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<td>25</td>
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</table>
Automotive TrueTouch® Roadmap
## Automotive Portfolio: TrueTouch®

### Gen6

<table>
<thead>
<tr>
<th>Features</th>
<th>CYAT8168X</th>
<th>CYAT8268X</th>
<th>CYAT8165X</th>
</tr>
</thead>
</table>
| Gestures, AMS¹  
Thick Glove² or Thick Overlay | 88 I/O, 100-Hz RR | 54 RX⁴, 100-Hz RR | 48 I/O, 100-Hz RR |
| In-Cell³, Gestures, AMS  
Thick Glove⁴ or Thick/Curved Overlay | 77/71 I/O⁵, 120-Hz RR | 46/39 RX, 120-Hz RR | |

### Gen7

<table>
<thead>
<tr>
<th>Features</th>
<th>CYAT817X</th>
<th>CYAT827X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hover, Haptic/Acoustic Feedback, LPWUB⁶, Force Touch⁶, TCPWM, I²S, CAN, Crypto</td>
<td>103 I/O, 120-Hz RR</td>
<td>64 I/O, 120-Hz RR</td>
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</tbody>
</table>
| In-Cell, Gestures, AMS  
Thick Glove or Thick/Curved Overlay | 88 I/O, 120-Hz RR | 59 I/O, 120-Hz RR |

<table>
<thead>
<tr>
<th>Features</th>
<th>CYAT8268X</th>
<th>CYAT8168X</th>
<th>CYAT8165X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Touchscreen, 10 Finger, AutoArmor™, DualSense™, H₂O⁹, Glove Touch¹⁰, Grades: A¹¹ and S¹²</td>
<td>61 I/O, 120-Hz RR</td>
<td>77/71 I/O⁵, 120-Hz RR</td>
<td></td>
</tr>
</tbody>
</table>

1. Automatic Mode Switching
2. 1-mm to 5-mm glove thickness (ski gloves)
3. A type of sensor stack-up in which the RX sensor is inside the LCD module under the color-filter glass
4. Less than 1-mm glove thickness (normal leather gloves)
5. Low-power wake-up button
6. The ability of touchscreen to distinguish between different levels of force being applied on the touchscreen
7. Enables compliance with chip-level emission, immunity and system-level specifications
8. Self-Capacitance + Mutual-Capacitance
9. Waterproofing and wet-finger tracking
10. A feature that allows the detection of gloved fingers on a touch sensor
11. AEC-Q100: -40°C to +85°C
12. AEC-Q100: -40°C to +105°C
13. Refresh rate
14. Number of available I/Os depends on package selection
15. Receive Pins

---

**Note:**

- **Active Touch Area:** 3"-8"  
  7-12"  
  > 12"

- **Touchscreen Size:**
  - 7-12"
  - > 12"

---

**Concept**  
**Development**  
**Sampling**  
**Production**  

<table>
<thead>
<tr>
<th>CYAT8165X</th>
<th>CYAT8168X</th>
<th>CYAT8268X</th>
<th>CYAT817X</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 I/O, 100-Hz RR</td>
<td>88 I/O, 100-Hz RR</td>
<td>54 RX⁴, 100-Hz RR</td>
<td>103 I/O, 120-Hz RR</td>
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</tbody>
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---

**QTY**  
**QTY**
## Automotive Portfolio: TrueTouch® Software

<table>
<thead>
<tr>
<th>Software</th>
<th>MPN</th>
<th>PSoC® Designer™</th>
<th>TrueTouch® Host Emulator²</th>
<th>TrueTouch Driver for Android³</th>
<th>Manufacturing Test Kit⁴</th>
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<tbody>
<tr>
<td><strong>Current Version</strong></td>
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<td>CY8CTMG120</td>
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<tr>
<td>Gen 3</td>
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<tr>
<td></td>
<td>CY8CTMA884</td>
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<tr>
<td>Gen 4</td>
<td>CY8CTMA460</td>
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<tr>
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<td>CY8CTMA461</td>
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<tr>
<td></td>
<td>CY8CTMA768</td>
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<td>CY8CTMA1036</td>
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<td>Gen 6</td>
<td>CYAT8165X-48</td>
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<td>CYAT8168X-77</td>
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<tr>
<td></td>
<td>CYAT8168X-88</td>
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</tr>
<tr>
<td>Gen7</td>
<td>CYAT8X7XX</td>
<td>Production</td>
<td></td>
<td>Contact Sales</td>
<td></td>
</tr>
</tbody>
</table>

Contact Cypress Sales for the latest TrueTouch software, drivers and tools

¹ PSoC Designer, TTHE and MTK releases are backward compatible. The latest version is recommended for new designs.
² TrueTouch Host Emulator (TTHE) is a front-end tool used to configure, tune, debug and demonstrate TrueTouch devices
³ TrueTouch Driver for Android (TTDA) is the driver for Android that translates touch information into Linux/Android events
⁴ TrueTouch Manufacturing Test Kit (MTK) enables customers and ITO partners to test touch panels that use Cypress TrueTouch controllers through the manufacturing flow
**CYAT8268X**

**Automotive TrueTouch® Gen6 Family**

**Applications**

Large touchscreen human machine interface (HMI) systems

**Features**

- **Advanced User Interface**
  - Waterproofing: Works with water droplets, condensation, sweat, and wet-finger tracking
  - Tracking with up to 5-mm thick gloves or thick overlay

- **Proprietary Analog Front End** with AutoArmor™
  - 54 Receive channels to support ≥100-Hz refresh rates
  - DualSense™: Self- and mutual-capacitance analog front end (U.S. Patents 8,773,146; 8,358,142; 8,319,505; and 8,067,948)
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132), and system-level (CISPR 25) specifications

- **Sensor Design**
  - Supports Hybrid In-Cell sensor

- **System Solutions**
  - Manufacturing test kits for production testing

- **Package**
  - 100-pin TQFP

**Collateral**

Datasheet and Design Guide: [Contact Sales](mailto:Contact.Sales@Cypress.com) or [automotive@cypress.com](mailto:automotive@cypress.com)

**Availability**

Sampling: Now  
Production: Now

---

1 The ability of a touchscreen sensor to work properly in the presence of water droplets, condensation or sweat
2 Analog circuit in the touchscreen controller used to measure self- and mutual-capacitance
3 Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
4 The capacitance of a row or column line in a touchscreen sensor
5 The capacitance between a row and a column in a touchscreen sensor
6 TX/VCOM share the same layer, receive ITO layer on/above the color filter
7 Interrupt
8 Display Driver Interface
CYAT8168X
Automotive TrueTouch® Gen6 Family

Applications
Large touchscreen human machine interface (HMI) systems

Features
- **Advanced User Interface**
  - Waterproofing\(^1\): Works with water droplets, condensation, sweat and wet-finger tracking
  - Tracking with up to 5-mm thick gloves or thick overlay
- **Proprietary Analog Front End\(^2\) with AutoArmor\(^3\)**
  - True 5-V TX-Boost\(^4\) with Multi-Phase TX
  - 54 Receive Channels to support ≥100-Hz refresh rates
  - DualSense\(^5\): Self\(^5\) and mutual\(^6\)-capacitance analog front end (U.S. Patents 8,773,146; 8,358,142; 8,319,505; and 8,067,948)
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132), and system-level (CISPR 25) specifications
- **System Solutions**
  - Manufacturing test kits for production testing
- **Package**
  - 128-pin TQFP, 100-pin TQFP

Collateral
Datasheet and Design Guide: [Contact Sales](mailto:contact_sales@cypress.com) or [automotive@cypress.com](mailto:automotive@cypress.com)

Availability
Sampling: Now  Production: Now

---

1. The ability of a touchscreen sensor to work properly in the presence of water droplets, condensation or sweat
2. Analog circuit in the touchscreen controller used to measure self- and mutual-capacitance
3. Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
4. A scanning method used to drive multiple TX lines simultaneously
5. The capacitance of a row or column line in a touchscreen sensor
6. The capacitance between a row and a column in a touchscreen sensor
7. Interrupt
CYAT8165X
Automotive TrueTouch® Gen6 Family

Applications
Small and medium touchscreen human machine interface (HMI) systems

Features
- **Advanced User Interface**
  - Waterproofing\(^1\): Works with water droplets, condensation, sweat, and wet-finger tracking
  - Tracking with up to 5-mm thick gloves or thick overlay
- **Proprietary Analog Front End\(^2\) with AutoArmor\(^3\)**
  - True 5-V TX-Boost\(^4\) with Multi-Phase TX\(^4\)
  - 17 Receive Channels to support ≥100-Hz refresh rates
  - DualSense\(^5\): Self- and mutual- capacitance analog front end
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132) and system-level (CISPR 25) specifications
- **System Solutions**
  - Manufacturing test kits for production testing
- **Package**
  - 100-pin TQFP and 64-pin TQFP

Collateral
Datasheet and Design Guide: Contact Sales or automotive@cypress.com

Availability
Sampling: Now  Production: Now

---

1 The ability of a touchscreen sensor to work properly in the presence of water droplets, condensation or sweat
2 Analog circuit in the touchscreen controller used to measure self- and mutual- capacitance
3 Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
4 A scanning method used to drive multiple TX lines simultaneously
5 The capacitance of a row or column line in a touchscreen sensor
6 The capacitance between a row and a column in a touchscreen sensor
7 Interrupt
**Applications**

Touchpad human machine interface (HMI) systems

**Features**

- **Advanced User Interface**
  - Support with square, rectangular, round, and free-form shape
  - Waterproofing\(^1\): Works with water droplets, condensation, sweat, and wet-finger tracking
  - Tracking with up to 5-mm thick gloves or thick overlay
  - Typical refresh rate of 120 Hz

- **Proprietary Analog Front End\(^2\) with AutoArmor\(^3\)**
  - True 5-V TX-Boost\(^4\) with Multi-Phase TX\(^4\)
  - 17 Receive Channels to support typical refresh rate of 120 Hz
  - DualSense\(^5\): Self\(^5\)- and mutual\(^6\)-capacitance analog front end
    (U.S. Patents 8,773,146; 8,358,142; 8,319,505; and 8,067,948)
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132), and system-level (CISPR 25) specifications

- **System Solutions**
  - Manufacturing test kits for production testing

- **Package**
  - 56-QFN wettable flank, 64-pin TQFP

**Collateral**

Datasheet and Design Guide: [Contact Sales](mailto:contactsales@cyprus.com) or [automotive@cyrus.com](mailto:automotive@cyrus.com)

---

1. The ability of a touchpad sensor to work properly in the presence of water droplets, condensation or sweat
2. Analog circuit in the touchscreen controller used to measure self- and mutual-capacitance
3. Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
4. A scanning method used to drive multiple TX lines simultaneously
5. The capacitance of a row or column line in a touchscreen sensor
6. The capacitance between a row and a column in a touchscreen sensor
7. Interrupt

**Availability**

- **Sampling:** Q2 2020
- **Production:** Q2 2020

---

Arm® Cortex® CPU

Flash [32]

SRAM [32]

Channel Engine

RX Channels

Programmable Analog Multiplexer

5-V TX Pump [32]

Touch Sequencer

INT [7]

1 - I2C/SPI

2 - Serial Peripheral Interface (SPI)

Touchpad Sensor I/O: XY00–XY40

Host Processor

Touchpad Sensor
CYAT6165X
Automotive TrueTouch® Gen6 Family

Applications
Slider human machine interface (HMI) systems

Features
- **Advanced User Interface**
  - Waterproofing: Works with water droplets, condensation, sweat and wet-finger tracking
  - Tracking with up to 5-mm thick gloves or thick overlay
  - Typical refresh rate of 200 Hz
  - Low-power wake-up button: Typical power consumption of 50 µA
- **Proprietary Analog Front End** with AutoArmor™
  - True 5-V TX-Boost™ with Multi-Phase TX
  - 17 Receive Channels to support ≥200-Hz refresh rates
  - DualSense™: Self- and mutual-capacitance analog front end (U.S. Patents 8,773,146; 8,358,142; 8,319,505; and 8,067,948)
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132) and system-level (CISPR 25) specifications
- **System Solutions**
  - Manufacturing test kits for production testing
- **Package**
  - 56-pin QFN wettable flank, 64-pin TQFP

Datasheet and Design Guide: Contact Sales or automotive@cypress.com

Availability
Sampling: Now  Production: Now

1 The ability of a touchscreen sensor to work properly in the presence of water droplets, condensation or sweat
2 Analog circuit in the touchscreen controller used to measure self- and mutual-capacitance
3 Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
4 A scanning method used to drive multiple TX lines simultaneously
5 The capacitance of a row or column line in a touchscreen sensor
6 The capacitance between a row and a column in a touchscreen sensor
7 Interrupt
CYAT817X
Automotive TrueTouch® Gen7 Family

**Applications**
Integrated touchscreen human machine interface (HMI) systems with multimodal feedback

**Features**

- **Advanced User Interface**
  - 50-mm hover\(^1\) performance and force touch\(^2\) support
  - Supports low-power CapSense\(^3\) wake-up button
  - 4x timer/counter/pulse-width modulator (TCPWM) blocks for haptic feedback controls
  - 1x I\(^2\)S block for acoustic feedback
  - Parallel reporting of touch data via SCB\(^4\) or CAN blocks
  - Includes a Crypto block for optional data encryption

- **Proprietary Analog Front End\(^5\) with AutoArmor\(^6\)**
  - True 5-V TX-Boost\(^7\) with multi-phase TX
  - 64 receive channels to support ≥100-Hz refresh rates
  - Multi-phase self-capacitance methodology aids in meeting EMI/EMC requirements without performance degradation
  - AutoArmor enables compliance with chip-level emissions (IEC 61967), immunity (IEC 62132), ESD (IEC 62132), and system-level (CISPR 25) specifications

- **Packages**
  - 128-pin TQFP, 100-pin TQFP

**Collateral**
Datasheet and Design Guide: [Contact Sales](mailto:ContactSales) or [automotive@cypress.com](mailto:automotive@cypress.com)

**Availability**
Sampling: Now  Production: Now

---

\(^1\) A feature allowing the detection of fingers hovering over the touchscreen sensor

\(^2\) The ability of a touchscreen sensor to distinguish between different levels of force being applied on the touchscreen

\(^3\) Cypress’ touch-sensing user interface solution. The industry’s No. 1 solution in sales by 4x over No. 2 due to superior performance

\(^4\) Serial communication block, configurable as SPI, I\(^2\)C or UART

\(^5\) Analog circuit in the touchscreen controller used to measure self- and mutual-capacitance

\(^6\) Cypress proprietary technology used to reduce emissions and improve EMI immunity to meet automotive EMC requirements
# Automotive TrueTouch Packages

<table>
<thead>
<tr>
<th>Family</th>
<th>Package</th>
<th>QFN¹</th>
<th>TQFP</th>
<th>Pins</th>
<th>Body Size (mm)</th>
<th>Pitch (mm)</th>
</tr>
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<tbody>
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¹ Wettable flanks package to allow automated optical inspection (AOI)
Automotive PSoC® Roadmap
# Automotive PSoC and MCU Portfolio

<table>
<thead>
<tr>
<th>8-Bit</th>
<th>32-Bit Arm® Cortex®-M0/M0+</th>
<th>32-Bit Arm Cortex®-M3</th>
<th>32-Bit Arm Cortex®-M4</th>
<th>32-Bit Arm Cortex®-M7</th>
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</thead>
<tbody>
<tr>
<td>High Analog Integration</td>
<td>Ultra-Low-Power 8-/16-Bit Replacement</td>
<td>Mid-Range Performance</td>
<td>High Performance</td>
<td>Next Generation</td>
</tr>
</tbody>
</table>

**Programmable System-on-Chip (PSoC)** is a brand of Cypress MCUs for the broad-base embedded market that delivers an Arm Cortex-M CPU (PSoC 4+) with unique software-defined peripherals and CapSense capacitive sensing.

**Flexible MCU (FM)** is a portfolio of high-performance Arm® Cortex®-M-based MCUs for industrial and consumer applications.

1. A programmable analog block that is configured using PSoC software to create analog front ends, signal conditioning circuits with opamps and filters.
2. A programmable digital block that is configured using PSoC software to implement custom digital peripherals and glue logic.

### PSoC 3
- M8C CPU
- 67 MHz, 64KB Flash
- Up to 19 PAB, 30 PDB, 72 I/Os

### PSoC 4
- Cortex®-M0/M0+
- 48 MHz, 256KB Flash
- Up to 13 PAB\(^1\), 20 PDB, 98 I/Os

### PSoC 5LP
- Cortex®-M3
- 80 MHz, 256KB Flash
- 20 PAB, 30 PDB, 72 I/Os

### FM3 MCUs
- Cortex®-M3
- 144 MHz, 1.5MB Flash, 154 I/Os

### FM0+ MCUs
- Cortex®-M0+
- 40 MHz, 512KB Flash, 102 I/Os

### PSoC Analog Coprocessor CY8C4Ax
- CY8C4Ax
- 48 MHz, 32KB Flash
- Up to 12 PAB, 11 PDB, 38 I/Os

### PSoC 6 HMI
- Cortex®-M4 and Cortex®-M0+
- NDA Required, Contact Sales

### FM4 MCUs
- Cortex®-M4
- 200 MHz, 2MB Flash, 190 I/Os

### PSoC 7
- Cortex®-M7
- NDA Required, Contact Sales

### 8FX
- 8-bit RISC MCU
- 16 MHz, 32–50KB Flash

---

1. A programmable analog block that is configured using PSoC software to create analog front ends, signal conditioning circuits with opamps and filters.
2. A programmable digital block that is configured using PSoC software to implement custom digital peripherals and glue logic.
## Automotive Portfolio: PSoC® 1

### M8C CPU | 24 MHz

<table>
<thead>
<tr>
<th>PSoC MCU</th>
<th>Programmable Digital</th>
<th>Intelligent Analog</th>
<th>Performance Analog</th>
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<tbody>
<tr>
<td>CY8C29x66</td>
<td>32K/2K, 44 GPIOs</td>
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<tr>
<td>CY8C27x43</td>
<td>32K/2K, 44 GPIOs</td>
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<td>CY8C28xxx</td>
<td>16K/1K, 56 GPIOs</td>
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<td>CY8C24894</td>
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<td>CY8C24x23</td>
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<td>CY8C23x33</td>
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<td>CY8C24x93</td>
<td>32K/2K, 36 GPIOs</td>
<td></td>
<td>CY8C24x93</td>
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<tr>
<td>CY8C21x23</td>
<td>4K/0.25K, 16 GPIOs</td>
<td></td>
<td>CY8C21x23</td>
</tr>
</tbody>
</table>

### Key Features

1. Flash KB/SRAM KB
2. General-purpose input/output pins
3. Analog-to-digital converter: Includes incremental, successive approximation register (SAR) or Delta-Sigma (ΔΣ) ADCs
4. AEC-Q100: -40°C to +85°C
5. AEC-Q100: -40°C to +125°C

### Availability

- Industrial
- Automotive

### Production

- Concept
- Development
- Sampling
- Production

---

1. Flash KB/SRAM KB
2. General-purpose input/output pins
3. Analog-to-digital converter: Includes incremental, successive approximation register (SAR) or Delta-Sigma (ΔΣ) ADCs
4. AEC-Q100: -40°C to +85°C
5. AEC-Q100: -40°C to +125°C
## Automotive Portfolio: PSoC® 4

**Flexibility | CapSense® | Ease-of-Use**

<table>
<thead>
<tr>
<th>PSoC MCU</th>
<th>Intelligent Analog PSoC 4100</th>
<th>Precision Analog PSoC 4 HV PA</th>
<th>Prog Digital PSoC 4200</th>
<th>Sense Anything PSoC 4700</th>
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## Automotive Portfolio: PSoC® Software

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<th>Software</th>
<th>PSoC Creator™</th>
<th>PSoC Designer™</th>
<th>PSoC Programmer</th>
<th>EZ-Click™</th>
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</table>

Download the latest PSoC software version [here](#).

---

1 All software and tool releases are backward compatible. The latest versions are recommended for new designs.
2 PSoC Creator is an Integrated Design Environment (IDE) that allows concurrent hardware and firmware design of PSoC 3 and PSoC 4 systems.
3 PSoC Designer is an IDE that enables firmware design using a library of precharacterized peripherals for PSoC 1 systems.
4 PSoC Programmer can be used with PSoC Designer and PSoC Creator to program and debug any design onto a PSoC device.
5 EZ-Click is a Windows® GUI-based tool that enables development of CapSense MBR solutions. It allows you to set up sensor configuration, apply global system properties, monitor real-time sensor output, and run production-line system diagnostics.
**PSOc® 4000S-Series**

**PSOc MCU**

### Applications

- User interface for infotainment systems, user interface for heating, ventilation, air conditioning

### Features

- **32-Bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0+ CPU
  - Up to 32KB Flash
  - 4KB SRAM
  - Real-time clock (RTC) capability with a watch crystal oscillator (WCO)

- **Programmable Analog Blocks**
  - One 10-bit, 46.8-ksps single-slope analog-to-digital converter (ADC)\(^1\)
  - Two low-power comparators (CMP)
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDAC) configurable as a single 8-bit IDAC

- **Programmable Digital Blocks**
  - Five 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Two serial communication blocks (SCB) that are configurable as I²C, SPI, UART or LIN Slave

- **Packages**
  - 24-pin QFN and 28-pin SSOP

- **I/O Subsystem**
  - Up to 24 GPIOs, including 16 Smart I/Os\(^2\)

### Collateral

- **Datasheet:** [PSOC 4000S](#)

---

\(^1\) A simple ADC used to measure slow-moving signals

\(^2\) Embedded programmable digital logic in the I/O subsystem
**PSOC® 4100S-Series**

**Intelligent Analog**

### Applications

User interface for heating, ventilation, air conditioning, MCU and discrete analog replacement

### Features

- **32-Bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0+ CPU
  - Up to 64KB Flash
  - 8KB SRAM
  - Real-time clock (RTC) capability with a watch crystal oscillator (WCO)

- **Programmable Analog Blocks**
  - One 12-bit, 1 Msps successive approximation register (SAR) analog-to-digital converter (ADC)
  - One 10-bit, 46.8-ksp single-slope ADC
  - Two opamps configurable as programmable gain amplifiers (PGA), comparators, etc.
  - Two low-power comparators (CMP)
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDAC) configurable as a single 8-bit IDAC

- **Programmable Digital Blocks**
  - Five 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Three serial communication blocks (SCBs) that are configurable as I²C, SPI, UART or LIN Slave

- **Packages**
  - 28-pin SSOP and 40-pin QFN

- **I/O Subsystem**
  - Up to 34 GPIOs, including 16 Smart I/Os

### Collateral

- **Datasheet:** [PSOC 4100S](#)

---

1. A simple ADC used to measure slow-moving signals
2. Embedded programmable digital logic in the I/O subsystem

---

### Availability

**Sampling:** Now  
**Production:** Now
PSoC® 4100S Plus-Series
Intelligent Analog

Applications
User interface for HMI applications, Body Control and HVAC applications

Features
- 32-Bit MCU Subsystem
  - 48-MHz Arm® Cortex®-M0+ CPU with DMA controller and real-time clock (RTC)
  - 128KB Flash and 16KB SRAM
  - External MHz oscillator (ECO) with PLL and 32KHz watch crystal oscillator (WCO)
- Programmable Analog Blocks
  - One 12-bit, 1-Msps successive approximation register (SAR) analog-to-digital converter (ADC)
  - One 10-bit, 46.8-kspst single-slope ADC
  - Two opamps configurable as programmable gain amplifiers (PGA), comparators, etc.
  - Two low-power comparators (CMP)
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDAC) configurable as a single 8-bit IDAC
- Programmable Digital Blocks
  - Eight 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Five serial communication blocks (SCBs) that are configurable as I²C, SPI, UART or LIN Slave
- One Controller Area Network (CAN) Controller
- Packages
  - 40-pin QFN and 64-pin TQFP
- I/O Subsystem
  - Up to 54 GPIOs, including 24 Smart I/Os

Collateral
Datasheet: [Contact Sales](#)

Availability
Sampling: Now
Production: Now

1 A simple ADC used to measure slow-moving signals
2 Embedded programmable digital logic in the I/O subsystem
PSoC® 4100M-Series
Intelligent Analog

Applications
User interface for HMI applications, body Control and HVAC applications

Features

- **32-bit MCU Subsystem**
  - 24-MHz Arm® Cortex®-M0 CPU with a DMA controller and real-time clock (RTC)
  - Up to 128KB Flash and 16KB SRAM

- **Programmable Analog Blocks**
  - Two comparators (CMP)
  - Four opamps, programmed as PGAs, CMPs, filters, etc.
  - One 12-bit/1-Msps successive approximation register (SAR) ADC
  - One CapSense® block with self- and mutual-capacitance sensing
  - Four (2x 8-bit, 2x 7-bit) current-output digital-to-analog converters (IDACs)

- **Programmable Digital Blocks**
  - Eight programmable 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Four serial communication blocks (SCBs) configurable as I²C master or slave, SPI master or slave, or UART

- **Packages**
  - 48-pin LQFP and 64-pin TQFP

- **I/O Subsystem**
  - Up to 51 GPIOs

Collateral

Datasheet: [Contact Sales](#)
**PSoC® 4200M-Series**

**Programmable Digital**

### Applications
User interface for HMI applications, body Control and HVAC applications

### Features
- **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0 CPU with a DMA controller and real-time clock (RTC)
  - Up to 128KB Flash and 16KB SRAM
- **Programmable Analog Blocks**
  - Two comparators (CMP)
  - Four opamps, programmed as PGAs, CMPs, filters, etc.
  - One 12-bit/1-Msps successive approximation register (SAR) analog-to-digital converter (ADC)
  - One CapSense® block with self- and mutual-capacitance sensing
  - Four (2x 8-bit, 2x 7-bit) current-output digital-to-analog converters (IDACs)
- **Programmable Digital Blocks**
  - Four universal digital blocks (UDBs): custom digital peripherals
  - Eight programmable 16-bit timer/counter/pulse-width modulation (TCPWM) blocks
  - Four serial communication blocks (SCBs) configurable as I2C master or slave, SPI master or slave, or UART
- **Two Controller Area Network (CAN) Controllers**
- **Packages**
  - 48-pin LQFP, 56-pin QFN and 64-pin TQFP

### Collateral
Datasheet: [Contact Sales](#)

### Availability
**Sampling:** Now  **Production:** Now
Automotive PSoC Packages

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| PSoC 1 | 2XX45 | ✓ | ✓ |
|        | 21X34 | ✓ | ✓ |
|        | 24X23 | ✓ | ✓ |
|        | 24894 | ✓ | |
|        | 29X66 | ✓ | ✓ |

| PSoC 4 | 4000 | ✓ | ✓ |
|        | 41/42XX | ✓ | |
|        | 40XXS | ✓¹ | ✓ |
|        | 41XXS | ✓¹ | |
|        | 41XXS Plus | ✓¹ | |
|        | 41/42XXM | ✓¹ | |

¹ Wettable flanks package to allow automated optical inspection (AOI)