

SA4041 (IXC2) Key Features

Rich power control-centric analog periphery:

- Extensive control sensing inputs (see Fig.1):
 - four high & low-frequency
 - four high-frequency, eight low-frequency
 - two differential to single-ended
- Sixteen-channel, 10-bit, 1.4 MS/s ADC
- Two four-channel, 10-bit, 1.4 MS/s ADC
- Seventeen 10 ns fast comparators
- Sixteen 10-bit and four 6-bit analog DACs for internal comparator threshold setting and four 6-bit analog DACs for level shifting
- Two differential high-speed current sensing amplifier interfaces
- Temperature sensing
- Four PWM pairs allowing control for Multi-Stage Designs with a single IC

Digital Power Engine and Peripherals:

- 32-bit RISC CPU with 64 kB SRAM, 256 kB internal flash memory and 4 kB ROM
- Eight event-driven timers with sixteen event processing channels
- Gate control with cross-conduction protection for up to four half-bridge driver pairs
- Dedicated high-performance digital PLL for grid synchronization
- Adaptive dead time control and hard and soft-switching optimization.
- Communications interfaces include HDLC-UART, UART, SPI, I2C
- Junction temperature - 40 to 125 °C.

SA4041 Applications:

- Totem-Pole PFC
- Interleaved PFC
- LLC and CLLC
- Bi-directional OBC (on-board-chargers) for EV
- Phase-Shifted Full Bridge
- PV Micro-Inverters
- Bi-Directional Inverters
- Dual-Active Bridge
- Resonant Reset Converters
- Hard-Switched Half & Full Bridge

Description

The SA4041 is an 80-pin advanced digital power processor. This mixed-signal IC offers a complete set of high-speed analog peripherals, digital accelerators, event control, and digital processing. Industrial, automotive, and renewable energy applications can benefit significantly from the enhanced performance, high power density and reduced component count it offers designers. The SA4041 provides many benefits in advanced topologies for AC-DC converters, battery chargers, and DC-DC converters.

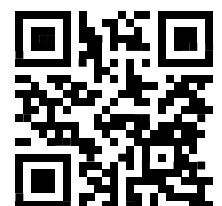
The SA4041 is a fully software-programmable digital controller, enabling control, monitoring and optimization through firmware. Solantro bundles application-specific evaluation firmware with specific reference design platforms, allowing customers to achieve faster time-to-market. In addition, Solantro's custom debug environment (Helios) is used to observe and change firmware variables and hardware registers in real-time to expedite the design process.

The SA4041 Advanced Digital Power Processor provides several key advantages over traditional analog or DSP-based digital power controllers:

- The architecture is power device agnostic (Si MOSFET, SiC, GaN) – allowing customers to optimize cost and performance for a variety of end applications.
- The rich set of analog and digital power peripherals enables designs with low parts count and maximum power density.
- Patented digital hardware accelerators eliminate CPU processor burden associated with high-frequency switching control of wide band-gap devices and increase available CPU processing bandwidth for auxiliary system and housekeeping functions.
- High-performance digital PLL for reliable grid synchronization and start-up
- Optimizes the efficiency at all power levels by using different control modes: burst, continuous-conduction and transition
- Variable frequency control minimizes EMI/RFI vs competitive fixed frequency control ICs

For further information please contact:

www.solantro.com



Solantro SA4041 (IXC2) Advanced Digital Power Processor

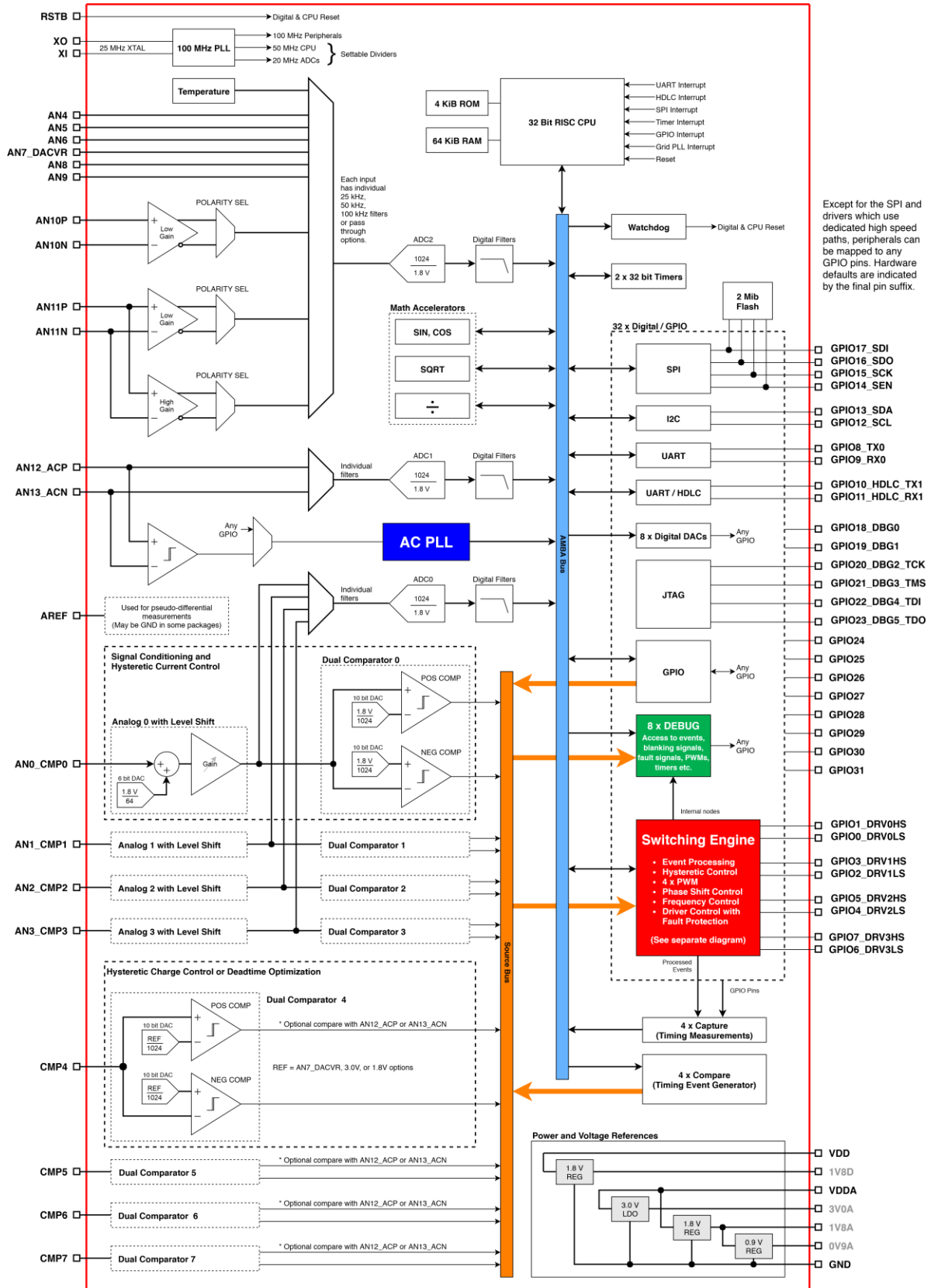


Figure 1 - Functional block diagram