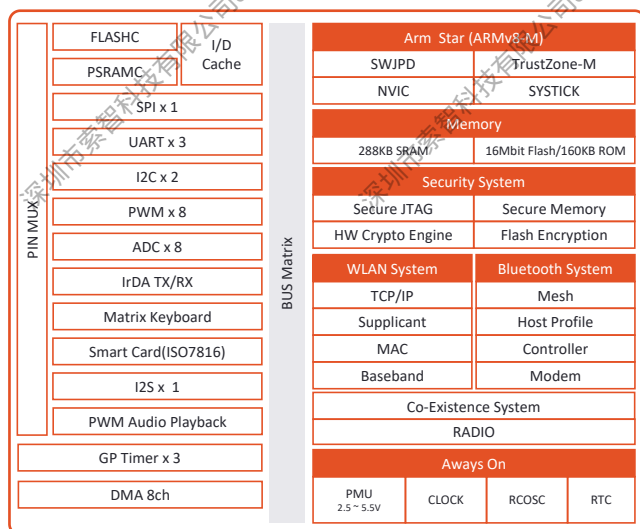




# Wi-Fi + BLE 5.0 Combo MCU

## for Internet of Things Applications

The XR806 is a highly integrated Wi-Fi and Bluetooth combo micro processor which features an ARMv8-M MCU, a 802.11b/g/n WLAN subsystem, a Bluetooth Low Energy (Version 5.0) subsystem and a Power Management Unit (PMU). It also integrates the highest level security system to provide comprehensive protection for software. It is designed for abundant smart devices in product categories such as Internet of Things (IoT), Machine-to-Machine (M2M), Smart Home, Cloud Connectivity applications.



### Highlight

- Wi-Fi and Bluetooth combo technology makes network connection simple and high efficient.
- High level of integration effectively reduces rBOM cost and simplifies hardware design.
- Industry leading low power consumption and effective power management ensure excellent battery life.
- High level of security system provides comprehensive protection for applications.
- Various peripherals support allows customers to develop variety of different products.
- High performance and highly integrated MCU, which enables software to perform more complex tasks.

### Features

#### Platform

- Arm-Star ARMv8-M MCU, up to 160MHz
- 320KB SRAM and 160KB Code ROM
- Supports SiP 16Mbit Flash and external Flash with QPI and XiP Mode
- 1024 bits eFuse

#### WLAN System

- Compatible with 802.11b/g/n standard
- Single-band 2.4G 1T1R WLAN
- WPA/WPA2.0 personal/WPA3.0 personal/ WPS2.0
- Integrated LNA PA and T/R switch
- STA, AP, STA/AP and Monitor mode
- Supports Wi-Fi and Bluetooth Co-existence

#### Bluetooth System

- Bluetooth specification v5.0, and compatible with v4.0/4.1/4.2 devices
- Bluetooth Low Energy 1Mbps, 2Mbps and long range
- -97dBm RX sensitivity in 1Mbps mode
- -103dBm RX sensitivity in 125kbps mode
- TX power: -20dBm ~ 20dBm

#### Security

- TEE: TrustZone-M
- Secure boot (ECC)
- Secure memory/eFuse
- JTAG/SWD protection
- Flash encryption/decryption
- HW crypto engine(AES/DES/3DES/MD5/SHA/SHA256/TRNG)

#### Power Management

- 2.5 ~ 5.5V single power supply integrated with DC-DC
- Shutdown: 0.3uA
- Hibernation: 6uA@RTC and wake up timer on only
- Standby: 28uA@16KB SRAM retention
- WLAN DTIM interval with 32.768kHz XTAL: 392uA@DTIM1, 180uA@DTIM3, 91uA@DTIM10
- WLAN RX active: 22.6mA@11b 1M Beacon
- WLAN TX active: 180mA@17dBm, 85mA@10dBm

#### Package

- QFN32 4mm x 4mm/QFN40 5mm x 5mm

| Features                  | Description                                          |                           | XR806AF2L         | XR806BM2E      |
|---------------------------|------------------------------------------------------|---------------------------|-------------------|----------------|
| Package                   | Trays and tape-in-reel                               |                           | 4x4mm^2           | 5x5mm^2        |
|                           |                                                      |                           | QFN32             | QFN40          |
| Supply voltage            | Power supply from system                             |                           | 2.5 ~ 5.5V        |                |
|                           | 5V IO                                                |                           | Yes               | /              |
| PMU                       | Intergate DCDC                                       |                           | Yes               |                |
|                           | LDO for external device (EXT LDO)                    |                           | Yes               |                |
| External Clock            | Reference High frequency clock                       |                           | 24/26/32/40MHz    |                |
| MCU Core                  | Core Type                                            |                           | Arm-star(ARMv8-M) |                |
|                           | Core clock maximum frequency                         |                           | 160MHz            |                |
|                           | TrustZone                                            |                           | TrustZone-M       |                |
| Memory                    | Internal ROM                                         |                           | 160KB             |                |
|                           | Internal RAM                                         |                           | 288KB             | 288KB          |
|                           | Internal Flash                                       |                           | 16Mbit(105°C)     | /              |
|                           | Internal PSRAM                                       |                           | /                 | 16Mbit         |
|                           | External Flash with XIP                              |                           | /                 | up to 128Mbit  |
|                           | Cache (can be config to system ram)                  |                           | 32KB              | 32KB           |
| Backup register           | Backup register for power save                       |                           | 16B               |                |
| Security                  | Secure boot                                          |                           | Yes(ECC)          |                |
|                           | TRNG(Provide random number seed)                     |                           | Yes               |                |
|                           | Flash Encryption/Decryption                          |                           | Yes               |                |
|                           | AES/DDES/3DES/SHA/MD5/CRC Crypto Engine              |                           | Yes               |                |
|                           | Secure Memory/eFuse                                  |                           | Yes               |                |
|                           | Secure JTAG                                          |                           | Yes               |                |
| Watchdog reset protection | Protect specified peripherals been reset by watchdog |                           | Yes               |                |
| BOR                       | BOR Detection                                        |                           | Yes               |                |
| Wi-Fi                     | 802.11 b/g/n                                         |                           | Yes               |                |
| Bluetooth                 | BLE5.0                                               |                           | Yes               |                |
|                           | SIG Mesh                                             |                           | Yes               |                |
| Peripherals               | GPIO                                                 | General Purpose           | 18                | 26(4 Flash IO) |
|                           | Flash Controller                                     | Quad XIP Flash Controller | 1                 | 1              |
|                           | UART                                                 |                           | 3(3.3V/5V)        | 3(3.3V)        |
|                           | SPI                                                  | Master and slave          | 1                 | 1              |
|                           | I2C                                                  | Max.400Kbps               | 1                 | 2              |
|                           | GPADC                                                | VBAT                      | 1                 | 1              |
|                           |                                                      | Normal                    | 3                 | 7              |
|                           | DMA                                                  | 8Channel                  | 1                 | 1              |
|                           | RTC                                                  |                           | 1                 | 1              |
|                           | Timer                                                | Watchdog                  | 1                 | 1              |
|                           |                                                      | Normal                    | 2                 | 2              |
|                           |                                                      | Wakeup                    | 1                 | 1              |
|                           | PWM                                                  | Output                    | 8                 | 8              |
|                           |                                                      | Input capture             | 8                 | 8              |
|                           | DAudio                                               | I2S Master and Slave      | 1                 | 1              |
|                           |                                                      | PWM DAC                   | 1                 | 1              |
|                           | IrDA                                                 | Receiver                  | 1                 | 1              |
|                           |                                                      | Transmitter               | 1                 | 1              |
|                           | SIM Card                                             | ISO7816                   | 1                 | 1              |
|                           | KEYBOARD                                             | Matrix Keyboard           | -                 | 8 x 16         |
|                           | 32K                                                  | Internal RCOSC            | 1                 | 1              |
|                           |                                                      | External XTAL             | 1                 | 1              |
|                           | WAKEUP IO                                            | From RTC wakeup           | 8                 | 14             |