Technical Article

High-level Analog Integration in an Ultra-low-power MCU? You Bet!

Today we are introducing the highly integrated analog system-on-chip microcontroller series from MSP, building on the successes of previous generations of MSP430FG4x MCUs. The new MSP430FG6x MCU series brings even more analog performance and integration together, forming an ideal platform for a multitude of portable instrumentation and handheld metering products.

When I say high performance integrated analog, I'm not just talking about an analog component here or there. The MSP430FG4x includes all of the following integration:

- 16-bit Continuous Time Sigma-Delta (CTSD) analog-to-digital converter (ADC), (87dB SINAD typ.)
- Low-drift (15 ppm / °C typ), high accuracy (+/- 1%) voltage reference capable of sourcing 1mA external current
- Dual 12-bit digital-to-analog converters (DAC) with synchronization and self-calibration
- Dual low-power rail-to-rail input and output (RRIO) operational amplifiers (op amps)
- Quad low-impedance (<10Ω typ) ground switches
- 12-input voltage comparator

The analog building blocks can easily be configured to create a wide range of systems. By using one amplifier as a trans-impedance stage, followed by a second amplifier as a gain stage, you can easily develop a precision current measuring system. Several system calibration features can be readily accessed such as the low impedance input grounding switches, or by using the DAC to zero the ADC offset.

Additional device peripherals include a 160-segment LCD driver, real-time clock (RTC), 32-bit hardware multiplier, CRC module and up to 128 KB flash memory.

The MSP430FG662x devices also include a USB 2.0 full speed interface, enabling simplified connection to a host system or computer for data transfer or firmware updates.

See how simple it is to enable audio playback in your handheld instrumentation application by leveraging our new TI Design reference design for voiceband audio playback.

Full product details can be found by visiting the MSP430FG6626 product folder.

You can also get more specific development tools from this family of ultra-low-power MSP430 MCUs:

- MSP-TS430PZ100AUSB : 100pin LQFP target socket board
- MSP-FET430U100AUSB : 100pin LQFP target socket board and MSP-FET bundle

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265