WM71004/71008/71016

4/8/16-Kilobit Secure Wireless F-RAM Memory with Gen-2 RFID Access

RAMTRON International Corporation

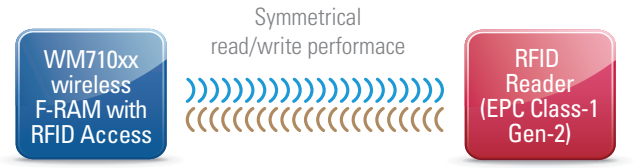
Description

The WM710xx family of wireless memory integrates an RF-enabled interface with Ramtron's industry leading nonvolatile ferroelectric random access memory or F-RAM (Figure 1). F-RAM performs reads and writes like a RAM. It provides reliable data retention for 20 years while eliminating the complexities, overhead, and system level reliability problems caused by EEPROM and other nonvolatile memories.

Unlike EEPROM's, the WM710xx write operations are zero power; there is no power or speed penalty for executing writes. F-RAM enabled MaxArias wireless memory offers fully symmetrical operation for reads and writes in terms of range, sustained memory access bandwidth, and reliability—all at the maximum data rates allowed by the Gen-2 standard.

The WM710xx's integrated RFID interface is compliant with the EPC Class-1 Generation-2 UHF Air Interface Protocol Standard at 860 MHz – 960 MHz, Version 1.2.0. The WM710xx is offered in a standard IC package, wafer, bare dice, or as a fully tested ISO-18000- 6C compliant transponder antenna inlay (see complete datasheet for full specifications).

Figure 1: MaxArias wireless memory block diagram (not to scale)



Features

4/8/16-Kilobit Nonvolatile Ferroelectric RAM

- Organized as 256/512/1024 x 16 bits
- Virtually unlimited read/write endurance (> 1E14)
- 20-year data retention
- Symmetrical read/write operation
- Advanced high-reliability ferroelectric process
- Global UHF Frequency range (860MHz—960MHz)

Interface and Security Features

- EPC Class-1 Generation-2 (ISO18000-6C) RFID compliant interface (revision 1.2.0)
- 192-bit memory: 96-bit electronic product code™ (EPC), 32-bit access password, 32-bit KILL password, 32-bit TID memory (factory programmed and locked)
- Additional TID memory to support unique serial number (total=4)
- Inventory, read, write and erase features
- Kill command
- Block permalock command
- Access command
- UHF carrier frequencies from 860 MHz to 960 MHz ISM band, ASK demodulation
- Up to 640kbps and 128kbps read and write transmission, respectively

Custom Features

- Stored address pointer to improve data write speed
- Stored address pointer lock

Ultra Low Power Symmetric Operation

- Memory read/write sensitivity: –6dBm, typical

Industry Standard Configurations

- Industrial temperature –40°C to +85°C
- 8-pin UDFN (-DG)
- Bumped wafers or tape and reel die
- ISO-18000-6C compliant transponder antenna inlay

MaxArias™
Wireless Solutions by Ramtron

Figure 2: UDFN 8-pin package (top view, PCB layout)

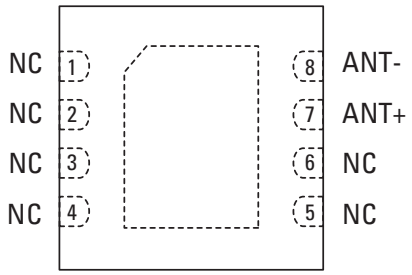


Table 1: Pin configuration and description

Pin Name	Type	Description
ANT-, ANT+	Input	RFID antenna: Connect to external RFID antenna terminal. Connect ANT- to external RFID antenna terminal, also acts as ground.
NC		This pin should be left floating.

Applications

High-density wireless memory is ideal for a broad range of applications and industries:

- Access control
- Aircraft and industrial manufacturing
- Amusement/resort ticketing
- Animal immunization records
- Building security
- Electronic toll collection
- Electronic vehicle registration
- Facilities maintenance records
- High-value asset tracking
- Inventory control
- Laboratory analysis
- Maintenance history
- Personnel tracking
- Pharmaceutical track and trace information
- Product authentication
- Secure Identification
- Time and place data-logging
- Utility metering

MaxArias™
Wireless Solutions by Ramtron