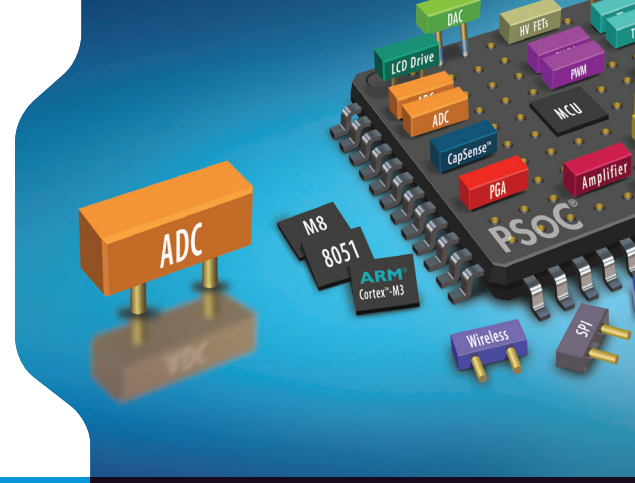


CYPRESS

# DELTA-SIGMA ANALOG TO DIGITAL CONVERTOR



## PRODUCT OVERVIEW

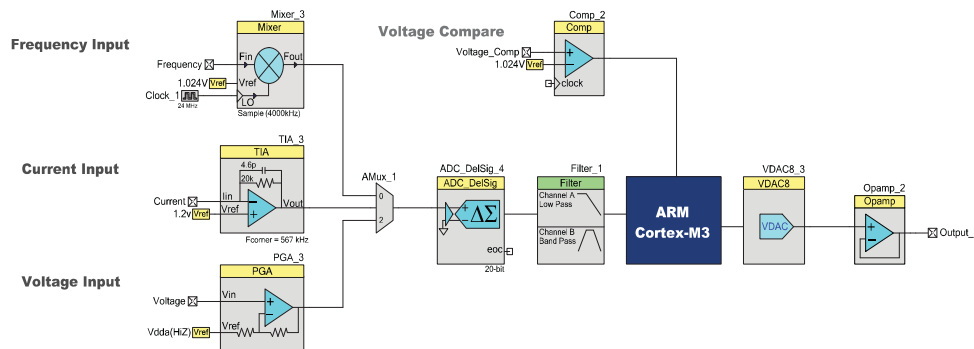
### CYPRESS BRINGS PRECISION TO THE MARKET

Cypress's PSoC<sup>®</sup> programmable system-on-chip architecture gives you the freedom to not only design revolutionary new products, but also the capability to get those products to market faster than anyone else. PSoC integrates more analog functionality than any other mixed-signal embedded solution available.

The PSoC 3 and PSoC 5 Delta-Sigma Analog to Digital Converter (ADC\_DelSig) is a low power and low noise front-end for precision measurement applications. The ADC\_DelSig is usable in a wide range of applications depending on resolution, sampling rate, and operating mode.

### PROGRAMMABLE SIGNAL CHAIN

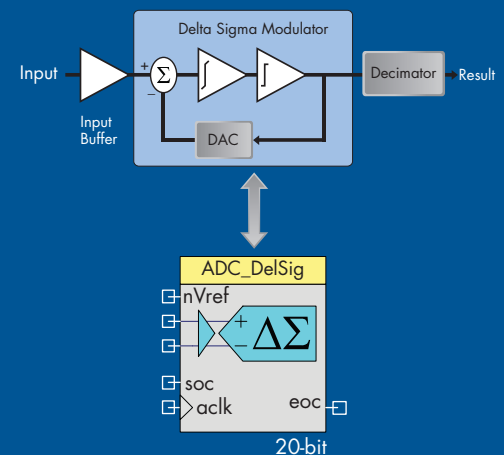
- Highly configurable analog blocks provide flexibility through the design
- System solutions enabled by programmable analog blocks and flexible analog routing
- Further flexibility provided by integrated CPU and programmable logic (UDBs)
- BOM integration: cost, IP protection, board size, power, ease of design
- PSoC Creator<sup>™</sup> enables easy component configuration and routing



Example of a programmable signal chain implemented in PSoC Creator

### FEATURES

- Selectable resolutions, 8- to 20-bits (device dependent)
- Eleven input ranges for each resolution
- Sample rate 10 sps to 384 ksp/s
- Operational modes:
  - Single sample
  - $\pm 0.003\%$  signal accuracy (INL)
  - Multisample
  - Continuous mode
  - Multisample (Turbo)
- High impedance input buffer
  - Selectable input buffer gain (1, 2, 4, 8) or input buffer bypass
- Multiple internal or external reference options
- Automatic power configuration
- Up to four run-time ADC configurations



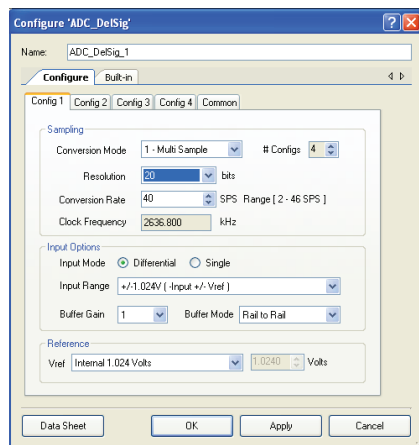
## ADVANTAGES OF USING PSoC DELTA SIGMA ADC

- The PSoC 3 and PSoC 5 Delta-Sigma ADC has the industry's best-in-class precision analog performance, with an adjustable resolution of 8- to 20-bits (device dependent) and a sampling rate of up to 384 kSPS. The Delta-Sigma ADC enables measurements in the microvolt range and gives a precision of up to 0.003%.
- The PSoC 3 and PSoC 5 Delta-Sigma ADC has an integrated gain up to 6X without increased signal inaccuracy.
- The PSoC 3 and PSoC 5 Delta-Sigma ADC offers both single ended (SE) and differential input ADC capability. The differential signal input, which is a unique capability compared to standard microcontrollers, allows from  $-V$  to  $+V$  as compared to the SE, which can only take inputs of 0 to  $+V$ . The differential inputs are less susceptible to input common mode noise and are often used for higher resolution applications.
- The PSoC 3 and PSoC 5 Delta-Sigma ADC can use either an external reference or a high performance internal reference.
- Like all other PSoC Creator components, functions are pre-written for the Delta-Sigma ADC - all the user has to do is to call those functions. There is no need to be an expert in coding to get a project done in PSoC Creator.

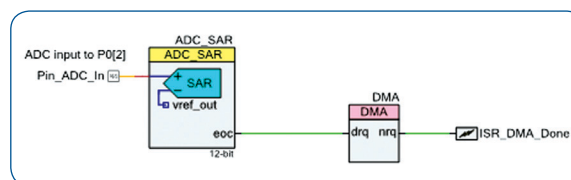
## DISCOVER THE POWER OF PSoC CREATOR

One of the primary advantages of the Delta-Sigma ADC comes from the flexibility that PSoC Creator provides.

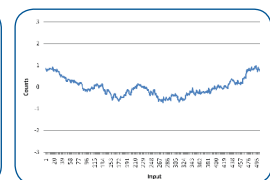
- Integrated documentation and examples in PSoC Creator simplify design. By simply right clicking on the ADC del\_seg component, one can find all the necessary information through its component datasheet.
- The GUI in PSoC Creator supports up to four configurations in one design, allowing you to easily configure each ADC in a variety of ranges, resolutions, sample rates, and input buffer and gain modes.
- Like all other PSoC Creator components, the software is pre-written so all the user has to do is use the function calls provided.
- Powerful DMA is available to transfer data from the ADC to system RAM, the Digital Filter Block (DFB) or another PSoC component.



Configuration window for Delta-Sigma ADC



High-accuracy, high-resolution ADC peripheral



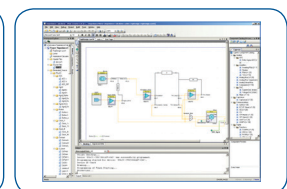
Precision



Evaluation board kit



Expansion board kit



PSoC Creator

## APPLICATIONS

- Sensors
- Controlled systems
- Automated hardware verification
- Measurement tools

## GET STARTED NOW

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