BGM111 Blue Gecko *Bluetooth* ® Module Data Short

The Blue Gecko BGM111 is a Bluetooth® Module targeted for Bluetooth low energy applications where reliable RF, low-power consumption, and easy application development are key requirements. At +8 dBm TX power, BGM111 is ideal for applications requiring short and medium range Bluetooth connectivity.
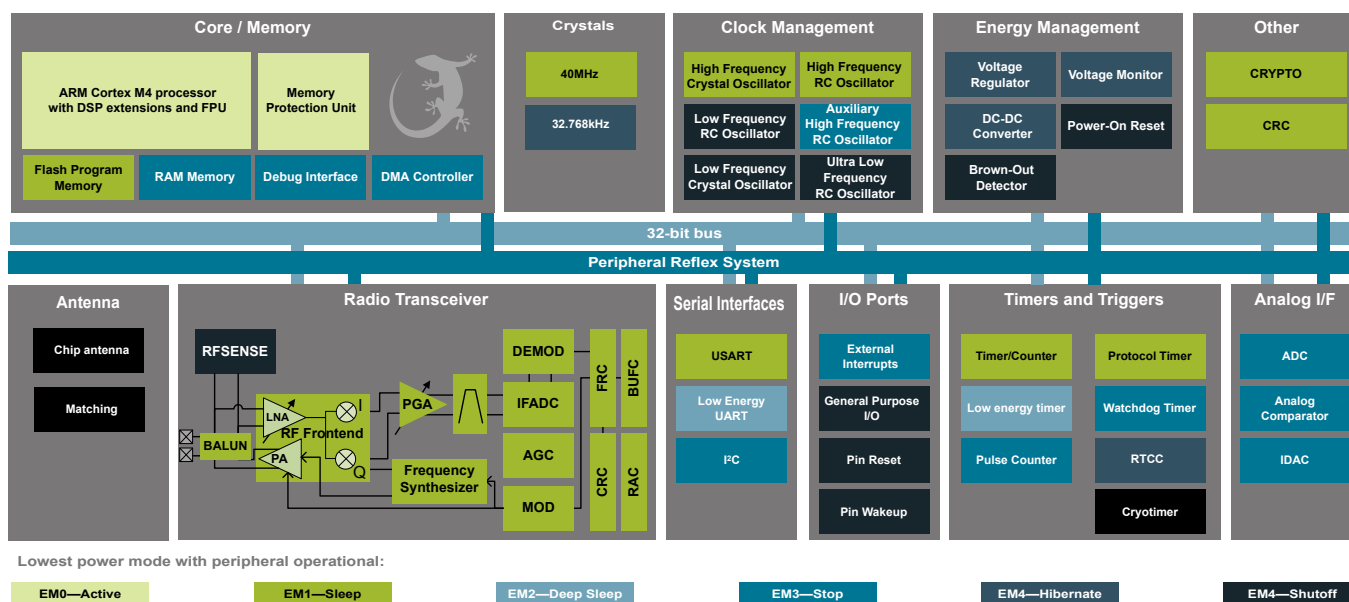
The BGM111 integrates all of the necessary elements required for a Bluetooth application: Bluetooth low energy radio, a software stack, and GATT-based profiles, and it can also host end user applications, which means no external microcontroller is required in size, price or power constrained devices. The BGM111 Bluetooth Module also has highly flexible hardware interfaces to connect to different peripherals or sensors.

BGM111 can be used in a wide variety of applications:

- IoT Sensors and End Devices
- Commercial and Retail
- Health and Wellness
- Industrial, Home and Building Automation
- Smart Phone, Tablet and PC Accessories

KEY FEATURES

- Bluetooth 4.2 Compliant
- Integrated antenna
- TX power: up to +8 dBm
- RX sensitivity: down to -92 dBm
- Range: up to 200 meters
- 32-bit ARM® Cortex®-M4 core at 40 MHz
- Flash memory: 256 kB
- RAM: 32 kB
- Autonomous Hardware Crypto Accelerator and Random Number Generator
- Integrated DC-DC Converter
- Onboard Bluetooth stack

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This information applies to a product under development. Its characteristics and specifications are subject to change without notice.

Preliminary Rev. 1.0

1. Feature List

The BGM111 highlighted features are listed below.

- **Low Power Wireless System-on-Chip**.
  - High Performance 32-bit 40 MHz ARM Cortex®-M4 with DSP instruction and floating-point unit for efficient signal processing
  - 256 kB flash program memory
  - 32 kB RAM data memory
  - 2.4 GHz radio operation
  - TX power up to +8 dBm
- **Low Energy Consumption**
  - 8.7 mA RX current at 2.4 GHz
  - 8.2 mA TX current @ 0 dBm output power at 2.4 GHz
  - 63 µA/MHz in Active Mode (EM0)
  - 2.5 µA EM2 DeepSleep current (full RAM retention and RTCC running from LFXO)
  - 2.1 µA EM3 Stop current (State/RAM retention)
  - Wake on Radio with signal strength detection, preamble pattern detection, frame detection and timeout
- **High Receiver Performance**
  - -92 dBm sensitivity @ 1 Mbit/s GFSK (2.4 GHz)
- **Supported Protocols**
  - Bluetooth®
- **Support for Internet Security**
  - General Purpose CRC
  - Random Number Generator
  - Hardware Cryptographic Acceleration for AES 128/256, SHA-1, SHA-2 (SHA-224 and SHA-256) and ECC

- **Wide Selection of MCU peripherals**
  - 12-bit 1 Msps SAR Analog to Digital Converter (ADC)
  - 2× Analog Comparator (ACMP)
  - Digital to Analog Current Converter (IDAC)
  - 25 pins connected to analog channels (APORT) shared between Analog Comparators, ADC, and IDAC
  - 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 + 4 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
  - Watchdog Timer with dedicated RC oscillator @ 50nA
  - 2×Universal Synchronous/Asynchronous Receiver/Transmitter (UART/SPI/SmartCard (ISO 7816)/IrDA/I2S)
  - Low Energy UART (LEUART™)
  - I2C interface with SMBus support and address recognition in EM3 Stop
- **Wide Operating Range**
  - 1.85 V to 3.8 V single power supply
  - 2.4 V to 3.8 V when using DC-DC
  - Integrated DC-DC
  - -40 °C to +85 °C
- **Dimensions**
  - 12.9 x 15.00 x 2.2 mm

2. Ordering Information

Ordering Code	Protocol Stack	Frequency Band	Max TX Power (dBm)	Encryption	Flash (KB)	RAM (KB)	GPIO	Package
BGM111A256V2	Bluetooth Smart	2.4 GHz	+8	Full	256	32	25	100 pcs cut reel
BGM111A256V2R	Bluetooth Smart	2.4 GHz	+8	Full	256	32	25	1000 pcs reel
SLWSTK6101B[1]								

Note:

1. Blue Gecko Bluetooth Smart Module Wireless Development Kit (WSTK) with BGM111 and BGM113 radio boards, expansion board and accessories.

Simplicity Studio

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