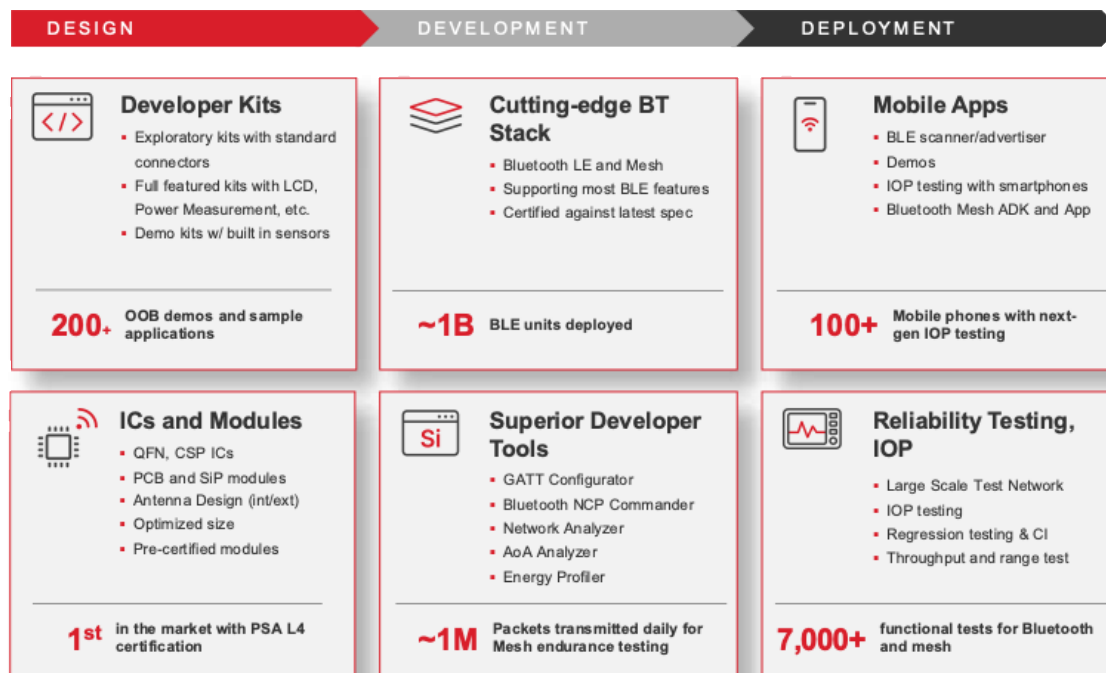


Bluetooth Low Energy

Overview

Bluetooth version 4.0 introduced Bluetooth Low Energy technology. Bluetooth Low Energy optimized Bluetooth communication over 2.4 GHz for short bursts of long-range radio connections, making it ideal for applications that depend on long battery life and don't need high throughput streaming data. Since its introduction, numerous updates to the Bluetooth Low Energy specification have standardized additional features such to increase throughput, support additional connection topologies, and improve latency. Each new feature broadens the scope of Bluetooth Low Energy to include additional use cases and usage models. Silicon Labs offers a qualified Bluetooth® Core Specification, Bluetooth 6.x protocol stack today.

Silicon Labs Provides Comprehensive Technology Supports for Bluetooth LE



Key Features of Silicon Labs Bluetooth Solution

Feature	Benefit
Core Features	Periodic Advertising with Responses (PAWR), Encrypted Advertising Data (EAD) , Advertisement Extensions, Periodic Advertising, LE secure connections, 2M PHY, Long Range, AFH, LE Privacy 1.2 (peripheral), LE packet length extensions, Accept List (central side), GATT, & GATT Caching
Direction Finding with Angle of Arrival (AoA)	Scale to AoA to few hundred devices simultaneously
Certificate Based Authentication and Pairing (CBAP)	Use certificates to authenticate devices before provisioning, thus saving cost and time. Also, prevents counterfeit devices from being provisioned into the network
Channel Sounding	Utilizes 2-way connection-oriented ranging to precisely estimate the distance between 2 Bluetooth LE enabled devices

Silicon Labs' Bluetooth Low Energy HW support

Industry-leading, energy efficient device for Bluetooth LE applications (AECQ-100 qualified packages available)	Most Battery Versatile SoC for Connected Health, Smart Home, Portable Products	Most Battery Versatile, Ultra-Low Power Series-2 SoC	High Performance Bluetooth LE, Bluetooth mesh, and Channel Sounding (AECQ-100 qualified packages available)	Most robust and feature-rich, multi-protocol SoC till date for more complex applications and ML capabilities	Series 3 Wireless SoC with Largest Flash, XIP QSPI, and Multiprotocol Support	Lowest-Power Bluetooth SoC with a Complete Channel Sounding Solution
512kB Flash 32kB RAM - TX power 6dBm -106.7dBm @ 125kbps -98.9dBm @ 1Mbit/s -96.2dBm @ 2Mbit/s - RX current 3.6mA @ 1Mbps - TX current 4.1mA @ 0dBm 1.4µA Sleep current (32kB) - Secure Vault Mid/Base 4x4 QFN32 4x4 QFN32 (AEC-Q100) 4x4 QFN32 5x5 QFN40 (AEC-Q100) 5x5 QFN40	768kB Flash 64kB RAM - TX power 8dBm -106.9dBm @ 125kbps -99.2dBm @ 1Mbit/s -96.3dBm @ 2Mbit/s - RX current 3.6mA @ 1Mbps - TX current 4.1mA @ 0dBm 1.26µA Sleep current (16kB) - Secure Vault Mid - QFN40 5x5 (26) - QFN32 4x4 (18) - TQFN32 4x4 (18)	1024kB Flash 256kB RAM - TX power 8dBm -106.8dBm @ 125kbps -99dBm @ 1Mbit/s -96.1dBm @ 2Mbit/s - RX current 3.6mA @ 1Mbps - TX current 4.0mA @ 0dBm 1.5 µA Sleep current (16kB) - Secure Vault High - QFN40 5x5 (26)	1536kB Flash 256kB RAM - TX power 19.5dBm -105.7dBm @ 125kbps -97.6dBm @ 1Mbit/s -94.8dBm @ 2Mbit/s - RX current 4.4mA @ 1Mbps - TX current 5.0mA @ 0dBm 1.3 µA Sleep current (16kB) - Robust peripheral set - AI/ML hardware accelerator - Direction Finding - Channel Sounding - Secure Vault High - QFN40 5x5 (26) (AEC-Q100) - QFN48 6x6 (32) (AEC-Q100)	3200kB Flash 512kB RAM - TX power 19.5dBm -105.7 dBm @ 125 Kbps -97.6 dBm @ 1Mbit/s -94.8 dBm @ 2 Mbit/s - RX current 5.4mA @ 1Mbps - TX current 6mA @ 0dBm 1.4µA Sleep current - Secure Vault Mid/High - QFN 6x6 (48) - QFN 8x8 (68) 7x7 BGA136	4 MB Flash 512 kB RAM - TX power 10dBm -106.8 dBm @ 125 Kbps -98.2 dBm @ 1Mbit/s - RX current 7.8mA @ 1Mbps - TX current 11.1mA @ 0dBm 1.4µA Sleep current - Secure Vault High - QFN32 4 × 4 mm (20) - QFN40 5 × 5 × mm (28) - QSPI w/ XIP, USART 12-bit ADC	- Up to 1016 kB Flash - Up to 128 kB RAM - TX power 8dBm -99.0dBm @ 1Mbit/s -96.1dBm @ 2Mbit/s - RX current 3.1mA @ 1Mbps - TX current 4.1mA @ 0dBm 1.1µA Sleep current (16kB) - Lowest Power Bluetooth LE - Dual-output buck DC-DC - Secure Vault High - Complete Channel Sounding with Inline PCT - CAN-FD, LED Boost & LED Sink - Dual 12-bit ADCs - Variable Resistive Load (VRL) 6x6 QFN48 5x5 QFN40

Silicon Labs' Bluetooth LE Development Kits

Silicon Labs' Bluetooth development kits are divided into three categories based on your development need:

- Rapid Prototyping
- Proof of Concept
- Advanced RF Development

For more information on the portfolio, check the link:

Technical Resource

(scan the QR code and search for keywords)

- EFR32xG22L
- EFR32xG22
- EFR32xG22E
- EFR32xG27
- EFR32xG24L
- EFR32xG29
- EFR32xG24
- EFR32xG26
- SiBG301
- EFR32BG2B
- API Documentation



Bluetooth LE Product Portfolio



Bluetooth Low Energy Selector Guide



Technical Resource

Software and Tools features

- Channel Sounding
- Supports Bluetooth™ 6.x
- Wi-Fi Coexistence
- Simplicity Studio IDE
- GATT Configurator
- Network Analyzer
- Direction Finding Tool suite
- Bluetooth NCP Commander
- Proprietary Radio Configurator
- Energy Profiler
- Tool Chain – GCC and IAR

Keyword Searching: Bluetooth Low Energy SDK, Bluetooth Channel Sounding, Bluetooth 6.x

Bluetooth LE Software / Tools

Silicon Labs Bluetooth Low Energy SDK helps you build smooth, reliable, and secure wireless connectivity for your IoT applications.

Bluetooth LE Target Applications

- | | |
|----------------|---------------------|
| ESL | LED Lighting |
| Medical | HVAC |
| Asset Tracking | Building Automation |
| Smart Home | Switches |
| Smart Tags | Sensors |