLE4973-x120T5-S00xx[1)]	161 [A]	210	13.7 [mV/A]	2.3	290 [µA/√Hz]		Internal	TISON-8-6
TLE4973-R025T5-U-S0010	33.6 [A]	210	65.5 [mV/A]	2.3	290 [µA/√Hz]	•	Internal	TISON-8-6
TLE4973-R050T5-U-S0010	67 [A]	210	32.8 [mV/A]	2.3	290 [µA/√Hz]	•	Internal	TISON-8-6
TLE4973-R075T5-U-S0010	101 [A]	210	21.8 [mV/A]	2.3	290 [µA/√Hz]	•	Internal	TISON-8-6
TLE4973-R120T5-U-S0010	161 [A]	210	13.7 [mV/A]	2.3	290 [µA/√Hz]	•	Internal	TISON-8-6
TLE4973-xE35D5-S00xx[1) 2)]	41 [mT]	210	53 to 254 [mV/mT]	1.3	70 [nT/√Hz]		external	TDSO-16
TLE4973-xE35S5-S00xx[1) 2)]	41 [mT]	210	53 to 254 [mV/mT]	1.3	70 [nT/√Hz]		external	VSON-6-4
TLE4973-RE35S5-S3510[3)]	21 [mT]	210	106 [mV/mT]	1.35	70 [nT/√Hz]		external	VSON-6-4

Note: All parts operate with 5 V power supply and are AEC-Q100 qualified for automotive and industrial applications
Note [1)] various output modes available (ratiometric on/off, single ended, semi/fully differential)
Note [2)] sensitivity range can be programmed for these variants
Note [3)] variant with fixed sensitivity range optimized for low offset

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