

1. Hardware Description

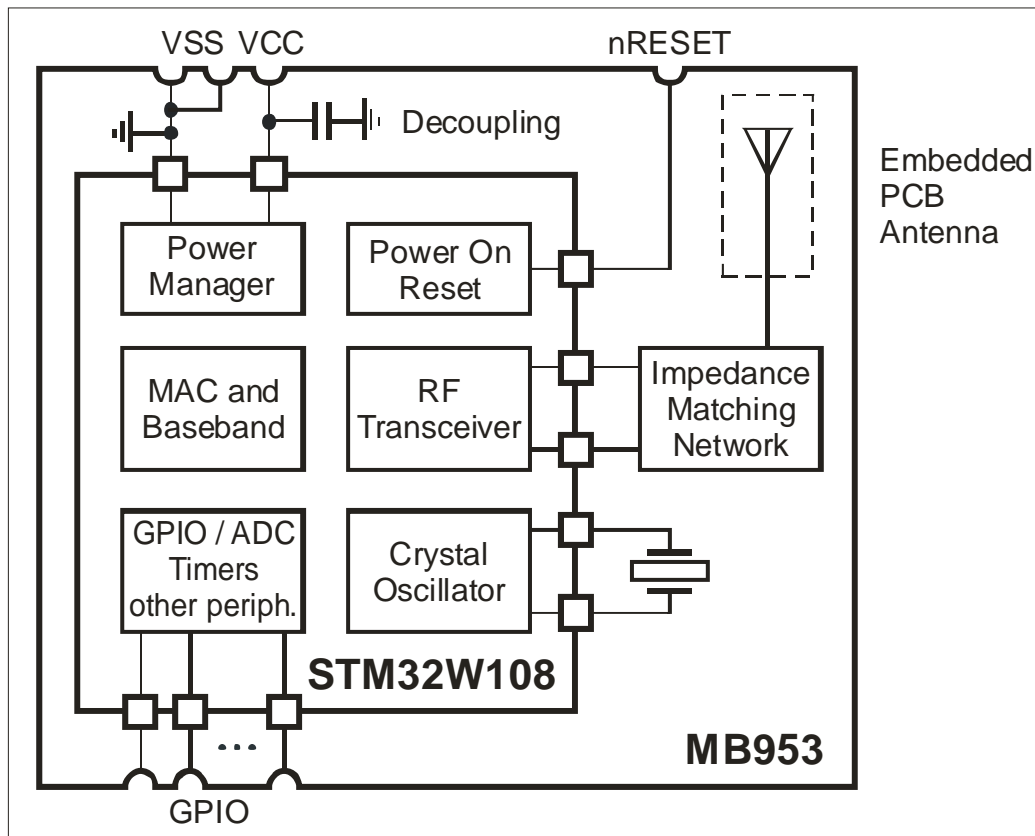


Fig. 1 Block Diagram of the Module

The MB953 Module is low-power, highly sensitivity IEEE 802.15.4 / ZigBee-compliant module. This multi-functional device is based on the STMicroelectronics STM32W108 fully integrated System-on-Chip (STM32W108CBU6x version).

This STM32W108 SoC integrates a 2.4 GHz IEEE 802.15.4-compliant transceiver, a 32-bit ARM® Cortex™-M3 microprocessor, Flash and RAM memory, as well as peripherals for use by designers of ZigBee-based systems.

The MB953 comes with 128 Kbytes of embedded Flash memory and 8 Kbytes of integrated RAM for data and program storage.

The STM32W108 IC offers a number of advanced power management features that enables long battery life. A high-frequency internal RC oscillator allows the processor core to begin code execution quickly upon waking. Various deep sleep modes are available with less than 1 μ s power consumption while retaining RAM contents.

I/O Peripherals

To support user-defined applications, on-chip peripherals include UART, SPI, TWI, ADC, general-purpose timers, and up to 24 GPIOs. Additionally, an integrated voltage regulator, power-on-reset circuit, and sleep timer are available. The STM32W108 IC utilizes standard Serial Wire and JTAG interfaces for powerful software debugging and programming of the ARM Cortex-M3 core. The STM32W108 IC integrates the standard ARM system debug components including Flash Patch and Breakpoint (FPB), Data Watch-point and Trace (DWT), and Instrumentation Trace Macrocell (ITM).

Firmware Protocol Stacks

Three protocols stacks are available:

- RF4CE (Radio Frequency for Consumer Electronics) stack, which is used primarily for a wide range of remotely-controlled audio/visual consumer electronics products. 32-bit ARM® Cortex™ -M3 microprocessor
- Proprietary stack, which is a robust application user interface package for wireless control and monitoring applications
- EmberZNet PRO stack, which is a complete ZigBee protocol software package containing all the elements required for robust and reliable mesh networking applications

Figure 4 below shows the a block diagram of the three optional ZigBee stacks

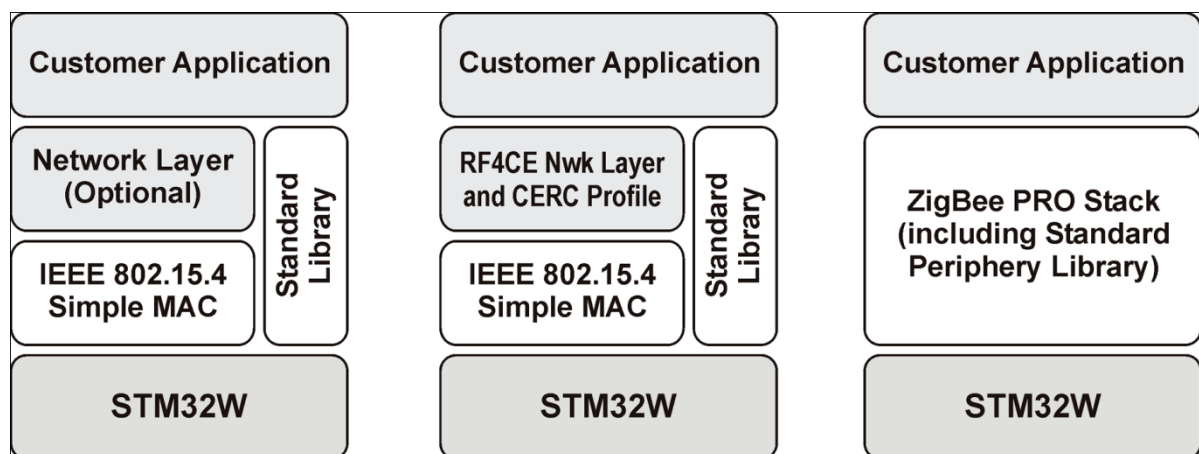


Fig. 2 Available protocol stacks.