

TLE4998x

Programmable Linear Hall Sensor family with 12bit and 16bit digital output

Applications

- Linear and angular position sensing
 - Pedal and throttle position
 - Steering torque
 - Suspension control
 - Headlight leveling
 - Seat position and occupation detection
 - Proximity detection
 - Multi-position detection and selection
 - Liquid leveling (e.g. fuel tanks)
 - HMI (Human-Machine-Interfaces, e.g. joysticks, dials)
- Lossless and galvanic separated current sensing
 - Battery management
 - Power metering

Features

- Fully digital signal processing up to 20bit on-chip
- Active on-chip Hall probe stress compensation
- PWM (12bit out), SENT acc. SAE J2716 (16bit out) or SPC (16bit out) with synchronous, dynamic range and bus mode extensions
- Programmable PWM frequency and SENT unit time
- 3 highly dynamic magnetic ranges: $\pm 50/100/200\text{mT}$
- Fully digital, programmable and deterministic second order temperature compensation
- Very flexible input-to-output value translation plus clamping
- Standard and extended supply range, low supply current
- Reverse polarity, short-circuit and micro-break protection
- Open-drain output
- Wide junction temperature range from -40 to $+150^\circ\text{C}$
- Green packages (PG-SSO-4-1, PG-SSO-3-9, PG-SSO-3-10)

Frame based on SAE J2716 (SENT)

SYNC	STAT.	HALL VALUE	TEMP.	CRC
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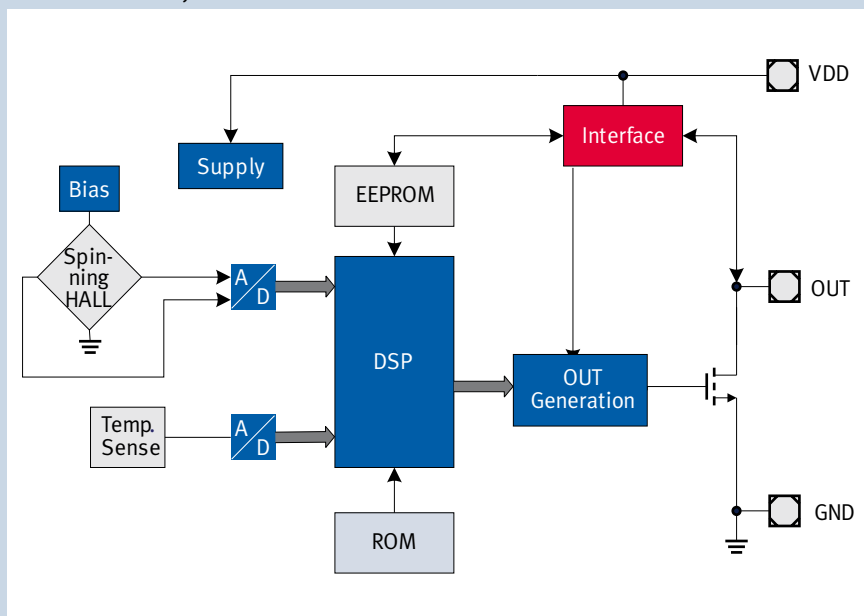
Benefits

- True 16bit resolution (SENT/SPC types)
- Best-in-class performance even under automotive conditions
- One platform following future protocol trends
- Widely usable magnetic ranges simplify application setup (opt. dynamic range setup)
- Temperature behavior widely adoptable to any magnetic setup - stable, digital compensation
- Reliable 2-point field-to-value calibration
- Usable on regulated and not regulated supplies
- Immunity against negative supplies and EMC robustness, low EMC emissions
- Reduces power dissipation on ECU side
- Different supply domains of sensor and recipient without additional circuitry possible
- SENT protocol allows reliable and CRC protected data transmission
- Transmission of on-chip temperature, e.g. for plausibility checks in a redundant (two-sensor) system (SENT or SPC)
- SPC supports (currently) four sensors on a bus
- Temperature and stress compensation for highest performance stability over temperature and lifetime

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TLE4998x family



With the introduction of the TLE4998x product family, Infineon offers an extensive product portfolio of Linear Hall sensors for automotive and industrial systems. The TLE4998x is based on a similar concept as the TLE4997. The analog interface implemented in the TLE4997 is replaced by a selection of digital output protocols. The interface options of the TLE4998x include Pulse Width Modulation (PWM), Single Edge Nibble Transmission (SENT) as well as Short PWM Codes (SPC). The sensor is conveniently programmable in EEPROM and is available in three different leaded packages. With its temperature and stress compensation features, it provides outstanding performance stability over both temperature and lifetime.

Features	Package and Type		
	PG-SSO-3-10	PG-SSO-4-1	PG-SSO-3-9 (incl. capacitors)
Programmable PWM output	TLE4998P3	TLE4998P4	TLE4998P3C
SENT (SAE J2716 standard)	TLE4998S3	TLE4998S4	TLE4998S3C
SPC (Short PWM Code)	TLE4998C3	TLE4998C4	TLE4998C3C

Parameter	Range			Unit
	min.	typ.	max.	
2P calibration accuracy	-0.2	0	0.2	%
Ext. supply voltage*	4.1	5	16	V
Reverse supply prot.	-18			V
Supply current	3	6	8	mA
Output sink current			5.0	mA
Load resistor to supply	1			kΩ
Programmable PWM freq.	122		1953	Hz
Programmable. SENT/SPC unit time	2	3	4/3.88	μs
Magnetic field			unlimited	mT

*for supplies >12V a 100Ω series resistor is recommended

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