

CT220BMV-IS5 Evaluation Board User Guide

DESCRIPTION

The EVB222-1.5 evaluation board is designed to demonstrate the current sensing capabilities of the CT220 linear magnetic sensor from Allegro MicroSystems. The CT220 is a contactless current sensor based on XtremeSense™ tunnel magnetoresistance (TMR) technology. It features a full-bridge configuration comprising four TMR elements monolithically integrated with active CMOS circuitry, allowing it to have high resolution and low noise in a small-package footprint. This user guide describes how to connect and use the EVB222-1.5 evaluation board.

FEATURES

- Field range: ± 1.5 mT
- Gain: 300 mV/V/mT
- 3 V to 5 V power supply

EVALUATION BOARD CONTENTS

- EVB222-1.5 evaluation board

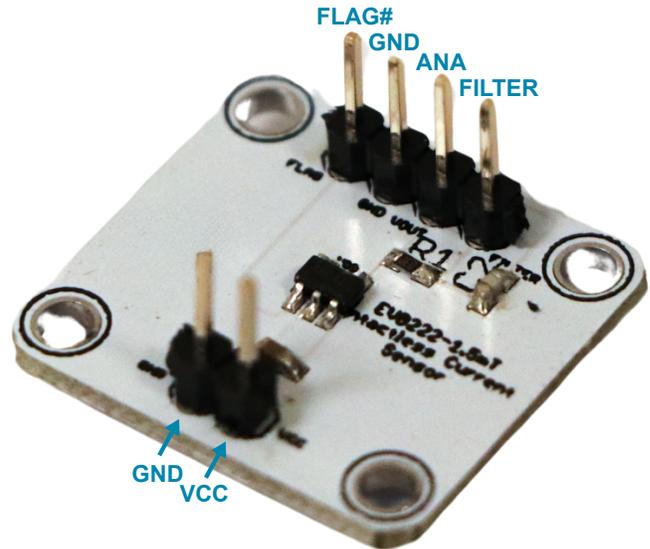


Figure 1: EVB222-1.5 Evaluation Board

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Table 1: EVB222-1.5 Evaluation Board Configurations

Configuration Name	Part Number	B-Field	Gain
EVB222-1.5	CT220BMV-IS5	± 1.5 mT	300 mV/V/mT

Table 2: General Specifications

Specification	Min.	Typ.	Max.	Units
Input Operating Voltage	3	3.3	5	V
Cutoff Frequency (3 dB)	–	10	–	kHz
Operating Temperature	–40	–	85	°C

USING THE EVALUATION BOARD

This section provides an overview of the connections and configuration options of the EVB222-1.5 evaluation board. Each group of connections highlighted in Figure 2 has a detail section below. The product datasheet contains detailed information about the use and functionality of each pin and should be consulted for more-detailed information than is contained in this user guide.

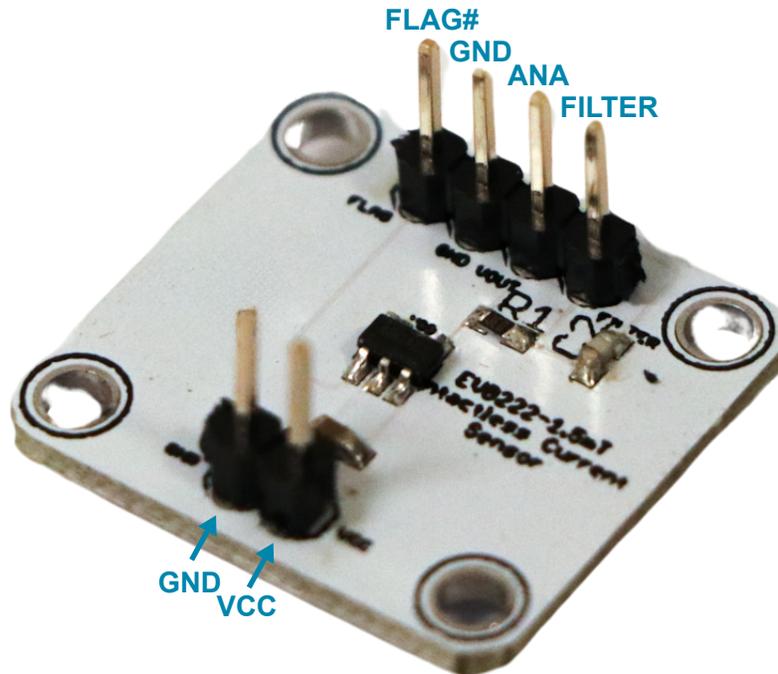


Figure 2: EVB222-1.5 Evaluation Board with Busbar

Power Input and Board Configuration

The two-pin male header connector is used to apply the bias voltage to the CT220 sensor. The four-pin male header on the PCB is used to measure the output. The voltage at the ANA pin (output) is proportional to the magnetic field present at the sensor. The EVB222-1.5 also has a resistor-capacitor (RC) filter-based low-pass filter with a 3 dB frequency of 10 kHz implemented. The filtered response to the magnetic field can be measured from the FILTER pin. The output on the FLAG pin changes state when the magnetic field exceeds ± 1.35 mT (90% of the full-scale magnetic field range).

SCHEMATIC

The schematic of the EVB222-1.5 evaluation board is shown in Figure 3.

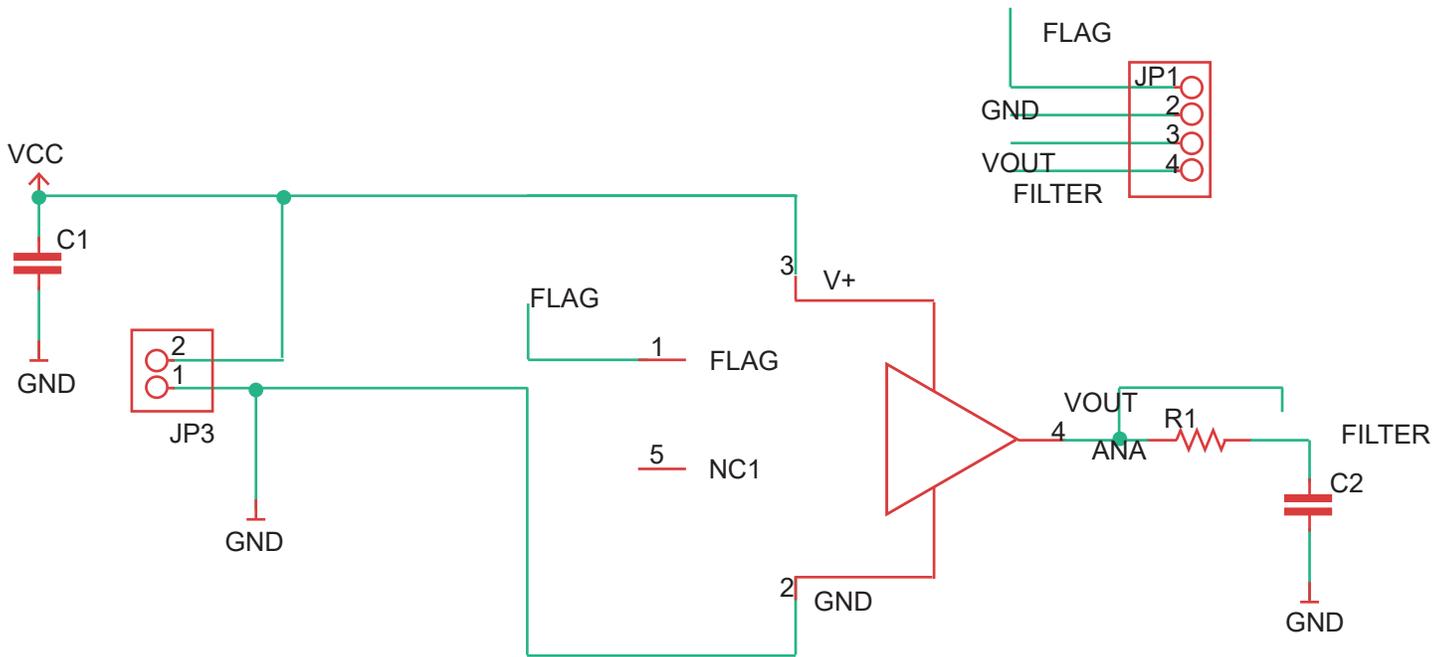


Figure 3: EVB222-1.5 Evaluation Board Schematic

LAYOUT

The top and bottom layers of the EVB222-1.5 evaluation board are shown in Figure 4 and Figure 5.

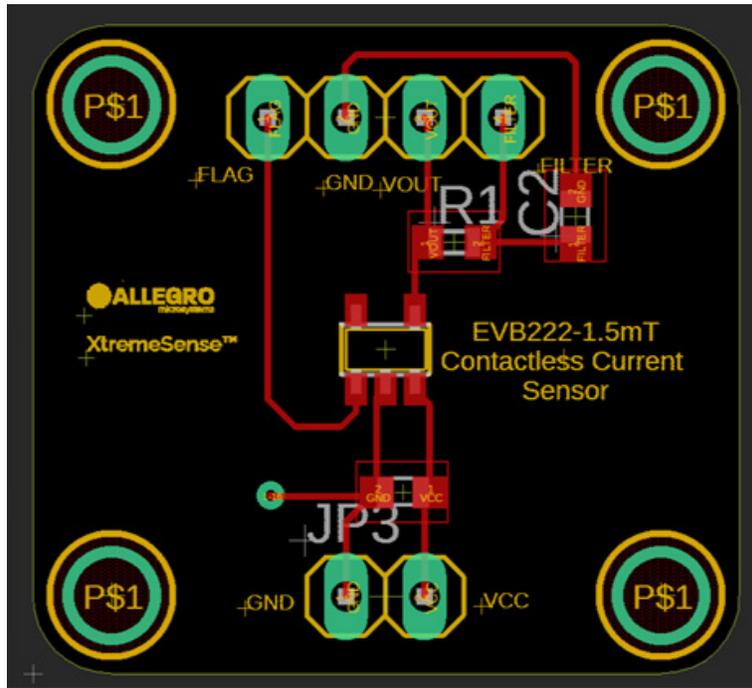


Figure 4: Top Layer

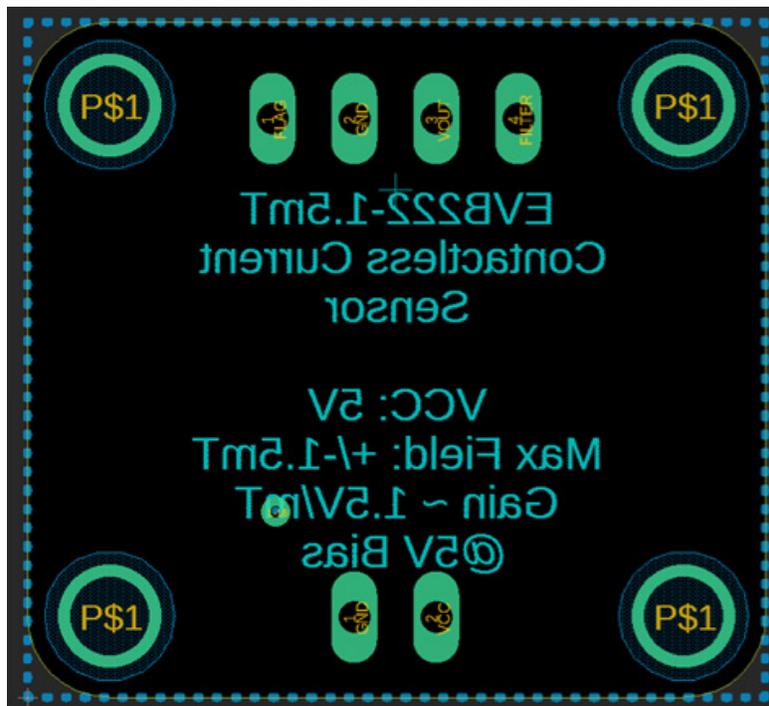


Figure 5: Bottom Layer

BILL OF MATERIALS

Table 3: CT220BMV-IS5 Version Evaluation Board Bill of Materials

Designator	Quantity	Description	Manufacturer	Manufacturer Part Number
ELECTRICAL COMPONENTS				
-	1	EVB222-1.5 EVAL PCB	Allegro MicroSystems	-
U\$3	1	CT220 Sensor	Allegro MicroSystems	-
FLAG, GND, VOUT, FILTER	4	Male Header Connectors	Samtec	TSW-104-07-F-S
GND, VCC	2	Male Header Connectors	Samtec	TSW-102-07-F-S
JP3	1	Capacitor, Ceramic, 1.0 μ F, 25 V, 10% X7R 0603	TDK	MSAST168SB7105KTNA01
C2	1	Capacitor, Ceramic, 150 pF, 1 kV, 10% X5F 0603	Vishay	562R10TST15
R1	1	Resistor, 105 k Ω , 1/10 W, 1% 0603	Vishay	TNPW0603105KBEEA

RELATED LINKS

CT220 Product Webpage:

<https://www.allegromicro.com/en/products/sense/current-sensor-ics/sip-package-zero-to-thousand-amp-sensor-ics/ct220>

Revision History

Number	Date	Description
–	May 23, 2024	Initial release
1	September 11, 2024	Updated general specifications (page 1), updated evaluation board images (pages 1 and 2), removed busbar configuration (page 3), and updated BOM (page 5).

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