Ultra-low power 32-bit Arm® Cortex®-M3, 16-bit NXP CoolFlux DSP, 512 kB Flash, 128 kB SRAM, on-chip DC-DC converters and 4 channel ADC

Features

- Arm Cortex-M3 32-bit CPU
  - Operating frequency up to 100 MHz
  - 1.8 V to 3.6 V power supply
  - 1.24 DMIPS/MHz
  - 800nA sleep mode + RTC on
  - ~13 uA/MHz run mode
  - NVIC with 24 interrupts
  - Serial Wire Debug support

- Memory
  - 512 kB embedded nonvolatile FLASH
  - 128 kB SRAM
  - 8 kB BootROM

- NXP CoolFlux DSP16
  - Ultra-low power 16-bit DSP
  - Operating frequency up to 60 MHz
  - Dual 16x16 MAC
  - 3 pipeline stages
  - 32 kB program memory and 32 kB data memory
  - 4 channel DMA

- Clocks
  - Integrated 32 kHz oscillator
  - Integrated 8 MHz high frequency oscillator

- OS timer
  - 64-bit counter
  - 4 comparators + overflow with interrupts

- Real time clock
  - Watchdog timer interrupt or reset

- Power management control unit

- 8 channel PWM
  - Supports frequencies up to 4 MHz

- 32 GPIOs

- UART (2X)
  - Supports baud rate up to 460,800
  - Optional Hardware flow control (RTS/CTS)

- SPI master (2X)
  - Supports frequencies up to 4 MHz
  - SPI modes: 0,1,2,3 (LSB or MSB)

- I2C master (2X)
  - Supports standard (100 kb/s) and full (400 kb/s) transfer rates

- I2S
  - Supports mono or stereo input and output at 8, 16 or 32 kSPS

- 2 channel 12-bit 200 kSPS ADC
  - 1 uW typical power consumption for 200 kSPS continuous conversion

- On-chip analog blocks
  - Ultra-high efficiency buck converters
  - Power on reset
  - Temperature Sensor

- QFN-88 (10x10) package
  - Smaller QFN and CSP in development
ECM3531 Block Diagram

Figure 1 ECM3531 Chip Block Diagram
ECM3531 Chip Pinout

Figure 2 ECM3531 Pinout
# Revision History

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