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AX8052F1xx Temperature Sensing Example



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APPLICATION NOTE

Introduction

When using the temperature sensor of the AX8052F1xx the MCU should be put into standby mode during temperature conversion. The temperature_meas example illustrates how this can be achieved.

To improve the noise immunity further the example configures all 4 ADC channels for temperature measurement. The result of channel 0 is discarded, whereas the median of channel 1, 2 and 3 is used as one temperature measurement.

Additional averaging over 64 measurements can be enabled by defining TEMPERATURE_AVG64.

NOTE: All interrupts (except GPADC interrupt EIE_6) are disabled for the duration of one temperature measurement in order to prevent the MCU from waking up during conversion. (One measurement means conversion of all 4 ADC channels here.) Therefore no interrupts are served for the duration of roughly 400 μ s!

Performance Measurements

The following diagram (Figure 1) shows the frequency of temperature deviations from mean temperature for 10,000 measurements without averaging as well as with averaging over 64 ADC runs for each measurement point.

The standard deviations are $\Sigma = 0.4$ deg without averaging and $\Sigma = 0.07$ when averaging over 64 ADC runs. Measurements were performed at 25 deg.

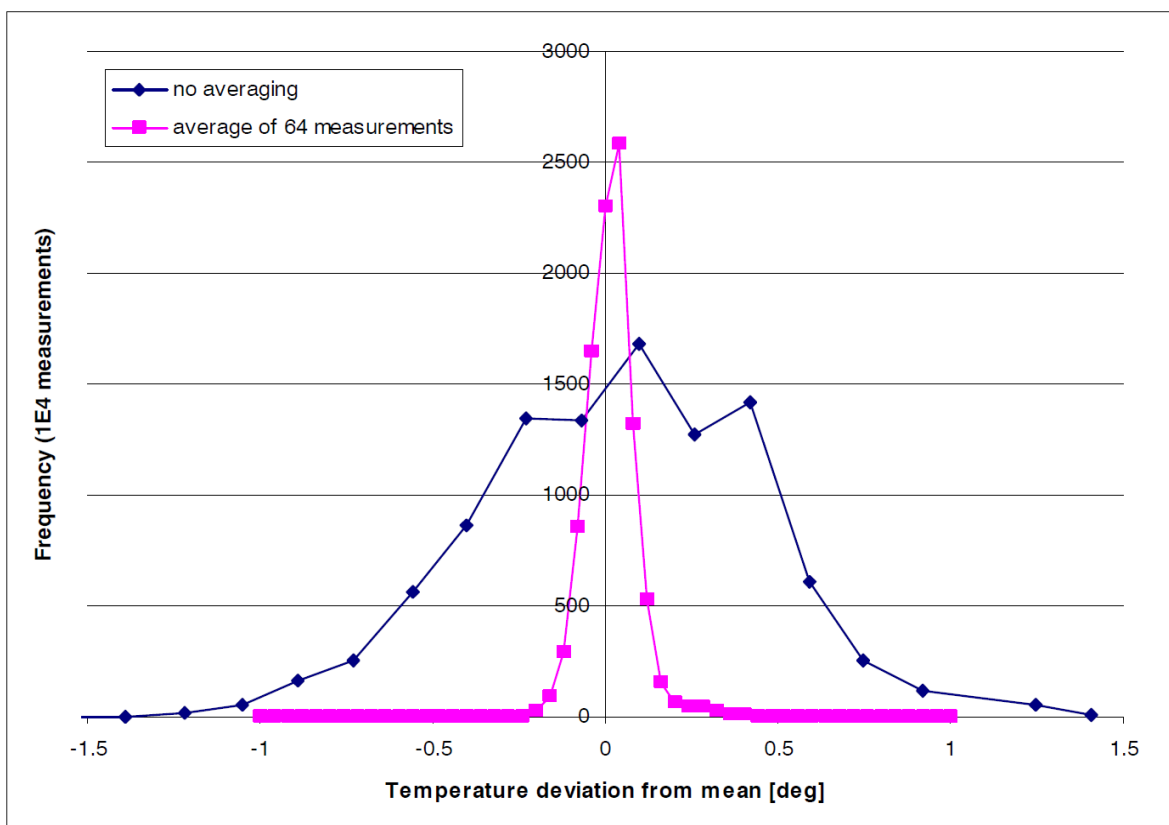



Figure 1.

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