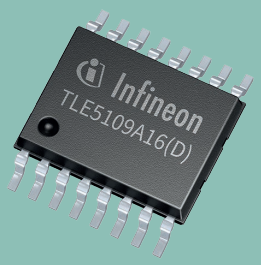


Product brief

TLE5109A16(D)

XENSIV™ magnetic position sensor – analog AMR-based angle sensors for ultra-precise angular position sensing

Infineon's new TLE5109 product family covers our latest ultra-precise, fast analog AMR-based angle sensors. TLE5109 products are the right fit for any kind of ultra-precise and fast 180° angle measurement application. The sensors' application fields range from BLDC motor position applications for e.g. pumps, wipers or brakes, position measurements of valves, flaps or pedals to steering angle applications with the highest functional safety requirements. Built within a 180° sensing technology, the new TLE5109 sensors nevertheless can be used for 360° for motors with an even number of pole pairs.

TLE5109 products are available as single and dual die versions and at two different supply voltage options, optimized for 3.3 V as well as 5 V. All products come inside the TDSO-16 package. The whole TLE5109 family is ready for ISO 26262, targeting ASIL-D for all dual die sensors. This makes the products a perfect fit for both automotive as well as industrial safety applications.

TLE5109 products can be used within a very broad magnetic field range, starting at 10 mT reaching up to more than 500 mT. One major benefit of the Infineon iAMR technology is its high angle accuracy, reaching typical values of only 0.1° angle error. At low magnetic fields of 10 … 20 mT, TLE5109 products are outperforming the market due to their benchmark small typical angle error of only 0.2°. Reaching such low error values at low magnetic fields, TLE5109 products enable very cost-efficient systems as customers can use less powerful and thus more economical magnets.

With their very fast start-up time of only 40 … 70 µs, TLE5109 products are outperforming competition again with regards to speed. TLE5109 sensors are also the perfect fit for high speed applications > 30.000 rpm.

Adding the AMR-based TLE5109 family to the already existing GMR-based TLE5009 and diverse TLE5309 products, Infineon Technologies AG is also increasing the design-in flexibility for customers. The quick and easy product version interchange is enabled due to the identical pin-configuration and interfaces of all TLE5x09 sensors.

Applications

- BLDC motor position (e.g. pumps, wipers, brakes and other actuators)
- EPS rotor position
- Pedals and rotary switches
- Valve or flap position sensing
- Steering Angle Sensing (SAS)
- Electric motors
- Magnetic encoders
- High-speed applications
- Automotive and industrial safety

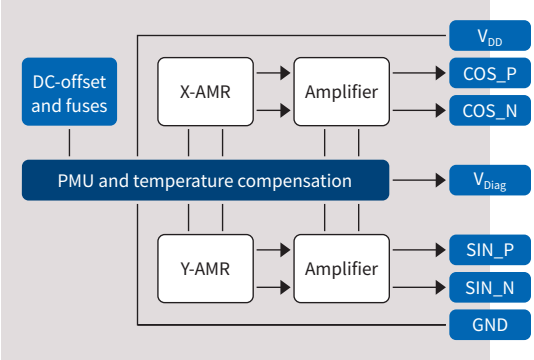
Features

- Wide magnetic field range: from 10 mT up to > 500 mT
- High angle accuracy with only 0.1° overall angle error (typ.)
- Best-in-class typ. angle error of only 0.2° within range 10 … 20 mT
- Separate supply pins for top and bottom sensor
- Low current consumption
- Quick start-up
- Optimized 3.3 V or 5 V supply voltage
- Pre-amplified output signals for differential or single-ended applications for AMR sensor
- TDSO-16 package
- Automotive qualified acc. to AEC-Q100
- Ready for ISO 26262, targeting ASIL-D (dual die)

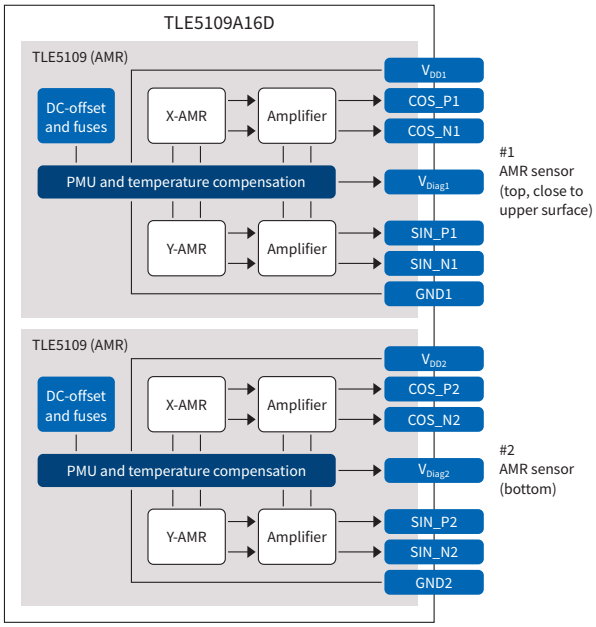
TLE5109A16(D)

XENSIV™ magnetic position sensor – analog AMR-based angle sensors for ultra-precise angular position sensing

Block diagram TLE5109A16 (single die)



Block diagram TLE5109A16D (dual die)



Product family	Product type	Number of dies	Chip technology	Package	Supply voltage [V]	Temperature compensation	Ordering code	Status
TLE5109*	TLE5109A16 E1210	Single	1x AMR chip	TDSO-16	3.3	with TCO	SP000956970	Active and preferred
	TLE5109A16 E2210			TDSO-16	5.0	with TCO	SP000956966	
	TLE5109A16D E1210	Dual	2x AMR chip	TDSO-16	3.3	with TCO	SP001496434	
	TLE5109A16D E2210			TDSO-16	5.0	with TCO	SP001044230	
TLE5309*	TLE5309D E1211	Dual	1x AMR chip, 1x GMR chip	TDSO-16	3.3	with TCO	SP001227880	Available
	TLE5309D E2211			TDSO-16	5.0	with TCO	SP001227888	
	TLE5309D E5201			TDSO-16	5.0	no TCO	SP001227884	
TLE5009*	TLE5009A16 E1200	Single	1x GMR chip	TDSO-16	3.3	no TCO	SP001285624	
	TLE5009A16 E1210			TDSO-16	3.3	with TCO	SP001296110	
	TLE5009A16 E2200			TDSO-16	5.0	no TCO	SP001296118	
	TLE5009A16 E2210			TDSO-16	5.0	with TCO	SP001296114	
	TLE5009A16D E1200	Dual	2x GMR chip	TDSO-16	3.3	no TCO	SP001285628	
	TLE5009A16D E1210			TDSO-16	3.3	with TCO	SP001296122	
	TLE5009A16D E2200			TDSO-16	5.0	no TCO	SP001296126	
	TLE5009A16D E2210			TDSO-16	5.0	with TCO	SP001296130	

Published by
Infineon Technologies AG
81726 Munich, Germany

Order Number: B142-I0778-V1-7600-EU-EC-P
Date: 02 / 2019