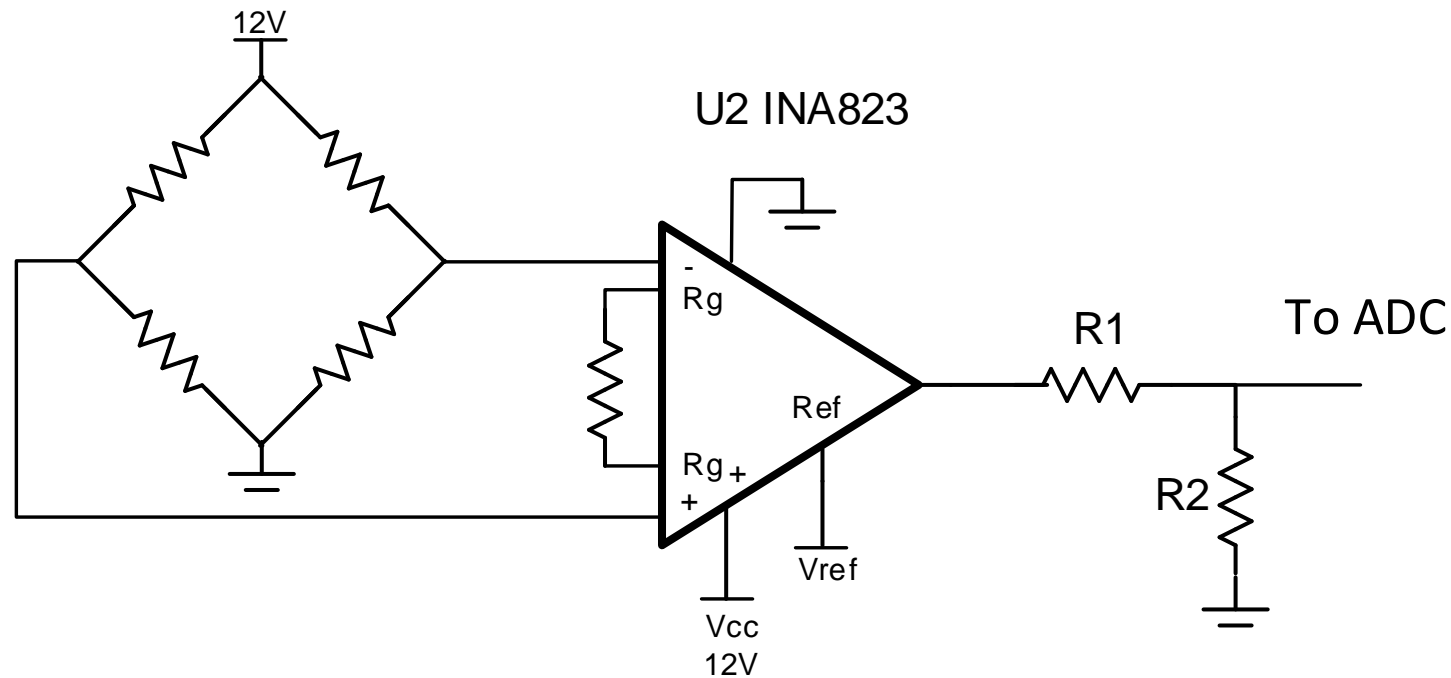


INA823 ADC drive

Differential gain of 5V/V



- The circuit above assumes the input impedance of the ADC is high.
- The goal of the divider is to make sure that the input signal cannot exceed the ADC absolute max limit (typically near ADC supply, e.g. 5V)
- The next slide shows component selection
 - The three variables are INA gain G, INA reference Vref, and voltage divider resistors
 - Gain is selected so that the output of the divider is equal to the ADC input range
 - Offset is selected to shift the output signal so that the ADC input has the correct common mode voltage

Procedure for selecting components

Equation for INA circuit:

$$V_{out} = (V_{dif} \cdot G + V_{ref}) \cdot \frac{R_2}{R_2 + R_1}$$

Choose R1 and R2 so that

$$V_{CC} \cdot \frac{R_2}{R_2 + R_1} < ADC_ABS_MAX$$

Choose G so that

$$ADC_Full_scale_range = G \cdot (V_{inMax} - V_{inMin}) \cdot \frac{R_2}{R_2 + R_1}$$

Choose Vref so that

$$V_{outMin} = V_{adc_min} = (G \cdot V_{inMin} + V_{ref}) \cdot \frac{R_2}{R_2 + R_1}$$