![MXIC logo]

RA Ecosystem Partner Solution
# Macronix ArmorFlash™ Memory

Solution Summary

ArmorFlash is an ideal secure flash solution for embedded systems. It is built on top of Serial NOR flash by providing a secure ID, authentication, and an encrypted link to protect valuable data stored in it. ArmorFlash offers a physical unclonable function (PUF) that makes use of a semiconductor's biometrics, which are characteristics derived from fabrication that can be used for encoding or identification. These solutions are available for the Renesas RA family of MCUs.

Performance/Versatility

- Standard SPI/QSPI/OctaBus interface
- Non-volatile monotonic counters
- True random number generator (TRNG)
- PUF support
- Hardware crypto engines
- Symmetric and asymmetric key provision and management
- Secure areas for authentication/encryption/decryption
- Standard areas for authentication

Diagrams/Graphics
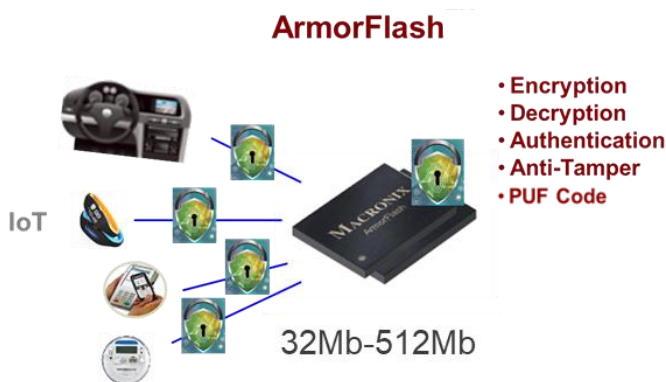
Serial Flash vs. ArmorFlash Data Flow
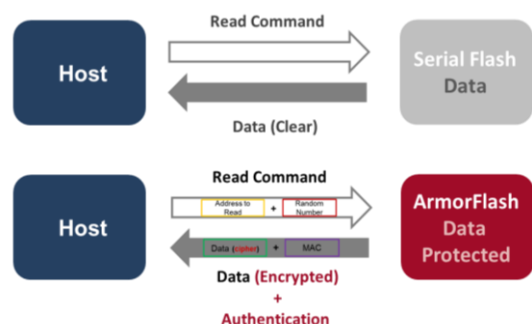
Target Markets and Applications

- Transportation
- Energy infrastructure
- Medical instruments and appliances
- Cellular network
- Enterprise and data centers
- Industrial 4.0

- Connected vehicles
- Secure data storage for embedded systems
- Secure flash for firmware storage and updates
- Root key storage on server platforms
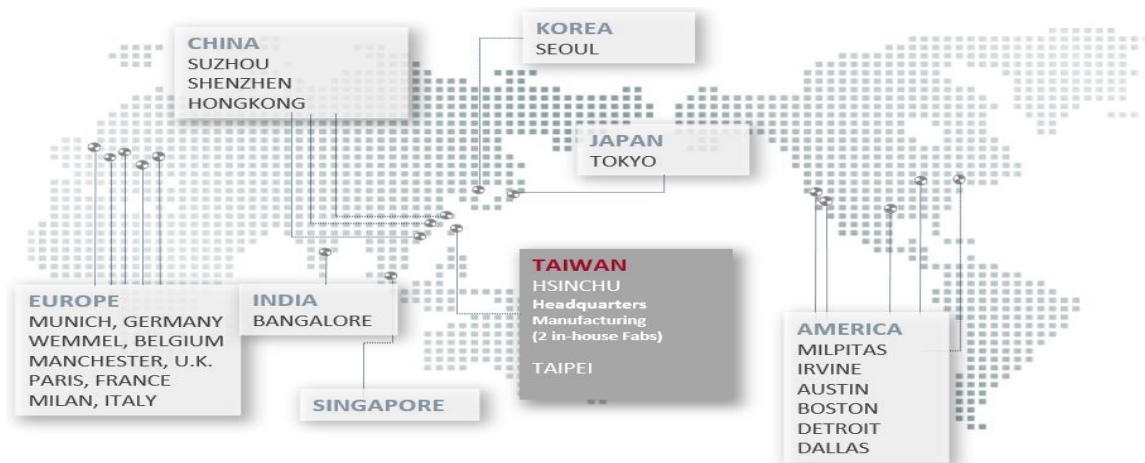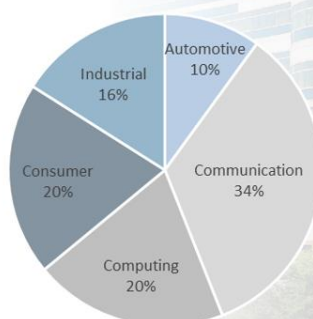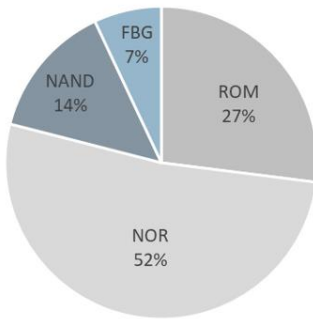- Trusted storage for automotive
- Unique identification for IoT, RoT

https://www.macronix.com/en-us/products/Pages/ArmorFlash.aspx

2023.05

Macronix at a Glance

1989 Founded in Taiwan

8,800+ Patents Granted (~Aug, 2022)

US$ 1,805Million 2021 Revenue

4,000+ (22% in R&D) Employees Worldwide

2 in-house Fabs Complete In- house Wafer Manufacturing

200mm Fab: NOR ~50K
300mm Fab: NOR/NAND ~50K Design Capacity (wafer/month)

▌2021 Revenue by Products ▌2021 Flash Revenue by Applications

2021 Revenue by Products:
- FBG 7%
- NAND 14%
- ROM 27%
- NOR 52%

2021 Flash Revenue by Applications:
- Automotive 10%
- Industrial 16%
- Communication 34%
- Consumer 20%
- Computing 20%

CHINA
SUZHOU
SHENZHEN
HONGKONG

KOREA
SEOUL

JAPAN
TOKYO

EUROPE
MUNICH, GERMANY
WEMMEL, BELGIUM
MANCHESTER, U.K.
PARIS, FRANCE
MILAN, ITALY

INDIA
BANGALORE

SINGAPORE

TAIWAN
HSINCHU
Headquarters
Manufacturing
(2 in-house Fabs)
TAIPEI

AMERICA
MILPITAS
IRVINE
AUSTIN
BOSTON
DETROIT
DALLAS

ArmorFlash
Security
- AEC-Q100 Compliant
- NIST Cryptographic Algorithm Validation Program

LybraFlash
NOR NAND
- High Reliability & Longevity
- The Optimum Solution for Gigabit Flash Memory

OctaBus Memory
High Performance
- Extreme Speed: 250 MHz with 500 MB/s
- Power "Instant-on" GUI Application

Ultra Low Power
Low Power
- Wide Range Vcc 1.65 – 3.6V
- Ultra Low Vcc 1.2 V
- Power Saving & Simple System Design

Contact us : [Customer Feedback (mxic.com.tw)](mxic.com.tw)