



EVB111 User Guide

Referenced Devices

CT110
EVB111

Introduction

The EVB111 demo board is designed to demonstrate the current sensing capabilities of the CT110 linear magnetic sensor from Crocus Technology.

The CT110 is current sensor based on Crocus Technology's patented XtremeSense™ TMR technology. It features a full-bridge configuration comprised of four (4) TMR elements monolithically integrated with active CMOS circuitry allowing it to have a high resolution and low noise in small package footprint.

This user guide describes how to connect and use the EVB111 demo board. It also provides a description of the circuit implemented and expected test results.

Features

- Total Output Error: $\pm 0.5\%$ FS (Typical)
- Available Current Ranges:
 - $+5 A_{DC} / \pm 5 A_{PK}$
 - $+10 A_{DC} / \pm 10 A_{PK}$
 - $+15 A_{DC} / \pm 15 A_{PK}$
- Gain: 30.0 mV/V/A to 88.2 mV/V/A
- 2 kV_{RMS} Galvanic Isolation
- 2.7 V to 5.0 V Power Supply

General Description

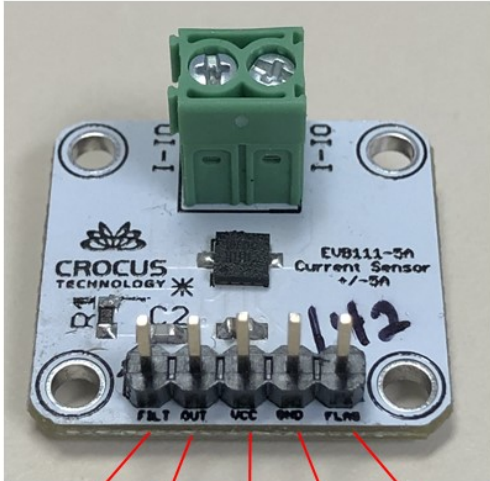
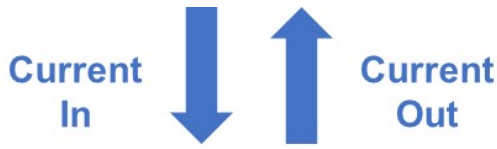
The EVB111 demo board is shown below, and it features:

- 5x, male header connectors
- 1x, terminal block – 2 connectors
- 1x, CT110 device
- 1x, 1.0 μ F 0603 SMD capacitor
- 1x, 150 pF 0603 SMD Capacitor
- 1x, 105 k Ω 0603 SMD Resistor

The two-connector terminal block is used to connect and drive the external current to be measured. Please do not exceed $+15 A_{DC}$.

The 5-pin male header on the PCB is used to bias the IC and measure the output from it. The PCB is powered by applying the bias voltage between the VCC and GND pins. The voltage at the OUT pin is proportional to the current flowing through the EVB. The output on the FLAG pin changes state when the current exceeds the maximum rated current of the device.

The EVB111 also has an RC low pass filter on the PCB with a 3 dB cutoff frequency of 10 kHz, and the filtered signal voltage can be accessed from the FILT pin of the PCB.



FILT OUT VCC GND FLAG

FIGURE 1: EVB111 EVALUATION BOARD

Board Measurements

This section summarizes the results of several laboratory measurements with a 5.0 V bias applied to the IC. Figure 2 illustrates the linear behavior of the current sensor across multiple temperatures.

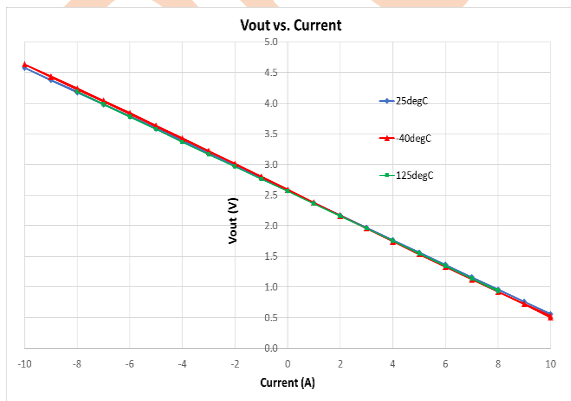


FIGURE 2: LINEAR PERFORMANCE ACROSS TEMPERATURE

In addition to the excellent linearity across temperature, the high Signal to Noise Ratio of EVB111 enables it to measure extremely low currents. Figure 3 illustrates the ability of EVB111 to detect currents as low as 5 mA.

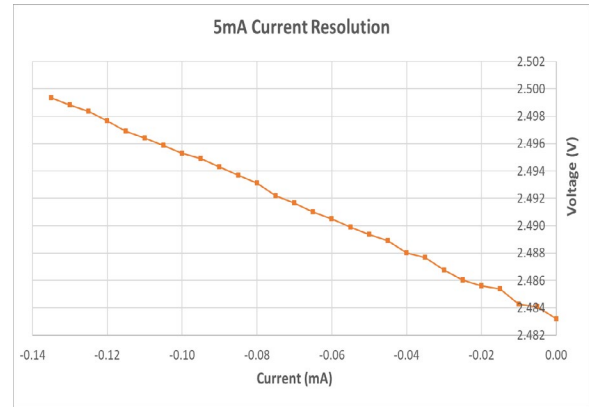


FIGURE 3: EXCELLENT RESOLUTION OF EVB111

Board Schematic & Layout

The CT110 is a standalone device, and it does not need any additional circuitry or components. The small form factor of the EVB111 is exhibited in Figure 4 and Figure 5.

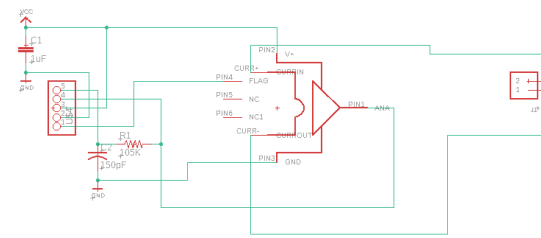


FIGURE 4: EVB111 PCB SCHEMATIC

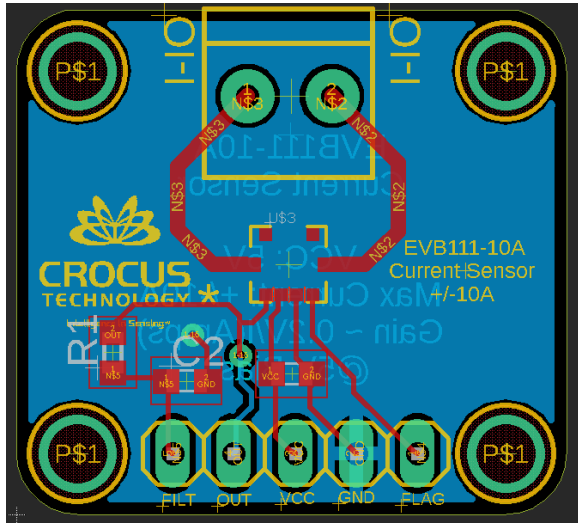


FIGURE 5: EVB111 PCB SCHEMATIC

Conclusion

The EVB111 demonstrates the capabilities of the CT110 Crocus Technology TMR linear sensor. This document provides a description of the demo board circuit and gives representative measurements of gain and linearity error.

Contacts

For samples or questions:
support@crocus-technology.com

EVB111 Ordering Table

TABLE 1: EVB111 PART NUMBERS

Ordering Part Number	Current Range
EVB111-5.0A	+5 A _{DC} / ±5 A _{PK}
EVB111-10A	+10 A _{DC} / ±10 A _{PK}
EVB111-15A	+15 A _{DC} / ±15 A _{PK}