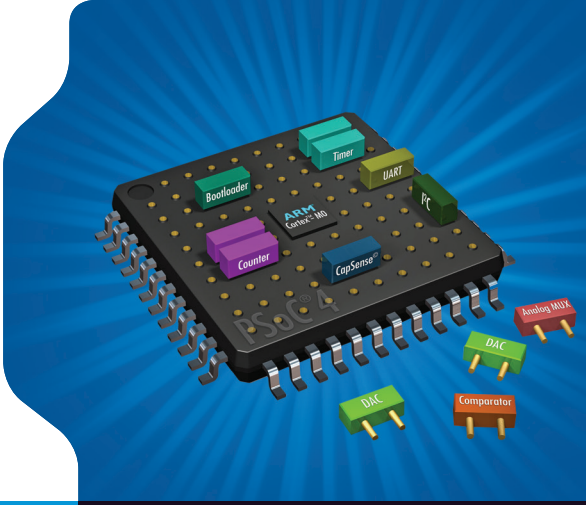
CYPRESS

AUTOMOTIVE PSOC® 4000

BEST, RELIABLE AND LOW-POWER CAPSENSE® FOR AUTOMOTIVE HMI



PRODUCT OVERVIEW

INTRODUCTION

Automotive PSoC® 4000 is the entry level PSoC 4 device targeted at capacitive touch-sensing solutions for Human Machine Interface applications in automobiles. Featuring robust capacitive-sensing algorithms with industry leading SNR and liquid tolerance, PSoC 4000 provides reliable operation in harsh electromagnetic (EM) environment and best-in-class low-power consumption. PSoC 4000 family also integrates programmable digital and analog peripherals such as, timers/counters/PWMs, I²C and comparators to suit a variety of automotive applications.

CapSense®: Industry's Best Capacitive Sensing Solution

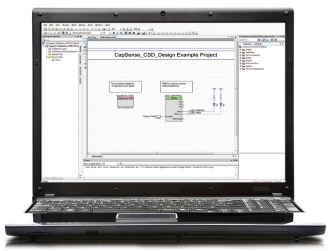
- Enables a touch user interface with up to 16 I/Os
- SmartSense auto-tuning speeds time-to-market and eliminates the need for manual system tuning
- Prevents false touches caused by liquids
- Implements advanced proximity sensing: wake-on-approach, liquid level detection, and IR sensor replacement

Reliable Operation in Harsh Automotive EM Environment

- Zero false touches reported by the touch sensors in harsh automotive environment
- Reduces Radiated Emissions (RE) by easily modifying CapSense Component parameters in PSoC Creator™ IDE
- Complies with standard emission and immunity specifications like CISPR 25, ISO 11452, IEC 61000, IEC 61967 and IEC 62132

Best-in-Class Low-Power Consumption

- Enables efficient designs with low-power consumption by utilizing deep-sleep power mode with current consumption of 2.5 µA
- PSoC Creator IDE simplifies power optimization using the PSoC 4000 family's low-power modes
- Achieves power consumption as low as 5 µA per button for a scan rate of 10 Hz



FEATURES

32-BIT MCU SUBSYSTEM:

- **16-MHz ARM® Cortex™-M0 MCU**
- **Up to 16 KB flash and 2 KB SRAM**

CAPSENSE® WITH SMARTSENSE™ AUTO-TUNING:

- **One Cypress Capacitive Sigma-Delta™ (CSD) controller**
- **Capacitive sensing supported on up to 16 pins**

PROGRAMMABLE ANALOG:

- **Two IDACs (7 bit and 8 bit): digitally controlled current sources**
- **One comparator (CMP)**

PROGRAMMABLE DIGITAL:

- **One configurable 16-bit timer, counter or pulse-width modulator (TCPWM) block**
- **One I²C master or slave**

PACKAGES

16-SOIC, 24-QFN

AEC-Q100 QUALIFIED

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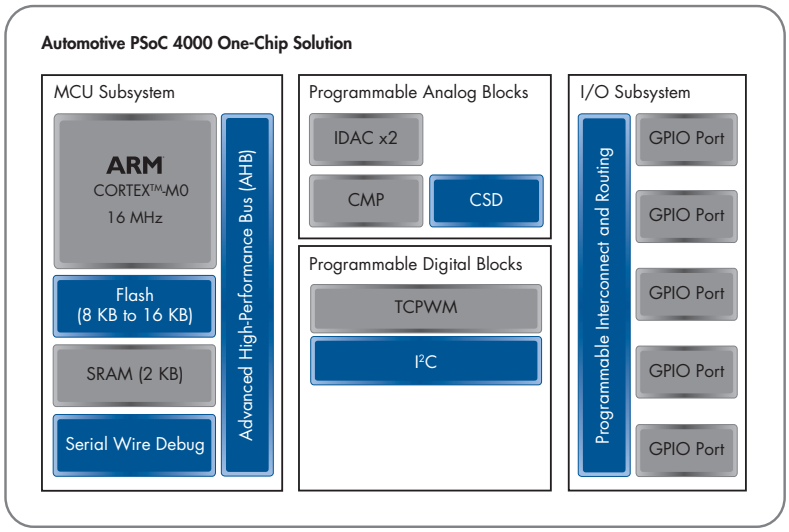
APPLICATIONS

• Infotainment: audio panels and navigation systems • HVAC systems • Interior lighting • Sunroof control • Keyless entry



PSoC 4000 Block Diagram

AUTOMOTIVE PSoC 4000 DEVICE PORTFOLIO

MPN	Max CPU Speed (MHz)	Flash (KB)	SRAM (KB)	CapSense	7-bit IDAC	8-bit IDAC	Comparators	TCPWM Blocks	SCB (I²C)	Package	Operating Temperature
CY8C4014SXA-421	16	16	2	√	1	1	1	1	1	16-SOIC	-40 to +85° C
CY8C4014LQA-422	16	16	2	√	1	1	1	1	1	24-QFN	-40 to +85° C
CY8C4014SXS-421	16	16	2	√	1	1	1	1	1	16-SOIC	-40 to +105° C
CY8C4014LQS-422	16	16	2	√	1	1	1	1	1	24-QFN	-40 to +105° C

GET STARTED NOW

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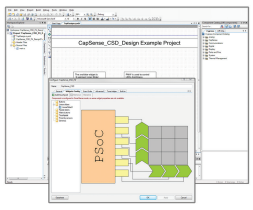

Download the PSoC Creator Integrated Design Environment
www.cypress.com/Creator

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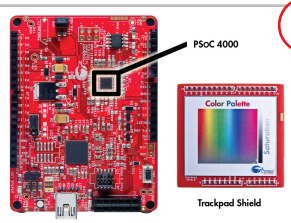

Buy the $30 Evaluation Kit (CY8CKIT-040)
www.cypress.com/go/CY8CKIT-040

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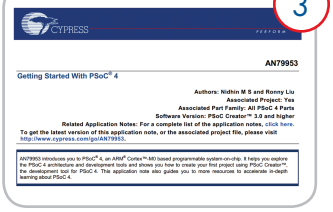

Download the Getting Started App Note
www.cypress.com/go/AN79953

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WORKSHOP

Register for a free PSoC 4 workshop in your area
www.cypress.com/workshops

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