

Current Sense Amplifier

BD1423xFJ-EVK-001 (x: 0, 1, 2, 5, 6, 7)

BD1423xFJ-EVK-001 is an evaluation board designed for BD1423xFJ-C, ROHM's current sense amplifier.

This user's guide explains BD1423xFJ-EVK-001.

About BD1423xFJ-C (x: 0, 1, 2, 5, 6, 7)

The BD1423xFJ-C series is a current sense amplifier IC. This device operates from a single 2.7 V to 18 V power supply. It has wide common mode voltage range from -14 V to +80 V, outputs analog voltage. There are three gain types: 20 V/V, 50 V/V, and 100 V/V. By integrating matched gain resistors, gain error and offset error are minimized. In addition, the low input bias current of 1 μ A reduces offset error occurring in the connection path to the shunt resistor.

- AEC-Q100 Grade 1 qualified
- Wide Common Mode Voltage Range
- High Accuracy
- Low Offset Voltage
- Low Input Bias Current

For more detailed information about the BD1423xFJ-C, refer to the datasheet.

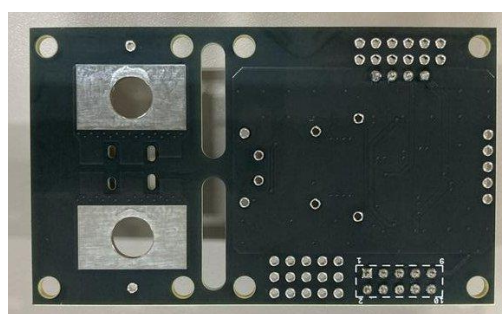
About BD14230FJ-EVK-001

This user's guide is an early-release version that targets the BD14230FJ-EVK-001, one of the evaluation boards in the BD1423xFJ-C series.

1. Board Information
 - Dimensions: 74 mm $\times$ 44 mm $\times$ 1.6 mm
 - Number of layers: 2
 - Material: FR-4 ($T_g \approx 125^\circ\text{C}$)
 - Copper thickness: 2 oz (70 μm)



Top side



Bottom side

Figure 1. Photograph of the BD14230FJ-EVK-001

2. Schematic

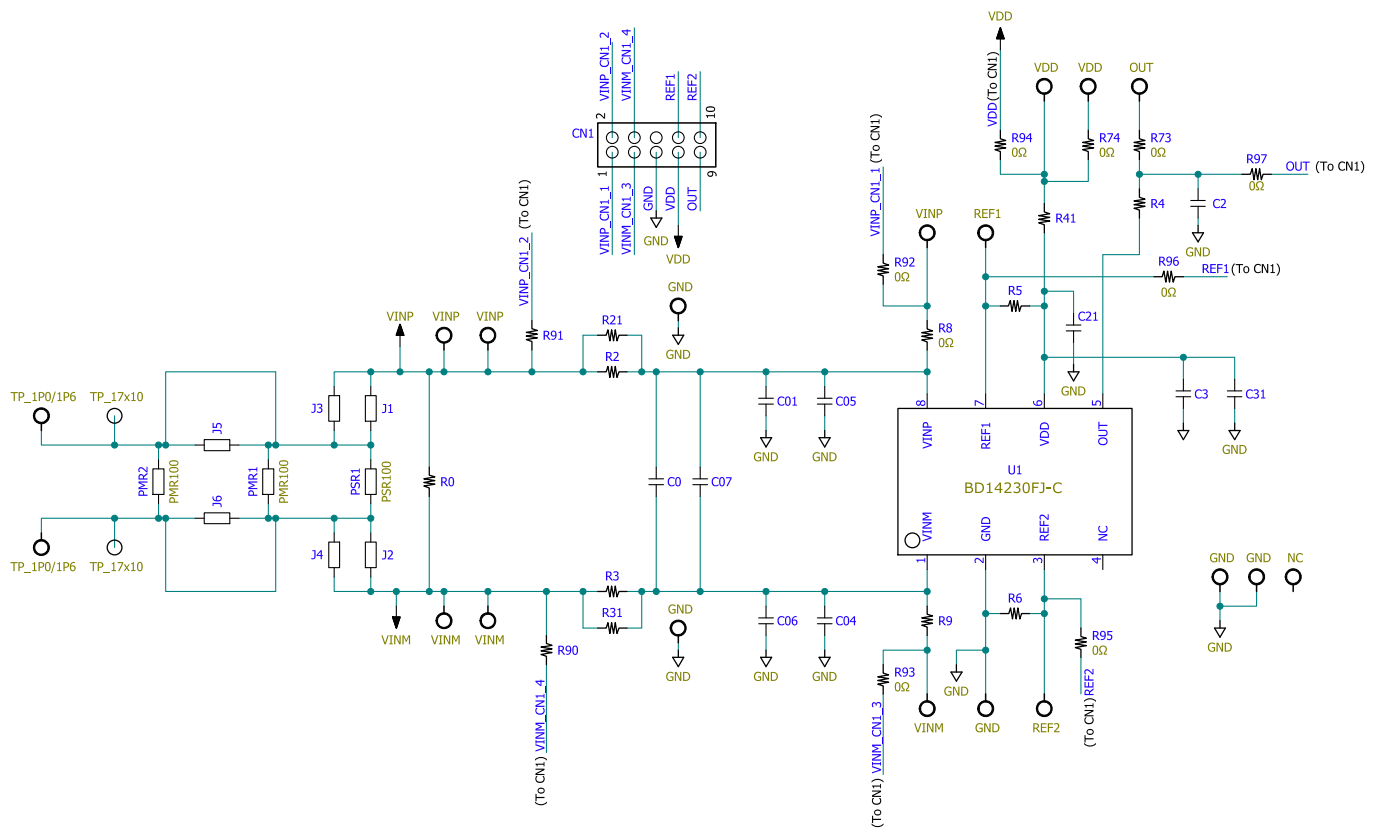


Figure 2. Schematic of the BD14230FJ-EVK-001

3. Bill of Materials

Table 1. Bill of Materials of BD1423xFVJ-EVK-001

Designator	Type	Value	Package/Size	Manufacturer	Part Number
R2, R3	Resistor	100 Ω	1608 (0603)	ROHM	ESR03EZPF1000
C07	Capacitor	0.047 μ F	1608 (0603)	MURATA	GCM188R71H473KA55D
U1	Current Sense Amplifier IC	—	SOP-J8	ROHM	BD14230FJ-C
C3	Capacitor	470 pF	1608 (0603)	KYOCERA AVX	KGM15AR71H471KT
C31	Capacitor	0.1 μ F	1608 (0603)	MURATA	GCM188L81H104KA57D
R4	Resistor	1 k Ω	1608 (0603)	ROHM	ESR03EZPJ102
C2	Capacitor	0.1 μ F	1608 (0603)	MURATA	GCM188R71H104KA57D
R8, R9, R41, R73, R74, R90, R91, R92, R93, R94, R95, R96, R97	Resistor	0 Ω	1608 (0603)	ROHM	MCR03SEQPJ000
CN1	Connector	—	2 × 5 pins 2.54 mm pitch	Würth Elektronik	61301021121
CN2 *1	Connector	—	1 × 4 pins 2.54 mm pitch	Würth Elektronik	61300411121
C0, C01, C04, C05, C06, C21	Capacitor	N.M. *2	1608 (0603)	—	—
R0, R5, R6, R21, R31	Resistor	N.M.	1608 (0603)	—	—
J1, J2, J3, J4, J5, J6	Jumper	N.M.	1005 (0402)	—	—
PMR1, PMR2	Shunt Resistor (PMR series)	N.M.	6432 (2512)	ROHM	—
PSR1	Shunt Resistor (PSR series)	N.M.	6.35 × 3.05 mm	ROHM	—

*1: CN2 is not silk-screened on the PCB. It is mounted in the through-holes for GND, REF2, REF1, and VDD.

*2: N.M. = Not Mounted

4. Layout

The Top Layer Routing Diagram in Figure 4 is a reference illustration showing the design concept for signal routing and current paths during PCB design.

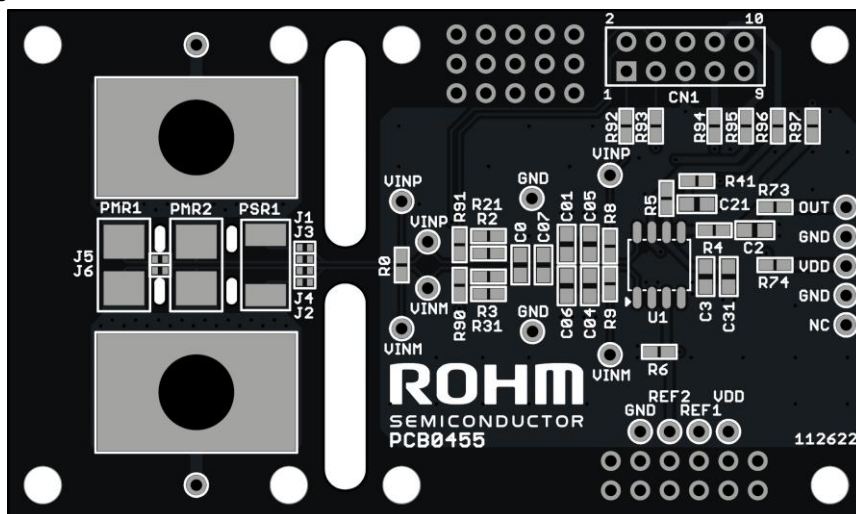


Figure 3. Top side PCB Image (Top View)

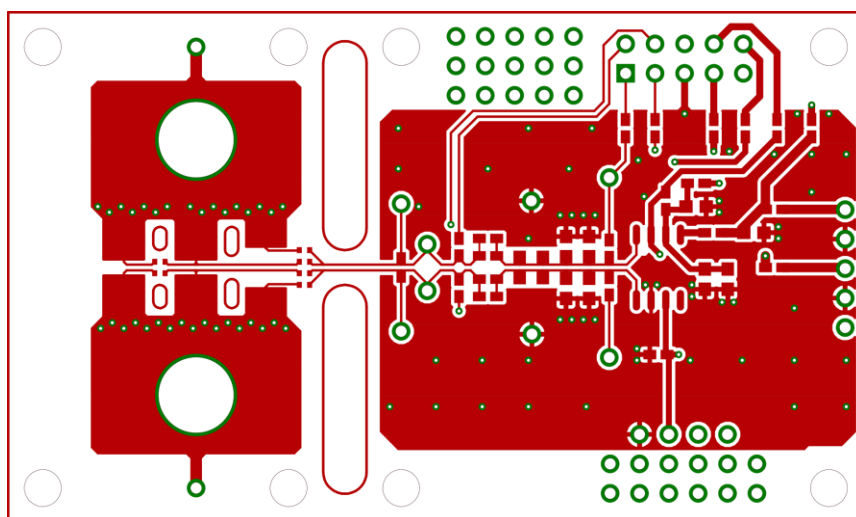


Figure 4. Top Layer Routing Diagram (Top View)

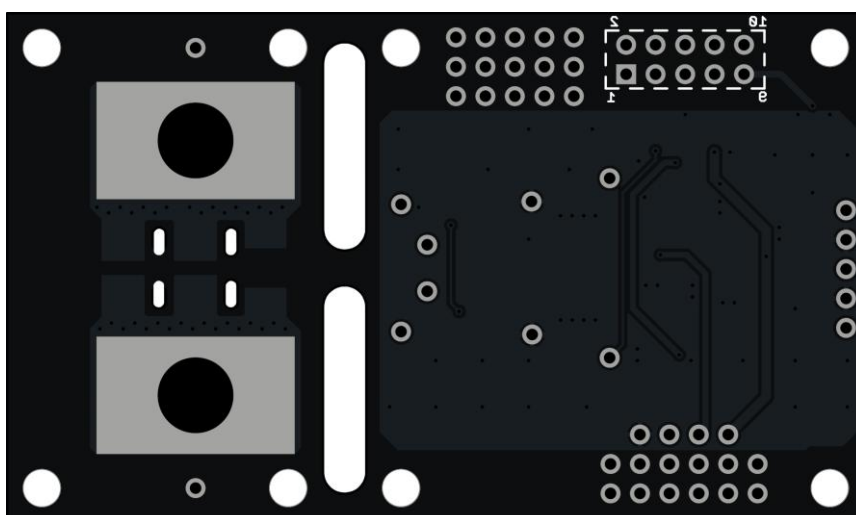


Figure 5. Bottom side PCB Image (Bottom View)

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