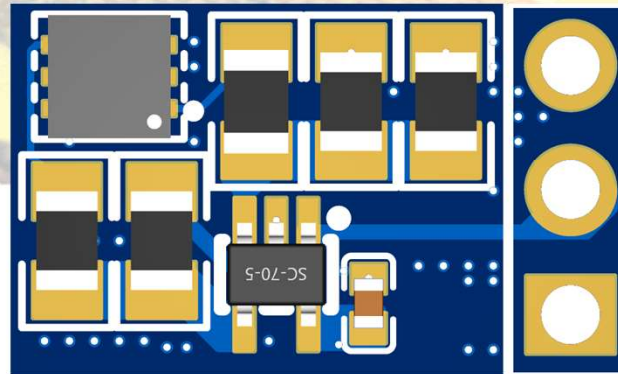


NVE
NVE CORPORATION
Leaders in Spintronics

ALT021-10E-EVB02
Ultrasensitive Miniature Evaluation Board



SB-00-166
Rev. January 2024

nve.com/webstore

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Overview

ALT021-10E-EVB02 is a small printed circuit board assembly that allows you to evaluate NVE's ultrasensitive **ALT021-10E** TMR Magnetometers. Key **ALT021-10E-EVB02** features include:

- Remarkable 2.5 V/V/mT typ. sensitivity
- Miniature 12.7 x 7.6 mm PCB size
- Bipolar magnetic response
- Simple three-wire interface
- 0.9 to 7 V supply voltage
- 1.1 to 1.6 mA current draw
- -40 to +125 °C temperature range

Quick Start

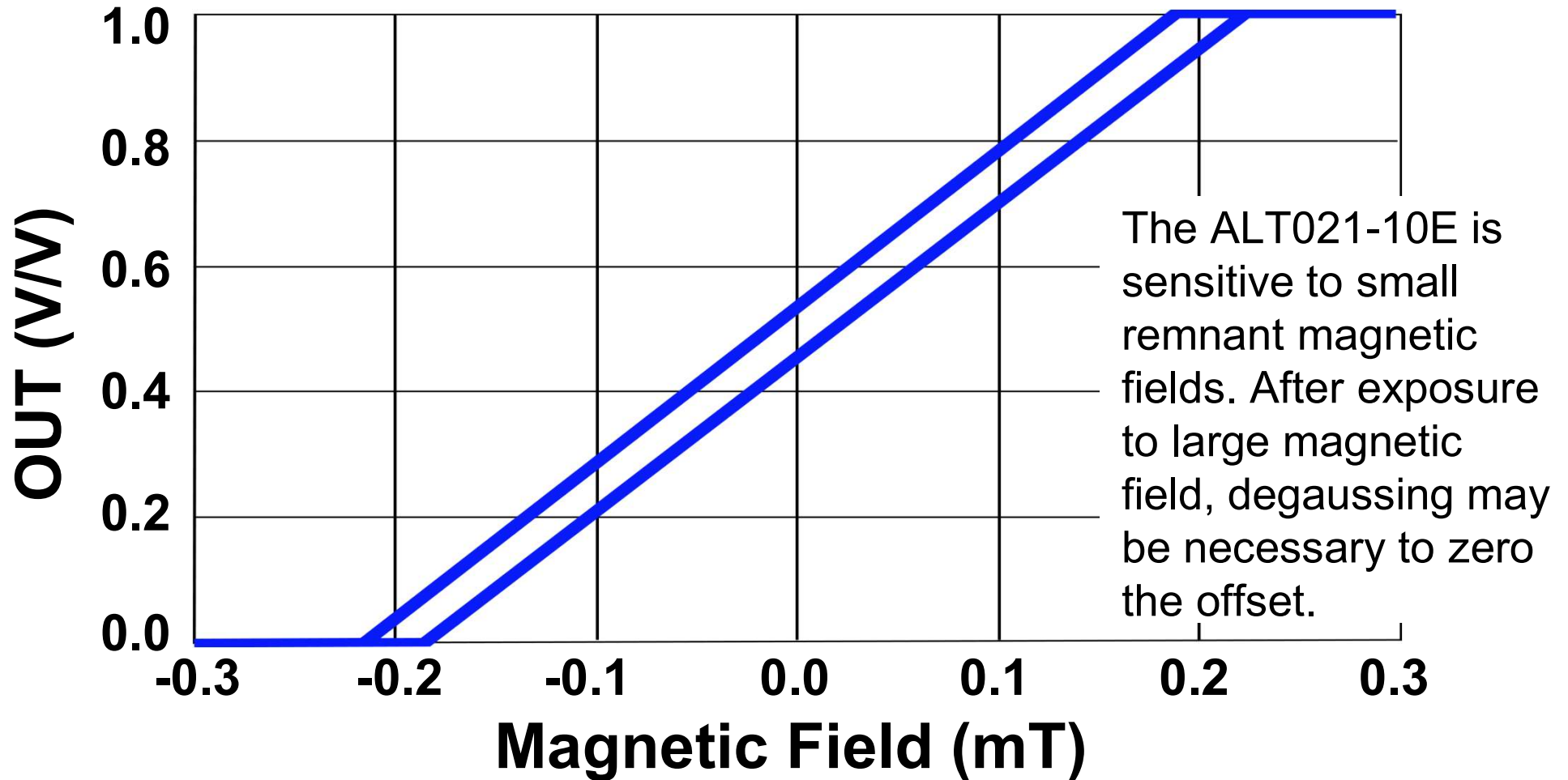
- Connect “Vcc” and “GND” to a DC power supply or battery
- Connect “OUT” and “GND” to a voltmeter
- Observe the sensor output by detecting earth magnetic field, current carrying wires, tiny magnets, ferromagnetic metals like steel, and other sources of magnetic field

Circuit Description

ALT021-10E-EVB02 consists of a fully-assembled 12.7 x 7.6 mm printed circuit board with:

- ALT021-10E TMR magnetometer sensor
- Differential amplifier circuit with a gain of 5
- Vcc, GND, and OUT plated thru-holes for connecting wires, LEDs, or test probes

Typical Sensor Output

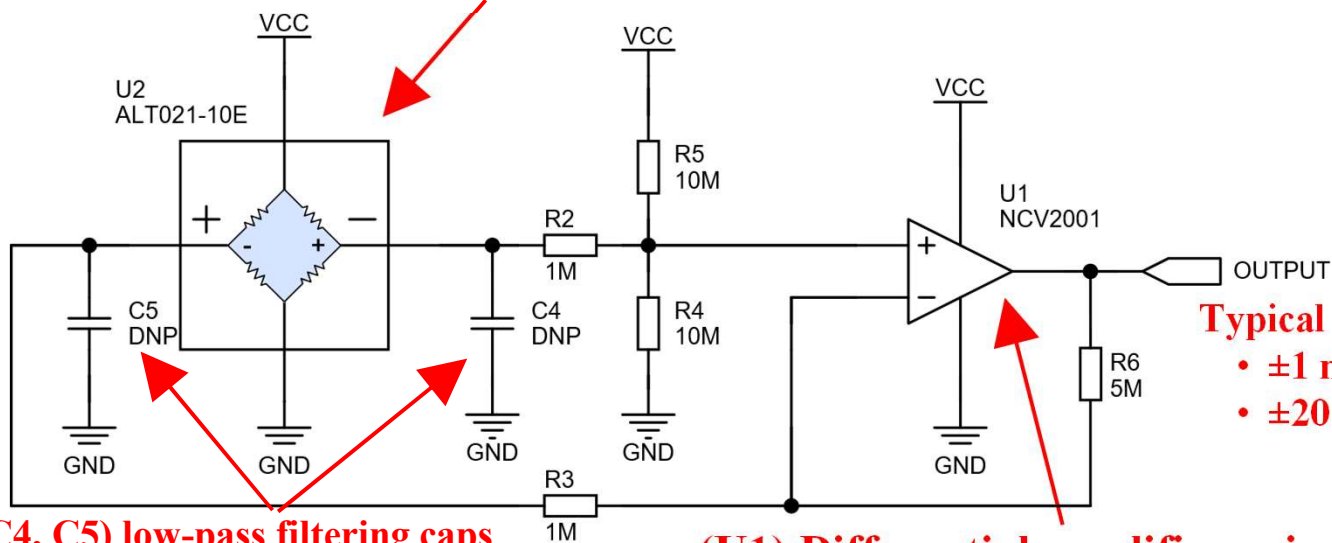


Magnetic Fields of Common Objects

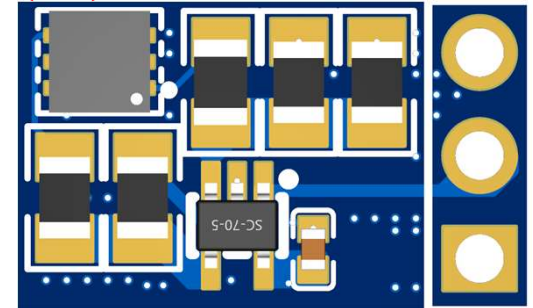
Magnetic Field Source	Magnetic field at 50 mm distance	Typical ALT021-10E-EVB02 detection distance
1 amp current	0.004 mT	Over 50 mm
20 amp current	0.08 mT	Over 1000 mm
50 amp current	0.2 mT	Over 2500 mm
Earth magnetic field	0.05 mT	Yes
4 mm ferrite C5 magnet	0.022 mT	Over 100 mm
4 mm NdFeB magnet	0.077 mT	Over 300 mm
25 mm NdFeB magnet	110 mT	Over 1000 mm

Full Schematic

(U2) Ultrasensitive TMR sensor element



(U2)



(U1)

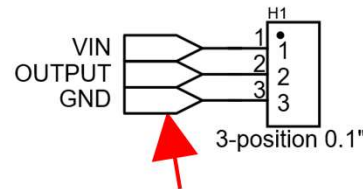
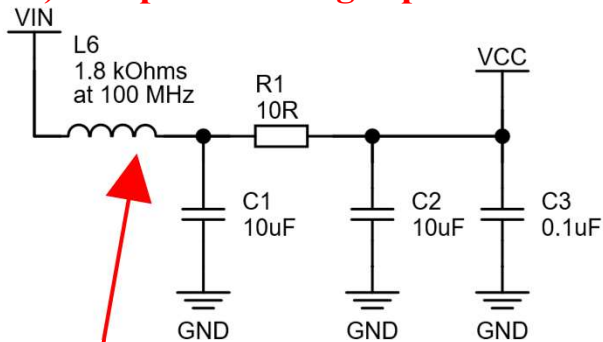
Typical output current:

- ±1 mA at 0.9 V supply
- ±20 mA at 3.3 V supply

(C4, C5) low-pass filtering caps

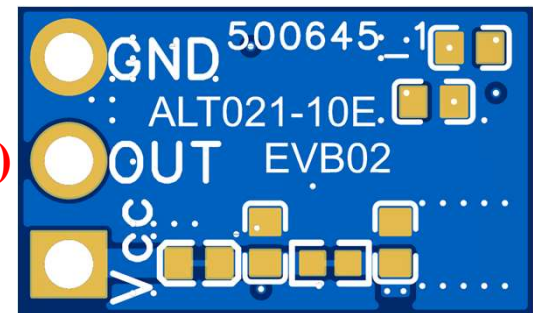
**(U1) Differential amplifier gain x5
output centered at Vcc/2**

(C4,C5)



(H1)

(H1) Plated thruholes



(L6,C1,R1,C2)

Power supply filtering stage (recommendation only, DNP by default. Cut traces to add L6, R1)



ALT021-10E TMR Magnetometer

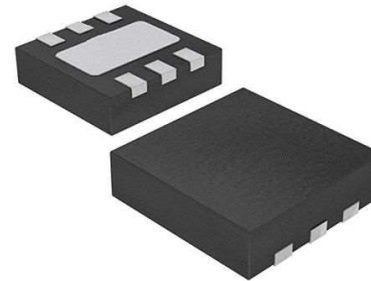
- 500 mV/V/mT sensitivity
- Detect magnetic field as small as 0.1 μ T
- 2.5 x 2.5 x 0.8 mm package
- 20 k Ω resistance

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TMR Sensors
*Manufactured in
Eden Prairie,
Minnesota, USA*



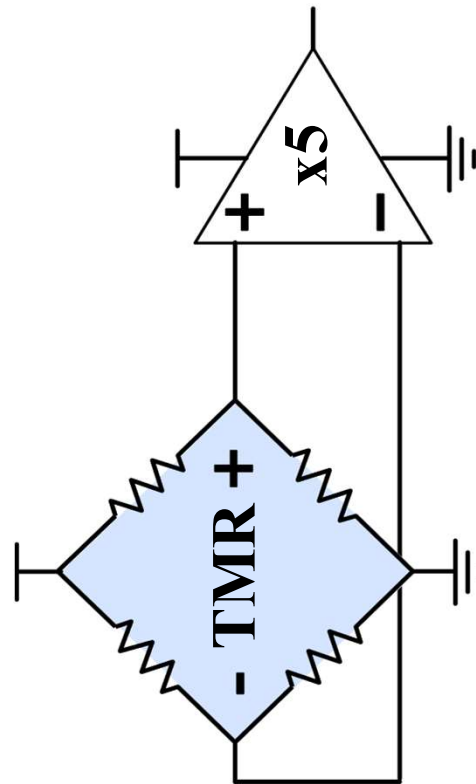
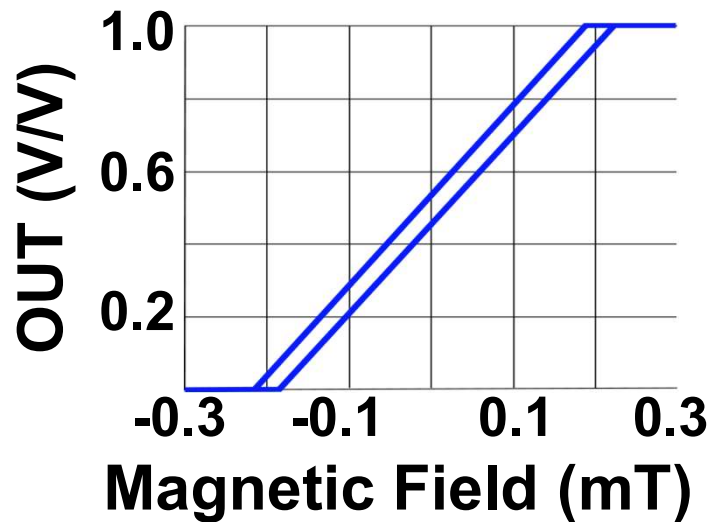
***Download the
product datasheet:***



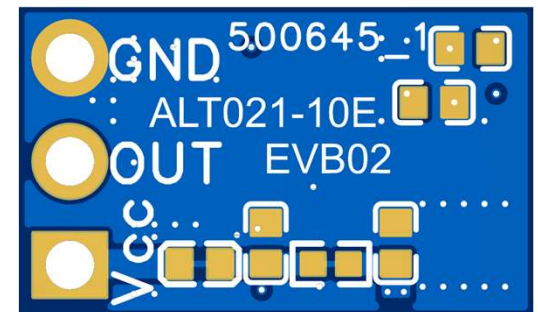
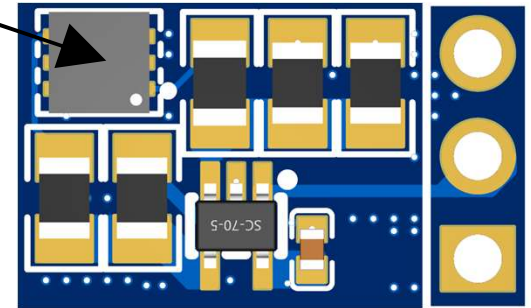
ALT021-10E-EVB02

Ultrasensitive Miniature Evaluation Board

- 2.5 V/V/mT typ. sensitivity
- 12.7 x 7.6 mm PCB
- Bipolar magnetic response
- Simple three-wire interface
- 0.9 to 7 V supply



ALT021-10E



Buy it
again:

