

BSC3000 Product Brief

Ultra-low power, secure IoT Wi-Fi and BLE wireless IC

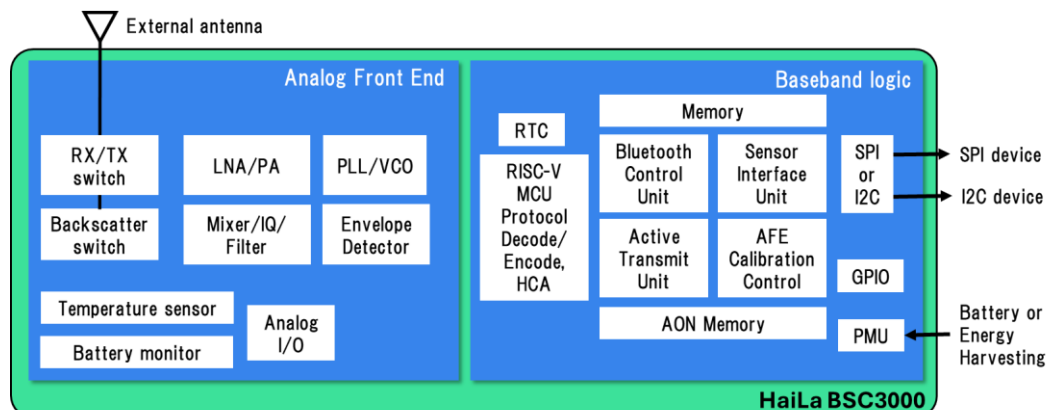
Overview

HaiLa's BSC3000 Wi-Fi and Bluetooth Low Energy (BLE) wireless IC paves the way for a new paradigm in wireless connectivity for the IoT. The BSC3000 enables extreme low-power, multi-mode 2.4 GHz wireless communication for sensors and other devices while leveraging existing 802.11 Wi-Fi or Bluetooth Low Energy (BLE) infrastructure. BSC3000 extends the life of battery-operated IoT devices well beyond the benchmark set by other low-power radio architectures. This enables IoT form-factor reduction, smaller batteries, or battery-free operation with appropriate energy-harvesting power sources. An on-chip temperature sensor with $\pm 1^\circ\text{C}$ accuracy is included.

For Bluetooth-based logistics and other applications, BSC3000 can uplink directly to existing smartphones, tablets, and other infrastructure that supports BLE. BSC3000 also enhances edge connectivity for Wi-Fi networks while maintaining secure, encrypted device connections. Autonomous or polled modes are supported with an extremely low power active uplink. Since new infrastructure is not required, end-users also benefit from lower total cost of ownership for WLAN deployments.

BSC3000 is supported by HaiLa SmartLink, a software development package for seamless Wi-Fi and Bluetooth infrastructure integration. In combination with power-optimized Neural Processing Units (NPUs), BSC3000 supports battery-powered, intelligent data transmission for a new wave of edge AI applications.

Block Diagram



Features

- Operating frequency band
 - Worldwide 2.4GHz
- Wireless protocols
 - 802.11a 1Mbps/2Mbps DSSS
 - Bluetooth 1Mbps FSK
- Security and encryption
 - AES-128/AES-256
 - SHA-224/SHA-512
 - ECDSA
- Sensor and device interfaces
 - SPI, I2C, analog, GPIO
- On-chip temperature sensor
- Power supply (battery, harvested)
 - 2.0 – 3.6 V
- Average Power Consumption
 - $<10 \mu\text{W}$ (Active mode, 30s duty cycle)
 - $<5 \mu\text{W}$ (Backscatter mode, continuous operation)
- Packaging & Environmental
 - QFN and WL-CSP
 - Operating temperature range: -40 to 85°C
 - Storage temperature: 40°C , 90% RH



Applications

- Building automation/Smart homes
- Consumer electronics
- Logistics and asset tracking
- Medical
- Industrial sensor networks
- Automotive and transport
- Edge AI