Cypress Roadmap:
MCU Portfolio
Q3 2019
# MCU Portfolio

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<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/M33(next generation)</th>
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<td>8-/16-Bit Replacement</td>
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</table>

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

**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

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**PSoC 3**
- 8051 CPU
- 67 MHz, 64KB Flash
- Up to 19 PAB, 30 PDB, 72 I/Os

**PSoC 1**
- M8C CPU
- 24 MHz, 32KB Flash
- 16 PAB, 16 PDB, 64 I/Os

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

**PSoC 4**
- Cortex-M0/M0+
- 48 MHz, 256KB Flash
- Up to 13 PAB, 20 PDB, 96 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 6**
- 150 MHz Cortex-M4/100 MHz M0+
- up to 2MB Flash
- 7 PAB, 56 PDB, 104 I/Os

**FM4 MCUs**
- Cortex-M4
- 200 MHz, 2MB Flash, 190 I/Os
## PSoC 6 MCU Portfolio

### Ultra-Low-Power | Flexibility | Hardware-Based Security and Root of Trust

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<td><strong>Ultra-Low-Power and High-Performance MCU Series</strong></td>
<td><strong>Ultra-Low-Power, Dual-Core, and High-Performance MCU Series</strong></td>
<td><strong>High-Integration Wired/Wireless Connectivity MCU Series</strong></td>
<td><strong>Ultra-Low-Power, Dual-Core, “Just Works” Secure Host MCU Series</strong></td>
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<tr>
<td><strong>NEW</strong> CY8C61xA</td>
<td><strong>NEW</strong> CY8C62xA</td>
<td><strong>NEW</strong> CY8C63xA</td>
<td><strong>NEW</strong> CY8B04xA</td>
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<tr>
<td>Arm Cortex-M4</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
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<td>2MB/1MB</td>
<td>2MB/1MB</td>
<td>2MB/1MB</td>
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<tr>
<td><strong>NEW</strong> CY8C61x7</td>
<td><strong>NEW</strong> CY8C62x7</td>
<td><strong>NEW</strong> CY8C63x7</td>
<td><strong>NEW</strong> CY8B04x7</td>
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<td>Arm Cortex-M4</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
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<tr>
<td>1MB/288KB</td>
<td>1MB/288KB</td>
<td>1MB/288KB</td>
<td>1MB/288KB</td>
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<tr>
<td>CMP, Opamp, ADC, SCB, DAC, QSPI, UDB, FS-USB, DC-DC</td>
<td>CMP, Opamp, ADC, SCB, DAC, QSPI, UDB, FS-USB, DC-DC</td>
<td>CMP, Opamp, ADC, SCB, DAC, QSPI, UDB, BLE, DC-DC</td>
<td>Secure-Boot MCU, CY Secure Bootloader, MbedOS, AFR, fRTOS Support</td>
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<tr>
<td><strong>NEW</strong> CY8C61x5</td>
<td><strong>NEW</strong> CY8C62x5</td>
<td><strong>NEW</strong> CY8C63x6</td>
<td><strong>NEW</strong> CY8B064x5</td>
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<tr>
<td>Arm Cortex-M4</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
<td>Arm Cortex-M4 &amp; Arm Cortex-M0+</td>
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<tr>
<td>512KB/256KB</td>
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<td>512KB/256KB</td>
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<tr>
<td>CMP, ADC, SCB, QSPI, FS-USB, CAN, SDHC</td>
<td>CMP, ADC, SCB, QSPI, FS-USB, CAN? DC-DC, SDHC</td>
<td>CMP, ADC, SCB, QSPI, UDB, BLE, SDHC, CAN?, BLE, DC-DC</td>
<td>Secure-Boot MCU, CY Secure Bootloader, MbedOS, AFR, fRTOS Support</td>
</tr>
</tbody>
</table>

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### Roadmap

- **NEW** Q319
- **NEW** Q419

### Status

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

### Availability

- 

### Status

- **Production**

### Features

1. **Flash KB/SRAM KB**
2. **Serial communication block** (UART, SPI, I2C)
3. **Secure Digital Host Controller**
4. **Full-Speed USB**
5. **Quad-SPI**
6. **Universal digital block – programmable logic**
7. **Mobile Industry Processor Interface**
8. **Controller Area Network**
## MCU PORTFOLIO – WKA

<table>
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<tr>
<th>Programmed Digital PSoC 5200</th>
<th>Intelligent Analog PSoC 5400</th>
<th>Performance Analog PSoC 5600</th>
<th>Precision Analog PSoC 5800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog: 1x ADC(^1), 1x DAC(^2), 2x CMP(^3), 0.9% (V_{REF})</td>
<td>Analog: 1x ADC, 2x DAC, 4x CMP, 2x Opamps, 2x SC/CT PAB(^5), 0.9% (V_{REF})</td>
<td>Analog: 2x ADC, 4x DAC, 4x CMP, 4x Opamps, DFB(^6), 4x SC/CT PAB, 0.9% (V_{REF})</td>
<td>Analog: 2x/3x ADC, 4x DAC, 4x CMP, 4x Opamps, DFB, 4x SC/CT PAB, 0.1% (V_{REF})</td>
</tr>
<tr>
<td>Interfaces: USB, FF(^4), P|C</td>
<td>Interfaces: USB, FF, P|C</td>
<td>Interfaces: USB, FF, P|C, CAN(^7)</td>
<td>Interfaces: USB, FF, P|C, CAN</td>
</tr>
</tbody>
</table>

### CY8C5288
- 80 MHz, 256K/64K/2K\(^8\)
- 12b SAR ADC
- 24x UDB\(^9\), 99-CSP\(^10\)

### CY8C5268
- 67 MHz, 128K/32K/2K
- 12b SAR ADC
- 24x UDB

### CY8C5267
- 67 MHz, 64K/16K/2K
- 12b SAR ADC
- 20x UDB

### CY8C5266
- 67 MHz, 32K/8K/2K
- 12b SAR ADC
- 20x UDB

### CY8C5265
- 67 MHz, 32K/8K/2K
- 12b SAR ADC
- 20x UDB

### CY8C5468
- 80 MHz, 256K/64K/2K
- 12b SAR ADC
- 24x UDB, 99-CSP

### CY8C5467
- 67 MHz, 128K/32K/2K
- 12b SAR ADC
- 24x UDB

### CY8C5466
- 67 MHz, 64K/16K/2K
- 12b SAR ADC
- 20x UDB

### CY8C5465
- 67 MHz, 32K/8K/2K
- 12b SAR ADC
- 20x UDB

### CY8C5468
- 80 MHz, 256K/64K/2K
- 2x 12b SAR ADC
- 24x UDB, 99-CSP

### CY8C5467
- 67 MHz, 128K/32K/2K
- 12b ΔΣ ADC, 12b SAR/2x 12b SAR ADC
- 24x UDB

### CY8C5466
- 67 MHz, 64K/16K/2K
- 12b ΔΣ ADC, 12b SAR/2x 12b SAR ADC
- 20x UDB

### CY8C5465
- 67 MHz, 32K/8K/2K
- 12b ΔΣ ADC, 12b SAR/2x 12b SAR ADC
- 20x UDB

### CY8C5468
- 80 MHz, 256K/64K/2K
- 20b ΔΣ ADC\(^11\), 2x 12b SAR ADC
- 24x UDB\(^9\), 99-CSP

### CY8C5467
- 67 MHz, 128K/32K/2K
- 20b ΔΣ ADC, 12b SAR ADC
- 24x UDB

### CY8C5466
- 67 MHz, 64K/16K/2K
- 20b ΔΣ ADC, 12b SAR ADC
- 20x UDB

### CY8C5465
- 67 MHz, 32K/8K/2K
- 20b ΔΣ ADC, 12b SAR ADC
- 20x UDB

\(^1\) Analog-to-digital converter
\(^2\) Digital-to-analog converter
\(^3\) Comparator
\(^4\) Fixed function
\(^5\) Switched capacitor/continuous time programmable analog block
\(^6\) Digital filter block
\(^7\) Controller area network
\(^8\) Flash KB/SRAM KB/EEPROM KB
\(^9\) Universal digital block
\(^10\) Chip-scale package
\(^11\) Delta-Sigma ADC

Status
- Concept
- Development
- Sampling
- Production

Availability
- QQYY
- QQYY
## PSoC® 4 Portfolio (NDA)

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

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<tr>
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<th>PSoC 4000</th>
<th>Programmable Digital PSoC 4200</th>
<th>Analog Coprocessor PSoC 4A00</th>
<th>Application Specific PSoC 4500, 4700</th>
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<tr>
<td><strong>BL = BLE-Series</strong></td>
<td><strong>S = S-Series</strong></td>
<td><strong>M = M-Series</strong></td>
<td><strong>L = L-Series</strong></td>
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<tr>
<td>CY8C4125</td>
<td>CY8C4126-M</td>
<td>CY8C4125</td>
<td>CY8C4125</td>
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</tr>
<tr>
<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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<tr>
<td>CY8C4125-BL</td>
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<td>24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</td>
<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</td>
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<tr>
<td>24-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
<td>24-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
<td>24-MHz M0, 64K/8K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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<td>24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</td>
<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</td>
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<td>24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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<td>24-MHz M0, 32K/4K CMP, Opamp, ADC, SCB IDAC</td>
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<td>24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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<td>24-MHz M0, 128K/16K CMP, Opamp, ADC, SCB IDAC, Smart I/O</td>
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</tbody>
</table>

1. Flash KB/SRAM KB
2. Comparator
3. Current-output DAC
4. Serial communication block
5. Analog-to-digital converter
6. Embedded programmable digital logic in the I/O subsystem
7. Bluetooth Low Energy
8. Universal digital block
9. Controller area network
10. Universal analog block
11. Motor Control Accelerator

**Availability**

- Concept
- Development
- Sampling
- Production

**Motor Control**

- 48-MHz M0+, 256K/32K MCA
- CMP, Opamp
- 2x ADC, SCB, IDAC
- Smart I/O, ECO

**Inductive Sensing**

- 48-MHz M0+, 32K/4K
- CMP, Opamp, UAB
- ADC, SCB, VDAC
- Smart I/O

**Universal Control Accelerator**

- 48-MHz M0, 128K/16K
- CMP, Opamp, UAB
- ADC, SCB, VDAC
- Smart I/O
## FM4® and FM0+® MCU Portfolio

### Arm® Cortex®-M4 and Arm Cortex-M0+

<table>
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<tr>
<th>Ultra-Low-Power 8-Bit/16-Bit Replacement</th>
<th>High Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S6E2D-Series</strong> 160 MHz, 540 CoreMark®, 2.7–3.6 V 2M/36K(^1), 512KB Video RAM 120/176 Pins</td>
<td><strong>S6E2C-Series</strong> 200 MHz, 675 CoreMark, 2.7–5.5 V 2M/256K, 144/176/216 Pins</td>
</tr>
<tr>
<td><strong>MB9BFx6xM/N/R-Series</strong> 160 MHz, 540 CoreMark, 2.7–5.5 V 1M/128K, 32KB Work Flash(^2) 80/100/120 Pins</td>
<td><strong>S6E2G-Series</strong> 180 MHz, 608 CoreMark, 2.7–5.5 V 1M/192K, 144/176 Pins</td>
</tr>
<tr>
<td><strong>S6E2H-Series</strong> 160 MHz, 540 CoreMark, 2.7–5.5 V 512K/64K, 32KB Work Flash 80/100/120 Pins</td>
<td><strong>MB9BFx6xK/L-Series</strong> 160 MHz, 540 CoreMark, 2.7–5.5 V 512K/64K, 32KB Work Flash 48/64 Pins</td>
</tr>
<tr>
<td><strong>S6E1C-Series</strong> 40 MHz, 1.7–3.8 V 128K/16K, 26/32/48/64 Pins, 40 µA/MHz(^3)</td>
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<tr>
<td><strong>S6E1A-Series</strong> 40 MHz, 2.7–5.5 V 88K/6K, 32/48 Pins, 70 µA/MHz(^3)</td>
<td></td>
</tr>
</tbody>
</table>

1. Flash KB/SRAM KB
2. Independent flash memory available to store data or additional firmware
3. Active power consumption

### Flash

- **S6E2D-Series**: 160 MHz, 540 CoreMark®, 2.7–3.6 V
- **MB9BFx6xM/N/R-Series**: 160 MHz, 540 CoreMark, 2.7–5.5 V
- **S6E2H-Series**: 160 MHz, 540 CoreMark, 2.7–5.5 V
- **MB9BFx6xK/L-Series**: 160 MHz, 540 CoreMark, 2.7–5.5 V
- **S6E1C-Series**: 40 MHz, 1.7–3.8 V
- **S6E1A-Series**: 40 MHz, 2.7–5.5 V

### CPU Speed

- **S6E2D-Series**: 160 MHz, 540 CoreMark®, 2.7–3.6 V
- **MB9BFx6xM/N/R-Series**: 160 MHz, 540 CoreMark, 2.7–5.5 V
- **S6E2H-Series**: 160 MHz, 540 CoreMark, 2.7–5.5 V
- **MB9BFx6xK/L-Series**: 160 MHz, 540 CoreMark, 2.7–5.5 V
- **S6E1C-Series**: 40 MHz, 1.7–3.8 V
- **S6E1A-Series**: 40 MHz, 2.7–5.5 V
**Midrange Performance**

- **MB9BFx2xK/L-Series**
  - 60 MHz, 2.7–5.5 V
  - 1.5M/192K, 64KB Work Flash
  - 144/176 Pins

- **MB9BFx1xS/T-Series**
  - 144 MHz, 2.7–5.5 V
  - 1M/128K, 144/176 Pins

- **MB9BFx1xN/R-Series**
  - 144 MHz, 2.7–5.5 V
  - 512K/64K, 32KB Work Flash, 100/120 Pins

- **MB9BFx2xK/L-M-Series**
  - 72 MHz, 2.7–5.5 V
  - 1.5M/192K, 32KB Work Flash
  - 48/64/80 Pins

- **MB9BF121J-Series**
  - 72 MHz, 2.7–5.5 V
  - 64K/4K, 32 Pins

1. Flash KB/SRAM KB
2. Independent flash memory available to store data or additional firmware
# PSoC® 3 Portfolio

## Programmable Digital PSoC 3200
- **Analog:** ΔΣ ADC\(^1\), 1x DAC\(^2\), 2x CMP\(^3\), 0.9% \(V_{REF}\)
- **Interfaces:** FF\(^4\), FC

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8C3246</td>
<td>50 MHz, 64K/8K/2K, 12b ADC, 24x UDB, USB, 72-CSP</td>
</tr>
<tr>
<td>CY8C3245</td>
<td>50 MHz, 32K/4K/1K, 12b ADC, 20x UDB, USB, 72-CSP</td>
</tr>
<tr>
<td>CY8C3244</td>
<td>50 MHz, 16K/2K/0.5K, 12b ADC, 16x UDB</td>
</tr>
</tbody>
</table>

## Intelligent Analog PSoC 3400
- **Analog:** ΔΣ ADC, 2x DAC, 4x CMP, 2x Opamps, 2x SC/CT PAB\(^5\), 0.9% \(V_{REF}\)
- **Interfaces:** FF, FC

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8C3446</td>
<td>50 MHz, 64K/8K2K, 12b ADC, 24x UDB, USB, CAN</td>
</tr>
<tr>
<td>CY8C3445</td>
<td>50 MHz, 32K/4K/1K, 12b ADC, 20x UDB, USB</td>
</tr>
<tr>
<td>CY8C3444</td>
<td>50 MHz, 16K/2K/0.5K, 12b ADC, 16x UDB</td>
</tr>
</tbody>
</table>

## Performance Analog PSoC 3600
- **Analog:** ΔΣ ADC, 2x4x DAC, 0x/2x/4x CMP, 0x/2x/4x Opamps, 0x/2x/4x SC/CT PAB, 0.1% \(V_{REF}\)
- **Interfaces:** USB, FF, FC

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8C3666</td>
<td>67 MHz, 64K/8K/2K, 0x/1x DFB(^7), 12b ADC, 20x/24x UDB(^8), CAN</td>
</tr>
<tr>
<td>CY8C3665</td>
<td>67 MHz, 32K/4-8K/1K, 0x/1x DFB, 12b ADC, 16x/20x UDB, 72-CSP</td>
</tr>
</tbody>
</table>

## Precision Analog PSoC 3800
- **Analog:** ΔΣ ADC, 2x4x DAC, 0x/2x/4x CMP, 0x/2x/4x Opamps, 0x/2x/4x SC/CT PAB, 0.1% \(V_{REF}\)
- **Interfaces:** USB, FF, FC

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8C3866</td>
<td>67 MHz, 64K/8K/2K, DFB, 20b ADC, 20x/24x UDB, CAN, 72-CSP</td>
</tr>
<tr>
<td>CY8C3865</td>
<td>67 MHz, 32K/4-8K/1K, 0x/1x DFB, 20b ADC, 16x/20x UDB</td>
</tr>
</tbody>
</table>

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1. Delta-Sigma analog-to-digital converter
2. Digital-to-analog converter
3. Comparator
4. Fixed function
5. Switched capacitor/continuous time programmable analog block
6. Flash KB/SRAM KB/EEPROM KB
7. Digital filter block
8. Universal digital block
9. Controller area network
10. Chip-scale package
## PSoC® 1 Portfolio

### M8C CPU | 24 MHz

<table>
<thead>
<tr>
<th>PSOC MCU</th>
<th>Programmable Digital</th>
<th>Intelligent Analog</th>
<th>Performance Analog</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8C24x93</td>
<td>32K/2K, 36 GPIOs</td>
<td>2x CMP, 1x10-bit Incremental ADC</td>
<td></td>
</tr>
<tr>
<td>CY8C27xxx</td>
<td>32K/2K, 44 GPIOs</td>
<td>CapSense, 8x PDB, 4x CMP</td>
<td>1x14-bit ΔΣ ADC, 12x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C29xxx</td>
<td>32K/2K, 64 GPIOs</td>
<td>CapSense, 16x PDB, 4x CMP</td>
<td>1x14-bit ΔΣ ADC, 12x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C24x94</td>
<td>16K/1K, 56 GPIOs</td>
<td>CapSense, 4x PDB, 2x CMP</td>
<td>2x14-bit SAR ADC, 6x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C28xxx</td>
<td>16K/1K, 44 GPIOs</td>
<td>CapSense, 8x PDB, 4x CMP</td>
<td>1x14-bit ΔΣ ADC, 12x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C21x34</td>
<td>8K/0.5K, 26 GPIOs</td>
<td>CapSense, 4x PDB, 2x CMP</td>
<td>1x10-bit Single-Slope ADC, 4x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C22x45</td>
<td>16K/1K, 38 GPIOs</td>
<td>CapSense, 8x PDB, 4x CMP</td>
<td>1x10-bit SAR ADC, 6x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C23x33</td>
<td>8K/0.5K, 26 GPIOs</td>
<td>CapSense, 4x PDB, 1x CMP</td>
<td>1x 8-bit SAR ADC, 4x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C24x93</td>
<td>4K/0.25K, 16 GPIOs</td>
<td>4x PDB, 2x CMP</td>
<td>1x10-bit Single-Slope ADC, 4x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C24x23</td>
<td>4K/0.25K, 24 GPIOs</td>
<td>CapSense, 4x PDB, 2x CMP</td>
<td>1x14-bit ΔΣ ADC, 6x SC/CT PAB</td>
</tr>
<tr>
<td>CY8C21x23</td>
<td>4K/0.25K, 16 GPIOs</td>
<td>4x PDB, 2x CMP</td>
<td></td>
</tr>
<tr>
<td>CY8C24x93</td>
<td>32K/2K</td>
<td>16x PDB, 4x CMP</td>
<td></td>
</tr>
</tbody>
</table>

1. Flash KB/SRAM KB
2. General purpose input/output pins
3. Programmable digital block
4. Comparator
5. Delta-Sigma ADC
6. Switched capacitor/continuous time programmable analog block
7. Successive approximation register ADC

### Status
- **Concept**
- **Development**
- **Sampling**
- **Production**

### Availability
- **Concept**
- **Development**
- **Sampling**
- **Production**

### CY8C24x93
- 32K/2K, 36 GPIOs
- 2x CMP, 1x10-bit Incremental ADC

### CY8C27xxx
- 32K/2K, 44 GPIOs
- CapSense, 8x PDB, 4x CMP
- 1x14-bit ΔΣ ADC, 12x SC/CT PAB

### CY8C29xxx
- 32K/2K, 64 GPIOs
- CapSense, 16x PDB, 4x CMP
- 1x14-bit ΔΣ ADC, 12x SC/CT PAB

### CY8C24x94
- 16K/1K, 56 GPIOs
- CapSense, 4x PDB, 2x CMP
- 2x14-bit SAR ADC, 6x SC/CT PAB

### CY8C28xxx
- 16K/1K, 44 GPIOs
- CapSense, 8x PDB, 4x CMP
- 1x14-bit ΔΣ ADC, 12x SC/CT PAB

### CY8C21x34
- 8K/0.5K, 26 GPIOs
- CapSense, 4x PDB, 2x CMP
- 1x10-bit Single-Slope ADC, 4x SC/CT PAB

### CY8C22x45
- 16K/1K, 38 GPIOs
- CapSense, 8x PDB, 4x CMP
- 1x10-bit SAR ADC, 6x SC/CT PAB

### CY8C23x33
- 8K/0.5K, 26 GPIOs
- CapSense, 4x PDB, 1x CMP
- 1x 8-bit SAR ADC, 4x SC/CT PAB

### CY8C24x23
- 4K/0.25K, 24 GPIOs
- CapSense, 4x PDB, 2x CMP
- 1x14-bit ΔΣ ADC, 6x SC/CT PAB

### CY8C21x23
- 4K/0.25K, 16 GPIOs
- 4x PDB, 2x CMP
- 1x10-bit Single-Slope ADC, 4x SC/CT PAB
## 8FX® MCU Portfolio
### 8-Bit RISC CPU

<table>
<thead>
<tr>
<th>CPU Speed and Flash</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-/16-Pin</td>
</tr>
<tr>
<td>20-Pin</td>
</tr>
<tr>
<td>24-Pin</td>
</tr>
<tr>
<td>32-Pin</td>
</tr>
<tr>
<td>48-/52-Pin</td>
</tr>
<tr>
<td>64-Pin</td>
</tr>
<tr>
<td>80-Pin</td>
</tr>
</tbody>
</table>

### CPU Speed and Flash

- **MB95550H**: 16 MHz, 1.8–5.5 V, 32/1/4
- **MB95560H**: 16 MHz, 2.4–5.5 V, 32/1/4
- **MB95570H**: 16 MHz, 2.4–5.5 V, 16/0.5/4
- **MB95580H**: 16 MHz, 2.4–5.5 V, 16/0.5/4
- **MB95590K**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95600**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95610H**: 16 MHz, 2.4–5.5 V, 32/1/4
- **MB95620K**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95630K**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95640K**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95650L**: 16 MHz, 1.8–5.5 V, 32/1/4
- **MB95660L**: 16 MHz, 2.4–5.5 V, 32/1/4
- **MB95670M**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95680M**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95690K**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95700K**: 16 MHz, 2.8–5.5 V, 56/2/4
- **MB95710M**: 16 MHz, 1.8–5.5 V, 56/2/4
- **MB95720M**: 16 MHz, 1.8–5.5 V, 56/2/4

1 Flash KB/SRAM KB/work flash KB; work flash is independent flash memory available to store data or additional firmware

### Status
- Concept
- Development
- Sampling
- Production

### Availability
- Concept: QOTY
- Development: QOTY
- Sampling: QOYY
- Production: QOYY
## CapSense® Portfolio

### CapSense Express™

<table>
<thead>
<tr>
<th>Configurable Controllers&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Programmable Controllers&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8CMBR3106S 11 Buttons, 2 Sliders Proximity, Liquid Tolerance SmartSense_EMCplus™&lt;sup&gt;3&lt;/sup&gt;</td>
<td>CY8C20xx7 31 Buttons, 6 Sliders 16, 32KB Flash Proximity, Liquid Tolerance SmartSense™ Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR3108 8 Buttons, 4 LEDs Proximity, Liquid Tolerance SmartSense_EMCplus</td>
<td>CY8C20xx6A/S 33 Buttons, 6 Sliders 16, 32KB Flash, 2KB SRAM SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR3110 10 Buttons, 5 LEDs Proximity, Liquid Tolerance SmartSense_EMCplus</td>
<td>CY8C20xx6H 25 Buttons, 5 Sliders 8, 16KB Flash SmartSense Auto-tuning Haptics</td>
</tr>
<tr>
<td>CY8CMBR3102 2 Buttons, Proximity SmartSense_EMCplus</td>
<td>CY8C20xx4B 24 Buttons, 4 Sliders 8KB Flash Proximity, Liquid Tolerance SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR2044 4 Buttons, 4 LEDs SmartSense Auto-tuning</td>
<td>CY8C20xx4A 33 Buttons, 6 Sliders 8KB Flash SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR3002 2 Buttons, 2 LEDs SmartSense_EMCplus</td>
<td>CY8C20xx4H 25 Buttons, 6 Sliders 8KB Flash</td>
</tr>
<tr>
<td>CY8C201xx 10 Buttons, 5 LEDs 2 Sliders</td>
<td></td>
</tr>
</tbody>
</table>

### CapSense Plus™

<table>
<thead>
<tr>
<th>Programmable Controllers&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY8CMBR3116 16 Buttons, 8 LEDs Proximity, Liquid Tolerance SmartSense_EMCplus</td>
</tr>
<tr>
<td>CY8CMBR2110 10 Buttons, 10 LEDs SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR2016 16 Buttons SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR2010 10 Buttons, 10 LEDs SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR2106S 11 Buttons, 2 Sliders SmartSense_EMCplus</td>
</tr>
<tr>
<td>CY8CMBR2044 4 Buttons, 4 LEDs SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR3110 10 Buttons, 5 LEDs Proximity, Liquid Tolerance SmartSense_EMCplus</td>
</tr>
<tr>
<td>CY8CMBR3102 2 Buttons, Proximity SmartSense_EMCplus</td>
</tr>
<tr>
<td>CY8CMBR2044 4 Buttons, 4 LEDs SmartSense Auto-tuning</td>
</tr>
<tr>
<td>CY8CMBR3002 2 Buttons, 2 LEDs SmartSense_EMCplus</td>
</tr>
<tr>
<td>CY8C201xx 10 Buttons, 5 LEDs 2 Sliders</td>
</tr>
</tbody>
</table>

<sup>1</sup> Standard products that are configured for target applications with a graphical user interface

<sup>2</sup> Microcontroller-based products that can be freely programmed to implement additional functions

<sup>3</sup> SmartSense Electromagnetic Compatible = SmartSense Auto-tuning + high noise immunity

### Integration

- **Performance**
- **Status**
  - Concept
  - Development
  - Sampling
  - Production
- **Availability**
  - Sample
  - Qty 1
  - Qty 2
  - Qty 3

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**MCU PORTFOLIO – WKA**

11
PSoC® 4000S-Series
PSoC 4 MCU Entry Line

**Applications**
Consumer devices (wearable, mobile, personal care) and small home appliances (coffee machine, juicer)

**Features**
- **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0+ CPU
  - 32KB flash (maximum)
  - 4KB SRAM
  - Real-time clock capability with a watch crystal oscillator (WCO)
- **Programmable Analog Blocks**
  - One 10-bit, 46.8-ksps single-slope ADC
  - Two low-power comparators (CMPs)
  - One CapSense® block that supports low-power operation and mutual capacitance sensing
  - Two 7-bit current-output digital-to-analog converters (IDACs) configurable as a single 8-bit IDAC
- **Programmable Digital Blocks**
  - Five 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Two serial communication blocks (SCBs) that are configurable as I2C, SPI, or UART
- **Packages**
  - 25-ball WLCSP, 24-pin QFN, 32-pin QFN, 48-pin TQFP
- **I/O Subsystem**
  - Up to 36 GPIOs, including 16 Smart I/Os

**Collateral**
Datasheet: [PSoC 4000S](#)

**Availability**
Production: Now

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1. A simple ADC used to measure slow-moving signals
2. Embedded programmable digital logic in the I/O subsystem
**PSOC® 4100S-Series**

**PSOC 4 MCU Base Line**

**Applications**

Home appliances (washing machine, dishwasher) and industrial applications

**Features**

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

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

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

- **Packages**
  - 35-ball WLCSP, 32-pin QFN, 40-pin QFN, 48-pin TQFP

- **I/O Subsystem**
  - Up to 36 GPIOs, including 16 Smart I/Os

**Collateral**

Datasheet: [PSOC 4100S](#)

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

**Availability**

Production: Now
**PSoC® 4100S Plus-Series**

**PSoC 4 MCU Base Line**

- **Applications**
  - Main control and user interface for home appliance, consumer, and industrial applications

- **Features**
  - **32-bit MCU Subsystem**
    - 48-MHz Arm® Cortex®-M0+ CPU with a DMA controller
    - Up to 128KB flash and 16KB SRAM
    - External MHz oscillator (ECO) with PLL and 32-kHz watch crystal oscillator (WCO)
    - True random number generator (TRNG)
  - **Programmable Analog Blocks**
    - One 12-bit, 1-Msps SAR ADC
    - Two opamps configurable as programmable gain amplifiers (PGAs), comparators (CMPS), etc.
    - Two low-power comparators
    - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
    - Two 7-bit current-output digital-to-analog converters (IDACs) configurable as a single 8-bit IDAC
  - **Programmable Digital Blocks**
    - Eight 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
    - Five serial communication blocks (SCBs) that are configurable as I²C, SPI, or UART
    - Segment LCD
  - **One Controller Area Network (CAN) Controller**
  - **Packages**
    - Up to 57 GPIOs, including 24 Smart I/Os
  - **I/O Subsystem**
    - Up to 57 GPIOs, including 24 Smart I/Os

- **Collateral**
  - **Datasheet:** PSoC 4100S Plus

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**PSoC® 4 One-Chip Solution**

**MCU Subsystem**
- Arm Cortex®-M0+ 48 MHz
- 64KB/128KB Flash
- 8KB/16KB SRAM
- DMA
- ECO + PLL
- WCO
- CAN x1
- Serial Wire Debug

**Programmable Analog Blocks**
- Opamp x2
- 12-bit SAR ADC
- CMP x2
- 7-bit IDAC x2
- 10-bit Single-Slope ADC

**Programmable Digital Blocks**
- TCPWM x8
- Segment LCD
- SCB x5

**I/O Subsystem**
- GPIO x8
- GPIO x8
- GPIO x8
- GPIO x8
- GPIO x6
- GPIO x3

**Availability**
- **Production:** Now

---

1 Embedded programmable digital logic in the I/O subsystem
PSoc® 4100PS-Series
PSoc 4 MCU Base Line

Applications
Consumer products and industrial applications

Features
- 32-bit MCU Subsystem
  - 48-MHz Arm® Cortex®-M0+ CPU with a DMA controller
  - Up to 32KB flash, 4KB SRAM, RTC capability with a watch crystal oscillator (WCO)
- Programmable Analog Blocks
  - One 12-bit/1-Mfps SAR ADC
  - One 10-bit/11.6-kfps single-slope ADC
  - Four opamps configurable as programmable gain amplifiers (PGAs), comparators (CMPs), transimpedance amplifiers (TIAs), etc.
  - Two low-power comparators
  - One CapSense® block that supports low-power operation with self- and mutual-capacitance sensing
  - Two 13-bit voltage output digital-to-analog converters (VDACs)
  - Two 7-bit current-output digital-to-analog converters (IDACs) configurable as a single 8-bit IDAC
- Programmable Digital Blocks
  - Eight 16-bit configurable timer/counter/pulse-width modulator (TCPWM) blocks
  - Three serial communication blocks (SCBs) that are configurable as I²C, SPI, or UART
- Packages
  - 28-pin SSOP, 45-ball WLCSP, 48-pin QFN, 48-pin TQFP
- I/O Subsystem
  - Up to 38 GPIOs, including 8 Smart I/Os

Collateral
Datasheet: [PSoc 4100PS](#)

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

Availability
Production: Now
PSoc® 4200DS-Series
PSoc 4 MCU Programmable Line

Applications
Main system control with programmable communications, subsystem control with programmable
digital functions, digital sensor hub, low-end field oriented control (FOC) motor control, CPLD SoC,
and any other embedded control without ADC/DAC

Features
- 32-bit MCU Subsystem
  - 48-MHz Arm® Cortex®-M0 CPU with a DMA controller
  - Up to 64KB flash, 8KB SRAM
- Programmable Analog Blocks
  - Two low-power comparators (CMPS)
- Programmable Digital Blocks
  - Four universal digital blocks (UDBs): customized digital functions for flexible designs
  - Four 16-bit configurable timer/counter/pulse-width modulator (TCPWM) blocks
  - Three serial communication blocks (SCBs) that are configurable as I²C, SPI, or UART
- Packages
  - 25-pin WLCSP, 28-pin SSOP, 24-pin QFN
- I/O Subsystem
  - Up to 25 GPIOs

Collateral
Datasheet: PSoC 4200DS

Availability
Production: Now

1 Embedded programmable digital logic in the I/O subsystem
**PSOC® 4A00-Series**

**PSOC 4 Analog Coprocessor**

### Applications
- Industrial sensors (photoelectric sensors, displacement sensors), instrumentation and measurement (photometers, pH meters), and consumer products (wearables, grooming products)

### Features
- **Programmable Analog Blocks**
  - One universal analog block (UAB) configurable as a programmable analog filter, 14-bit Delta-Sigma ADC, or 13-bit voltage-output DAC (VDAC)
  - Four opamps, configurable as programmable gain amplifiers (PGAs), comparators (CMPs), transimpedance amplifiers (TIA), etc.
  - One 12-bit/1-Msps SAR ADC
  - One 10-bit/11.6-ksps single-slope ADC
  - 38-channel analog multiplexer (AMUX)
  - One CapSense® block configurable as a capacitive-sensing controller, two 7-bit current-output DACs (IDACs), or two low-power CMPs

- **Signal Processing Engine**
  - 48-MHz Arm® Cortex®-M0+ with a DMA controller and watch crystal oscillator (WCO)
  - Eight 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Three serial communication blocks (SCBs) configurable as I²C, SPI, or UART

- **Packages**
  - 28-pin SSOP, 45-pin CSP, 48-pin QFN, 48-pin TQFP

- **I/O Subsystem**
  - Up to 38 GPIOs

### Collateral
- **Datasheet:** [CY8C4Axx Datasheet](#)

### Availability
- **Production:** Now

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1 A simple ADC used to measure slow-moving signals
PSoc® 4100BLE-Series
PSoc 4 MCU Base Line with BLE

Applications
Sports and fitness monitors, wearable electronics, medical devices, home automation solutions, game controllers, and sensor-based low-power systems for the Internet of Things (IoT)

Features
- **32-bit MCU Subsystem**
  - 24-MHz Arm® Cortex®-M0 CPU
  - Up to 256KB flash and 32KB SRAM
- **Programmable Analog Front Ends (AFEs)**
  - Four opamps configurable as programmable gain amplifiers (PGAs), comparators (CMPs), filters, etc.
  - One 12-bit/1-Msps SAR ADC
- **CapSense® with SmartSense™ Auto-Tuning**
  - Industry’s No. 1 capacitive-sensing solution with one Capacitive Sigma-Delta™ (CSD) controller with touchpad capability
- **Programmable Digital Logic**
  - Four 16-bit configurable timer/counter/pulse-width modulator (TCPWM) blocks
  - Two serial communication blocks (SCBs) configurable I²C master or slave, SPI master or slave, or UART
- **Packages**
  - 56-pin QFN and 68-pin CSP
- **Bluetooth Connectivity with Bluetooth 4.1 or Bluetooth 4.2**
  - Royalty-free stack and GUI-based Component to configure profiles, 2.4-GHz BLE radio with integrated balun

Collateral
Datasheet: [PSoc 4 BLE (CY8C4XX BLE)]

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<table>
<thead>
<tr>
<th>MCU Subsystem</th>
<th>Programmable Analog Blocks</th>
<th>I/O Subsystem</th>
</tr>
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<tbody>
<tr>
<td>Arm Cortex®-M0</td>
<td>Opamp x4</td>
<td>GPIO x8</td>
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<td>24 MHz</td>
<td>SAR ADC</td>
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<td>CMP x2</td>
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<tr>
<td></td>
<td>SAR ADC</td>
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<td></td>
<td>CSD</td>
<td>GPIO x8</td>
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<td></td>
<td>Flash</td>
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<td>TCPWM x4</td>
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<td></td>
<td>SRAM</td>
<td>GPIO x4</td>
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<tr>
<td></td>
<td>SCB x2</td>
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</tbody>
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```

Availability
Production: Now

1 Bluetooth 4.2 is only available in the 256KB flash option device
**PSoc® 4200BLE-Series**

**PSoc 4 MCU Programmable Line with BLE**

**Applications**
Sports and fitness monitors, wearable electronics, medical devices, home automation solutions, game controllers, and sensor-based low-power systems for the Internet of Things (IoT)

**Features**
- **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0 CPU
  - Up to 256KB flash and 32KB SRAM
- **Programmable Analog Front Ends (AFEs)**
  - Four opamps, configurable as programmable gain amplifiers (PGAs), comparators (CMPs), filters, etc.
  - One 12-bit/1-Msps SAR ADC
- **CapSense® with SmartSense™ Auto-Tuning**
  - Industry’s No. 1 capacitive-sensing solution including one Capacitive Sigma-Delta™ (CSD) controller with touchpad capability
- **Programmable Digital Logic**
  - Four universal digital blocks (UDBs): custom digital peripherals
  - Four configurable 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Two serial communication blocks (SCBs) configurable as I²C master or slave, SPI master or slave, or UART
- **Packages**
  - 56-pin QFN and 68-pin CSP
- **Bluetooth Connectivity with Bluetooth 4.1 or Bluetooth 4.2**
  - Royalty-free stack and GUI-based Component to configure profiles, 2.4-GHz BLE radio with integrated balun

**Collateral**

Datasheet: [PSoc 4 BLE (CY8C4XX7 BLE)](link)

1 Bluetooth 4.2 is only available in the 256KB flash option device

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**PSOC® 4 BLE One-Chip Solution**

**MCU Subsystem**

- Cortex®-M0
- 48 MHz
- 32-bit MCU Subsystem
- 48 KB flash
- 32 KB SRAM

**Programmable Analog Blocks**

- Opamp x4
- SAR ADC
- CMP x2
- CSD

**Programmable Digital Blocks**

- TCPWM x4
- UDB x4
- SCB x2
- Segment LCD Drive

**I/O Subsystem**

- GPIO x8

**Availability**

Production: Now
MCU PORTFOLIO – WKA

PSoC® 4100M-Series
PSoC 4 MCU Base Line

Applications
User interface and host processor for home appliances, digital and analog sensor hubs, MCU and discrete analog replacement

Features
- **32-bit MCU Subsystem**
  - 24-MHz Arm® Cortex®-M0 CPU with a DMA controller and RTC
  - Up to 128KB flash and 16KB SRAM
- **CapSense® with SmartSense™ Auto-Tuning**
  - Cypress Capacitive Sigma-Delta™ (CSD) controller
  - CapSense supported on up to 55 pins
- **Programmable Analog Blocks**
  - Two comparators (CMPs)
  - Four opamps, programmed as programmable gain amplifiers (PGAs), comparators (CMPs), filters, etc.
  - One 12-bit/1-Msps SAR ADC
  - Four (2x 8-bit, 2x 7-bit) current-output DACs (IDACs)
- **Programmable Digital Blocks**
  - Eight programmable 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Four serial communication blocks (SCBs) configurable as I2C master or slave, SPI master or slave, or UART
- **Packages**
  - 48-pin LQFP, 64-pin TQFP (0.8-mm pitch), 64-pin TQFP (0.5-mm pitch), and 68-pin QFN

Collateral
Datasheet: PSoC 4 M-Series (CY8C4100)

PSoC® 4 One-Chip Solution

MCU Subsystem
- arm Cortex®-M0
- 24 MHz
- Flash (64KB to 128KB)
- SRAM (8KB to 16KB)
- Serial Wire Debug
- Programmable Analog Blocks
  - Opamp x4
  - SAR ADC
- Programmable Digital Blocks
  - TCPWM x8
- I/O Subsystem
  - GPIO x8
  - GPIO x8
  - GPIO x8
  - GPIO x7

Availability
Production: Now
PSoc® 4200M-Series
PSoc 4 MCU Programmable Line

Applications
User interface and host processor for home appliances, digital and analog sensor hubs, LED control and communication for lighting systems

Features
- **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0 CPU with a DMA controller and RTC
  - Up to 128KB flash and 16KB SRAM
- **CapSense® with SmartSense™ Auto-Tuning**
  - One Cypress capacitive Sigma-Delta™ (CSD) controller
  - CapSense supported on up to 55 pins
- **Programmable Analog Blocks**
  - Two comparators (CMPs)
  - Four opamps, programmed as programmable gain amplifiers (PGAs), comparators (CMPs), filters, etc.
  - One 12-bit/1-Msps SAR ADC
  - Four (2x 8-bit, 2x 7-bit) current-output DACs (IDACs)
- **Programmable Digital Blocks**
  - Four universal digital blocks (UDBs): custom digital peripherals
  - Eight programmable 16-bit timer/counter/pulse-width modulator (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, 64-pin TQFP (0.8-mm pitch), 64-pin TQFP (0.5-mm pitch), and 68-pin QFN

Collateral
Datasheet: PSoC 4 M-Series (CY8C4200)
**MCU PORTFOLIO – WKA**

**PSoC® 4200L-Series**

**PSoC 4 MCU Programmable Line**

**Applications**
User interface and host processor for home appliances, digital and analog sensor hub, MCU and discrete analog replacement, and LED control and communication for lighting systems

**Features**

- **32-bit MCU Subsystem**
  - 48-MHz Arm® Cortex®-M0 CPU with a DMA controller and RTC
  - Up to 256KB flash and 32KB SRAM
  - Up to 98 GPIOs supporting analog and digital interfaces

- **CapSense® With SmartSense™ Auto-Tuning**
  - Two Cypress Capacitive Sigma-Delta™ (CSD) controllers

- **Programmable Analog Blocks**
  - Two comparators (CMPs)
  - Four opamps configurable as programmable gain amplifiers (PGAs), comparators (CMPs), filters, etc.
  - One 12-bit/1-Msps SAR ADC
  - Four (2x 8-bit, 2x 7-bit) current-output DACs (IDACs)

- **Programmable Digital Blocks**
  - Eight universal digital blocks (UDBs): custom digital peripherals
  - Eight configurable 16-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Four serial communication blocks (SCBs) configurable as I²C master or slave, SPI master or slave, or UART

- **Full-Speed USB 2.0 Controller and Transceiver**

- **Two Controller Area Network (CAN) Controllers**

- **Packages**
  - 48-pin TQFP, 64-pin TQFP, 68-pin QFN, and 124-pin VFBGA

**Collateral**

Datasheet: [PSoC 4 L-Series](https://www.cypress.com)

**Availability**

Production: Now

---

**PSoC® 4 One-Chip Solution**
**Features**

- **MCU Subsystem**
  - Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm Cortex-M0+
  - Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
  - Up to 1MB Flash, 288KB SRAM with a DMA controller

- **Analog Blocks**
  - Two opamps, two low-power comparators (CMPs), 12-bit SAR ADC (1-Mbps)
  - 12-bit DAC, CapSense® capacitive-sensing block

- **Digital Blocks and Communication Interfaces**
  - Twelve universal digital blocks (UDBs): custom digital peripherals
  - Eight serial communication blocks (SCBs)
  - I²S and PDM-PCM converter, SMIF

- **Bluetooth Smart Connectivity**
  - Bluetooth Low Energy (BLE) 5.0 radio with 2-Mbps data throughput

- **Security Features**
  - Advanced cryptographic coprocessor (Crypto), true random number generator
  - One-time programmable eFuse for secure key storage
  - Secure over-the-air (OTA) firmware update with read-while-write flash technology for firmware updates

- **I/O Subsystem**
  - Up to 78 GPIOs

- **Packages**
  - 104-M-WLCSP, 116-BGA

1. Configurable as a 8-bit, 16-bit timer, or 32-bit counter or PWM
2. Configurable as a UART, SPI or PC interface
3. Digital microphone interface
4. Serial memory interface for execute-in-place, encrypted Quad-SPI

**Applications**

Wearables, portable medical, industrial IoT, and smart home

**Preliminary Datasheet**

PSoc 6 Product Page

**Availability**

Sampling: Now  Production: Now

1. One-time programmable bits for secure key storage
2. Single-precision floating-point unit
PSoC® 62 Line

Applications
- IoT gateways, smart home, home appliances, HMI, audio processing, and industrial concentrators

Features
- **MCU Subsystem**
  - Dual-core architecture: 150-MHz Arm® Cortex®-M4 and 100-MHz Arm Cortex-M0+
  - Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
  - Up to 1MB flash, 288KB SRAM with a DMA controller
- **Analog Blocks**
  - Two opamps, two low-power comparators (CMPs), 12-bit SAR ADC (1-Mps)
  - 12-bit DAC, CapSense® capacitive-sensing block
- **Digital Blocks and Communication Interfaces**
  - Twelve universal digital blocks (UDBs): custom digital peripherals
  - Twenty-four 16-bit and eight 32-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Eight serial communication blocks (SCBs)², deep-sleep SCB
  - I²S and PDM-PCM³ converter, SMIF⁴
  - USB 2.0 (host and device)
- **Security Features**
  - Advanced cryptographic coprocessor (Crypto)
  - True random number generator
  - One-time programmable eFuse⁵ for secure key storage
  - Secure over-the-air (OTA) firmware update with read-while-write flash technology for firmware updates
- **I/O Subsystem**: Up to 104 GPIOs
- **Packages**: 124-BGA, 80-WLCSP

Collateral
- Preliminary Datasheet: [PSoC 6 Product Page](#)

---

1. Configurable as a 8-bit, 16-bit timer, or 32-bit counter or PWM
2. Configurable as a UART, SPI or I²C interface
3. Digital microphone interface
4. Serial memory interface for execute-in-place, encrypted Quad-SPI
5. One-time programmable bits for secure key storage
6. Single-precision floating-point unit

---

Availability
- Sampling: Now
- Production: Now
**Features**

- **MCU Subsystem**
  - 120-MHz Arm® Cortex®-M4
  - Ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
  - Up to 512KB flash, 128KB SRAM with a DMA controller
- **Analog Blocks**
  - Two low-power comparators (CMPs), 12-bit SAR ADC (1-Msps)
- **Digital Blocks and Communication Interfaces**
  - Ten 16-bit and two 32-bit timer/counter/pulse-width modulator (TCPWM) blocks
  - Five serial communication blocks (SCBs), deep sleep SCB
  - One Secure Digital High Capacity (SDHC), two controller area networks (CANs)
- **I/O Subsystem**
  - Up to 76 GPIOs
- **Packages**
  - 100-LQFP

**Collateral**

Preliminary Datasheet: [PSoC 6 Community](#)

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1 Configurable as a 8-bit, 16-bit timer, or 32-bit counter or PWM
2 Configurable as a UART, SPI or I²C interface
3 Single-precision floating-point unit
PSoC® 64 Secure Boot MCU Line with BLE

**Applications**
Wearables, portable medical, industrial IoT, and smart home

**Features**

- **MCU Subsystem**
  - 150-MHz Arm® Cortex®-M4 with ultra-low-power (0.9-V) and low-power (1.1-0V) operation mode
  - Up to 1MB Flash, 288KB SRAM with DMA
- **CY Secure Enclave**
  - Hardware isolated, 100-MHz Arm Cortex®-M0+ with privileged access to memory and peripherals
  - Hardware isolated keys, cryptographic functions and trusted applications
  - Hardware root-of-trust providing secure device identity
  - Secure boot with attestation and anti-rollback
  - Advanced hardware cryptographic acceleration and TRNG
- **Analog Blocks**
  - 2 x opamps, 2 x low-power comparators (CMP), 12-bit SAR ADC (1-Msp/s)
  - 12-bit DAC, CapSense® capacitive-sensing block
- **Digital Blocks and Communication Interfaces**
  - 12 x universal digital blocks (UDBs): custom digital peripherals
  - 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)1
  - 8 x serial communication blocks (SCBs)2, deep-sleep SCB
  - I2S and PDM-PCM3 converter, SMIF4
- **Bluetooth Smart Connectivity**
  - Bluetooth Low Energy (BLE) 5.0 radio with 2-Mbps data throughput
- **I/O Subsystem**: Up to 78 GPIOs

**Collateral**

- Preliminary Datasheet: [PSoC 6 Product Page](#)

---

1 Configurable as an 8-bit, 16-bit timer, or 32-bit counter or PWM
2 Configurable as a UART, SPI, or PIC interface
3 Digital microphone interface
4 Serial memory interface for execute-in-place, encrypted Quad-SPI
5 One-time programmable bits for secure key storage
6 Single-Precision Floating-Point Unit

---

**Availability**

- Sampling: Q3 2019
- Production: Q4 2019
PSoC® 64 Secure Boot MCU Line

Applications
IoT gateways, smart home, home appliances, HMI, audio processing, and industrial concentrators

Features
- **MCU Subsystem**
  - 150-MHz Arm® Cortex®-M4 with ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
  - Up to 2MB Flash, 1MB SRAM with DMA
- **CY Secure Enclave**
  - Hardware isolated, 100-MHz Arm Cortex®-M0+ with privileged access to memory and peripherals
  - Hardware isolated keys, cryptographic functions and trusted applications
  - Hardware root-of-trust providing secure device identity
  - Secure boot with attestation and anti-rollback
  - Advanced hardware cryptographic acceleration and TRNG
- **Analog Blocks**
  - 2 x opamps, 2 x low-power comparators (CMP), 12-bit SAR ADC (1-Msps)
  - 12-bit DAC, CapSense® capacitive-sensing block
- **Digital Blocks and Communication Interfaces**
  - 12 x universal digital blocks (UDBs): custom digital peripherals
  - 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)¹
  - 8 x serial communication blocks (SCBs)², deep-sleep SCB
  - I²S and PDM-PCM³ converter, SMIF⁴
  - USB 2.0 (Host and Device)
- **I/O Subsystem**: Up to 104 GPIOs

Collateral
Preliminary Datasheet: [PSoC 6 Product Page](#)

Availability
Sampling: Q3 2019  Production: Q4 2019

---

¹ Configurable as an 8-bit, 16-bit timer, or 32-bit counter or PWM
² Configurable as a UART, SPI, or I²C interface
³ Digital microphone interface
⁴ Serial memory interface for execute-in-place, encrypted Quad-SPI
⁵ One-time programmable bits for secure key storage
⁶ Single-Precision Floating-Point Unit
PSoC® 64 Standard Secure MCU Line with BLE

**Applications**
Wearables, portable medical, industrial IoT, and smart home

**Features**

- **MCU Subsystem**
  - 150-MHz Arm® Cortex®-M4 with ultra-low-power (0.9-V) and low-power (1.1-0V) operation mode
  - Up to 1MB Flash, 288KB SRAM with DMA
- **CY Secure Enclave**
  - Hardware isolated, 100-MHz Arm Cortex®-M0+ with privileged access to memory and peripherals
  - Hardware isolated keys, cryptographic functions and trusted applications
  - Hardware root-of-trust providing secure device identity
  - Secure boot with attestation and anti-rollback
  - Cypress 'Just Works' trusted O/S integrated with AFR/others cloud tool-kits (TLS, PKCS11 and FOTA)
  - Advanced hardware cryptographic acceleration and TRNG
- **Analog Blocks**
  - 2 x opamps, 2 x low-power comparators (CMP), 12-bit SAR ADC (1-Msps)
  - 12-bit DAC, CapSense® capacitive-sensing block
- **Digital Blocks and Communication Interfaces**
  - 12 x universal digital blocks (UDBs): custom digital peripherals
  - 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)1
  - 8 x serial communication blocks (SCBs)2, deep-sleep SCB
  - I2S and PDM-PCM3 converter, SMIF4
- **Bluetooth Smart Connectivity**
  - Bluetooth Low Energy (BLE) 5.0 radio with 2-Mbps data throughput
- **I/O Subsystem**
  - Up to 78 GPIOs

**Collateral**

- **Preliminary Datasheet**: PSoC Product Page

---

1 Configurable as an 8-bit, 16-bit timer, or 32-bit counter or PWM
2 Configurable as a UART, SPI, or PC interface
3 Digital microphone interface
4 Serial memory interface for execute-in-place, encrypted Quad-SPI
5 One-time programmable bits for secure key storage
6 Single-Precision Floating-Point Unit
### Features

**MCU Subsystem**
- 150-MHz Arm® Cortex®-M4 with ultra-low-power (0.9 V) and low-power (1.1 V) operation mode
- Up to 2MB Flash, 1MB SRAM with DMA

**CY Secure Enclave**
- Hardware isolated, 100-MHz Arm Cortex®-M0+ with privileged access to memory and peripherals
- Hardware isolated keys, cryptographic functions and trusted applications
- Hardware root-of-trust providing secure device identity
- Secure boot with attestation and anti-rollback
- Cypress 'Just Works' trusted O/S integrated with AWS/other cloud toolkits (TLS, PKCS11 and FOTA)
- Advanced hardware cryptographic acceleration and TRNG

**Analog Blocks**
- 2 x opamps, 2 x low-power comparators (CMP), 12-bit SAR ADC (1-Msps)
- 12-bit DAC, CapSense® capacitive-sensing block

**Digital Blocks and Communication Interfaces**
- 12 x universal digital blocks (UDBs): custom digital peripherals
- 24 x 16-bit and 8 x 32-bit timer/counter/pulse-width modulation blocks (TCPWM)<sup>1</sup>
- 8 x serial communication blocks (SCBs)<sup>2</sup>, deep-sleep SCB
- I²S and PDM-PCM<sup>3</sup> converter, SMIF<sup>4</sup>
- USB 2.0 (Host and Device)

**I/O Subsystem**
- Up to 104 GPIOs

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### Availability (AWS Version)

**Sampling**: Q1 2020  
**Production**: Q2 2020

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1. Configurable as an 8-bit, 16-bit timer, or 32-bit counter or PWM  
2. Configurable as a UART, SPI, or I²C interface  
3. Digital microphone interface  
4. Serial memory interface for execute-in-place, encrypted Quad-SPI  
5. One-time programmable bits for secure key storage  
6. Single-Precision Floating-Point Unit
**S6E1C-Series**

**FM0+ MCU Portfolio**

**Applications**
Industrial, healthcare, sensor hubs, wearable electronics, and mobile, battery-powered devices

**Features**

- ** Ultra-Low-Power MCU Subsystem**
  - Up to 40-MHz Arm® Cortex®-M0+ CPU, 40-μA/MHz active current with 1.65–3.6-V operating voltage
  - Low-power 1.2-μA RTC operating current
  - Up to 128KB flash and 16KB SRAM
  - Near-zero wait-state flash access at up to 40 MHz
  - Fast 540-μs startup from power-on reset and 40 μs from standby

- ** Analog and Digital Subsystems**
  - Two base timers, dual timer, CRC, and watch counter
  - Six channels of multifunction serial (MFS) interfaces configurable as SPI, UART, I²C, LIN, USB, and I²S
  - Two HDMI-CEC¹ channels
  - Two Smart Card interface channels
  - 12-bit, 1-Msps ADC with a 24-channel multiplexer input

- ** Packages**
  - 32-pin LQFP, 48-pin LQFP, 64-pin LQFP, 32-pin QFN, 48-pin QFN, 26-pin CSP (2.35-mm x 2.72-mm)

**Collateral**
Datasheet: [S6E1C1-Series](#), [S6E1C3-Series](#)

**Availability**

Production: Now

---

¹ HDMI consumer electronics control signal
² Low-voltage detect
³ Descriptor system transfer controller
⁴ Watchdog timer
**Applications**
Motor control, factory automation, industrial, Internet of Things (IoT), and building management systems and automation

**Features**
- **High-Performance MCU Subsystem**
  - 675 CoreMark®, 200-MHz Arm® Cortex®-M4 CPU, 365-µA/MHz active current with 2.7–5.5-V operating voltage
  - Ultra-low-power 1.0-µA RTC operating current
  - Up to 2MB flash and 256KB SRAM with 16KB flash accelerator
  - Error-correcting code (ECC) support, hardware watchdog timer (WDT), low-voltage detect (LVD), and clock supervisor blocks for safety-critical applications

- **Analog and Digital Subsystems**
  - Three multifunction timers (MFTs), nine programmable pulse generators (PPGs), sixteen base timers, four quadrature position/revolution counters (QPRCs), a dual timer, CRC, and watch counter
  - Sixteen channels of multifunction serial (MFS) interfaces configurable as SPI, UART, I²C, or LIN
  - Two USB interfaces, two controller area network (CAN), CAN with flexible data rate (CAN-FD), IEEE 1588 Ethernet¹, high-speed Quad-SP (HS-QSPI), I²S, and external bus interfaces
  - Three 12-bit/2-Msps ADCs with a 32-channel multiplexer input
  - Two 12-bit DACs
  - Built-in Cryptographic Assist hardware coprocessor for encryption

- **Packages**
  - 144-pin LQFP, 176-pin LQFP, 216-pin LQFP, 192-pin BGA

**Collateral**
- Datasheet: [S6E2CC-Series](#)

---
¹ Ethernet communications solution that supports the Precision Time Protocol (PTP) standard
² Memory protection unit
³ Descriptor system transfer controller
FM4 MCU Portfolio

Motor control, factory automation, industrial, Internet of Things (IoT), and building management systems and automation

Applications

Motor control, factory automation, industrial, Internet of Things (IoT), and building management systems and automation

Features

- **High-Performance MCU Subsystem**
  - 608 CoreMark®, 180-MHz Arm® Cortex®-M4 CPU, 244-μA/MHz active current with 2.7–5.5-V operating voltage
  - Up to 1MB flash and 192KB SRAM with 16KB flash accelerator
  - Error-correcting code (ECC) support, hardware watchdog timer (WDT), low-voltage detect (LVD), and clock supervisor blocks for safety-critical applications

- **Analog and Digital Subsystems**
  - Two multifunction timers (MFTs), nine programmable pulse generators (PPGs), sixteen base timers, two quadrature position/revolution counters (QPRCs), a dual timer, CRC, and watch counter
  - Ten channels of multifunction serial (MFS) interfaces configurable as SPI, UART, I²C, or LIN
  - Two USB interfaces, controller area network (CAN), IEEE 1588 Ethernet¹, I²S, two SD Card interfaces, and an external bus interface
  - Three 12-bit/2-Msp ADCs with a 32-channel multiplexer input
  - Built-in Cryptographic Assist hardware coprocessor for encryption

- **Packages**
  - 144-pin LQFP and 176-pin LQFP

Collateral

Datasheet: [S6E2G-Series](#)

1 Ethernet communications solution that supports the Precision Time Protocol (PTP) standard
2 Memory protection unit
3 Descriptor system transfer controller

Availability

Production: Now
S6E2H-Series
FM4 MCU Portfolio

Applications
Motor control, factory automation, industrial, IoT, DSLR lens MCU and home appliance

Features

- **High-Performance MCU Subsystem**
  - 540 CoreMark®, 160-MHz Arm® Cortex®-M4 CPU, 188-μA/MHz active current with 2.7–5.5-V operating voltage
  - Ultra-low power 1.3-μA RTC operating current
  - Up to 512KB flash and 64KB SRAM with 16KB flash accelerator
  - Error-correcting code (ECC) support, hardware watchdog timer (WDT), low-voltage detect (LVD), and clock supervisor blocks for safety-critical applications

- **Analog and Digital Subsystems**
  - Three multifunction timers (MFTs), nine programmable pulse generators (PPGs), eight base timers, three quadrature position/revolution counters (QPRCs), a dual timer, CRC, and watch counter
  - Eight channels of multifunction serial (MFS) interfaces configurable as SPI, UART, I²C, or LIN
  - Two controller area network (CAN), SD Card, and external bus interfaces
  - Three 12-bit/2-Msps ADCs with a 24-channel multiplexer input
  - Two 12-bit DACs

- **Packages**
  - 80-pin LQFP, 100-pin LQFP, 120-pin LQFP, 121-pin BGA

Collateral

Datasheet: [S6E2H-Series](#)

Availability

Production: Now

1 Memory protection unit
2 Descriptor system transfer controller
## MCU Development Kits

### PSoC Prototyping Kits
- **Kit Number**: CY8CKIT-049 or CY8CKIT-059
- **Key Features**:
  - Ultra-low-cost prototyping
  - Breadboard-compatible
  - Serial wire debug (SWD) or bootload for program/debug
- **Price**: $4–$10

### Bluetooth Low Energy (BLE) Pioneer Development Kit
- **Kit Number**: CY8CKIT-042-BLE
- **Key Features**:
  - Arduino form factor compatible
  - Access to all PSoC 4 BLE I/Os
  - Full SWD program and debug
- **Price**: $49

### PSoC 5LP Development Kit
- **Kit Number**: DEV-13229
- **Key Features**:
  - Arduino form factor compatible
  - Access to all PSoC 5LP I/Os
  - Full SWD program and debug
- **Price**: $55

### FM4 S6E2H-Series Pioneer Kit
- **Kit Number**: FM4-176L-S6E2CC-ETH
- **Key Features**:
  - Arduino form factor compatible
  - Full SWD program and debug
- **Price**: $49

### PSoC6 WiFi-BT Pioneer Kit
- **Kit Number**: CY8CKIT-062-WIFI-BT
- **Key Features**:
  - Arduino form factor compatible
  - Full SWD program and debug
- **Price**: $99

### PSoC 6 BLE Pioneer Kit
- **Kit Number**: CY8CKIT-062-BLE
- **Key Features**:
  - Arduino form factor compatible
  - Full SWD program and debug
- **Price**: $75

Learn more or buy a kit today at [www.cypress.com/kits](http://www.cypress.com/kits)
## MCU Packages

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## Additional MCU Packages

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**Note:** ✓ indicates availability, blank indicates unavailability.