

AN–1932 LMP2021MAEVAL - Bridge Sensor Instrumentation Amplifier Evaluation Board

1 Introduction

The LMP2021MAEVAL instrumentation amplifier evaluation board is configured as a differential-in, differential-out amplifier using the LMP2021. Also included is a precision reference and buffer to drive a bridge sensor. The board is set up to be used with the ADC141S626 evaluation board (part number: ADC141S626EB).

2 Power

- J3 Connect to the positive supply.
- J4 Connect to ground.
- J5 If using dual supplies connect to the negative supply. If using a single supply short J5 to ground.
- J7 Pin 1 of J2 can be used to power the ADC141S626EB evaluation board, which requires +5 V. If J3 is +5 V, JP3 can be shorted to provide +5 V to the ADC141S626EB evaluation board. If J3 is not +5 V, leave JP3 open and connect +5 V to J7.

3 Input Signal and Bridge Excitation

J1 is used to power the bridge sensor and input the signal from the bridge to the amplifier. The LM4120 (U4) provides a precision +5 V reference. This is buffered by the LMP7741 (U5) and supplied on pin 1 of J1 to power the bridge sensor. The bottom of the bridge sensor can be connected to pin 2, which is connected to ground. The outputs of the bridge sensor can be connected to pins 3 and 5 of J1.

4 Output Signal

The output of the amplifier is available on pins 3 and 5 of J2. This connector is pin-to-pin compatible with the input connector of the ADC141S626EB evaluation board.

5 Amplifier Gain

The gain of the amplifier is set using R1, R10, R11, and R12. If $R11 = R12$, the gain of the amplifier is $1 + (2R11)/(R1||R10)$.

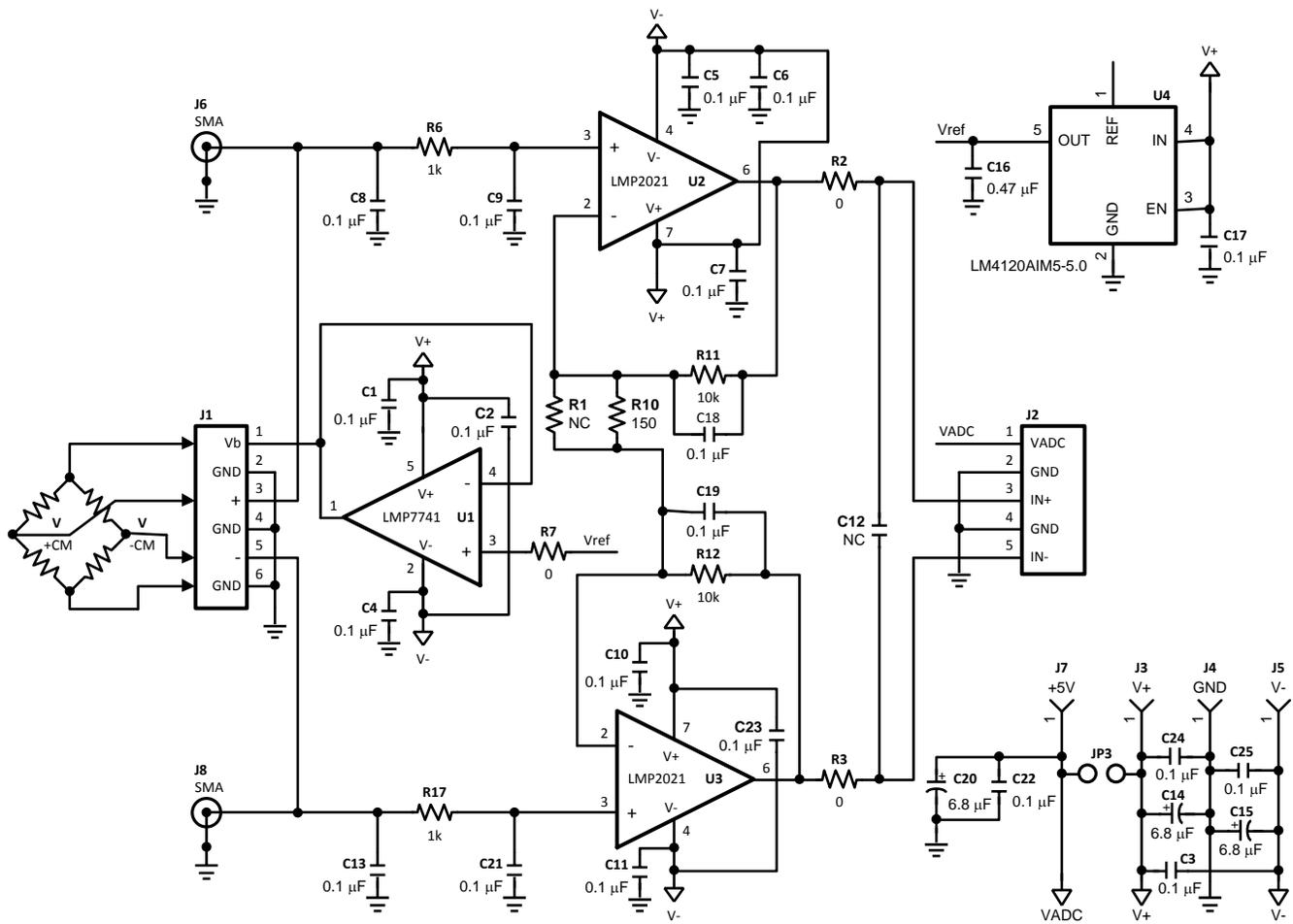


Figure 1. Schematic

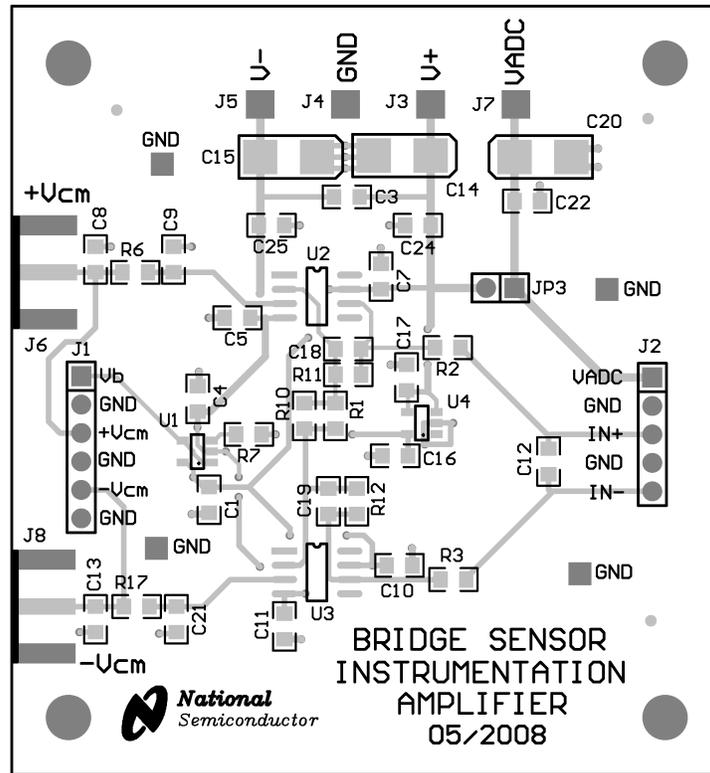


Figure 2. PCB Top

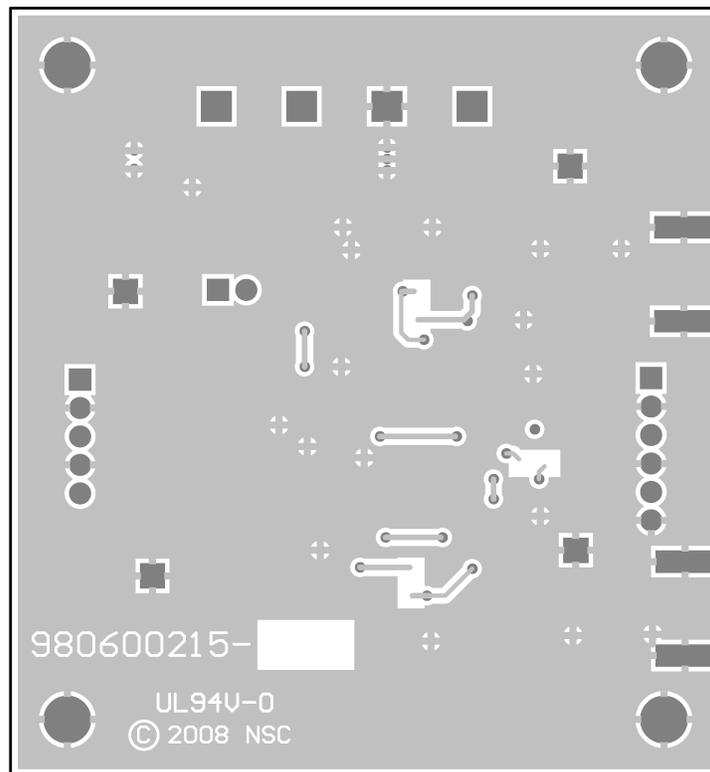


Figure 3. PCB Bottom

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