

ATSAM4CP16C

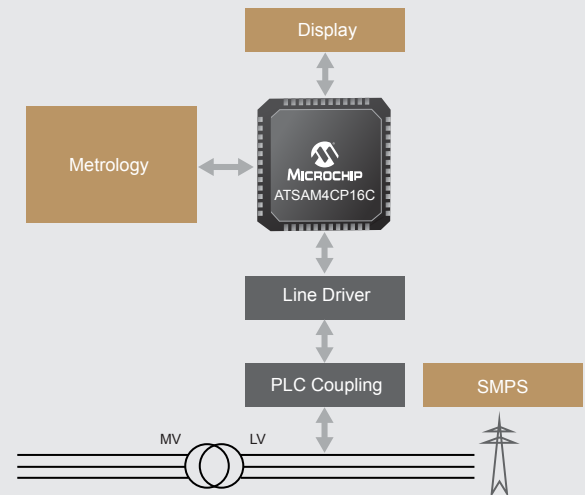
Power Line Communication – G3-PLC System-on-Chip

Summary

The ATSAM4CP16C is a smart metering platform able to support a complete smart meter implementation. It includes a G3-PLC compliant Power Line Communication (PLC) modem. G3-PLC is an open standard technology supported by internationally recognized standard bodies and promoted by the G3-PLC Alliance. Representatives from the smart grid ecosystem, including leading utilities, meter manufacturers, system integrators, IT vendors and silicon providers, constitute the G3-PLC Alliance.

The ATSAM4CP16C is based on a high-performance 32-bit, dual-core ARM® Cortex®-M4 RISC processor providing a maximum speed of 120 MHz each, 1 MB of embedded Flash, 128 KB of SRAM and on-chip cache. The ATSAM4CP16C includes an advanced cryptographic engine and embeds a modem for G3-PLC. Its modem supports CENELEC, ARIB and FCC profiles, as defined by the G3-PLC specification.

The unique dual-core ARM Cortex-M4 architecture of the ATSAM4CP16C supports the implementation of signal processing, application and communications firmware in independent partitions.



Key Features

- Application/master core
 - ARM Cortex-M4 running at up to 120 MHz
 - Memory Protection Unit (MPU)
 - DSP Instruction
- Co-processor
 - ARM Cortex-M4F running at up to 120 MHz
 - IEEE 754-compliant, single precision Floating Point Unit (FPU)
 - DSP instruction
- Cryptography
 - High-performance AES 128 to 256 with various modes (GCM, CBC, ECB, CFB, CBC-MAC, CTR)
 - TRNG (up to 38 Mbps stream, with tested Diehard and FIPS)
 - Classic public key crypto accelerator and associated ROM library for RSA, ECC, DSA, ECDSA
 - Integrity Check Module (ICM) based on Secure Hash Algorithm (SHA1, SHA224, SHA256), DMA assisted
- Safety
 - Four physical anti-tamper detection I/O with time stamping and immediate clear of general backup registers
 - Security bit for device protection from JTAG accesses
- G3-PLC embedded modem
 - Power line carrier modem for 50 Hz and 60 Hz mains
 - Implements G3-PLC CENELEC, FCC and ARIB profiles
 - G3-PLC coherent and differential modulation schemes available
 - Automatic gain control and continuous amplitude tracking in signal reception
 - Class D switching power amplifier control
- Shared system controller
 - Power supply
 - Embedded core and LCD voltage regulator for single-supply operation
 - Power-on-Reset (POR), Brown-out Detector (BOD) and watchdog timer for safe operation
 - Low-power sleep and back-up modes

G3-PLC
Alliance

ATSAM4CP16C Evaluation Kit (ATSAM4CP16C-EK)

- Two ATSAM4CP16C-MB modem boards
- Documentation for PLC hardware design
- G3-PLC software and documentation
- Microchip tools for PLC developers: PC applications to evaluate the ATSAM4CP16C performance at device and network level (PHY tester, G3 sniffer)



Ordering Information

| Part Number | MRL | Flash (KB) | Temperature Range | Package Type |
|------------------|-----|------------|---------------------------|--------------|
| ATSAMCP16C-AHU-Y | A | 1024 | Industrial (-40 to +85°C) | LQFP 176 |

Evaluation Kit Ordering Information

| Part Number | Name |
|----------------|----------------------------|
| ATSAM4CP16C-EK | ATSAM4CP16C Evaluation Kit |

For more information, please email PLC@microchip.com.

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