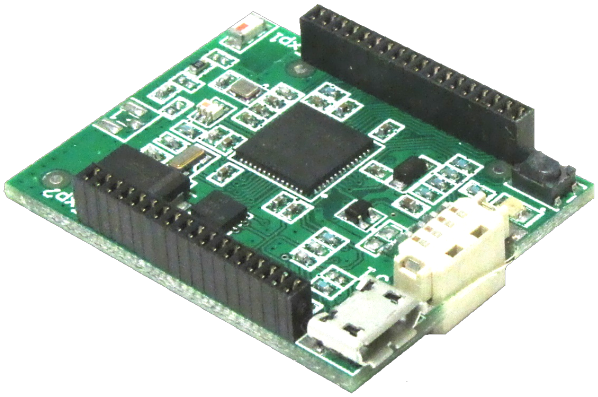
EPOSMote III



Project files

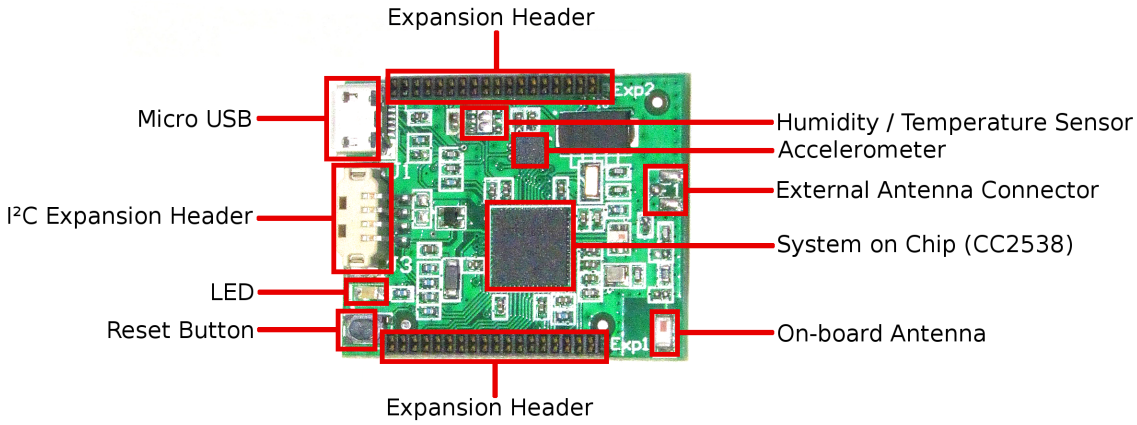
- EPOSMote III Project - V2.0 (schematic + partlist + gerber)

Overview

The chosen SoC for this application was the Texas Instruments CC2538, that combines a powerful ARM Cortex-M3-based MCU system with up to 32KB on-chip RAM and up to 512KB on-chip flash with a robust IEEE 802.15.4 radio, all in a 8x8mm² QFN56 footprint.

Here are some of it's characteristics:

- Up to 32-MHz clock speed;
- Supports On-Chip Over-the-air Upgrade (OTA);
- Supports Dual ZigBee Application profiles;
- cJTAG and JTAG debugging;
- Low power consumption:
  - 24mA TX current;
  - 20mA RX current;
  - 1.3 µA in Power Mode 2 (Sleep);
  - 0.4 µA in Power Mode 3 (Deep Sleep);
- High memory density:
  - 512Kbyte, 256Kbyte or 128Kbyte flash memory;
  - 32Kbyte RAM memory
- RF:
  - 2.4-GHz IEEE 802.15.4 Compliant RF – I2C Transceiver;
  - Receiver Sensitivity of –97 dBm;
  - Robustness to Interference With ACR of 44 dB;
  - Programmable Output Power up to 7 dBm
- Peripherals:
  - µDMA;
  - 4 × General-Purpose Timers (Each 32 bit or 2 x 16 bit);
  - 32-Bit 32-kHz Sleep Timer;
  - 12-Bit ADC With 8 Channels and Configurable resolution;
  - Battery Monitor and Temperature Sensor;
  - USB 2.0 Full-Speed Device (12 Mbps);
  - 2 × SPI;
  - 2 x UART;
  - I2C;
  - 32 General-Purpose I/O Pins;
  - Watchdog Timer;



Led

The EPOSMote III board have one red LED that can be used through the PC3 (1, EXP2) GPIO.

Buttons

The EPOSMote III board have one push-button, used to reset the system.

Inertial Module (iNEMO)

The ST' LSM330 is a low power 3-axis accelerometer (250µA in measurement mode and 10µA in standby mode) and giroscope (6.1mA in measurement mode, 2mA in sleep mode and 5µA in power-down mode) with a SPI/I2C interface. It has 8-bit resolution and can measure from -16G to 16G.

Temperature and Humidity Sensor

The Silicon Labs' Si7020 is a versatile temperature and humidity sensor, operated via I2C, with high precision (±4% Relative Humidity (max), 0-80% Relative Humidity) and accuracy (±0.4°C (max), –10 to 85°C). It has a low-power consumption (150µA active current and 60nA standby current), packed in a 3x3mm^2 DFN enclosure.