

2.4-GHz *Bluetooth*[®] low energy System-on-Chip

Check for Samples: [CC2540F128](#), [CC2540F256](#)

FEATURES

- True Single-Chip BLE Solution: CC2540 Can Run Both Application and BLE Protocol Stack, Includes Peripherals to Interface With Wide Range of Sensors, Etc.
- 6-mm × 6-mm Package
- RF
 - *Bluetooth* low energy technology Compatible
 - Excellent Link Budget (up to 97 dB), Enabling Long-Range Applications Without External Front End
 - Accurate Digital Received Signal-Strength Indicator (RSSI)
 - Suitable for Systems Targeting Compliance With Worldwide Radio Frequency Regulations: ETSI EN 300 328 and EN 300 440 Class 2 (Europe), FCC CFR47 Part 15 (US), and ARIB STD-T66 (Japan)
- Layout
 - Few External Components
 - Reference Design Provided
 - 6-mm × 6-mm QFN40 Package
- Low Power
 - Active Mode RX Down to 19.6 mA
 - Active Mode TX (–6 dBm): 24 mA
 - Power Mode 1 (3- μ s Wake-Up): 235 μ A
 - Power Mode 2 (Sleep Timer On): 0.9 μ A
 - Power Mode 3 (External Interrupts): 0.4 μ A
 - Wide Supply Voltage Range (2 V–3.6 V)
 - Full RAM and Register Retention in All Power Modes
- [TPS62730](#) Compatible Low Power in Active Mode
 - RX Down to 15.8 mA (3 V Supply)
 - TX (–6 dBm): 18.6 mA (3 V Supply)
- Microcontroller
 - High-Performance and Low-Power 8051 Microcontroller Core
 - In-System-Programmable Flash, 128 KB or 256 KB
 - 8-KB SRAM
- Peripherals
 - 12-Bit ADC with Eight Channels and Configurable Resolution
 - Integrated High-Performance Op-Amp and Ultralow-Power Comparator
 - General-Purpose Timers (One 16-Bit, Two 8-Bit)
 - 21 General-Purpose I/O Pins (19× 4 mA, 2× 20 mA)
 - 32-kHz Sleep Timer With Capture
 - Two Powerful USARTs With Support for Several Serial Protocols
 - Full-Speed USB Interface
 - IR Generation Circuitry
 - Powerful Five-Channel DMA
 - AES Security Coprocessor
 - Battery Monitor and Temperature Sensor
 - Each CC2540 Contains a Unique 48-bit IEEE Address



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SOFTWARE FEATURES

- **Bluetooth v4.0 Compliant Protocol Stack for Single-Mode BLE Solution**
 - Complete Power-Optimized Stack, Including Controller and Host
 - GAP – Central, Peripheral, Observer, or Broadcaster (Including Combination Roles)
 - ATT / GATT – Client and Server
 - SMP – AES-128 Encryption and Decryption
 - L2CAP
 - Sample Applications and Profiles
 - Generic Applications for GAP Central and Peripheral Roles
 - Proximity, Accelerometer, Simple Keys, and Battery GATT Services
 - Multiple Configuration options
 - Single-Chip Configuration, Allowing Application to Run on CC2540
 - Network Processor Interface for Applications Running on an External Microcontroller
 - BTool – Windows PC Application for Evaluation, Development, and Test
- **Development Tools**
 - CC2540 Mini Development Kit
 - SmartRF™ Software
 - Supported by IAR Embedded Workbench™ Software for 8051

DESCRIPTION

The CC2540 is a cost-effective, low-power, true system-on-chip (SoC) for *Bluetooth* low energy applications. It enables robust BLE master or slave nodes to be built with very low total bill-of-material costs. The CC2540 combines an excellent RF transceiver with an industry-standard enhanced 8051 MCU, in-system programmable flash memory, 8-KB RAM, and many other powerful supporting features and peripherals. The CC2540 is suitable for systems where very low power consumption is required. Very low-power sleep modes are available. Short transition times between operating modes further enable low power consumption.

The CC2540 comes in two different versions: CC2540F128/F256, with 128 and 256 KB of flash memory, respectively.

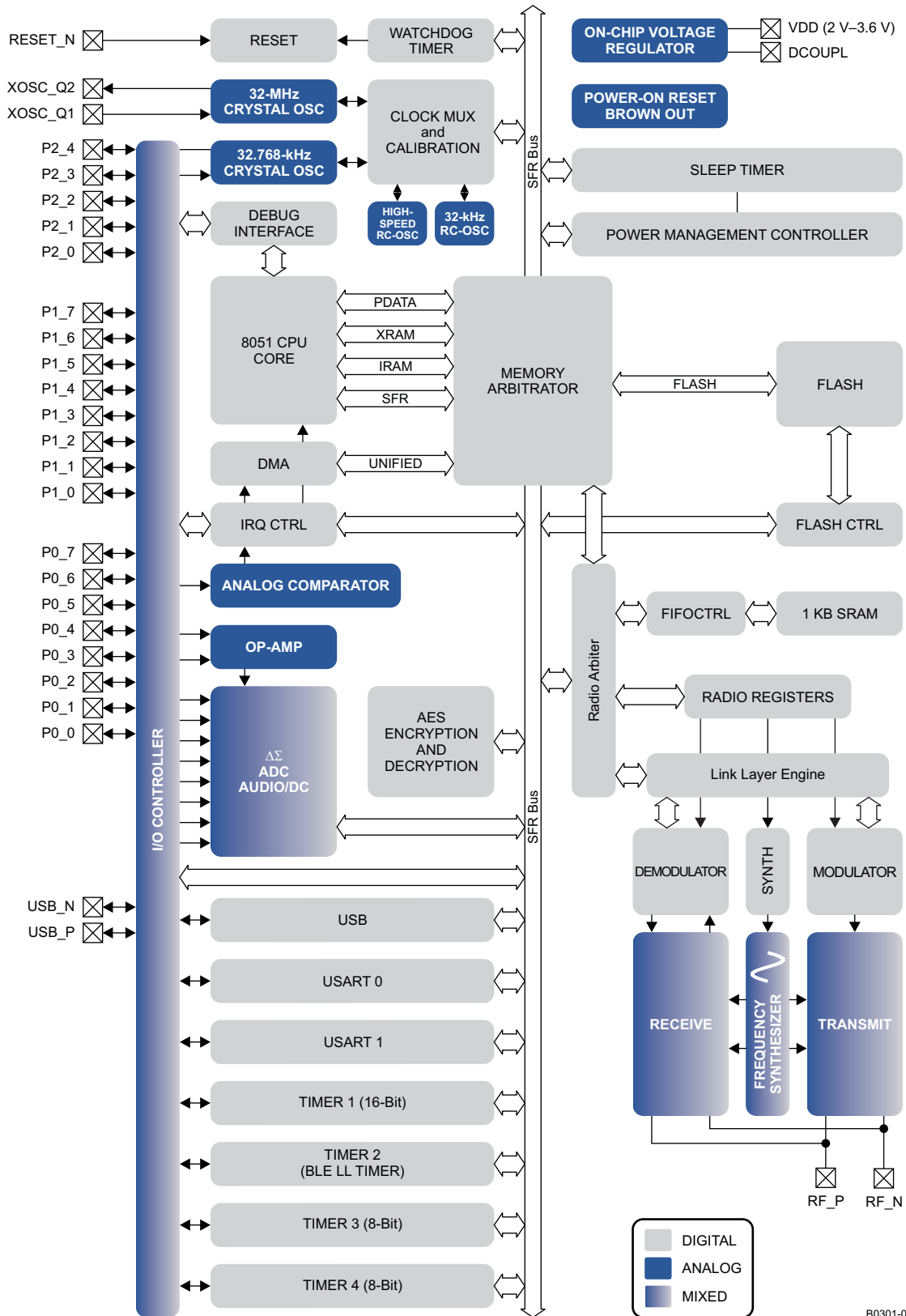
Combined with the *Bluetooth* low energy protocol stack from Texas Instruments, the CC2540F128/F256 forms the market's most flexible and cost-effective single-mode *Bluetooth* low energy solution.

APPLICATIONS

- 2.4-GHz *Bluetooth* low energy Systems
- Mobile Phone Accessories
- Sports and Leisure Equipment
- Consumer Electronics
- Human Interface Devices (Keyboard, Mouse, Remote Control)
- USB Dongles
- Health Care and Medical

CC2540 WITH TPS62730

- **TPS62730** is a 2 MHz Step Down Converter with Bypass Mode
- Extends Battery Lifetime by up to 20%
- Reduced Current in TX and RX
- 30 nA Bypass Mode Current to Support Low Power Modes
- RF Performance Unchanged
- Small Package Allows for Small Solution Size
- CC2540 Controllable



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