

Front-end IC features zero offset

austriamicrosystems (SIX: AMS), a leading designer and manufacturer of high-performance analog ICs, today announced the AS8510, a high precision data acquisition front-end IC for automotive battery current, voltage, and temperature sense applications, and general sensor interface applications where precise measurement of small signals close to ground is required.

The new flexible sensor interface IC offers advantages over alternative solutions, including being the first to feature a 16-bit dual-channel ADC + PGA architecture with less than one LSB of offset and noise. Highly configurable, the AS8510 allows systems tailored to individual needs making it well suited for a wide range of present and future battery management applications. The AS8510 in combination with austriamicrosystems System Basis Chip and a microcontroller provides an entire battery sensor semiconductor solution for both high-side and low-side at a price below \$2.80 in volume.

The AS8510 data acquisition front-end IC features two independent analog input channels with 16-bit ADCs, each with individually programmable sampling rates. Each channel has a low-drift programmable gain amplifier for handling +/- 160 mV signals or 0 V to 1 V when by-passing the PGA, thus battery currents from the mA range to the kA range can be measured from a 100 Ω shunt. A highly linear sigma delta architecture and wide range of sampling rates allows the AS8510 to provide flexible support of electric vehicle applications. The offset auto-zero feature (both channels) allows high accuracy measurements with low value shunt resistance with negligible insertion loss. Also, various operating modes include low power standby with current monitoring for active wake-up.

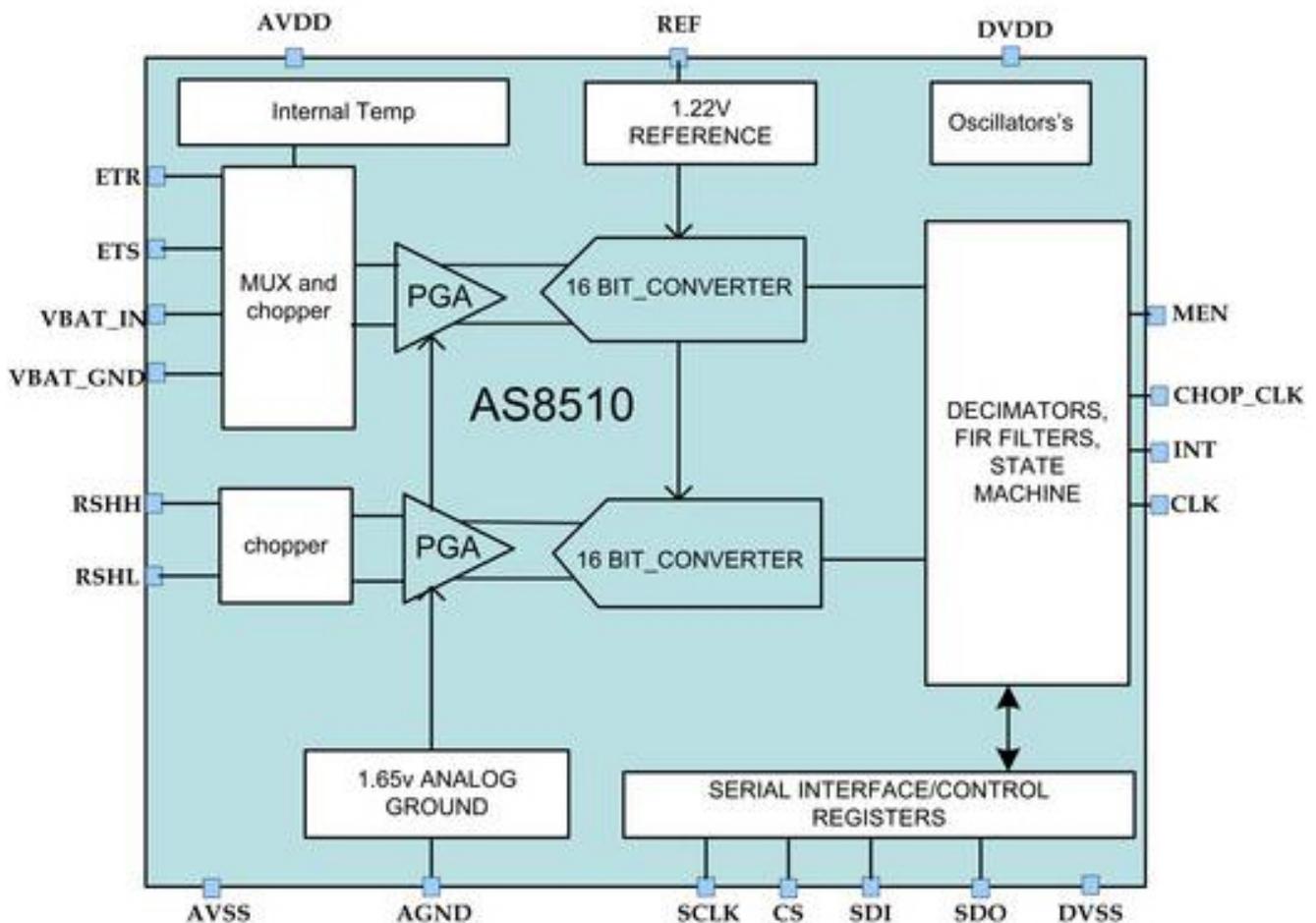
“The need for increasingly more accurate and efficient power management is being driven by the exploding market for battery powered devices and, increasingly, electric vehicles,” stated Manfred Brandl, Product Manager Automotive Sensor Interface and SBC ASSPs. He continued, “With the AS8510, designers have the highest accuracy available and the flexibility required for a wide variety of applications. In addition, by adding an austriamicrosystems LIN companion IC and a low-cost microcontroller, automotive designers can realize reduced time to market in an evolving field at competitive price and improved performance.”

The AS8510 operates with a current shunt sensor in a 12 V system either at a battery's ground terminal or at the plus terminal in conjunction with a dedicated level shift companion IC, or it can be used as a general purpose sensor interface for precise measurement of signals close to ground. Fully differential inputs allow the AS8510 to capture differential signals with 300 mV of common mode above ground and 160 mV below ground. The 2-channel architecture enables digital error correction techniques like “delta by sigma” division or capture of bridge currents / voltages with subsequent error correction in an external microcontroller. In addition,

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the AS8510 draws just 40 μA in standby mode.



The AS8510 high precision data acquisition device can be configured for differential simultaneous 2-channel operation, or for multiplexing 2 single-ended channels in addition to one of the differential channels for sequential measurements. In addition to measuring voltage and current, the AS8510 also allows accurate temperature measurement from either the internal sensor or from an external temperature sensor, which may be powered by an on-chip 250 μA current source. The AS8510 includes an internal precision reference, integrated digital low-pass filters, on-chip precision oscillators and a 4-wire SPI interface.

The AS8510 is available in a SSOP20 package, operates from 3.3 V, and has an ambient operating temperature range of -40 to $+125^{\circ}\text{C}$.

Price & Availability

The AS8510 costs less than \$1.40 in high volume. Samples are available on request.

Technical Support

An adapter board for quick start with the AS8510 is available. An evaluation system for voltage, temperature and battery current measurement at 12 V plus terminal is available. Contact austriamicrosystems for price. For further information on the

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AS8510 or to request samples, please visit

www.austriamicrosystems.com/Battery_Mgmt/AS8510 [1].

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Links:

[1] http://www.austriamicrosystems.com/Battery_Mgmt/AS8510