EFR32BG22 Specs

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
- Up to 512 kB flash program memory
- Up to 32 kB RAM data memory
- 2.4 GHz radio operation

Radio Performance
- -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 6 dBm
- 2.5 mA radio receive current
- 3.4 mA radio transmit current @ 0 dBm output power
- 7.5 mA radio transmit current @ 6 dBm output power

Low System Energy Consumption
- 3.6 mA RX current (1 Mbps GFSK)
- 4.1 mA TX current @ 0 dBm output power
- 8.2 mA TX current @ 6 dBm output power
- 27 µA/MHz in Active Mode (EM0) at 76.8 MHz
- 1.40 µA EM2 DeepSleep current (32 kB RAM retention and RTC running from LFXO)
- 1.75 µA EM2 DeepSleep current (32 kB RAM retention and RTC running from a precision LFRCO)
- 0.17 µA EM4 current

Wide Selection of MCU Peripherals
- 16-bit Analog to Digital Converter (ADC)
- 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)
- 4 × 16-bit Timer/Counter with 3 Compare/Capture/PWM channels
- 1 × 32-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/I2S)
- 1 × Enhanced Universal Asynchronous Receiver/Transmitter (EUART)
- 2 × I2C 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 °C
- accuracy after single-point calibration

Supported Modulation Format
- (G)FSK with fully configurable shaping
- OQPSK DSSS
- (G)MSK

Protocol Support
- Bluetooth Low Energy (Bluetooth 5.2)
- Direction finding using Angle-of-Arrival (AoA) and Angle-of-Departure (AoD)
- Bluetooth mesh Low Power Node
- (512 kB parts only)
- Proprietary

Wide Operation Range
- 1.71 V to 3.8 V single power supply
- -40 °C to 125 °C

Packages
- QFN40 5 mm × 5 mm × 0.85 mm
- QFN32 4 mm × 4 mm × 0.85 mm
- TQFN32 4 mm × 4 mm × 0.30 mm

BG22 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
- True Random Number Generator (TRNG) compliant with NIST SP800-90 and AIS-31
- ARM® TrustZone®
- Secure Debug with lock/unlock

Si117x Biometric Sensor Common Specs
- **Fully integrated Heart Rate Module IC**
- Up to 4 LEDs with lensing and optical blocking
- High sensitivity photodiode
- Low noise analog front-end and ADC
- Four independent, regulated LED drivers (1.7 to 310mA)
- < 50 uA current for continuous HR (LED + Sensor Power)
- Built-in 2k buffer
- Supports synchronization with an accelerometer
- 24 bit ADC and AFE with over 100 dB dynamic range
- Small size (3.7x7.0 mm)
- I2C and SPI support
- < 500 nA standby current
- Available with high quality, motion compensated HR algorithm optimized for wrist-based sensing.
- Built-in ECG front-end for single channel ECG measurements (Si1172 and Si1173)