Implementation

The first part to implement will be the flex sensors. These are essentially variable resistors (like potentiometers). As seen in the datasheet below, the resistance varies between 5 kΩ and 10 kΩ. I will connect the flex sensor in series with a 3.3 kΩ resistor to 3.3 V (VCC), and use the midpoint between the two resistors as the input to the ADC.

This forms a basic voltage divider. Theoretically:

- Minimum ADC voltage (when flex = 10 kΩ):

  $V_{out} = \frac{10}{10+3.3} \times 3.3 = 2.48\,V$

- Maximum ADC voltage (when flex = 5 kΩ):Vout=5+105×3.3=1.1 V

  $V_{out} = \frac{5}{5+3.3} \times 3.3 = 1.98\,V$

So the voltage range at the ADC will be 1.98 V to 2.48 V, depending on the bend angle.