

Product brief

XENSIV™ – 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 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 (end of shaft and out of shaft)
- › Joystick movement

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, the package (WLB-5) is halogen free, JESD47 or AEC-Q100 qualified and supports system according functional safety standard ISO 26262.

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 24 Hz
- › 2.8 to 3.5 V operating supply voltage
- › Digital output via 2-wire standard I²C interface
- › Bx, By and Bz linear magnetic field measurement up to ±160 mT
- › 12-bit data resolution for each measurement direction
- › Sensitivity 7.7 to 30.8 LSB12/mT
- › Sample rate 0.05 ... 7.8 kHz
- › TSOP6/WLB-5 package
- › Operating temperature range from -40°C to 125°C

Key applications

- › Consumer and industry
 - Joystick e.g. finger, thumb and gaming paddles
 - E-meters e.g. anti-tampering
 - Mobile camera lens position sensing for focus and zoom
 - Control elements e.g. white goods, multifunction knob
- › Automotive
 - Control elements for infotainment/navigation systems, air conditions, multi-functional steering wheels or light switches
 - Top column module, e.g. direction indicator, wiper control
 - Gear stick position sensing



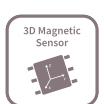
ISO 26262
compliant

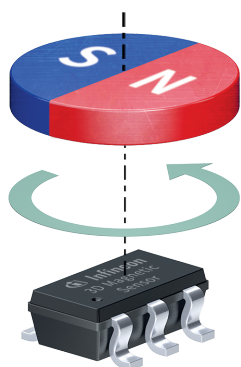


Halogen-Free

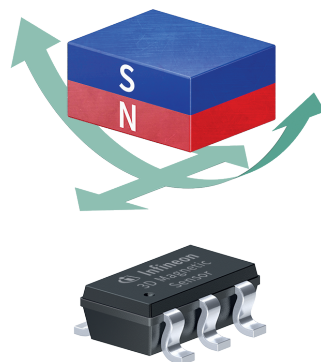


RoHS

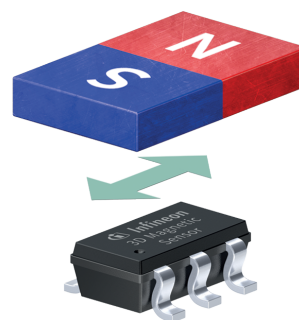




Rotation movement



3D movement



Linear movement

Product summary

Parameter	TLV493D-A1B6	TLI493D-A2B6	TLE493D-A2B6	TLE493D-W2B6	TLI493D-W2BW	Units
Supply voltage	2.9 to 3.5	2.8 to 3.5	2.8 to 3.5	2.8 to 3.5	2.8 to 3.5	V
Typ. supply current – power down	7.0	7.0	7.0	7.0	7.0	nA
Typ. supply current – fast mode	3.7	3.4	3.4	3.4	3.4	mA
Minimum usable magnetic linear range	130	100 or 160	100 or 160	100 or 160	50, 100 or 160	mT
Magnetic sensitivity	10.2	7.7/15.4	7.7/15.4	7.7/15.4	7.7/15.4/30.8	LSB12/mT
x to y channel matching drift	±9	±3.5	±3.5	±3.5	±3.5	%
x/y to z channel matching drift	±15	±15	±15	±15	±15	%
Temperature range	-40 to 125	-40 to 105	-40 to 125	-40 to 125	-40 to 125	°C

Type	Additional features	Qualification	Packing unit	Ordering code
TLV493D-A1B6	Low power	JESD47	3K pcs	SP001286056
TLI493D-A2B6	Low power	JESD47	3K pcs	SP0001689844
TLI493D-W2BW A0 TLI493D-W2BW A1 TLI493D-W2BW A2 TLI493D-W2BW A3	Low power and wake up function	JESD47	4K pcs	SP005409809 SP005409807 SP005409905 SP005409903
TLI493D-W2BW A0 TLI493D-W2BW A1 TLI493D-W2BW A2 TLI493D-W2BW A3	Low power and wake up function	JESD47	15K pcs	SP005409964 SP005409966 SP005409968 SP005409970
TLE493D-A2B6	Low power	AEC-Q100	3K pcs	SP001689848
TLE493D-W2B6 A0 TLE493D-W2B6 A1 TLE493D-W2B6 A2 TLE493D-W2B6 A3	Low power and wake up function	AEC-Q100/ ISO 26262 compliant	3K pcs	SP001605334 SP001605340 SP001605344 SP001605348

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