Unique ID EEPROM for IoT applications

ST EEPROM

IoT market

IoT application - examples

IoT devices must be uniquely and reliably identifiable to enable efficient onboarding, fleet management, and updates at scale. Without robust hardware identity, manufacturers struggle with traceability, anti-counterfeiting, and consistent attachment to cloud services.

Smart home

- Smart thermostats
- Connected lighting
- Access control

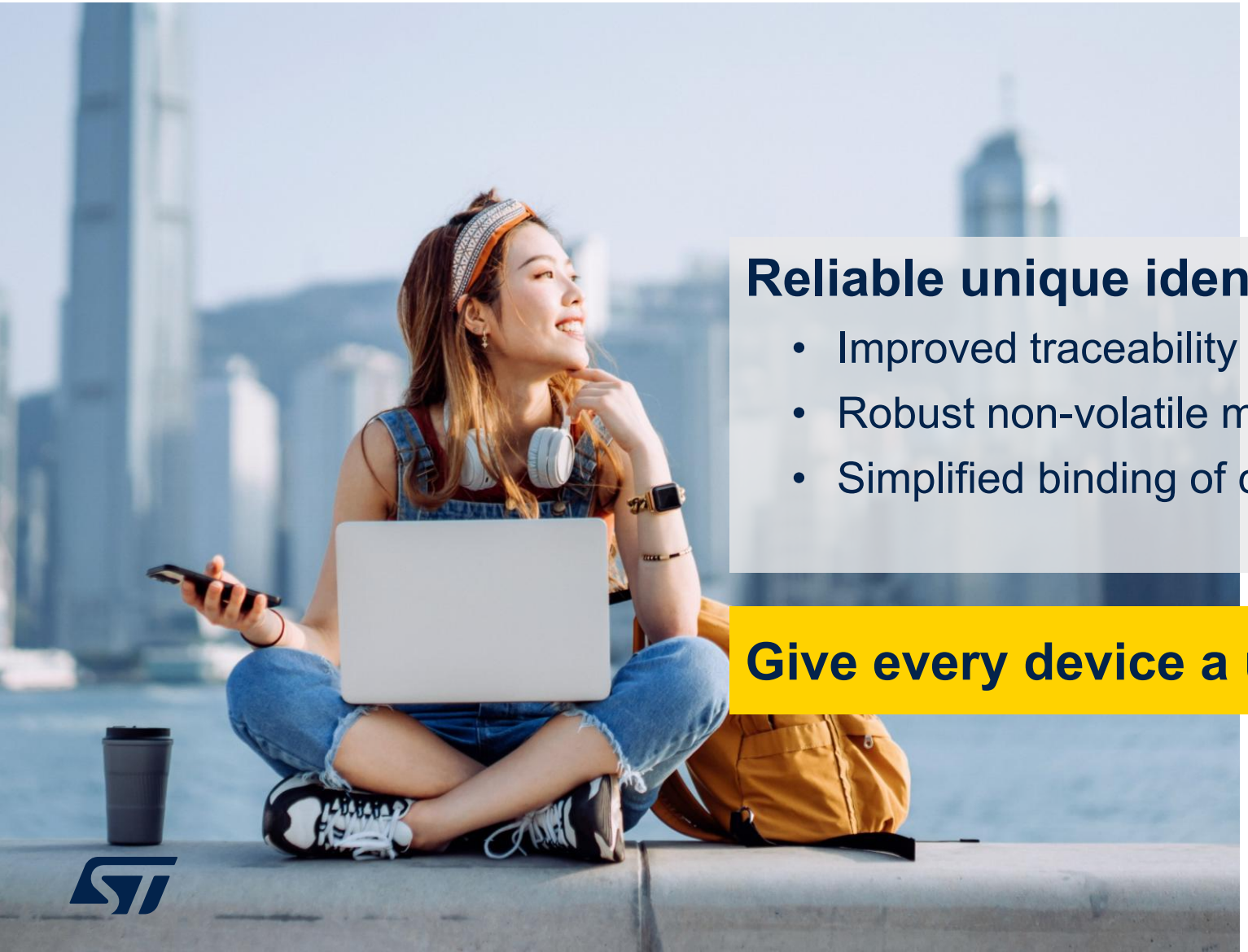
Industrial & smart infrastructure

- Industrial sensors
- Motor drives & controllers
- Smart meters & grid devices

Smart city & retail

- Smart street lighting
- EV charging stations
- Parking sensors

How Unique ID EEPROM enhances IoT applications

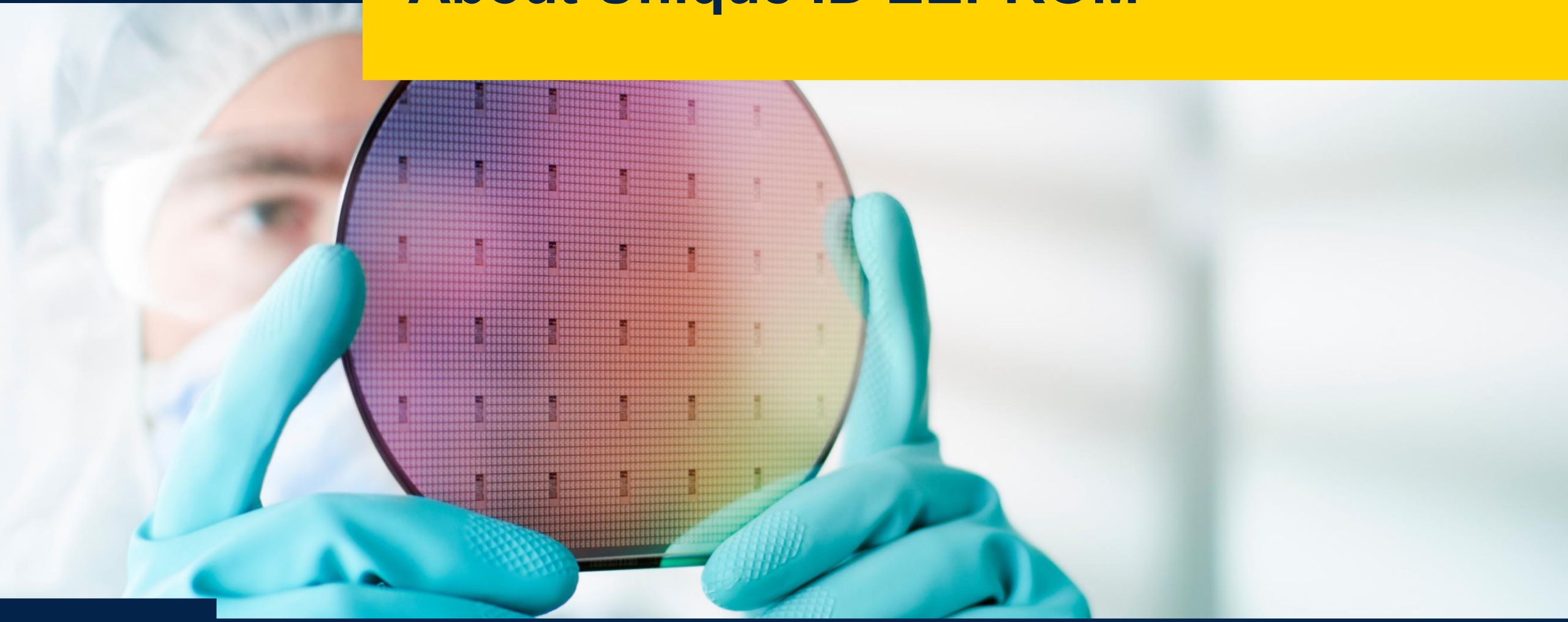


Reliable unique identification

- Improved traceability and life cycle management
- Robust non-volatile memory for data and settings
- Simplified binding of credentials and device information

Give every device a unique identifier

About Unique ID EEPROM



Unique ID EEPROM introduction

Application benefits

Robust data storage
Very high endurance and ultra-long data retention

Easy embedded integration
with standard I²C and 8-pin packages

Ready-to-use unique ID
Factory-programmed, guaranteed-unique

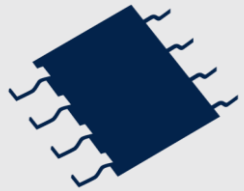
A unique product

Includes reliable user memory area and a factory-programmed 128-bit unique ID.

Memory densities
32 Kbit
64 Kbit
128 Kbit
256 Kbit
512 Kbit
1 Mbit
2 Mbit

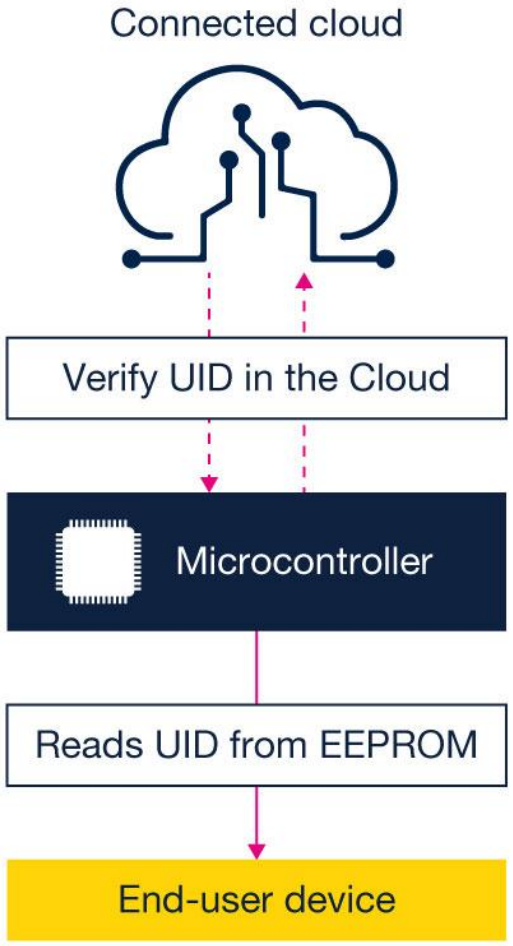
Package type*

SO8N



* Other packages on demand

How the Unique ID EEPROM enables reliable device identity?



1. The MCU reads a factory-programmed unique ID stored in the EEPROM and uses it as the device's immutable identity.
2. This unique ID is sent to the cloud, where it is verified before access to services or data is granted.
3. Assigning each end-user device enables reliable identification and traceability.

Unique ID EEPROM
End-to-end traceability

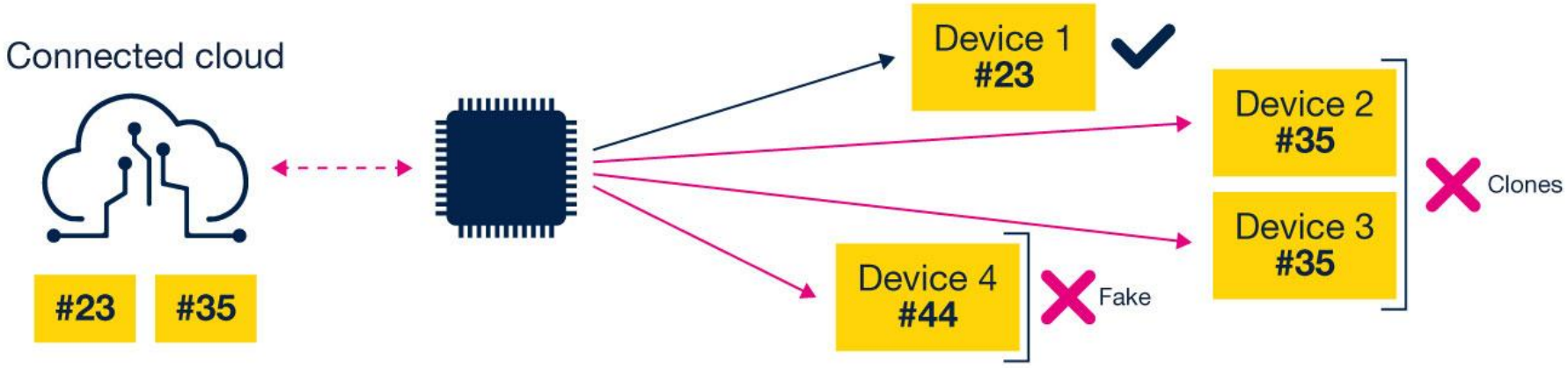
Enables unique tracking of each device across its life cycle for onboarding, maintenance, and incident analysis

The enabling features	What this means for end users
Factory-programmed unique ID per device	Trusted, unique devices
Easy access to the EEPROM's unique ID & data	Full life cycle traceability
Cloud-verifiable device identity	Easier onboarding and service

Unique ID EEPROM
Cloud onboarding

Cloud accepts only devices whose Unique ID matches the trusted list, blocking clones and fakes at onboarding

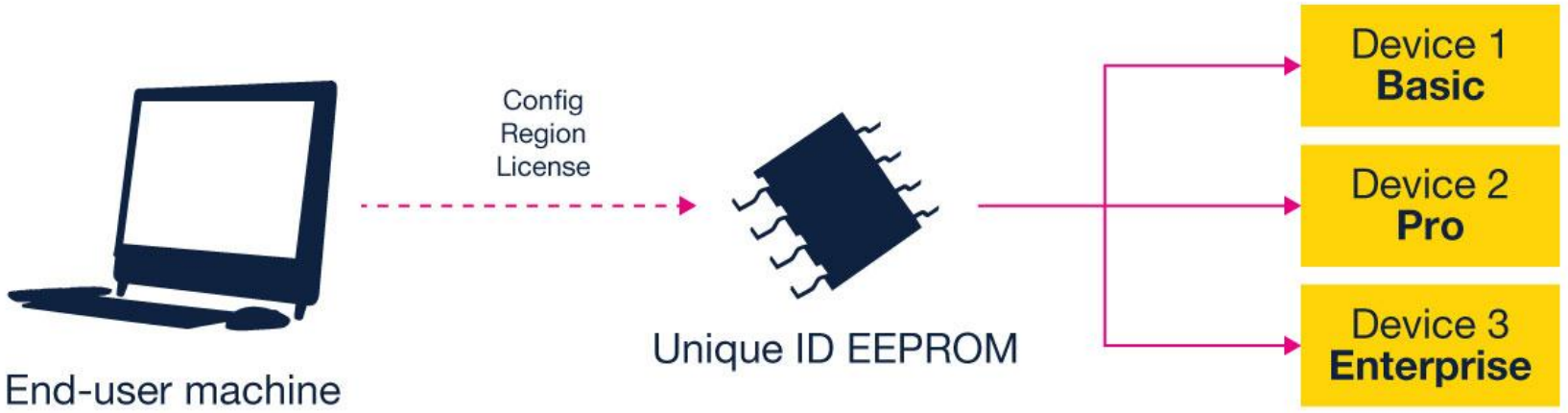
The enabling features	What this means for end users
Unique ID checked during cloud onboarding	Only trusted devices connect to the cloud
Cloud whitelist of valid device UIDs	Clones and fake devices are detected
Rejects duplicates and unknown IDs	Simpler, automated controlled provisioning



Unique ID EEPROM
Configuration, personalization, and licensing

One end-user machine, uniquely personalized and licensed per device with a unique ID EEPROM

The enabling features	What this means for end users
Stores per-device config and regional profile	Fewer hardware variants
Unique ID anchors licenses and feature levels	Flexible offers and pricing models
Updates select config/firmware using UID	Evolving services without changing hardware



Unique ID EEPROM

Key takeaways

128-bit unique factory-programmed serial number **(UID)** with unicity guaranteed by ST

Improved identification and verification to detect counterfeiting and ensure the use of only authorized devices

Improved traceability facilitating tracking and compliance of each device or module throughout its life cycle

Our technology starts with You

Find out more at www.st.com/EEPROM-UID