

# 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.

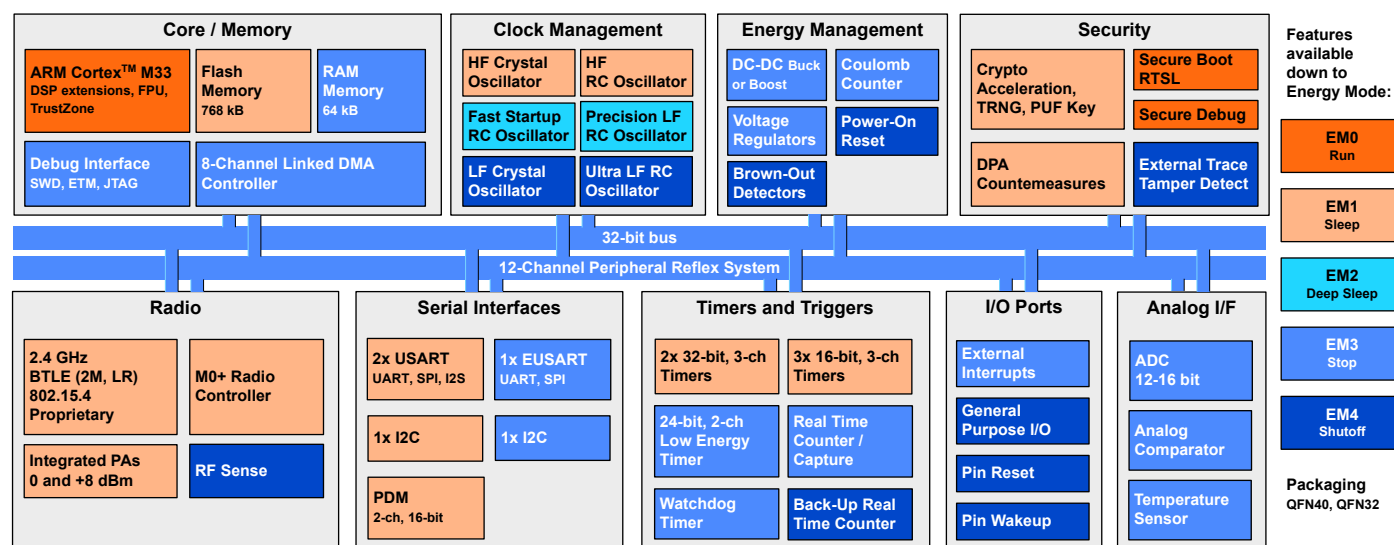
The devices are available with boost or buck DC-DC capabilities, enabling direct power from a wide variety of batteries.

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.

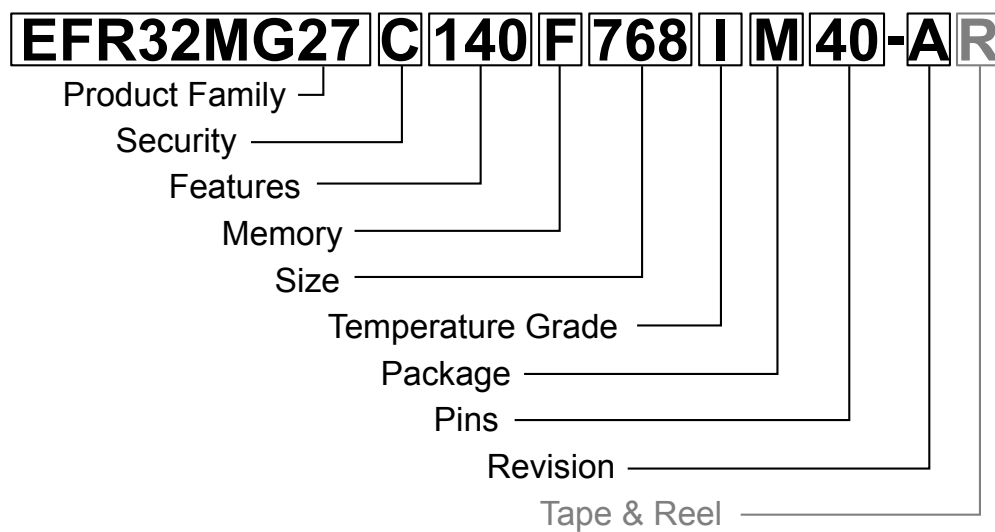
- **Low Power Wireless System-on-Chip**
  - High Performance 32-bit 76.8 MHz ARM Cortex®-M33 with DSP instruction and floating-point unit for efficient signal processing
  - 768 kB flash program memory
  - 64 kB RAM data memory
  - 2.4 GHz radio operation
- **Radio Performance**
  - -102.3 dBm sensitivity @ 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 kbps
  - 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<sup>2</sup>S)
  - 1 × Enhanced Universal Synchronous/Asynchronous Receiver/Transmitter (UART/SPI)
  - 2 × I<sup>2</sup>C 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	<ul style="list-style-type: none"> <li>• Zigbee PRO</li> <li>• Zigbee Green Power</li> <li>• Bluetooth 5.x</li> <li>• Direction Finding (AoA Transmitter)</li> <li>• Proprietary</li> </ul>	6 dBm	Boost	768	64	25	QFN40	-40 to 125 °C
EFR32MG27C230F768IM32-B	<ul style="list-style-type: none"> <li>• Zigbee PRO</li> <li>• Zigbee Green Power</li> <li>• Bluetooth 5.x</li> <li>• Direction Finding (AoA Transmitter)</li> <li>• Proprietary</li> </ul>	6 dBm	Boost	768	64	17	QFN32	-40 to 125 °C
EFR32MG27C140F768IM40-B	<ul style="list-style-type: none"> <li>• Zigbee PRO</li> <li>• Zigbee Green Power</li> <li>• Bluetooth 5.x</li> <li>• Direction Finding (AoA Transmitter)</li> <li>• Proprietary</li> </ul>	8 dBm	Buck	768	64	26	QFN40	-40 to 125 °C
EFR32MG27C140F768IM32-B	<ul style="list-style-type: none"> <li>• Zigbee PRO</li> <li>• Zigbee Green Power</li> <li>• Bluetooth 5.x</li> <li>• Direction Finding (AoA Transmitter)</li> <li>• Proprietary</li> </ul>	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	<ul style="list-style-type: none"> <li><b>EFR32MG27:</b> Wireless Gecko MG27 Family</li> </ul>
Security	<ul style="list-style-type: none"> <li><b>C:</b> Secure Vault Mid</li> </ul>
Features [f1][f2][f3]	<ul style="list-style-type: none"> <li>f1 <ul style="list-style-type: none"> <li><b>1:</b> DC-DC Buck Converter</li> <li><b>2:</b> DC-DC Boost Converter</li> </ul> </li> <li>f2 <ul style="list-style-type: none"> <li><b>3:</b> 6 dBm PA Transmit Power</li> <li><b>4:</b> 8 dBm PA Transmit Power</li> </ul> </li> <li>f3 <ul style="list-style-type: none"> <li><b>0:</b> Unused</li> </ul> </li> </ul>
Memory	<ul style="list-style-type: none"> <li><b>F:</b> Flash</li> </ul>
Size	<ul style="list-style-type: none"> <li><b>Memory Size</b> in kBytes</li> </ul>
Temperature Grade	<ul style="list-style-type: none"> <li><b>I:</b> -40 to +125 °C</li> </ul>
Package	<ul style="list-style-type: none"> <li><b>M:</b> QFN</li> </ul>
Pins	<ul style="list-style-type: none"> <li><b>Number of Package Pins</b></li> </ul>
Revision	<ul style="list-style-type: none"> <li><b>A:</b> Revision A</li> <li><b>B:</b> Revision B</li> </ul>
Tape & Reel	<ul style="list-style-type: none"> <li><b>R:</b> Tape &amp; Reel (optional)</li> </ul>

Figure 2.1. Ordering Code Key

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### 3. Revision History

#### Revision 0.3

March, 2023

Updated characterization results with latest data.

#### Revision 0.1

December, 2022

Initial release.

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