

## ➤ CryptoRF® World's Largest Family of Secure RF Memories

CryptoRF supports the most stringent security standards used for track and trace, logistics management, anti-cloning and anti-counterfeiting, identification, and e-purse.

CryptoRF is a 13.56 MHz RFID device family with a 64-bit embedded hardware encryption engine, mutual authentication capability, and up to 64-Kbits of user memory. Based on ISO 14443-B standard, CryptoRF is ideally suited to meet a variety of security applications such as contactless payment, product authentication, patient safety, and patron management.

CryptoRF devices are great for proximity applications where hardware security is desired or when environmental factors such as dirt, moisture, chemicals, etc., exist.

CryptoRF devices are available with EEPROM densities from 1-Kbit to 64-Kbits of user memory to accommodate a wide range of information storage and cost requirements. The user memory is divided into 4, 8 or 16 separate sections, each of which can be customized to allow different levels of read and write access, including:

- Free access
- Password protection
- Authentication
- Data encryption and message authentication codes (MACs)

These user selectable optional security features give customers tremendous flexibility in developing and deploying a secure RF solution. CryptoRF is also deliverable as modules for creation of complete RFID tags, RFID cards and thinned wafers.

**Highlights:** Stream encryption ensuring data privacy, multiple key sets for authentication and encryption, encrypted passwords with attempt counters, selectable access rights by zone, tamper sensors, compliant with industry standards.

**Advantages of Using Epoxy Glass:** High reliability, long life (10 years or more in most applications), corrosion and moisture resistant.

### MY1 Epoxy Glass

17mm thin profile round tag transponders



#### MECHANICAL

| Parameter                       | Typical Value         | Units |
|---------------------------------|-----------------------|-------|
| Substrate                       | Epoxy Glass           | -     |
| Substrate Thickness             | 110                   | µm    |
| Track                           | Cu with Ni+Au plating | -     |
| Center Hole Diameter            | 3                     | mm    |
| Max Operating Distance*         | 7 to 15               | mm    |
| Typical Punched Outer Dimension | 17.0 diameter         | mm    |
| Maximum Thickness               | 0.6                   | mm    |

\* Communication range is dependent on the reader antenna design.

#### ELECTRICAL

| Parameter                  | Typical Value | Units  |
|----------------------------|---------------|--------|
| Resonance Frequency, $f_0$ | 14.0          | MHz    |
| Write Endurance            | 100,000       | Cycles |
| Data Retention             | 10            | Years  |

#### TEMPERATURE

| Parameter | Range        | Units   |
|-----------|--------------|---------|
| Storage   | -40° to +85° | Celsius |
| Operating | -25° to +70° | Celsius |

#### Delivery Option

35mm Tape

### MX1 Epoxy Glass

13mm thin profile square tag transponders



| Parameter                       | Typical Value         | Units |
|---------------------------------|-----------------------|-------|
| Substrate                       | Epoxy Glass           | -     |
| Substrate Thickness             | 110                   | µm    |
| Track                           | Cu with Ni+Au plating | -     |
| Center Hole Diameter            | -                     | mm    |
| Max Operating Distance*         | 5 to 13               | mm    |
| Typical Punched Outer Dimension | 13.0 x 13.0           | mm    |
| Maximum Thickness               | 0.9                   | mm    |

| Parameter                  | Typical Value | Units  |
|----------------------------|---------------|--------|
| Resonance Frequency, $f_0$ | 14.5          | MHz    |
| Write Endurance            | 100,000       | Cycles |
| Data Retention             | 10            | Years  |

| Parameter | Range        | Units   |
|-----------|--------------|---------|
| Storage   | -40° to +85° | Celsius |
| Operating | -25° to +70° | Celsius |

#### Delivery Option

35mm Tape



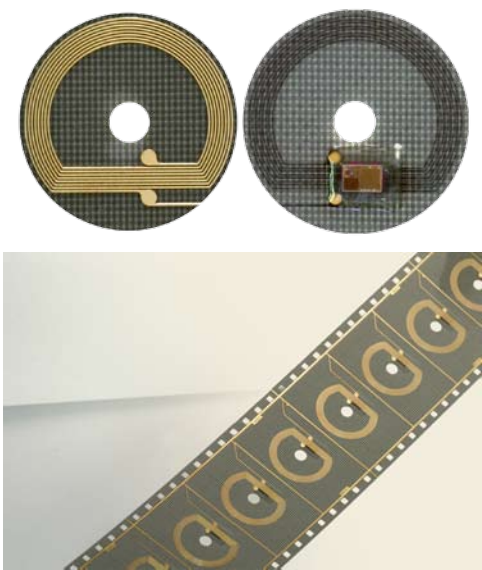
PRODUCTS

| Catalog                              | Configuration Memory | User Memory | Zones | RF Protocol          |
|--------------------------------------|----------------------|-------------|-------|----------------------|
| AT88SC0104CRF-MX1, AT88SC0104CRF-MY1 | 2 Kbits              | 1 Kbit      | 4     | ISO/IEC 14443 Type B |
| AT88SC0204CRF-MX1, AT88SC0404CRF-MY1 | 2 Kbits              | 2 Kbit      | 4     | ISO/IEC 14443 Type B |
| AT88SC0404CRF-MX1, AT88SC0404CRF-MY1 | 2 Kbits              | 4 Kbit      | 4     | ISO/IEC 14443 Type B |
| AT88SC0808CRF-MX1, AT88SC0808CRF-MY1 | 2 Kbits              | 8 Kbit      | 8     | ISO/IEC 14443 Type B |
| AT88SC1616CRF-MX1, AT88SC1616CRF-MY1 | 2 Kbits              | 16 Kbit     | 16    | ISO/IEC 14443 Type B |
| AT88SC3216CRF-MX1, AT88SC3216CRF-MY1 | 2 Kbits              | 32 Kbit     | 16    | ISO/IEC 14443 Type B |
| AT88SC6416CRF-MX1, AT88SC6416CRF-MY1 | 2 Kbits              | 64 Kbit     | 16    | ISO/IEC 14443 Type B |

**Target Applications:** Anti-counterfeiting, clone prevention and authentication, IP and brand protection, energy metering and payments, medical, safety, and security.

CryptoRF is available in many different shapes and sizes. Specially designed CryptoRF tags in a variety of shapes can be developed for high volume applications.

MY1 Epoxy Glass



Delivery Format for MY1 Module

MX1 Epoxy Glass



Delivery Format for MX1 Module

For free samples of the 4k device  
contact Atmel sales at  
[www.atmel.com/contacts](http://www.atmel.com/contacts)

