



CY8C3xxx and CY8C5xxx

PSoC[®] 3 and PSoC[®] 5 Programmable Systems On-Chip

PSoC[®] 3 and PSoC[®] 5 programmable embedded SOCs are true system level platforms integrating configurable analog and digital peripherals, memory, and microcontroller on a single chip. With an extremely flexible visual embedded design methodology that includes preconfigured, user-defined peripherals and hierarchical schematic entry, designers can easily create system-level designs and accommodate last-minute design changes through simple firmware updates.

The PSoC 3 CY8C38xx and PSoC 5 CY8C55xx architectures offer a programmable method of signal acquisition, signal processing, and control with precision and bandwidth to handle everything from thermocouples (near DC voltages) to ultrasonic signals. The PSoC Creator™ IDE provides a digital logic library with dozens of drop-in peripherals, connectivity with USB, multi-master I²C, and CAN, and fast implementation of 8-, 16-, or 32-bit designs with the high-performance 8051 or advanced ARM[®] Cortex™-M3 processors.

Applications

- Automotive
- Consumer electronics and white goods
- Lighting
- Medical
- Wireless low-power communications

Features

CY8C38xx (PSoC 3)

- Single cycle 8051 CPU core
- DC to 67 MHz operation
- Flash program memory, up to 64 KB
- Up to 8 KB SRAM memory
- Up to 2 KB EEPROM memory
- Low-power: 330 μ A operating at 1 MHz
- Five sleep modes including 200 nA hibernate mode with RAM retention and LVD

CY8C55xx (PSoC 5)

- 32-bit ARM Cortex-M3 CPU core
- DC to 80 MHz operation
- Flash program memory up to 256 KB
- Up to 64 KB SRAM memory
- 2 KB EEPROM memory
- Low-power: 500 μ A operating at 1 MHz
- Four sleep modes including 300 nA hibernate mode with RAM retention

Temperature and packaging

- Operating temperature range: -40°C to +85°C
- 48-pin SSOP, 68-pin QFN, and 100-pin TQFP package options

Versatile IO system

- 28 to 72 IO (62 GPIO, 8 SIO, 2 USBIO)
- Flexible routing: all GPIO are analog I/O
- 1.2V to 5.5V IO interface voltages, up to four domains
- Maskable, independent IRQ on any pin or port
- LCD direct drive from any GPIO up to 46 x 16 segments
- All GPIO configurable as open drain high/low, pull up/down, high-Z, or strong output
- Configurable GPIO pin state at Power On Reset (POR)
- 25 mA sink on SIO

Digital peripherals

- 16 to 24 programmable PLD-based universal digital blocks
- Full CAN 2.0b 16 RX, 8 TX buffers
- Full-Speed (FS) USB 2.0 12 Mb/s
- Up to four 16-bit configurable timer, counter, and PWM blocks
- Library of standard peripherals
 - 8-, 16-, 24-, and 32-bit timers, counters, and PWMs
 - SPI, UART, I²C
 - Many others available in PSoC Creator catalog
- Library of advanced peripherals
 - Cyclic Redundancy Check (CRC)
 - Pseudo Random Sequence (PRS) generator
 - LIN Bus 2.0
- Quadrature decoder

Analog peripherals

- $\pm 0.1\%$ internal voltage reference across -40°C to +85°C
- Configurable Δ - Σ A/D converter with 12-bit to 20-bit resolution
 - Sample rates up to 192 ks/s
 - Programmable gain stage: x0.25 to x16
 - 12-bit mode, 192 ks/s, 70 dB SNR, 1.5-bit INL/DNL
 - 16-bit mode, 48 ks/s, 90 dB SNR, 1-bit INL/DNL

