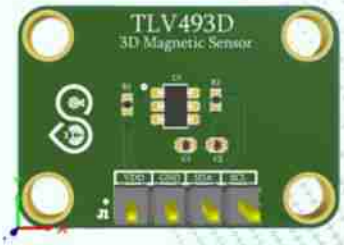
TLV493D

Overview

The TLV493D is a 3D magnetic sensor from Texas Instruments that uses Hall-effect technology to measure the magnetic field in three dimensions (X, Y, and Z axes). This sensor is capable of detecting small changes in magnetic fields, making it ideal for precise position and angle measurements. It is typically used in applications that require accurate tracking of movement or orientation in a compact form factor.

Key Features

- True 3D Magnetic Sensing – Simultaneous measurement of X, Y, and Z magnetic field components.
- Compact & Low-Power Design – Ultra-low power consumption (~10 µA) supports battery-operated devices.
- High Precision & Stability – 12-bit resolution ensures accurate position and angle detection.
- Digital Interface – Fast and reliable I²C communication up to 1 MHz.
- Versatile Applications – Suitable for automotive, robotics, gaming, and consumer electronics.



Technical Specification

- Operating Voltage: 2.7 V – 3.5 V (typical 3.3 V).
- Magnetic Field Measurement Range:
- ±130 mT (X, Y axes)
- ±180 mT (Z axis)
- Resolution: 12-bit for all three axes.
- Interface: I²C protocol (up to 1 MHz).
- Current Consumption: ~10 µA (Ultra Low-Power Mode).

Application

- Robotics: 3D position sensing for robotic arms and actuators.
- Automotive: Component position detection (gear shifters, pedals, steering systems).
- Consumer Electronics: Gesture recognition for smart devices and touchless interfaces.
- Gaming & AR/VR: Tilt, rotation, and motion detection in controllers and headsets.