XC2806

Bluetooth Low Energy 5.0 SoC

Brief Introduction

1 General description

The XC2806 is a System-on-Chip combining an application processor, memories, cryptography engine, power management unit, digital and analog peripherals and a MAC engine complied with Bluetooth® Low Energy 5.0 and radio transceiver.

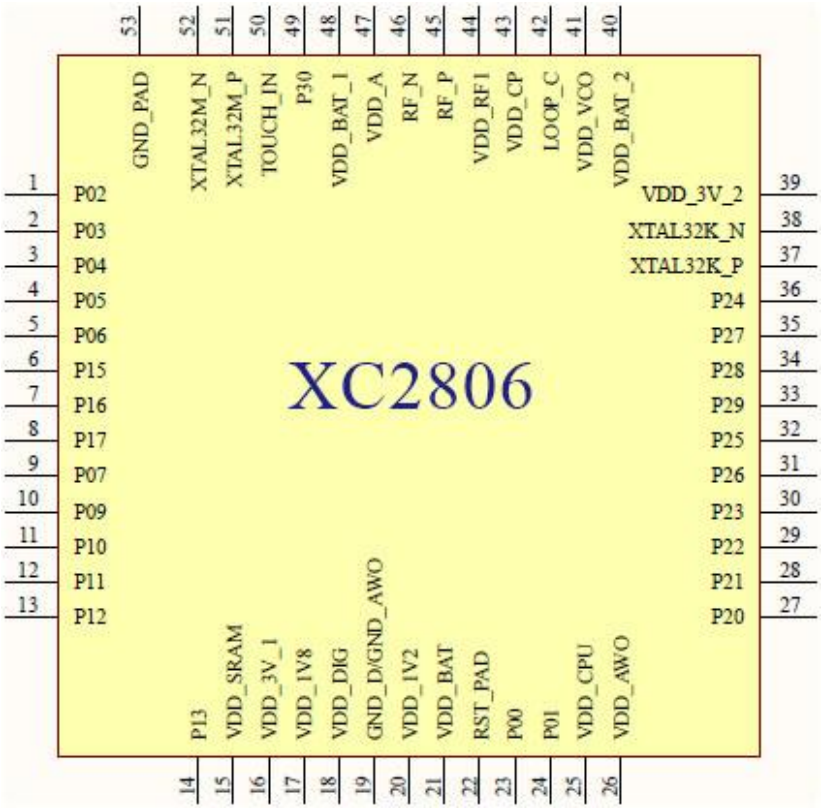
A 32-bit MCU is integrated in XC2806 for BLE link layer management and system operation. Rich digital and analog peripheral interfaces are optimized for external control, including GPIO, SPI, UART, IIC, PW, ADC and LDOs. Power Management Unit with on-chip DC DC buck converter, Battery Charger and various Regulators provides ultra-low current consumption for XC2806.

2 Feature list

- Complies with Bluetooth BLE 5.0 with 1Mbps/2Mbps data rates.
- Radio Transceiver:
  - ISM band 2.4~2.5GHz operation
  - -93 dBm RX sensitivity at 1Mbps mode
  - -90 dBm RX sensitivity at 2Mbps mode
  - RF output power levels: -20dBm, 0dBm, 3dBm and 7dBm
  - Single RF pin connected to antenna for input/output with integrated TX/RX switch
  - 50dB RSSI dynamic range
  - 3.4 mA in RX and 3.5 mA in TX with ideal DCDC Converter at 4.3V
  - 4.3 mA in RX and 4.4 mA in TX with on chip DCDC Converter at 4.3V
  - 5.5 mA in RX and 5.6 mA in TX with on chip DCDC Converter at 3.3V
- Clock and PLL:
  - 32MHz Crystal and RC oscillators
  - 32KHz Crystal and RC oscillators
  - 96MHz/80MHz/64MHz/48MHz/32MHz/16MHz PLL
- Analog Interfaces:
  - 6-channel 10-bit ADC with average capability (Oversampling up to 64 steps providing effectively up to 12 bits resolution)
  - Touch-Key Function
  - Battery monitoring function from 5.0V to 2.0V
  - Temperature sensor from -40℃ to 85℃
- Digital Interfaces:
  - 30 GPIO pins
  - 5 PWM outputs
  - IO State retention in deep sleep mode
  - Quad-SPI Flash interface
  - 2 SPI: up to 24Mbps and each with two chip select signal output
  - 1 SPI slave interface up to 8Mbps
  - 2 UART: flow control up to 1Mbps and supports all the baud rate under 1Mbps, IRDA is supported
  - 2 I^2C: master/slave programmable and speed up to 1Mbps
  - 2 timers and 1 watch dog timer
- Integrated MCU
  - Core: ARM® 32-bit Cortex®-M3 CPU
  - Clock frequency: 16MHz, 32MHz, 48MHz, 64MHz, 80MHz and 96MHz
  - 4-way associative cache
  - SWD debug interface
  - AHB/APB bus matrix with speed up to 96MHz

- Ultra low Current Mode
  - Sleep current 2.5uA ~ 6uA : SRAM (16 KB ~ 256 KB) retention
  - Average current 20uA during 1.28 sec active(broadcasting ADV)/sleep (256 KB SRAM retention) cycle time
- Memories
  - 8 Mbit Flash memory
  - 256 KB SRAM with retention capability, each 32KB can be set into retention state separately
  - 128 KB ROM (boot ROM and BLE stack)
  - 16 KB 4 way cache controller for external SPI flash which enable CPU run on the external SPI flash, the 16kB cache can be used as system SRAM when cache is disabled.
  - 32KB retention exchange memory for BLE connection data
- Power Management
  - Integrated DC DC buck converter
  - Battery Charger
  - 2.3-5.5V power input
  - One 1.8V LDO 40mA output
  - Two 3.3V LDO 50mA and 30mA output each
- Cryptographic engine:
  - ECC
  - AES-256
- Packages:
  - QFN 52 pins 6mm * 6mm

3 Pin Assignment (QFN52 pins 6mm*6mm)



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