



EFR32BG24 Wireless Gecko SoC Family

Data Short



The EFR32BG24 Wireless SoCs are ideal for wireless connectivity using Bluetooth Low Energy and Bluetooth mesh.

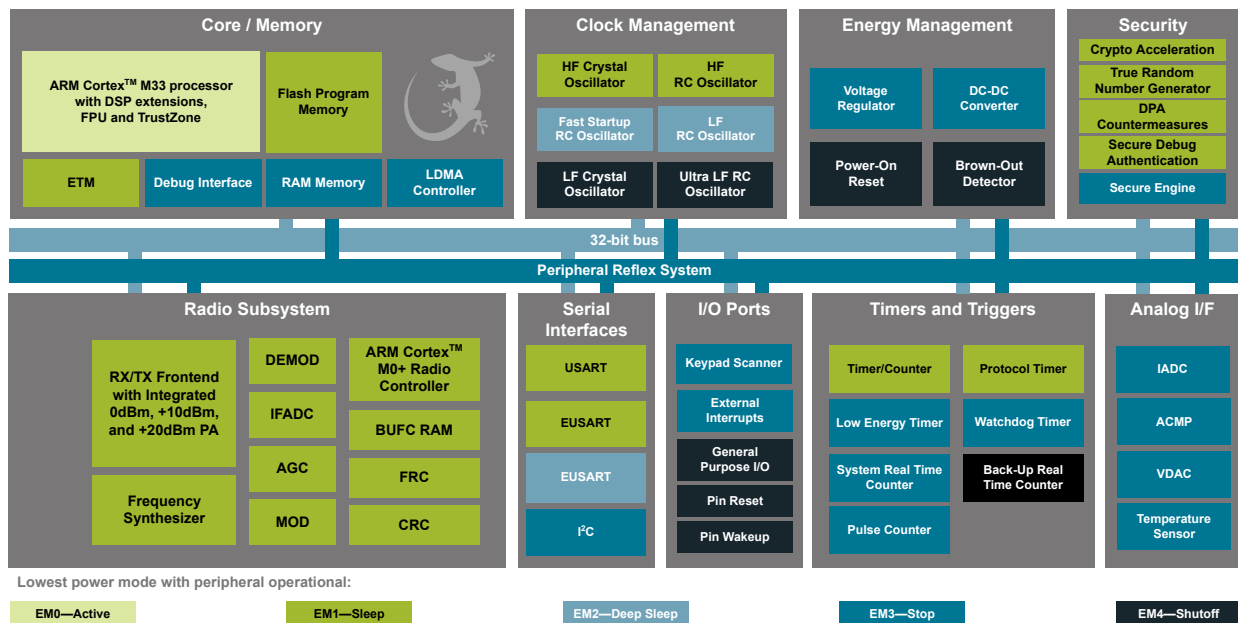
With key features like high performance 2.4 GHz RF, low current consumption, an AI/ML hardware accelerator and Secure Vault, IoT device makers can create smart, robust, and energy-efficient products that are secure from remote and local cyber-attacks. A Cortex®-M33 running up to 78.0 MHz and up to 1536 kB of Flash and 256 kB of RAM provides resources for demanding applications while leaving room for future growth.

Target applications include:

- Smart Home - Gateways and hubs, sensors, switches, door locks, smart plugs
- Lighting - LED bulbs, luminaires
- Portable Medical Devices - Blood glucose meters, pulse oximeters
- AI/ML - Predictive maintenance, glass break detection, wake-word detection

KEY FEATURES

- 32-bit ARM® Cortex®-M33 core with 78.0 MHz maximum operating frequency
- Up to 1536 kB of flash and 256 kB of RAM
- High performance radio with up to +19.5 dBm output power
- Energy efficient design with low active and sleep currents
- Secure Vault™
- AI/ML Hardware Accelerator



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1. Feature List

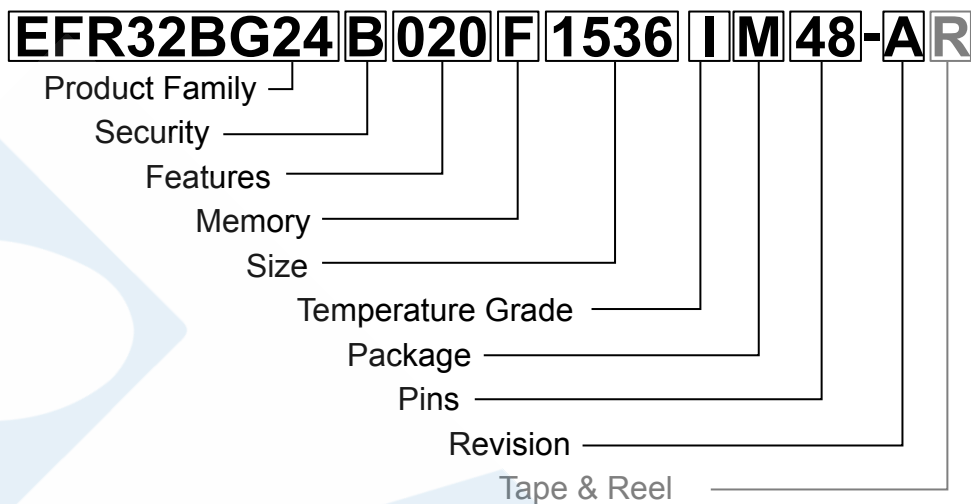
The EFR32BG24 highlighted features are listed below.

- **Low Power Wireless System-on-Chip**
 - High Performance 32-bit 78.0 MHz ARM Cortex[®]-M33 with DSP instruction and floating-point unit for efficient signal processing
 - Up to 1536 kB flash program memory
 - Up to 256 kB RAM data memory
 - 2.4 GHz radio operation
- **Radio Performance**
 - -104.9 dBm sensitivity @ 125 kbps GFSK
 - -97.5 dBm sensitivity @ 1 Mbit/s GFSK
 - -94.4 dBm sensitivity @ 2 Mbit/s GFSK
 - TX power up to 19.5 dBm
- **Low System Energy Consumption**
 - 4.4 mA RX current (1 Mbps GFSK)
 - 5.1 mA TX current @ 0 dBm output power
 - 20 mA TX current @ 10 dBm output power
 - 155 mA TX current @ 19.5 dBm output power
 - 32.2 μ A/MHz in Active Mode (EM0) at 39.0 MHz
 - 1.3 μ A EM2 DeepSleep current (16 kB RAM retention and RTC running from LFRCO)
- **Supported Modulation Format**
 - 2 (G)FSK with fully configurable shaping
 - (G)MSK
- **Protocol Support**
 - Bluetooth Low Energy
 - Bluetooth mesh
 - Proprietary 2.4 GHz
- **Secure Vault**
 - Hardware Cryptographic Acceleration for AES128/192/256, ChaCha20-Poly1305, SHA-1, SHA-2/256/384/512, ECDSA +ECDH(P-192, P-256, P-384, P-521), Ed25519 and Curve25519, J-PAKE, PBKDF2
 - True Random Number Generator (TRNG)
 - ARM[®] TrustZone[®]
 - Secure Boot (Root of Trust Secure Loader)
 - Secure Debug Unlock
 - DPA Countermeasures
 - Secure Key Management with PUF
 - Anti-Tamper
 - Secure Attestation
- **Wide selection of MCU peripherals**
 - Analog to Digital Converter (IADC)
 - 12-bit @ 1 Msps or 16-bit @ 76.9 kps
 - Select OPNs support High Speed Mode (up to 2 Msps) and High Accuracy Mode (up to 16 bits ENOB at 3.8 kps)
 - 2 \times Analog Comparator (ACMP)
 - 2 \times Digital to Analog Converter (VDAC)
 - Up to 32 General Purpose I/O pins with output state retention and asynchronous interrupts
 - 8 Channel DMA Controller (LDMA)
 - 16 Channel Peripheral Reflex System (PRS)
 - 3 \times 16-bit Timer/Counter with 3 Compare/Capture/PWM channels (TIMER2/3/4)
 - 2 \times 32-bit Timer/Counter with 3 Compare/Capture/PWM channels (TIMER0/1)
 - 32-bit Real Time Counter (SYSRTC)
 - 24-bit Low Energy Timer for waveform generation (LETIMER)
 - 16-bit Pulse Counter with asynchronous operation (PCNT)
 - 2 \times Watchdog Timer (WDOG)
 - 1 \times Universal Synchronous/Asynchronous Receiver/Transmitter (USART), supporting UART/SPI/SmartCard (ISO 7816)/IrDA/I²S
 - 2 \times Enhanced Universal Synchronous/Asynchronous Receiver/Transmitter (EUSART) supporting UART/SPI/DALI/IrDA
 - 2 \times I²C interface with SMBus support
 - Low-Frequency RC Oscillator with precision mode to replace 32 kHz sleep crystal (LFRCO)
 - Keypad scanner supporting up to 6x8 matrix (KEYSCAN)
 - Die temperature sensor with +/-TBD degree C accuracy after single-point calibration
- **Wide Operating Range**
 - 1.71 V to 3.8 V single power supply
 - -40 $^{\circ}$ C to 125 $^{\circ}$ C
- **Packages**
 - **QFN40** 5 mm \times 5 mm \times 0.85 mm
 - **QFN48** 6 mm \times 6 mm \times 0.85 mm

2. Ordering Information

Table 2.1. Ordering Information

Ordering Code	Max TX Power	Flash (kB)	RAM (kB)	Secure Vault	IADC High-Speed / High-Accuracy	GPIO	Package / Pinout
EFR32BG24B220F1024IM48-B	19.5 dBm	1024	128	High	No	32	QFN48 / Standard
EFR32BG24B210F1024IM48-B	10 dBm	1024	128	High	No	32	QFN48 / Standard
EFR32BG24B110F1536IM48-B	10 dBm	1536	256	High	Yes	28	QFN48 / ADC
EFR32BG24A020F1024IM48-B	19.5 dBm	1024	128	Mid	No	32	QFN48 / Standard
EFR32BG24A020F1024IM40-B	19.5 dBm	1024	128	Mid	No	26	QFN40 / Standard
EFR32BG24A010F1024IM48-B	10 dBm	1024	128	Mid	No	32	QFN48 / Standard
EFR32BG24A010F1024IM40-B	10 dBm	1024	128	Mid	No	26	QFN40 / Standard



Field	Options
Product Family	<ul style="list-style-type: none"> • EFR32BG24: Blue Gecko 24 Family
Security	<ul style="list-style-type: none"> • A: Secure Vault Mid • B: Secure Vault High
Features [f1][f2][f3]	<ul style="list-style-type: none"> • f1 <ul style="list-style-type: none"> • 0: No feature enabled • 1: IADC High-Speed / High-Accuracy Available • 2: Matrix Vector Processor (MVP) Available • 3: IADC High-Speed / High-Accuracy and Matrix Vector Processor (MVP) Available • f2 <ul style="list-style-type: none"> • 1: 10 dBm PA Transmit Power • 2: 19.5 dBm PA Transmit Power • f3 <ul style="list-style-type: none"> • 0: No feature enabled • 1: High Quality HFCLKOUT Pin Available
Memory	<ul style="list-style-type: none"> • F: Flash
Size	<ul style="list-style-type: none"> • Memory Size in kBytes
Temperature Grade	<ul style="list-style-type: none"> • G: -40 to +85 °C • I: -40 to +125 °C
Package	<ul style="list-style-type: none"> • M: QFN
Pins	<ul style="list-style-type: none"> • Number of Package Pins
Revision	<ul style="list-style-type: none"> • A: Revision A
Tape & Reel	<ul style="list-style-type: none"> • R: Tape & Reel (optional)

Figure 2.1. Ordering Code Key

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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