Realization and Results

The Analog to Digital Converter of the BeagleBone Black has 12 bit resolution and 5µs sampling time (200kHz sampling rate). It has an maximum 2.0V and minimum -0.5V rating. The figure shows a clamping diode holding voltages between -0.56V and 1.76V. A bias voltage is required to being the minimum clamping voltage up to -0.9V.

Schmitt triggers are used to provide clear HIGH or LOW signals to interrupts on the BeagleBone Black. The hysteresis of the Schmitt triggers assist in preventing false LOW signals from high frequency ac signals. These HIGH and LOW signals are provided by Hall-effect sensors on the Baja racer. The signals are used to calculate rotations per minute of wheels and axels.

References

All photographs and images from the University of Arkansas, including the University of Arkansas Mini Baja SAE team.


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