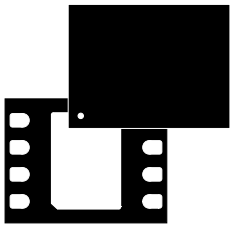
ST25DA-C

Data brief

Secure NFC dynamic tag for Matter commissioning and crypto operations



UFDFPN8 (2 x 3 mm)

Product status
ST25DA-C

Features

Contact interface

- 1.62 V to 3.3 V supply voltage range
- ESD protection:
  - Human body model (HBM): 6 kV for digital and antenna pads
  - Charge device model (CDM): 1 kV based on a STMicroelectronics module
- Two-wire I²C serial interface supporting fast mode (up to 400 kHz)

Contactless interface

- Power supplied by 13.56 MHz carrier
- Complies with ISO/IEC 14443 Type A
- Complies with NFC Forum Type 4 Tag
- 78 pF tuning capacitor, with automatic antenna tuning for optimized performance
- Automatic CPU frequency adaptation for optimum power consumption
- 7-byte unique identifier (UID) on each die

Security features

- Secure MCU
- Active shield
- Monitoring of environmental parameters
- Protection mechanism against faults
- Protection against side-channel attacks
- Unique serial number on each die
- NIST 800-90B compliant true random-number generator (TRNG)
- Elliptic curve digital signature algorithm (ECDSA) with SHA-256 for digital signature generation and verification
- Elliptic curve Diffie-Hellman (ECDH) for key establishment
- Symmetric cryptography with AES-CCM for data confidentiality and integrity
- Symmetric cryptography with AES-CTR for data privacy

Matter services

- Stores Matter onboarding data in NFC Forum Type 4 tag
- Performs commissioning over NFC Transport Layer (NTL):
  - Powered either by VCC pin or 13.56 MHz contactless carrier
  - SPAKE2+
- Secure storage for certificates and keys needed for Matter commissioning
- Provides Matter signature generation and verification over I²C

Memory

- More than 3 KB of non-volatile memory is allocated for Matter certificates, keys, and attributes.

Operating temperature

- From -25°C to +85°C

Package

- 8 pins UFDFPN8 (2 x 3 mm)

All packages are ECOPACK2 compliant.

1 Description

The ST25DA-C device is an NFC dynamic tag integrated circuit providing the upcoming Matter commissioning flow over NFC, and cryptographic services.

The ST25DA-C offers a solution for commissioning a new device on a Matter network without requiring external power. On the NFC interface, it offers NFC Forum T4A Tag and Matter NFC Transport Layer applications. It implements secure storage, cryptographic primitives, and protocols to handle Matter Passcode-Authenticated Session Establishment (PASE) based on SPAKE2+ protocol, authentication of Matter device conformance with Matter device attestation, Node Operational Certificate (NOC), offline configuration of the operational network (Thread), and online signature service required for Certificate-Authenticated Session Establishment (CASE).

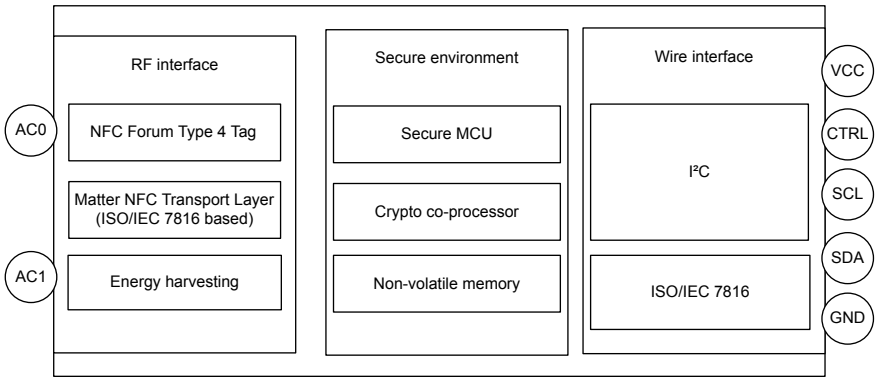
Based on a Common Criteria (CC) certified secure hardware, the device is designed to be the NFC component of a smart IoT device, acting as an NFC secure companion to the main microcontroller.

It exposes an NFC Forum Type 4 interface to communicate with a smartphone, and a high-speed (400 kHz) I²C interface to communicate with the main microcontroller.

1.1 Block diagram

The ST25DA-C device is depicted in the following logical block diagram:

Figure 1. Logical block diagram



DT72257V1

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
10-Dec-2024	1	Initial release.
03-Nov-2025	2	Updated: • Section Features • Section 1: Description • Section 1.1: Block diagram
05-Nov-2025	3	First public release.

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