DVK91220 – SOIC8
User Guide

Contents

1. Scope and Development Kit content

The DVK91220 provides all the needed components to evaluate the performances and the functionalities of MLX91220 integrated current sensor family. It includes:

- A ready-to-use evaluation board provided with **MLX91220KDC-ABF-050** for a quick start.
- An evaluation board with no IC to be customized with the reference you need. Please refer to the datasheet for all available product codes.

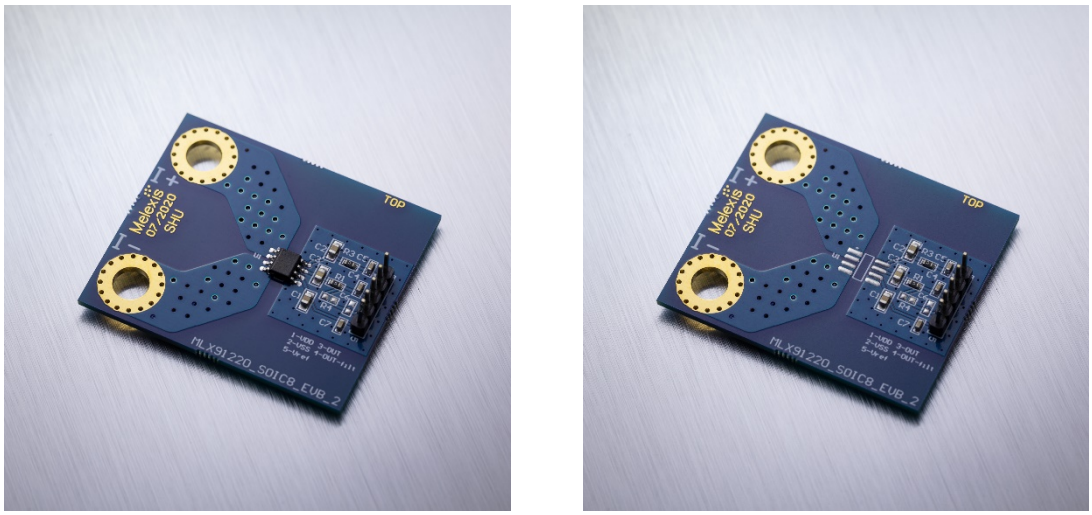

Figure 1: Content of DVK91220-SOIC8 : A ready-to use EVB with MLX91220KDC-ABF-050 (left) and a customizable EVB (right)

2. Key features

2.1. Sensor

- Isolated current measurement demonstrator factory calibrated for 50 A
- 5 V of working supply
- 2.4kV_{RMS} of voltage isolation
- Stray field immune due to differential measurement
- < 3 µs response time

2.2. PCB

- PCB adapted to high current measurements up to 30 Arms continuous
- Ground Layer and decoupling capacitors for high EMC performances
- Placeholder for output filter implementation

3. Hardware

3.1. PCB layout

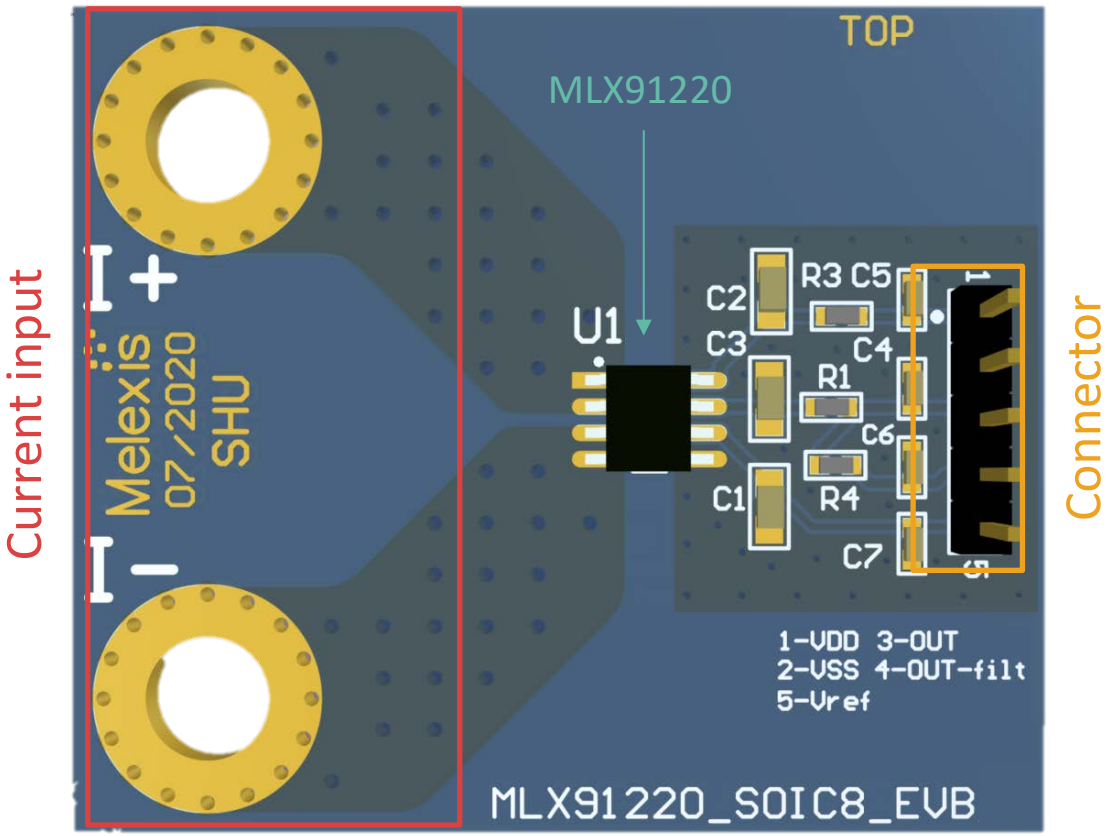

Figure 2: Layout of the EVB91220 SOIC8

3.2. PCB characteristics

The MLX91220_SOIC8_EVB is manufactured with two 105 µm copper layers and an ENIG Surface finishing.

Please note that the revision 2 of the board (MLX91220_SOIC8_EVB_**2)** has two 70 µm copper layers and no ENIG surface finishing. This version can still be used for 35 Arms continuous current at 25°C but the thermal management will be less efficient.

3.3. Schematics

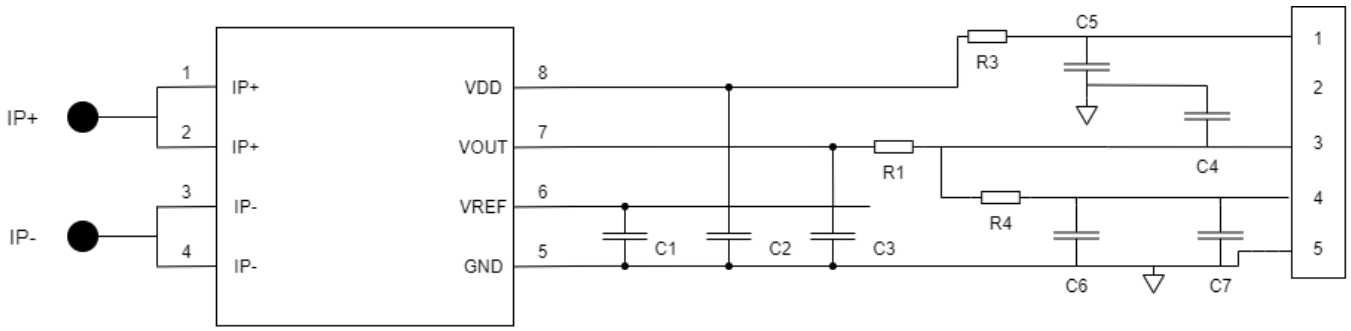

Figure 3: Schematics of the EVB91220 - SOIC8

3.4. Pins Designation

Table 1: MLX91220 pin designation

PIN	Pin	Function	Type
1	IP+	Primary Current Path Input	Analog
2			
3	IP-	Primary Current Path Output	Analog
4			
5	V_{SS}	Ground Voltage	Ground
6	V_{REF}	Reference Voltage	Analog
7	V_{OUT}	Output Voltage	Analog
8	V_{DD}	Supply Voltage	Supply

Table 2: Connector pins designation

Pin	Function
1	Supply Voltage
2	Ground Voltage
3	Output Voltage
4	Filtered Output Voltage (not populated)
5	Reference Voltage

3.5. Bill of Material

Part	Description	Value
C1	Reference pin decoupling capacitor EMI, ESD	47 nF
C2	Supply capacitor, EMI , ESD	47 nF
C3	Output pin Decoupling capacitor EMI, ESD	4.7 nF
C4, C5, C7	Decoupling capacitor EMI, ESD	1 nF
R1, R3	Connection to header	0 Ω
R4, C6	Extra RC filter	TBD

4. MLX91220KDC-ABF-050

4.1. Characteristics

The Development Kit contains two PCBs. One is not populated. Please refer to the datasheet of MLX91220 or MLX91221 to find the adapted product for your application.

One PCB is populated with MLX91220KDC-ABF-050. Table 3 describes its configuration. Please refer to the datasheet for the full specifications. Figure 4: Output of MLX91220KDC-ABF-050

Table 3: MLX91220KDC-ABF-050 configuration

Product code	Legend
MLX91220	5V Supply Integrated Current Sensor
K	- 40°C to 125°C ambient temperature
DC	SOIC-8 NB (Narrow Body – 150mils) package
A	Die version
B	Bipolar sensing. The sensor provides a symmetrical output around the 0A point which is set at V_{ref}
F	Fixed mode output
50	50 A at Full Scale current measurement (corresponding to 2V excursion from VOQ). Corresponds to a sensitivity of **40 mV/A**

4.2. Sensor output

Figure 4 displays the expected output of the sensor and V_{ref} value. The measured current can be retrieved by the following formula:

$$I = \frac{V_{out} - V_{ref}}{S}$$

Where S = 40 mV/A.

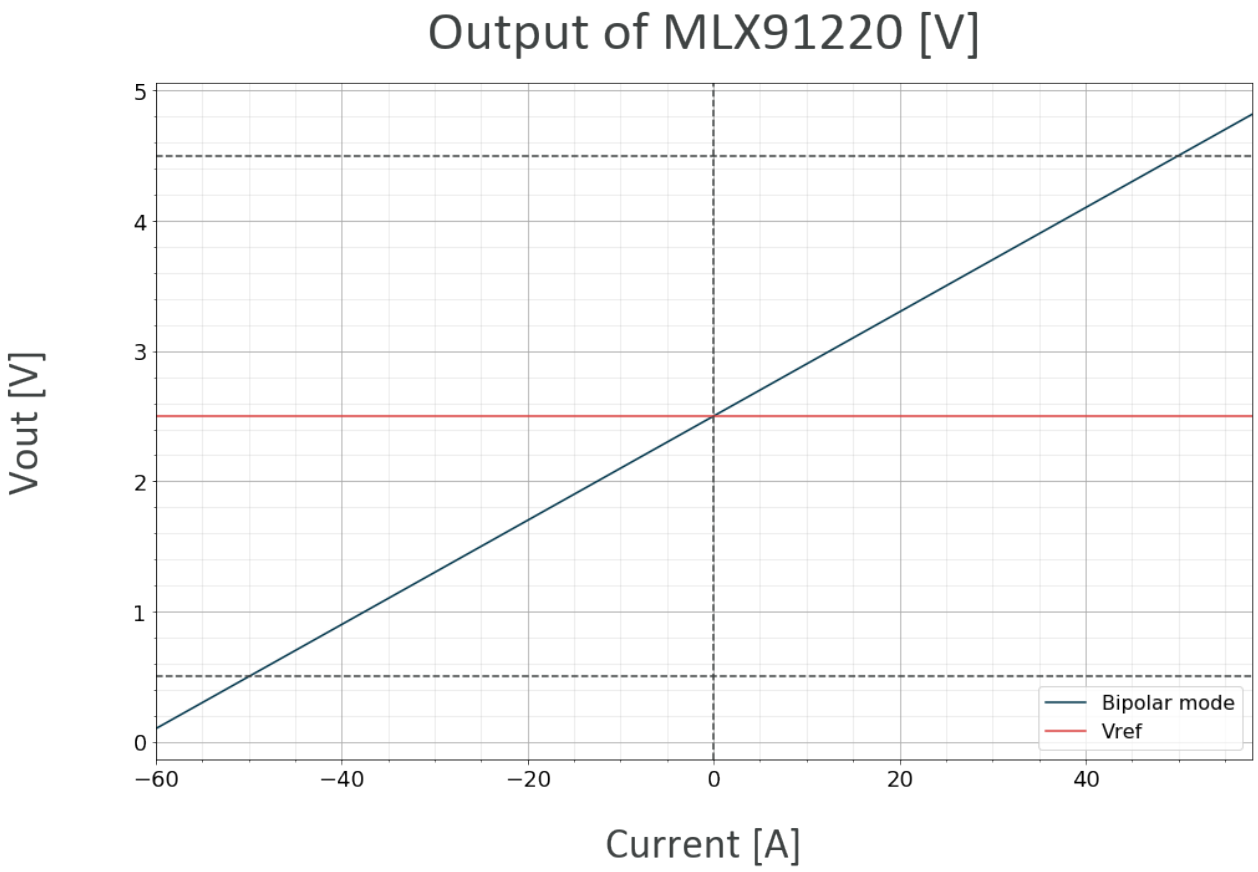

Figure 4: Output of MLX91220KDC-ABF-050

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