

AT88RF020 RF SMART CARD IC

2-KBIT READ/WRITE RF TRANSPONDER EEPROM

The AT88RF020 is a low-cost, Type B contactless EEPROM memory for use in cards, tags and tickets.



Key Features

- 2048-bit EEPROM Memory
- Contactless 13.56 MHz, ISO/IEC 14443 Type B Interface
- Password Protected User Memory
- Data Page Locking
- One-way Transaction Counter
- Integrated Tuning Capacitor
- High Reliability Memory, 100K Write Cycles with 10-year Data Retention

Applications

- Transit Tickets and Tokens
- Access Control Cards
- Product Traceability
- Document Authentication



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REV: 2038B-08/03/7K

Atmel's AT88RF020 low-cost 2-Kbit RF Transponder EEPROM Smart Card IC is fully compliant with the Type B requirements of ISO/IEC 14443. This chip is powered by the RF interface, so a battery is not needed. A tuning capacitor is included on-chip so only a single external coil antenna is required to operate the device. The AT88RF020 is compatible with any Type B RF Smart Card Reader.

Security

AT88RF020 has several security features. A 64-bit password protects the 224-byte user memory which cannot be read or written unless the correct password has been presented. Write Lock bits protect critical data from being over-written. Each Lock bit protects an 8-byte page, so once the Lock bit is set the data can never be changed. The AT88RF020 features a one-way transaction counter that allows tracking of individual device usage. The counter is set at the factory to zero and is incremented by a COUNT command that simultaneously writes the Signature field. The counter can never be reset or decremented. Atmel uniquely serializes each device with a 32-bit read-only serial number.

Memory Map

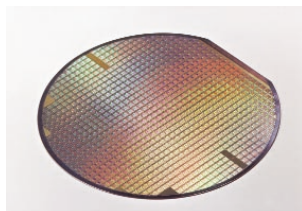
AT88RF020 contains 256 bytes of memory configured as shown below. The first three pages can always be read by the system. Page 3 is the password and can never be read. Pages 4 thru 31 are the user memory area that can only be accessed after password validation.

	BYTE 0	BYTE 1	BYTE 2	BYTE 3	BYTE 4	BYTE 5	BYTE 6	BYTE 7
Page 0	[Unique Tag ID]				[Lock Bits]			
Page 1	[Application Data]				[Reserved]			
Page 2	[Signature]							[Counter]
Page 3	[Password]							
Page 4	—	—	—	—	—	—	—	—
...								
...								
Page 31	—	—	—	—	—	—	—	—

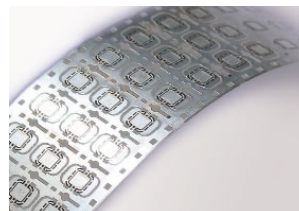
Product Features

- Contactless 13.56 Mhz RF Communications Interface
 - ISO/IEC 14443-2:2001 Type B Compliant
 - ISO/IEC 14443-3:2001 Type B Compliant Anticollision Protocol
 - Command Set Optimized for Multicard RF Communications
 - Tolerant of Type A Signaling for Multiprotocol Applications
 - Operating Distance of 10 cm or more
- Integrated Tuning Capacitor
- 256 Byte EEPROM Memory
- 8-Byte Page Write Mode
- 224-Bytes User Memory
- 5 mS Write Time
- Security Features
 - Unique Read-only PUPI Serial Number
 - 64-bit Password
 - One-way Transaction Counter
 - Write Lock Data Protection
- High Reliability
 - Endurance: 100,000 Write Cycles
 - Data Retention: 10 Years
 - Operating Temperature: 0°C to 70°C

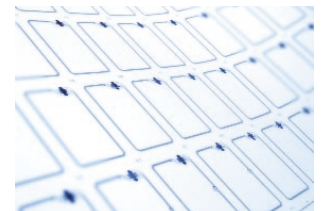
Package Options



Wafer Form, Thinned to 6 Mills



RF Smart Card Modules



Prelaminate Sheets

Development Tools

AT88RF020-DK Development Kit, including RF reader and software

Atmel Contact: securerf@atmel.com

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