MGM13P Mighty Gecko Module Data Sheet

The MGM13P Mighty Gecko Module (MGM13P) is a small form factor, certified module, enabling rapid development of wireless mesh networking solutions.

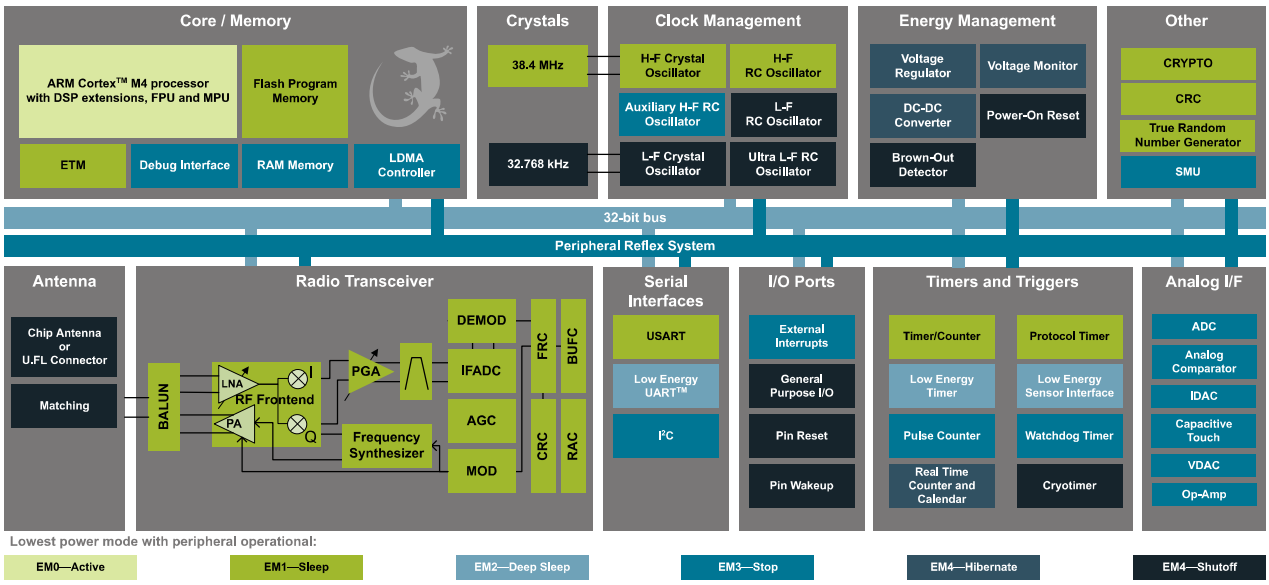
Based on the Silicon Labs EFR32MG13 Mighty Gecko SoC, the MGM13P combines an energy- efficient, multi-protocol wireless SoC with a proven RF/antenna design and industry leading wireless software stacks. This integration accelerates time-to-market and saves months of engineering effort and development costs. In addition, common software and development tools enable seamless migration between modules and discrete SoC-based designs.

MGM13P modules can be used in a wide variety of applications:

- IoT Multi-Protocol Devices
- Connected Home
- Lighting
- Health and Wellness
- Metering
- Building Automation and Security

KEY FEATURES

- 32-bit ARM® Cortex®-M4 core at 38.4 MHz
- 512 kB of flash memory and 64 kB of RAM
- Zigbee, Thread, BLE, and multi-protocol support
- Pin compatible with MGM12P module
- 12-channel Peripheral Reflex System, Low-Energy Sensor Interface & Multichannel Capacitive Sense Interface
- Integrated PA with up to 10 dBm transmit power
- Robust peripheral set and up to 25 GPIO



1. Feature List

The MGM13P highlighted features are listed below.

- **Low Power Wireless System-on-Chip.**
  - High Performance 32-bit 38.4 MHz ARM Cortex®-M4 with DSP instruction and floating-point unit for efficient signal processing
  - Embedded Trace Macrocell (ETM) for advanced debugging
  - 512 kB flash program memory
  - 64 kB RAM data memory
  - 2.4 GHz radio operation
  - TX power up to 10 dBm
- **Low Energy Consumption**
  - 11 mA RX current at 250 kbps, O-QPSK DSSS
  - 9.9 mA RX current at 1 Mbps, GFSK
  - 8.5 mA TX current at 0 dBm output power
  - 87 µA/MHz in Active Mode (EM0)
  - 1.4 µA EM2 DeepSleep current (64 kB RAM retention and RTCC running from LFXO)
  - 1.3 µA EM2 DeepSleep current (16 kB RAM retention and RTCC running from LFRCO)
  - Wake on Radio with signal strength detection, preamble pattern detection, frame detection and timeout
- **High Receiver Performance**
  - -102.8 dBm sensitivity at 125 kbit/s GFSK
  - -94.6 dBm sensitivity at 1 Mbit/s GFSK
  - -91 dBm sensitivity at 2 Mbit/s GFSK
  - -102.1 dBm sensitivity at 250 kbps DSSS-OQPSK, 2.4 GHz
- **Supported Protocols**
  - Zigbee
  - Thread
  - Bluetooth Low Energy (Bluetooth 5)
- **Support for Internet Security**
  - General Purpose CRC
  - True Random Number Generator (TRNG)
  - 2 × Hardware Cryptographic Acceleration for AES 128/256, SHA-1, SHA-2 (SHA-224 and SHA-256) and ECC
- **Regulatory Certifications**
  - FCC
  - CE
  - IC / ISEDC
  - MIC / Telec
- **Wide selection of MCU peripherals**
  - 12-bit 1 Msps SAR Analog to Digital Converter (ADC)
  - 2 × Analog Comparator (ACMP)
  - 2 × Digital to Analog Converter (VDAC)
  - 3 × Operational Amplifier (Opamp)
  - Digital to Analog Current Converter (IDAC)
  - Low-Energy Sensor Interface (LESENSE)
  - Multi-channel Capacitive Sense Interface (CSEN)
  - 25 pins connected to analog channels (APORT) shared between analog peripherals
  - 25 General Purpose I/O pins with output state retention and asynchronous interrupts
  - 8 Channel DMA Controller
  - 12 Channel Peripheral Reflex System (PRS)
  - 2 × 16-bit Timer/Counter
    - 3 or 4 Compare/Capture/PWM channels
  - 1 × 32-bit Timer/Counter
    - 3 Compare/Capture/PWM channels
  - 32-bit Real Time Counter and Calendar
  - 16-bit Low Energy Timer for waveform generation
  - 32-bit Ultra Low Energy Timer/Counter for periodic wake-up from any Energy Mode
  - 16-bit Pulse Counter with asynchronous operation
  - 2 × Watchdog Timer
  - 3 × Universal Synchronous/Asynchronous Receiver/Transmitter (UART/SPI/SmartCard (ISO 7816)/IrDA/I^2S)
  - Low Energy UART (LEUART™)
  - 2 × I^2C interface with SMBus support and address recognition in EM3 Stop
- **Wide Operating Range**
  - 1.8 V to 3.8 V single power supply
  - Integrated DC-DC
  - -40 °C to +85 °C
- **Dimensions**
  - 12.9 × 17.8 × 2.3 mm (W × L × H)