EFR32MG27 Wireless Gecko SoC Family Data Short

The EFR32MG27 Wireless Gecko multiprotocol family of SoCs is part of the Wireless Gecko portfolio. EFR32MG27 Wireless Gecko SoCs are ideal for enabling energy-friendly multiprotocol networking for IoT devices.

The single-die solution combines a 76.8 MHz Cortex-M33 with a high performance 2.4 GHz radio to provide an industry-leading, energy efficient wireless, SoC for IoT connected applications.

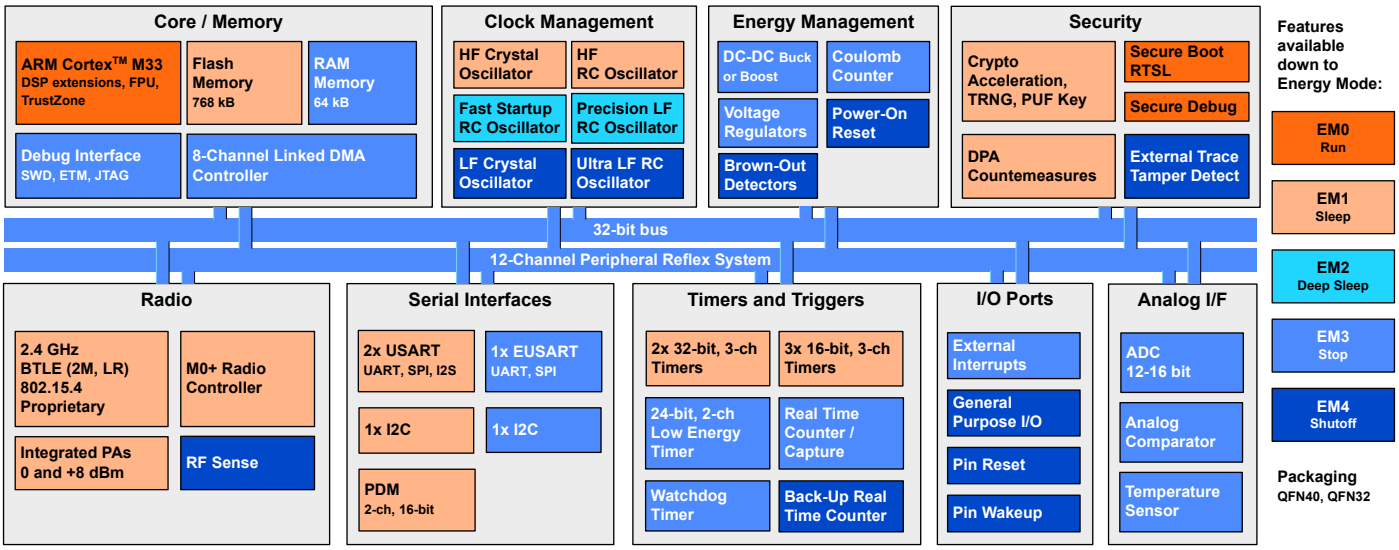
The devices are available with boost or buck DC-DC capabilities, enabling direct power from a wide variety of batteries.

Wireless Gecko applications include:

- Home End Devices
- Mesh Networking
- Fleet/Asset Monitoring
- Industrial Automation
- Access Control
- Power Tools

KEY FEATURES

- 32-bit ARM® Cortex®-M33 core with 76.8 MHz maximum operating frequency
- 768 kB of flash and 64 kB of RAM
- Energy-efficient radio core with low active and sleep currents
- Integrated PA with up to 8 dBm (2.4 GHz) TX power
- Secure Boot with Root of Trust and Secure Loader (RTSL)
- Pin compatibility / feature superset with EFR32xG22
- DC-DC supporting buck (1.8-3.8 V) or boost (0.8 - 1.7 V) operation



1. Feature List

The EFR32MG27 highlighted features are listed below.

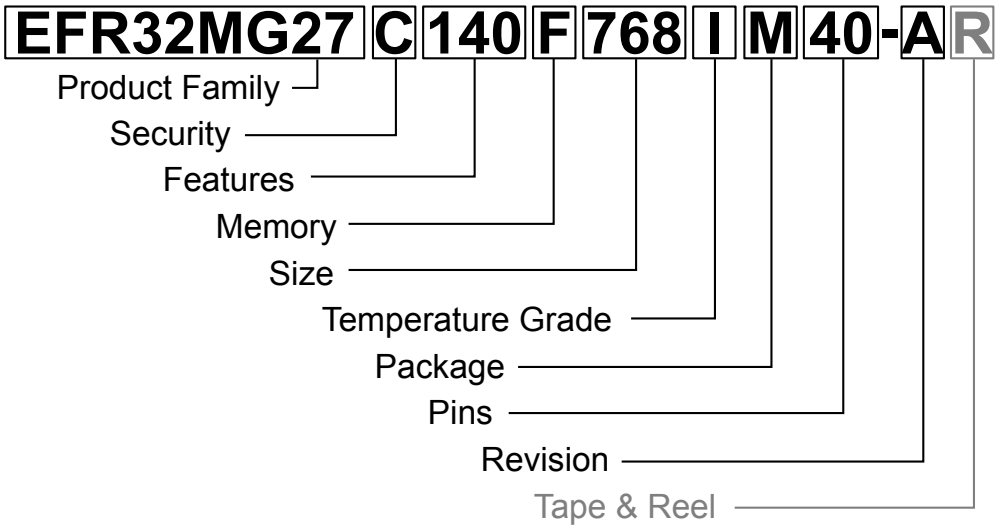
- **Low Power Wireless System-on-Chip**
  - High Performance 32-bit 76.8 MHz MHz ARM Cortex®-M33 with DSP instruction and floating-point unit for efficient signal processing
  - 768 kB flash program memory
  - 64 kB RAM data memory
  - 2.4 GHz radio operation
- **Radio Performance**
  - -102.3 dBm sensitivity @ 250 kbps O-QPSK DSSS
  - -106.7 dBm sensitivity @ 125 kbps GFSK
  - -98.9 dBm sensitivity @ 1 Mbit/s GFSK
  - -96.2 dBm sensitivity @ 2 Mbit/s GFSK
  - TX power up to 8 dBm
- **Low System Energy Consumption**
  - 4.0 mA RX current (250 kbps O-QPSK DSSS)
  - 3.6 mA RX current (1 Mbps GFSK)
  - 4.1 mA TX current @ 0 dBm output power
  - 9.2 mA TX current @ 6 dBm output power
  - 11.3 mA TX current @ 8 dBm output power
  - 29 µA/MHz in Active Mode (EM0) at 76.8 MHz
  - 1.6 µA EM2 DeepSleep current (64 kB RAM retention and RTC running from LFXO)
  - 0.18 µA EM4 current
- **Supported Modulation Format**
  - OQPSK DSSS
  - 2 (G)FSK with fully configurable shaping
  - (G)MSK
- **Protocol Support**
  - Zigbee PRO / Green Power
  - Bluetooth Low Energy (Bluetooth 5.x)
  - Proprietary
- **Security Features**
  - Secure Boot with Root of Trust and Secure Loader (RTSL)
  - Hardware Cryptographic Acceleration for AES128/256, SHA-1, SHA-2 (up to 256-bit), ECC (up to 256-bit), ECDSA, and ECDH
  - DPA Countermeasures
  - Key Management with PUF
  - True Random Number Generator (TRNG) compliant with NIST SP800-90 and AIS-31
  - ARM® TrustZone®
  - Secure Debug with lock/unlock
  - External Tamper Detect
- **Wide selection of MCU peripherals**
  - Analog to Digital Converter (ADC)
    - 12-bit @ 1 Msps
    - 16-bit @ 76.9 ksps
  - Analog Comparator (ACMP)
  - Up to 26 General Purpose I/O pins with output state retention and asynchronous interrupts
  - 8 Channel DMA Controller
  - 12 Channel Peripheral Reflex System (PRS)
  - 2 × 32-bit Timer/Counter with 3 Compare/Capture/PWM channels
  - 3 × 16-bit Timer/Counter with 3 Compare/Capture/PWM channels
  - 32-bit Real Time Counter
  - 24-bit Low Energy Timer for waveform generation
  - 1 × Watchdog Timer
  - 2 × Universal Synchronous/Asynchronous Receiver/Transmitter (UART/SPI/SmartCard (ISO 7816)/IrDA/I^2S)
  - 1 × Enhanced Universal Synchronous/Asynchronous Receiver/Transmitter (UART/SPI)
  - 2 × I^2C interface with SMBus support
  - Digital microphone interface (PDM)
  - Precision Low-Frequency RC Oscillator to replace 32 kHz sleep crystal
  - RFSENSE with selective OOK mode
  - Die temperature sensor with +/-1.5 degree C accuracy after single-point calibration
  - Coulomb counter integrated into DC-DC
- **Wide Operating Range**
  - 1.8 V to 3.8 V single power supply for devices with Buck DC-DC
  - 0.8 V to 1.7 V single power supply for devices with Boost DC-DC
  - -40 °C to 125 °C
- **Packages**
  - **QFN40** 5 mm × 5 mm × 0.85 mm, 0.4 mm pitch
  - **QFN32** 4 mm × 4 mm × 0.85 mm, 0.4 mm pitch

2. Ordering Information

Table 2.1. Ordering Information

Ordering Code	Protocol Stack	Max TX Power	DC-DC	Flash (kB)	RAM (kB)	GPIO	Package	Temp Range
EFR32MG27C230F768IM40-B	• Zigbee PRO • Zigbee Green Power • Bluetooth 5.x • Direction Finding (AoA Transmitter) • Proprietary	6 dBm	Boost	768	64	25	QFN40	-40 to 125 °C
EFR32MG27C230F768IM32-B	• Zigbee PRO • Zigbee Green Power • Bluetooth 5.x • Direction Finding (AoA Transmitter) • Proprietary	6 dBm	Boost	768	64	17	QFN32	-40 to 125 °C
EFR32MG27C140F768IM40-B	• Zigbee PRO • Zigbee Green Power • Bluetooth 5.x • Direction Finding (AoA Transmitter) • Proprietary	8 dBm	Buck	768	64	26	QFN40	-40 to 125 °C
EFR32MG27C140F768IM32-B	• Zigbee PRO • Zigbee Green Power • Bluetooth 5.x • Direction Finding (AoA Transmitter) • Proprietary	8 dBm	Buck	768	64	18	QFN32	-40 to 125 °C

Bluetooth 5.x: As the Bluetooth standard evolves, Silicon Labs is regularly adding new features. For more information on supported Bluetooth capabilities, visit https://www.silabs.com/bluetooth-hardware.



Field	Options
Product Family	• **EFR32MG27**: Wireless Gecko MG27 Family
Security	• **C**: Secure Vault Mid

Features [f1][f2][f3]	• f1
	  • **1**: DC-DC Buck Converter
	  • **2**: DC-DC Boost Converter
	• f2
	  • **3**: 6 dBm PA Transmit Power
	  • **4**: 8 dBm PA Transmit Power
	• f3
	  • **0**: Unused

Memory	• **F**: Flash
Size	• **Memory Size** in kBytes
Temperature Grade	• **I**: -40 to +125 °C
Package	• **M**: QFN
Pins	• **Number of Package Pins**
Revision	• **A**: Revision A • **B**: Revision B
Tape & Reel	• **R**: Tape & Reel (optional)

Figure 2.1. Ordering Code Key

Table of Contents

3. Revision History

Revision 0.3

March, 2023

Updated characterization results with latest data.

Revision 0.1

December, 2022

Initial release.

Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!

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