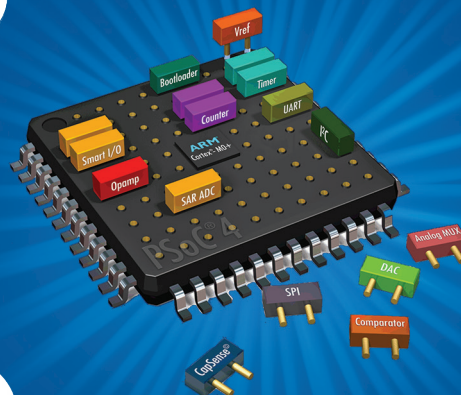


CYPRESS

PSoC[®] 4 S-SERIES

REPLACE LEGACY 8-/16-BIT MCUS WITH AN ARM[®] CORTEX-M0+ AND THE WORLD'S MOST RELIABLE, LOWEST-POWER CAPACITIVE-SENSING SOLUTION



PRODUCT OVERVIEW

Cypress solves complex design problems with PSoC 4

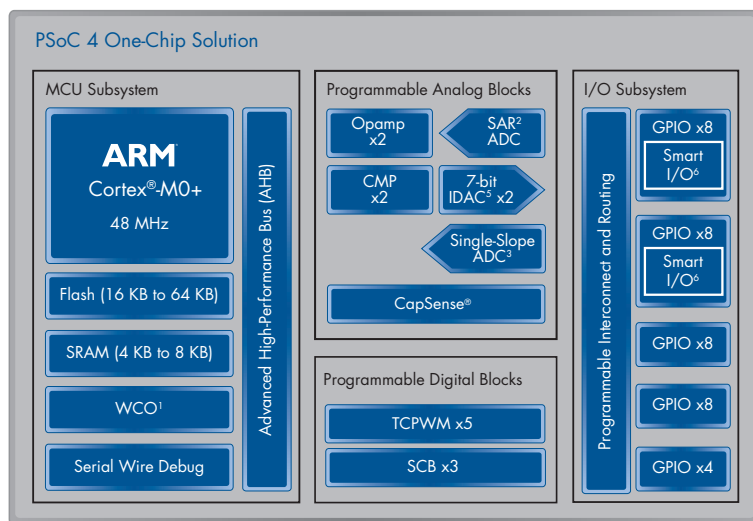
PSoC[®] 4 S-Series expands the portfolio by introducing Cypress's fourth-generation CapSense[®], Smart I/Os to implement pin-level digital logic and the 32-bit ARM[®] Cortex-M0+ for all your mixed-signal embedded requirements.

Cypress introduces fourth-generation CapSense

PSoC[®] 4 S-Series delivers robust noise immunity with superior SNR (>300:1), allowing home appliance customers to easily pass IEC 61000 standards. CapSense fourth-generation also implements robust liquid-level sensing solutions with mutual-capacitance sensing support and improving manufacturing robustness with SmartSense[™] auto-tuning.

Cypress simplifies low-power system design

PSoC 4 S-Series reduces average power consumption by boosting performance. Processing instructions at more than 2x the rate of legacy 8-bit and 16-bit MCUs the system is allowed to spend more time in sleep modes. CapSense fourth-generation also simplifies low-power system design with a low 3μA average current.



¹ Watch crystal oscillator

² Successive approximation register

³ A simple ADC used to measure slow-moving signals

⁴ Programmable gain amplifier

⁵ Current output digital-to-analog converter

⁶ Embedded programmable digital logic in the I/O subsystem

PSOC 4 S-Series Block Diagram

FEATURES

32-BIT MCU SUBSYSTEM:

- 48-MHz ARM[®] Cortex[®]-M0+ MCU
- Up to 64KB flash and 8KB SRAM

FOURTH-GENERATION CAPSENSE:

- Low-power operation (3 μA)
- Self- and mutual-capacitance sensing
- SNR >300:1 delivers robust noise immunity
- Liquid Tolerance SmartSense auto-tuning

PROGRAMMABLE ANALOG:

- 12-bit, 1-Msps SAR ADC
- 10-bit, 46.8-Ksps Single-Slope ADC
- 2x opamps configurable as PGAs, comparators, etc.
- 2x low-power comparators (CMP)
- 2x 7-bit IDACs configurable as a single 8-bit IDAC

PROGRAMMABLE DIGITAL:

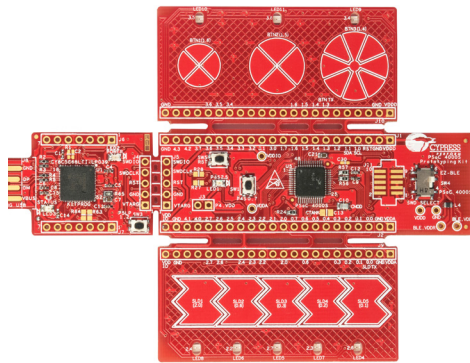
- Smart I/Os used to implement basic, pin-level digital logic
- 5x 16-bit Timer, Counter, PWM (TCPWM) blocks
- 3x serial communication blocks (SCBs) configurable as I²C, SPI or UART

LOW-POWER 1.71V TO 5.5V OPERATION

UP TO 36 PROGRAMMABLE GPIO PINS

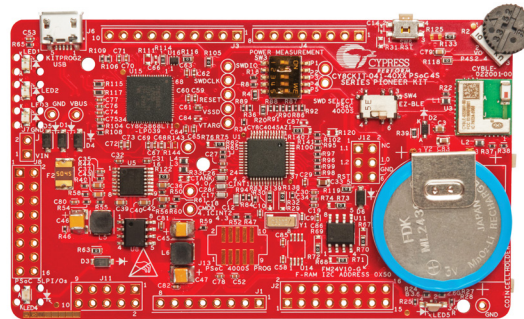
- 48-pin TQFP, 40-pin QFN, 32-pin QFN, and 35-ball WLCSP packages

\$10 CY8CKIT-145 PSoC 4 S-SERIES PROTOTYPING KIT



This low-cost kit features a full-featured programmer debugger with a PSoC 4000S device and two snap-away boards enabled for mutual and self-capacitance CapSense designs.

\$49 CY8CKIT-041-40XX PSoC 4 S-SERIES PIONEER KIT

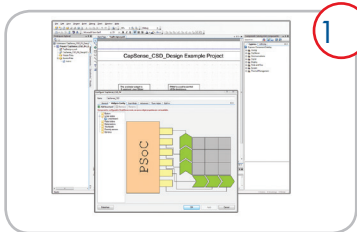


This kit features a PSoC 4000S device with a CapSense trackpad, buttons, and a proximity loop. The board includes an on-board 1Mbit F-RAM, an EZ-BLE™ ProCTM module, and a rechargeable coin-cell battery.

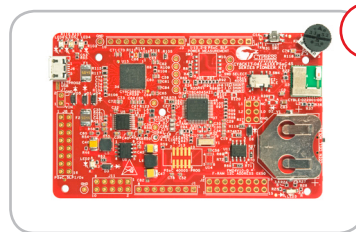
MPN	Max CPU Speed (MHz)	Flash (KB)	SAR ADC ¹	Single-Slope ADC ²	CapSense ³	Opamps	CMP ⁴	Smart I/O ⁵	SCB ⁶	TCPWM ⁷	Package
CY8C4024LQI-S401	24	16	-	-	-	-	2	8	2	5	24-QFN
CY8C4024FNI-S412	24	16	-	46.8 Ksps	√	-	2	8	2	5	25-WLCSP
CY8C4025LQI-S412	24	32	-	46.8 Ksps	√	-	2	16	2	5	32-QFN
CY8C4045AZI-S413	48	32	-	46.8 Ksps	√	-	2	16	2	5	48-TQFP
CY8C4124LQI-S412	24	16	-	46.8 Ksps	√	2	2	16	2	5	32-QFN
CY8C4125LQI-S423	24	32	806 Ksps	-	-	2	2	16	2	5	40-QFN
CY8C4146FNI-S423	48	64	1 Msps	-	-	2	2	16	3	5	35-WLCP
CY8C4146AZI-S433	48	64	1 Msps	46.8 Ksps	√	2	2	16	3	5	48-TQFP

This table shows a subset of PSoC 4 S-Series part numbers. Refer to the PSoC 4 S-Series datasheet for the complete list of part numbers.

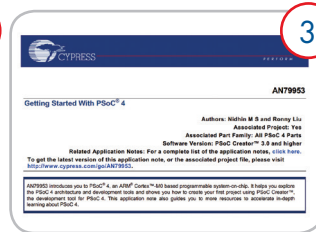
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Download the Getting Started App Note
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