

Product brief

3D magnetic sensor family

TLE/TLI/TLV493D family for consumer, industrial and automotive applications

Infineon's new 3D magnetic sensor family TLE/TLI/TLV493D offers accurate three dimensional sensing with extremely low-power consumption. Within its small 6-pin package the sensor provides direct measurement of the x-, y-, and z components of a magnetic field.

Thus the sensor family is ideally suited for the measurement of:

- > 3 dimensional movement within a magnetic field
- > Linear slide movement
- > 360° angle rotation

By combining 3-axis measurement in a small package, with low power consumption, the TLE/TLI/TLV493D sensors provide a contactless position sensing alternative to applications which traditionally use mechanical or optical solutions. The system size for these applications can be reduced as magnetic threshold stability over temperature provides a highly accurate and more robust solution for those systems.

Infineon's sensor provides a standard 2-wire digital I²C communication interface, which enables a bi-directional communication between the sensor and microcontroller.

In keeping with the highest quality standards and environmental regulations, the sensor is RoHS compliant, JESD47 or AEC-Q100 qualified and supports system according functional safety standard ISO 26262.

Key applications

Consumer and industry

- > Joystick e.g. finger, thumb and gaming paddles
- > E-meters e.g. anti-tampering
- > Control elements e.g. white goods, multifunction knob

Automotive

- > Control elements for infotainment/navigation systems, air conditions, multifunctional steering wheels or light switches
- > Top column module, e.g. direction indicator, wiper control
- > Gear stick position sensing

Key features

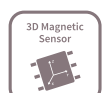
- > 3-dimensional magnetic field sensing (Bx, By and Bz)
- > Integrated temperature sensing
- > Low-current consumption
 - 7 nA in power down mode
 - 10 µA in low power operation at 50 Hz
- > 2.8 to 3.5 V operating supply voltage
- > Digital output via 2-wire standard I²C interface
- > Bx, By and Bz linear field measurement up to ±160 mT
- > 12-bit data resolution for each measurement direction
- > Resolution 130 µT/LSB (optional 65 µT/LSB)
- > Sample rate 0.04 ... 8.4 KHz
- > TSOP6 package
- > Operating temperature range from -40°C to 125°C



ISO26262
compliant

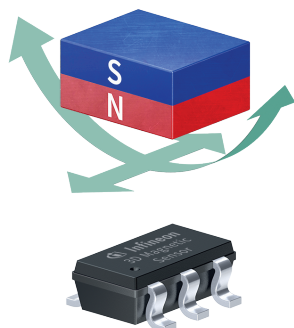


RoHS

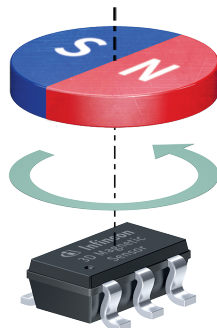


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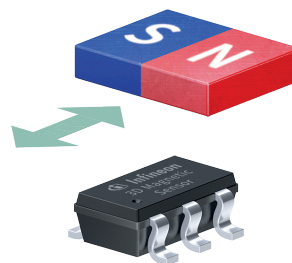
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3D-movement
e.g. top column module



Angle measurement
e.g. control button



Linear measurement
e.g. gear stick

Product summary

Parameter	TLV493D-A1B6	TLE493D-A1B6	TLE493D-A2B6 ¹⁾	TLE493D-W2B6 A0 to A3	Unit
Supply voltage	2.9-3.5	2.9-3.5	2.8-3.5	2.8-3.5	V
Typ. supply current – power down mode	7	7	7	7	nA
Typ. supply current – fast mode	3.7	3.7	3.7	3.4	mA
Minimum usable magnetic linear range	±130 (typ.)	60	160	±160	mT
Maximum magnetic resolution	130	130	130	130/65 (two ranges)	µT/LSB
x to y channel lifetime matching drift	±9	±9	±3.5	±3.5	%
x/y to z channel lifetime matching drift	±15	±15	±15	±15	%
I ² C protocol	2	1	1 or 2	1 or 2	Byte

1) TLI493D-A2B6 same parameters

Type	ISO 26262 support	Additional features	AECQ100/JESD47	Ordering code
TLV493D-A1B6	No	1-Byte I ² C protocol	JESD47	SP001286056
TLE493D-A1B6	No	2-Byte I ² C protocol	AECQ100	SP001368598
TLI493D-A2B6	No	1- and 2-Byte I ² C	JESD47	SP0001689844
TLE493D-A2B6	No	1- and 2-Byte I ² C	AECQ100	SP001689848
TLE493D-W2B6 A0 TLE493D-W2B6 A1 TLE493D-W2B6 A2 TLE493D-W2B6 A3	Yes	1- and 2-Byte I ² C	AECQ100	Address 0: SP001605334 Address 1: SP001605340 Address 2: SP001605344 Address 3: SP001605348

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