

Product Brief GR851X

NB-IoT Solution



Brief Description

NB-IoT brings low power and high capacity wide range cellular connectivity technology to the market. It stimulates thousands of applications and billions of connections, demanding uncompromised security and rich platform solution. Goodix GR851x product series supply the industry leading edge NB-IoT solution with high security and ultra-low power openCPU enablement. It offers competitive cost effective single chip solutions for smart meter, smoke detector, wristband and other NB-IoT applications.

Key Features

- 3GPP NB-IoT Rel-14, incl. Rel-15 readiness
- Ultra Low Power Cortex-M4F AP w/ FPU
- Integrated SIM with certified security.
- Advanced Communication processing (CP) engine
- Wide range voltage input from 1.7V~4.35V
- OpenCPU solution with MCU style SDK and tool set

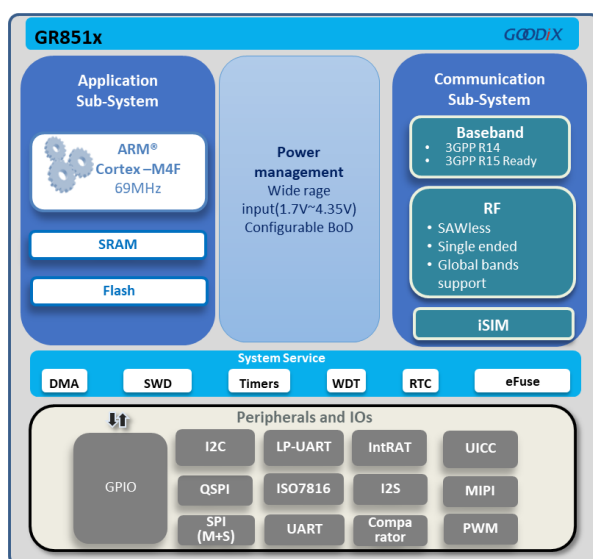
Key Benchmark

- RX sensitivity
- CP power data: PSM/idle/eDRX/TX
- AP power data: Deep sleep/current per MHz.

Certification (Silicon)

- China Mobile
- China Telecom
- GTI (In Plan)
- SRRC (In Plan)
- Deutsche Telekom (In Plan)

Block Diagram



Application Processor (AP) Sub-System

- Scalable core clock Cortex-M4F up to 69MHz
- AP sub-system independent from CP
- Up to 128KB SRAM dedicated for openCPU application
- Up to 4MB Flash with XIP
- DFOTA
- Low power UART
- I2S, I2C, UART, ISO7816, SPI
- 12-bit ADC
- PWM
- Protocol support: IPv4, IPv6, IPv4v6, Non-IP, UDP, TCP, CoAP, LwM2M, MQTT-SN

Communication Processing (CP) Sub-System

- 3GPP NB-IoT Rel-13 and Rel-14 compliant
 - Single- and Multi-Tone Uplink
 - CP and UP support incl. RoHC for UP solution
 - Multi-Carrier support (including Rel-14 non-anchor NPRACH and paging)
 - Cat-NB2 and Dual-HARQ support
 - CP re-establishment support
 - AS and NAS release assistance indication support
 - Rel-14 positioning: OTDOA and ECID
 - SMS text and PDU mode
- HW ready for 3GPP NB-IoT Rel-15 support
- Global bands support: 1, 2, 3, 4, 5, 8, 11, 12, 13, 14, 17, 18, 20, 25, 26, 28, 66, 70, 71, 74, 85
- DFOTA

Power Management

- Wide range voltage input from 1.7V~4.35V
- High efficient PMU integration
- AP and CP decoupled with flexible power modes

Package

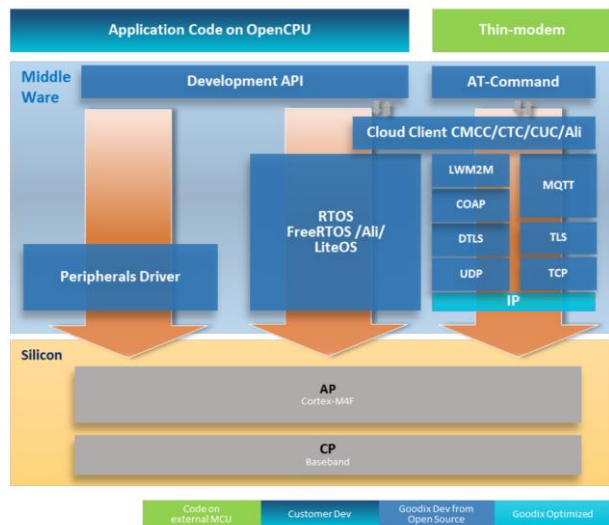
- BGA 121 pins, 5.6x5.6x0.88 mm, 0.5mm pitch
- QFN 58 pins, 6x6x0.75 mm, 0.5mm pitch, support 4 layers PCB.
- -40~85°C

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Software SDK



Rich Tool Set

- Easy to use software development kit
- Easy to test and evaluate hardware development kit
- Turn-key reference module design
- Flash tool
- RF calibration and test tool
- CP trace tool
- High efficiency mass production tool

Target Applications

- Smart meter
- Wireless smoke detector
- Asset management
- Smart street lamp
- Bike sharing
- Scooter sharing
- Smart parking
- Pet tracking
- Livestock management

About Goodix

Goodix Technology (SH: 603160) is an integrated solution provider for applications based on IC design and software development offering industry-leading software and hardware semiconductor solutions for smart devices, IoT applications, and automotive electronics. Goodix serves hundreds of millions of global consumers with quality products and solutions via renowned brands including Huawei, OPPO, vivo, Xiaomi, OnePlus, Google, Amazon, Samsung, Nokia, Dell, HP, LG, ASUS, etc., and is recognized as the largest biometric authentication solution provider for Android devices in the global market.

Standing among the global semiconductor industrial revolution with a solid foundation built upon the achievements and successes in human-interface and biometric authentication, Goodix will continue its dedication in research and development, striving to establish the comprehensive IC design blueprint for smart devices, IoT applications, and automotive electronics, aiming to become a world-leading comprehensive IC design company and innovative technology team that delivers continuous surprises to global customers and consumers, offers long-term and differentiating values to the industry and the society, and provides excellent career development opportunities for Goodix's global talents.

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