SUMMARY

**DEVICE : W25Q16JV (16M-bit) Serial Flash memory**

**About the device:**

* A network controller is a software that orchestrates network functions. It serves as an intermediary between the business and the network infrastructure.
* Medium Access Control (MAC) network controller with Bluetooth Low Energy module.
* The ATWINC3400-MR210xA modules are Bluetooth 5.0 certified.
* This module is optimised for low power and high performance mobile applications.
* This module features a small form factor with integrated Power Amplifier (PA), Low-Noise Amplifier (LNA), Transmit/Receive (T/R) switch (for Wi-Fi® and Bluetooth) and Power Management Unit (PMU).
* The ATWINC3400-MR210CA integrates a chip antenna while the ATWINC3400-MR210UA adds a micro co-ax (u.FL) connector for connecting to an external antenna.
* The ATWINC3400-MR210xA module requires a 32.768 kHz clock for sleep operation.
* The ATWINC3400-MR210xA module utilizes highly optimized IEEE 802.11 Bluetooth coexistence protocols, and provides Serial Peripheral Interface (SPI) to interface with the host controller.
* The references to the ATWINC3400-MR210xA module include the following devices:
  + ATWINC3400-MR210CA – Integrates a chip antenna
  + ATWINC3400-MR210UA – Adds a micro co-ax (u.FL) connector for connecting to an external antenna

**FEATURES :**

* Wi-Fi features
* Bluetooth features

**Device States:**

* The ATWINC3400-MR210xA module has multiple device states, based on the state of the IEEE 802.11 and Bluetooth subsystems.
* It is possible for both subsystems to be active at the same time. To simplify the device power consumption breakdown, the following basic states are defined.
* One subsystem can be active at a time:
  + - WiFi\_ON\_Transmit – Device actively transmits IEEE 802.11 signal
    - WiFi\_ON\_Receive – Device actively receives IEEE 802.11 signal
    - BT\_ON\_Transmit – Device actively transmits Bluetooth signal
    - BT\_ON\_Receive – Device actively receives Bluetooth signal
    - Doze – Device is powered on but it does not actively transmit or receive data
    - Power\_Down – Device core supply is powered off

**Controlling Device States:**

* The device states can be switched using the following:
  + CHIP\_EN – Module pin (pin 19) enables or disables the DC/DC converter
  + VDDIO – I/O supply voltage from external supply
* In the ON states, VDDIO is ON and CHIP\_EN is high (at VDDIO voltage level).
* To change from the ON states to Power\_Down state, connect the RESETN and CHIP\_EN pin to logic low (GND) by following the power-down sequence.
* When VDDIO is OFF and CHIP\_EN is low, the chip is powered off with no leakage.

**Clocking :**

* The ATWINC3400-MR210xA module requires an external 32.768 kHz clock to be supplied at the module pin 20. This clock is used during the sleep operation. The frequency accuracy of this external clock must be within ±200 ppm.

**CPU and Memory Subsystem :**

* **Processor :** 
  + The ATWINC3400-MR210xA module has two Cortus APS3 32-bit processors, one is used for Wi-Fi and the other is used for Bluetooth.
  + In addition, the processor provides flexibility for various modes of operation, such as Station (STA) and Access Point (AP) modes. In Bluetooth mode, the processor handles multiple tasks of the Bluetooth protocol stack.
* **Memory Subsystem :**
  + The device uses 160 KB shared/exchange RAM (128 KB for IEEE 802.11 and 32 KB for Bluetooth), accessible by the processor and MAC, which allows the processor to perform various data management tasks on the Tx and Rx data packets.
* **Nonvolatile Memory (eFuse)**