



life.augmented

ST25DV-I2C-EVO

Product presentation



Main ST25DV-I2C-EVO market segments

Smart industry



Factory automation,
Industrial lighting

Smart Home



Home automation,
Security Systems

Smart City



Metering, Street Lighting

Smart Things



Healthcare, Wellness

Smart Banking



CVV credit card, Badge

ST25DV-I2C-EVO combined use cases

Device programming in production



- **In-the-box** quick programming thanks to **Long range**
- **Simple** and **flexible**

Servicing and maintenance



- Download records history **contactless**
- **Update** parameters even if device is off
- Quick **FW upgrade** via **Fast Transfer Mode**

End user experience



- Access to **Web page** (URL link)
- Get link for Android **application** (AAR)
- e-warranty card & customer **registration**

Pairing for wireless network



- **ID Activation**
- Parameter **settings**

Convenient data logging



- Data **download**
- Data **tracking**
- Fast data **logging** thanks to fast **EEPROM** write

Battery less applications



- Product without battery thanks to **Energy Harvesting** feature

Typical NFC type 5 range

NFC phones



Up to 7 cm / 3in.
ISO15693 (26kb/s)



ST25DV-I2C-EVO

EEPROM

RFID readers



Up to 40cm / 1.3ft

ISO15693 (26kb/s)



ST25DV-I2C-EVO

EEPROM



Up to 1.0 m / 3ft

ISO15693 (26kb/s)



ST25DV-I2C-EVO

EEPROM

Reduce your antenna dimension and make your product more robust thanks to ISO15693

ST25DV-I2C-EVO product

ST25DV-I2C-EVO chip belongs to ST25 NFC / RFID Tags & Readers family

- **ST25DV-I2C-EVO main features**

- NFC Forum Tag Type 5 certified / ISO15693 RF interface
- Two-wire, slave I²C up to 1MHz interface (I²C fast mode) - 1.8V to 5.5V
- Improved I2C write time in EEPROM
- Up to 64kbit EEPROM memory
- Multiple 64-bit passwords for data protection
- 40 years data retention & 1Mcycles erase/write
- 9 Interrupts modes, configurable on dedicated GPO pin (MCU wake-up, ...)
- Energy harvesting through RF
- Fast Transfer Mode, thanks to 256 Bytes buffer
- Extended temperature range, industrial grade 8
- 8 pin or 12 pin package versions

- ST25DV-I2C-EVO is the natural evolution of ST25DV-I2C or M24LR series

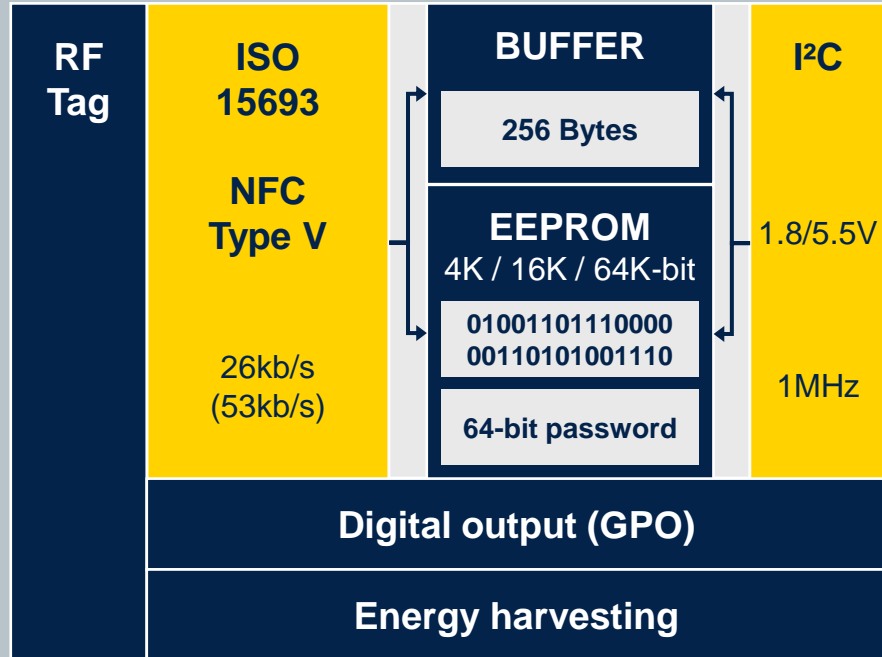


ST25DV-I2C-EVO

dynamic NFC tag



ST25DV04KC / 16KC / 64KC



SO8



FPN8



WLCSP10



TSSOP8



FPN12

Use cases

- Fast data exchange with NFC phones / HF readers
 - Fast data transfer for MCU FW upgrade, fast data exchange
 - Parameters settings and update, with in-the-box programming
 - Data log download

Key Features

- **ISO15693** and **NFC Type V**
- **Fast data transfer** thanks to 256 Bytes buffer
- I2C write on **16-Byte page**
- Low Power mode, < 1µA power consumption in Standby
- -40 to **+125°C** (I2C) industrial Grade 8 temperature range
- **Energy harvesting** function through RF
- I2C enhanced features (write time improved, address configurable, access priority...)

Key Benefits

- Smart applications using a **flexible interrupt GPO**
- Enhanced protection with multiple **64-bit passwords**
- Same 28.5pF internal RF tuning capacitor, as in ST25DV-I2C & M24LR



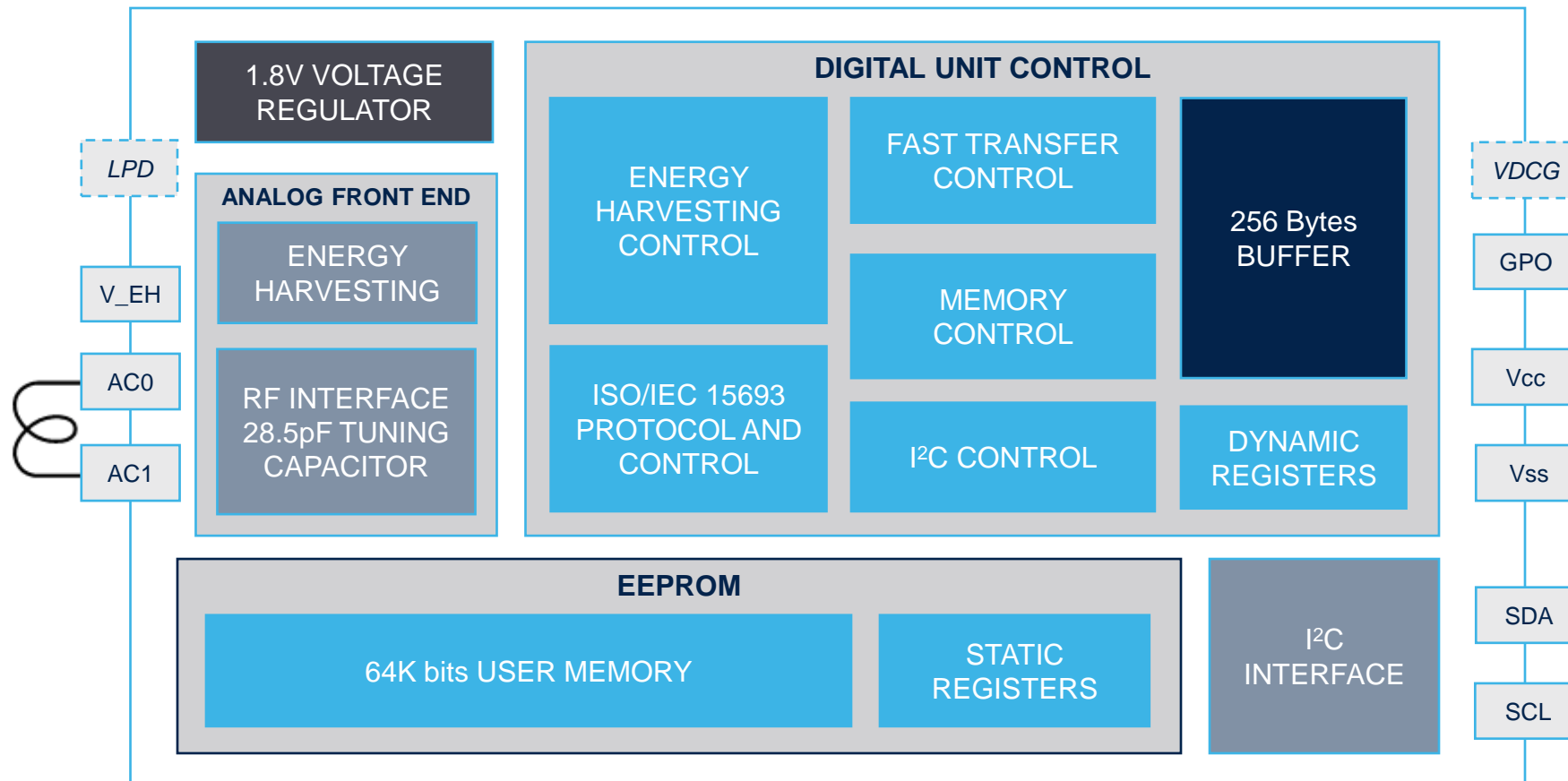
ST25DV-I2C-EVO

key features

ST25DV-I2C-EVO	
Contactless Interface	ISO15693 / NFC Forum Type 5
RF range	Long range (up to 1m)
RF speed	26kbps (up to 53kbps)
Single supply voltage	1.8V to 5.5V
Serial Interface	I2C @1MHz
Fast Transfer mode	Yes (256B buffer)
Extra features	I2C write on 16-Byte page size Configurable I2C address GPO: 9 interrupts modes (Open Drain or CMOS) Energy Harvesting, Low Power mode
Memory format & size	EEPROM data - 4k / 16k / 64k-bit
Data retention	40-year at 55°C
Erase/Write cycles	1M cycles at +25°C / 600k cycles at + 85°C 500k cycles at +105°C / 400k cycles at +125°C
Data protection	Password 64-bit
Temperature range	Grade 6: -40°C to +85°C Grade 8: -40°C to +125°C (105°C RF)
Package	SO8 / TSSOP8 / FPN8 / FPN12 / WLCSP10

ST25DV-I2C-EVO

Block diagram



**LPD, VDCG pin are only available with FPN12 / WLCSP10 package version*

ST25DV-I2C-EVO

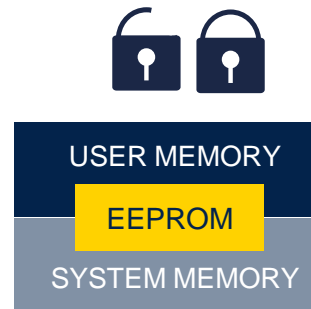
Data protection

- User and System memory data protection thanks to a password
 - Password size 64-bit $\rightarrow 1.8 \cdot 10^{19}$ combinations



Access from RF

- 3x passwords
- Each memory area can be individually protected by 1 out of 3 available passwords.
- Each area can have a Read / Write access conditions set (area 1 always readable).



Access from I2C

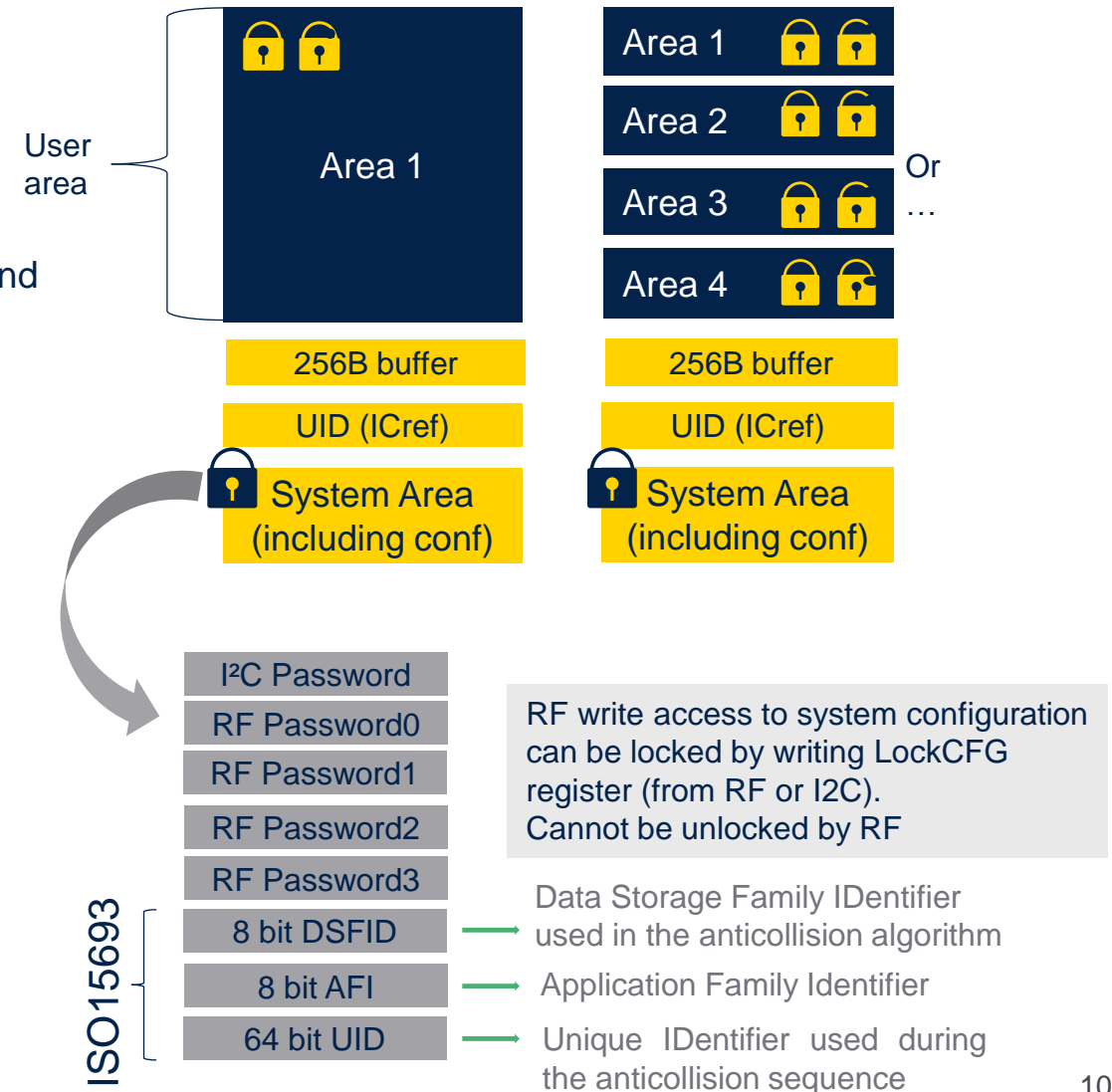
- 1x password
- Each memory area can be individually protected by 1 available password.
- Each area can have a Read / Write access conditions set (area 1 always readable).

+ 1x configuration password to access configuration bytes in system memory (specific from RF, but same password as memory access password from I2C)

ST25DV-I2C-EVO

Memory mapping & password management

- High EEPROM density
 - 04k-bit / 16k-bit / 64k-bit
- User EEPROM area configurable in flexible areas (up to 4, granularity 32 bytes)
 - Each area is individually read-/write- protected by password command
→ **64-bit password**
- System EEPROM area
 - Access protected by **64-bit password** (Write)
- Specific block used to store a **64-bit UID**
 - Unique Identifier accessible from I²C (read only)
 - Its value is written by ST on the production line
 - used during the anticollision sequence (Inventory)
- 256 Bytes buffer
 - Dedicated Fast Transfer mode
 - Need Vcc ON to be accessible
 - When enabled, write access to user memory (EEPROM) is disabled
- 5 additional **64-bit** blocks that stores:
 - 1 I²C password (only accessible from I²C)
 - 1 RF configuration password (access from RF),
 - 3 RF area access password codes (access from RF)

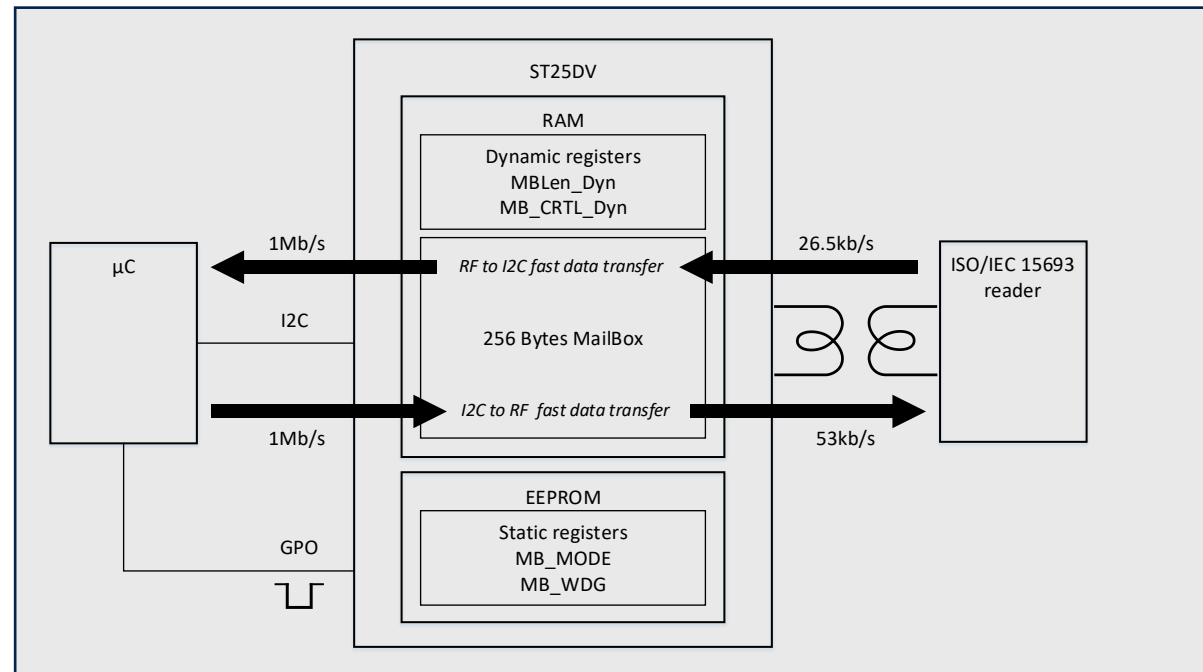


ST25DV-I2C-EVO

Fast transfer mode

- Fast Transfer Mode Overview

- Fast data transfer between μ C and RF reader, ensured through 256 bytes buffer
- RF link up to 53Kb/s (26.5kb/s in write) / I2C link up to 1Mb/s
- Interruption on GPO pin to wake μ C on message read and/or message write.
- Status register to inform RF reader or μ C of current message status.
- Programmable watchdog to automatically release the system.



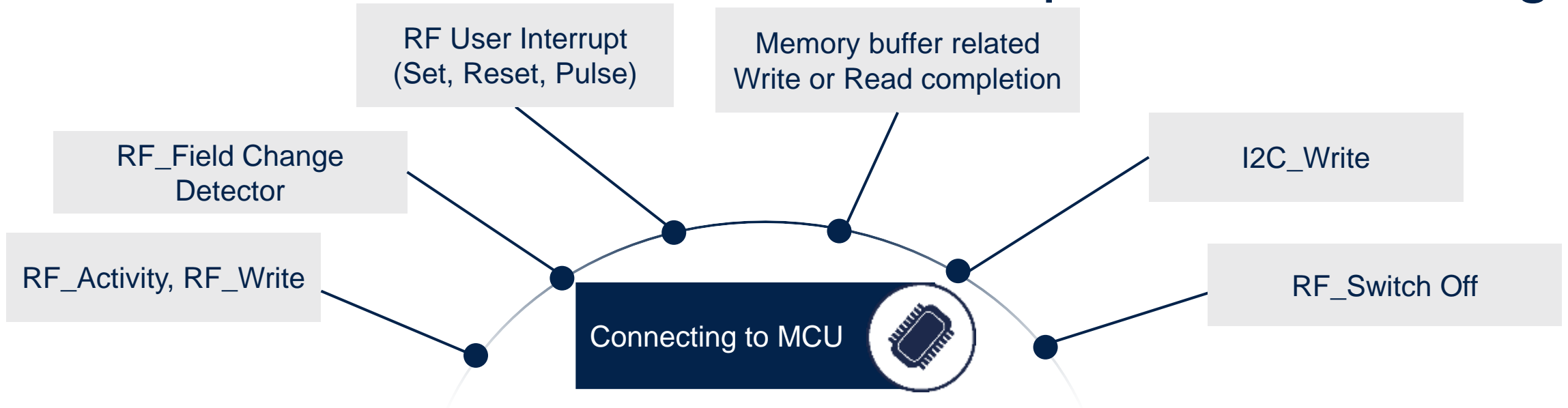
Prerequisites

Vcc ON supply must be active to use the 256 Bytes buffer system

Put message is only possible when buffer is empty and enabled

ST25DV-I2C-EVO

Flexible interrupts for more usages



GPO pin → one pin, several options

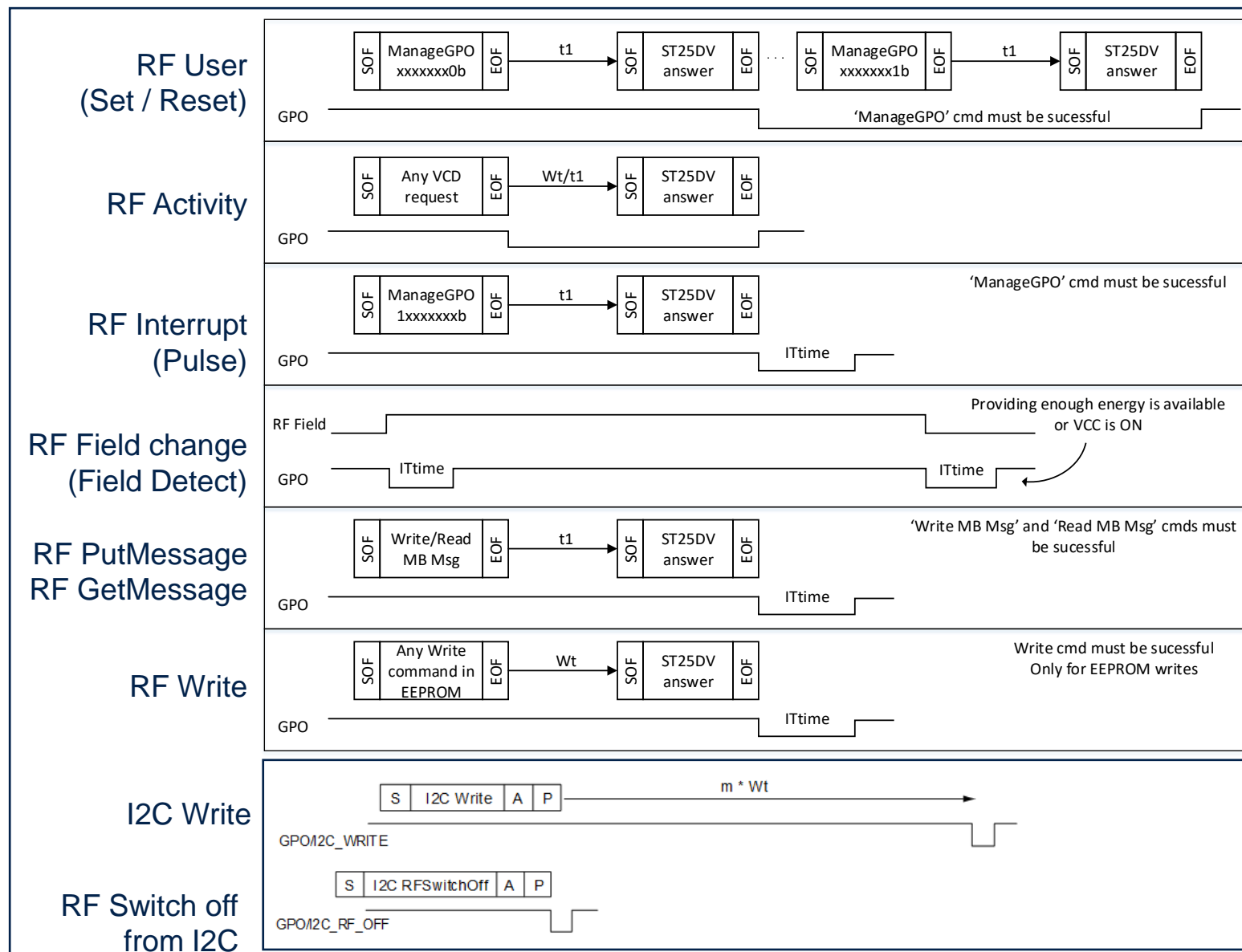
- User set / reset, pulse
 - Microcontroller wake up
- RF related actions
 - Signaling RF activity / write from RF into EEPROM.
- 256 Bytes memory buffer related
 - End of message write or end of message read in memory buffer
- Field detect
- I2C related actions
 - Signaling end of write from I2C into EEPROM
 - RF switched off from I2C master
- Output in Open Drain or CMOS

Open-Drain GPO:
External pull-up resistor
(>4.7 KΩ)

ST25DV-I2C-EVO

GPO interruptions

- GPO interruptions chronograms



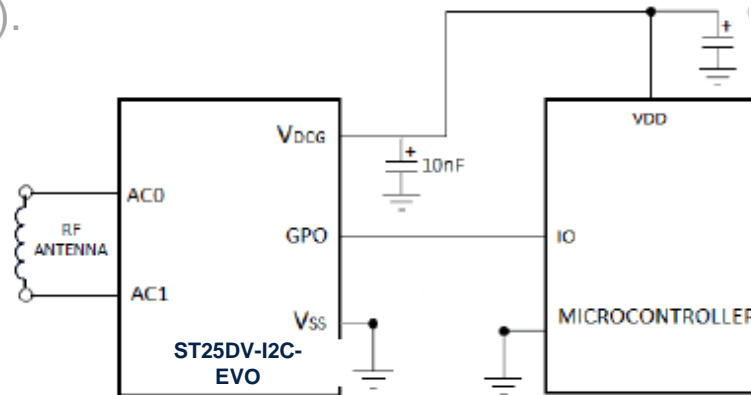
Open drain version.
CMOS version signal is inverted.

ST25DV-I2C-EVO

GPO output options

- GPO CMOS

- CMOS interrupt active at High level
- Signal moving from Low to high level (rising edge)
- No need of any external pull-up resistor or RC filtering or transistor.
 - The capacitor (10nF) on VDCG power supply is recommended but not mandatory.
- VDCG and Vss required. VDCG to power CMOS GPO output
 - Current leakage on VDCG pin <100nA (max).



- GPO Open Drain

- Open drain interrupt active at Low level
- Need external pull up resistor, >4.7 K Ω

CMOS interrupt signal
=> Active High



Open-Drain interrupt signal
=> Active Low



ST25DV-I2C-EVO

I2C interface

- I²C (Inter-Integrated Circuit) is typically used for connecting ST25DV-I2C-EVO to a micro-controller. It features:

- Slave I²C serial interface supports 1MHz protocol (I²C fast mode)
- Single supply voltage: 1.8V to 5.5V
- Configurable I2C address
- Random and sequential read modes
- Automatic address increment
- Byte and multiple-byte write modes (up to 256 bytes, 16-byte pages internally)
- No roll over, no cross-zone border

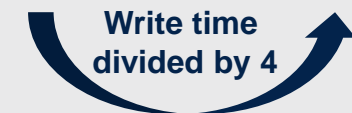
- I²C uses only two lines

- Serial Clock (SCL)
 - Input signal used to strobe all data in and out of the device
- Serial Data (SDA), Open drain
 - Bidirectional signal is used to transfer data in or out of the device
 - Pull-up resistor must be connected from SDA to Vcc

**Write time comparison on ST25DV products
(ms)**

Nb Bytes to write	ST25DV-I2C	ST25DV-I2C EVO
64	81	21
256	325	86
512	651	172
1024	1303	343

Write time
divided by 4



Thanks to 16-Byte page I2C access, write time is equivalent on 16Kb standard EEPROMs



Energy harvesting for battery less design

- The ST25DV-I2C-EVO offers Energy Harvesting mode to power external components
 - Part of the non necessary RF power received by the ST25DV-I2C-EVO on the AC0-AC1 RF input is delivered through the V_EH pin in order to supply external devices.
- The ***analog output pin*** will be able to deliver the analog voltage ***V_EH*** whenever the RF field strength is sufficient
 - Delivery of Harvest Energy (**up to a few tens μW**) on V_EH pin depends on the value of the EH_enable bit located in the dynamic register EH_Dyn
 - Harvest Energy is available at host as soon as surplus energy is available (just limited by RF communication needs)
 - Available Energy depends on antenna, Reader's modulation rate, load and whether RF communication is simultaneously required



Energy harvesting
from NFC RF field

NFC connectivity

Up to a few mA
with NFC reader

ST one-stop-shop
with low power MCU
and sensors





ST25DV-I2C-EVO

Energy harvesting capabilities

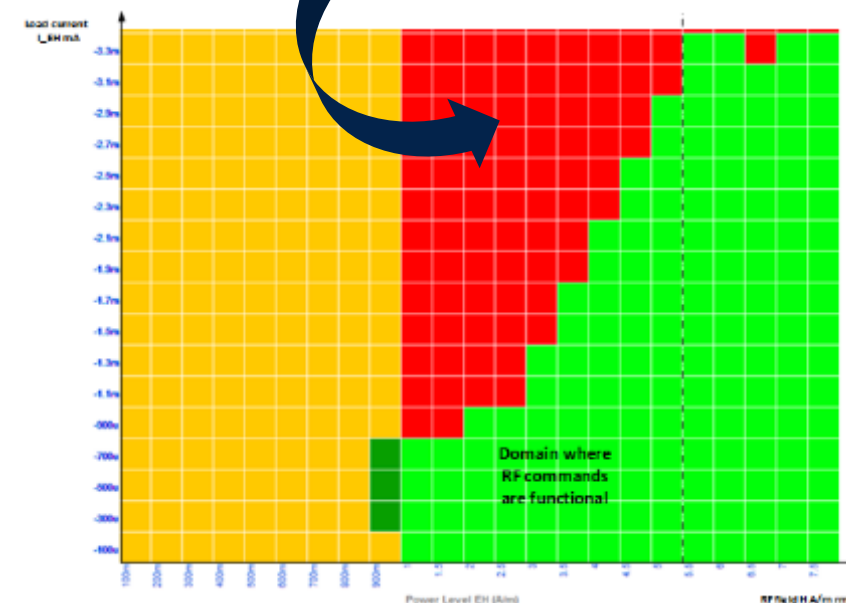
- The ST25DV-I2C-EVO offers Energy Harvesting suited for your battery less application
 - Guidelines
 - Reader's **AM= 100%** (NFC Forum & ISO15693)

H_EH	A/m rms	1	1,5	2	2,5	3	3,5	4	4,5	5
V_EH	V	3,25	3,25	3,2	3,15	3,1	2,99	3,05	3,13	3,31
I_EH	mA	0,7	0,7	0,9	1,1	1,3	1,9	2,1	2,7	3,1
P_EH	mW	2,275	2,275	2,88	3,465	4,03	5,681	6,405	8,451	10,26

- Reader's **AM= 10%** (ISO15693)

H_EH	A/m rms	1	1,5	2	2,5	3	3,5	4	4,5	5
V_EH	V	3,25	3,25	3,2	3,15	3,1	2,99	3,05	3,13	3,31
I_EH	mA	0,7	0,7	0,9	1,1	1,3	1,9	2,5	3,3	4,3
P_EH	mW	2,275	2,275	2,88	3,465	4,03	5,681	7,625	10,33	14,23

Energy Harvesting
is still available in this
zone, but no RF
communication possible

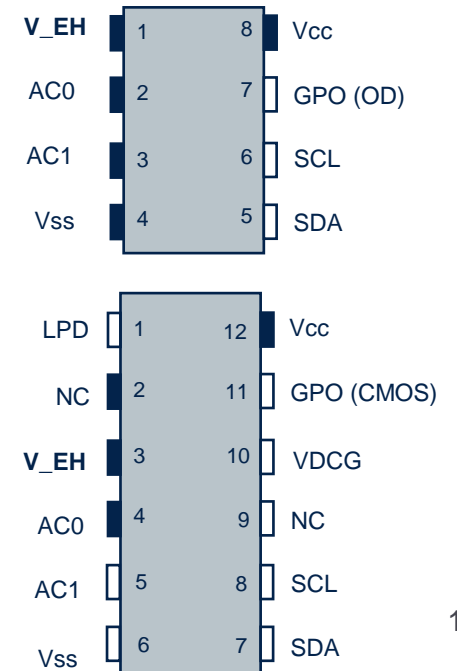


ST25DV-I2C-EVO

Energy harvesting configuration

- The ST25DV-I2C-EVO offers Energy Harvesting mode to power external components through the analog output pin V_EH.
 - The Energy Harvesting mode allows to deliver a part of the non necessary RF power received by the ST25DV-I2C-EVO on the AC0-AC1 RF inputs in order to supply external devices.
 - To deliver supply voltage on V_EH pin, the RF field must be present (Field_ON) and Energy harvesting must be enabled (EH_EH = 1)
 - In case the RF field strength is insufficient or when Energy harvesting mode is disabled, the analog output pin V_EH goes into high-Z state and Energy Harvesting mode is automatically stopped.
 - Delivered power is dependent on field power and load
 - Power is delivered at V_EH pin as soon as RF_Field is present and sufficient
 - 2 control registers (no additional configuration required):
 - EH_MODE allows to force Energy Harvesting at boot or on demand (R/W)
 - EH_CTRL_Dyn allows to switch Energy Harvesting on the fly, whatever the EH_MODE

EH_CTRL_Dyn	Bit description
EH_EN	enable or disable energy harvesting on the fly (R/W)
EH_ON	indicates if energy is delivered on V_EH pin
Field_ON	indicates if RF field is present (RO)
Vcc_ON	indicates if VCC supply is provided (RO)



ST25DV-I2C-EVO

RF interface & tuning capacitance

- The internal RF tuning capacitance is 28.5pF which is allowing antenna design from Class 1 to Class 6 form factor.

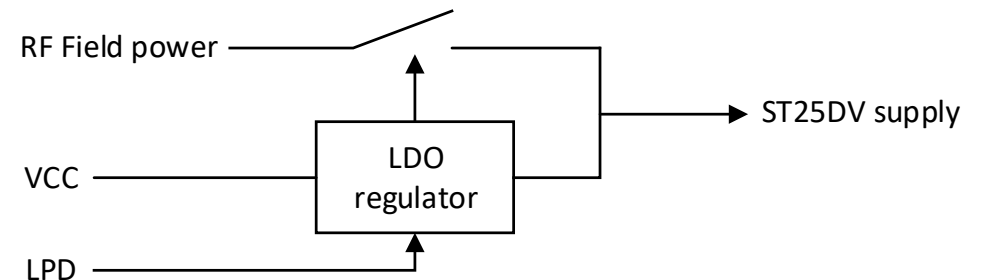
	ST25DV-I2C-EVO
Standard	Based on ISO15693 (2019) NFC Forum type V
Main carrier frequency	13.56MHz
Data sub-carrier frequency	+ 424KHz
Optimal frequency tuning	13.6MHz – 14MHz
Internal capacitor (measured at 0.5V)	28.5pF (*)
Recommended internal capacitor value for antenna design	29pF
Down link speed	Up to 53kbits/s
Single block programming time	< 5ms
Multiple block programming time (max 4 blocks)	< 20ms

(*) equivalent to 27.5pF internal capacitor value as for M24LR

ST25DV-I2C-EVO

Power management & low power mode

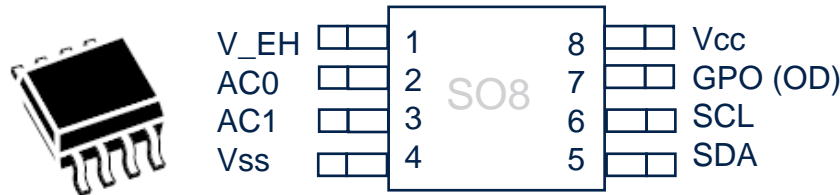
- Power supply
 - 2 possible supply sources: RF field and VCC
 - ST25DV-I2C-EVO is supplied by VCC, if present
 - Access to user memory and system configuration is possible with RF and/or VCC
 - Access memory buffer is possible only if VCC is present
 - VCC: 1.8V to 5.5V. Internal LDO regulator on VCC
- Low power mode (with FPN12 package)
 - LPD pin is used to control LDO regulator
 - When set high, LDO is disabled (power consumption ~ 1 μ A at VCC=1.8V)
 - ➔ I2C access is disabled (but RF access still possible)



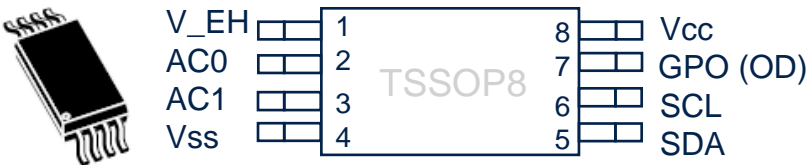
ST25DV-I2C-EVO

Various packages

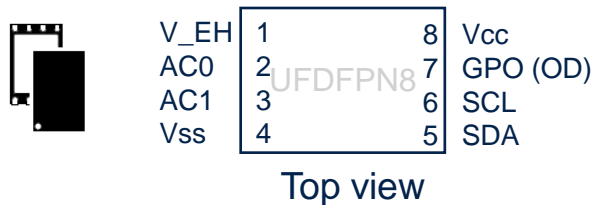
- SO8N Package (4.9x3.9mm)



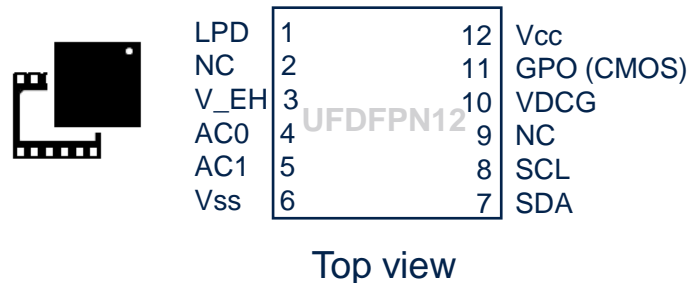
- TSSOP8 Package (3x4.4mm)



- UFDFPN8 Package (2x3mm)



- UFDFPN12 Package (3x3mm)



- WLCSP Package (1.5x1.7mm), thin, 10 bumps, 400um pitch



3 pinouts available

8 pins : SO8, TSSOP8, UFDFPN8

Open Drain GPO (needs external pull-up)

10 pins : WLCSP

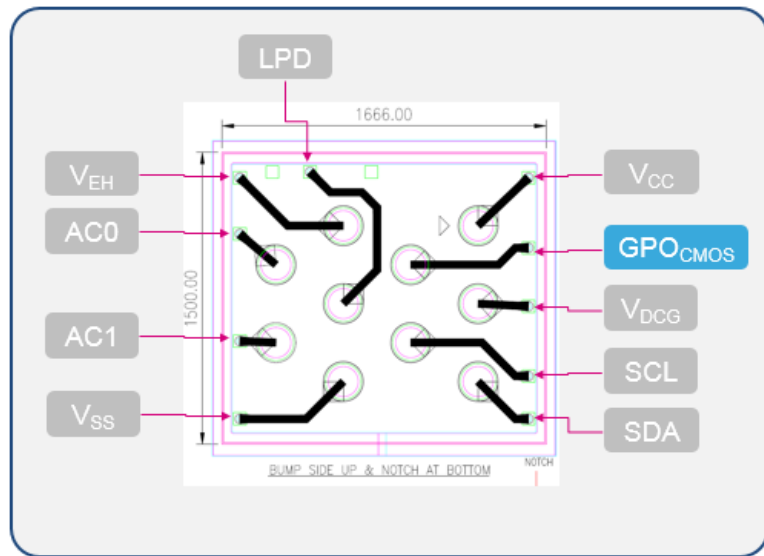
CMOS GPO (with VDCG supply pin), LPD input

12 pins : UFDFPN12

CMOS GPO (with VDCG supply pin), LPD input

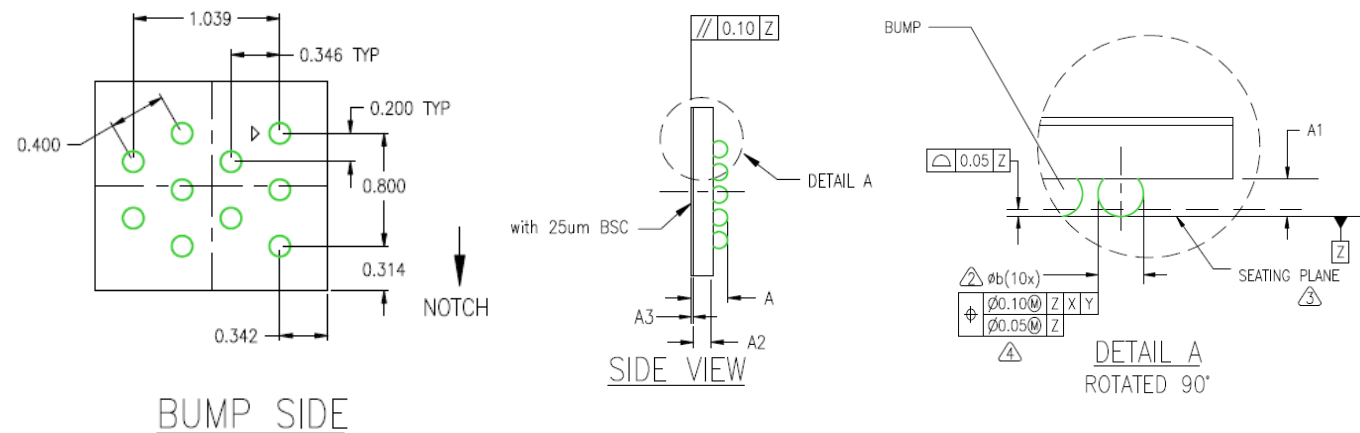
ST25DV-I2C-EVO in WLCSP

- ST25DV04KC in WLCSP
 - Layout → 10 bumps, 400μm pitch
 - Bump metallurgy → SAC 405
 - Backside coating → 25μm, black



Dimensions

DIMENSION	MINIMUM	NOMINAL	MAXIMUM
A	0.265	0.295	0.325
A1	0.080	0.095	0.110
A2	0.150	0.175	0.200
A3	—	0.025	—
b	0.155	0.185	0.215
NUMBER OF BUMPS: 10			





ST25DV-I2C-EVO

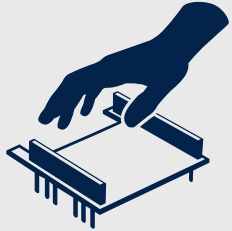
Product part numbers



ST25DV-I2C-EVO	Package	4k-bit	16k-bit	64k-bit
Dynamic NFC Type 5 Tag ISO15693 + I2C IF + GPO + Fast Transfer Mode + Energy Harvesting + Extended Temperature + I2C enhanced features	SO8 SO8 TSSOP8 TSSOP8 UFDFPN8 UFDFPN8 UFDFPN12 UFDFPN12 WLCSP10	ST25DV04KC-IE6S3 ST25DV04KC-IE8S3 ST25DV04KC-IE6T3 ST25DV04KC-IE8T3 ST25DV04KC-IE6C3 ST25DV04KC-IE8C3 ST25DV04KC-JF6D3 ST25DV04KC-JF8D3 ST25DV04KC-JF6L3	ST25DV16KC-IE6S3 ST25DV16KC-IE8S3 ST25DV16KC-IE6T3 ST25DV16KC-IE8T3 ST25DV16KC-IE6C3 ST25DV16KC-IE8C3 ST25DV16KC-JF6D3	ST25DV64KC-IE6S3 ST25DV64KC-IE8S3 ST25DV64KC-IE6T3 ST25DV64KC-IE8T3 ST25DV64KC-IE6C3 ST25DV64KC-IE8C3 ST25DV64KC-JF6D3 ST25DV64KC-JF8D3

ST25DV-I2C-EVO

Rich eco-system



- Discovery kits based on STM32 MCU
- STM32 Nucleo boards ecosystem
- STM32Cube software ecosystem



- Antenna e-design tool
- Schematic and BOM
- Gerber files



- Android and iOS ST25 NFC tap app
- PC software tool
- MCU drivers firmware



- Documentation
- e2e community
- Webinar / MOOC
- Training

ST25DV-I2C-EVO Evaluation boards



ST25DV64KC-DISCO

ST25DV-I2C-EVO Discovery kit

- **ST25DV64KC** Dynamic NFC tag IC
- 49x37mm 8 turns antenna (ANT Class3)
- STM32F405 MCU
- 2.4" TFT LCD Touch screen
- I2C & SWIP connectors
- Daughter board connector
- 14.5x24mm 15 turns antenna (Flex Antenna)
- 5 samples ST25DV64KC



X-NUCLEO-NFC07A1

ST25DV-I2C-EVO Nucleo shield

- **ST25DV64KC** Dynamic NFC tag IC
- Ø54mm 8 turns single layer antenna Energy harvesting, Low Power mode, GPO
- Compatible with STM32 Nucleo boards
- I2C interface to MCU & Powered through Arduino™ connector



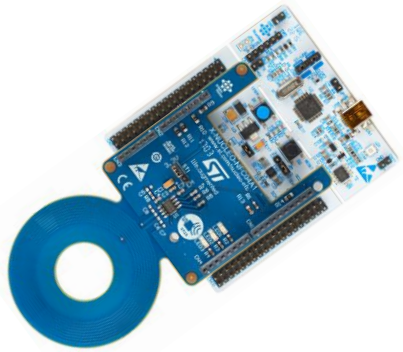
ANT7-T-25DV64KC

ST25DV-I2C-EVO Tiny antenna module

- **ST25DV64KC** Dynamic NFC tag IC
- Ready-to-use PCB including:
- 14x14 mm, dual layer etched antenna
- I2C test points
- RF event configurable GPO
- Analog energy harvesting (EH) output

ST25DV-I2C-EVO

Hardware development tool usage



	X-NUCLEO	Discovery kit
Typical use case	Flexible prototyping, Community	
Hardware	<ul style="list-style-type: none"> • ST25DV-I2C-EVO antenna plug for Nucleo eco system • Compatible with any STM32 mother board 	<ul style="list-style-type: none"> • Dedicated to ST25DV-I2C-EVO • Ready to use • Stand Alone system • includes two antennas
Extension possibilities	+ + +	+ +
Connectivity	Arduino™ ST Morpho	ST
Software	ST25DV-I2C-EVO start-up Deliveries for Nucleo	Demo SW flashed Demo use cases SW deliveries available

Compatibility with dynamic tags



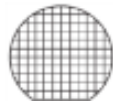
ST25DV-I2C-EVO vs ST25DV-I2C / M24LR / M24SR (1/2)

	M24SR	M24LR	ST25DV-I2C	ST25DV-I2C-EVO
Contactless Interface	ISO14443A NFC Type 4	ISO15693 NFC compatible	ISO15693 NFC Type 5	ISO15693 NFC Type 5
RF range	Short range (up to 10cm)	Long range (up to 1m)	Long range (up to 1m)	Long range (up to 1m)
RF speed	106kbps	26kbps	26kbps	26kbps
Serial Interface	I2C @1MHz 16-byte page	I2C @400kHz 4-byte page	I2C @1MHz 4-byte page	I2C @1MHz 16-byte page Additional features
Fast Transfer mode	No	No	Yes (256B buffer)	Yes (256B buffer)
Energy Harvesting	No	Yes	Yes	Yes
Digital output	Open-Drain GPO	Open-Drain GPO	OD or CMOS GPO	OD or CMOS GPO
Extra features	RF Disable	-	Low Power mode	Low Power mode

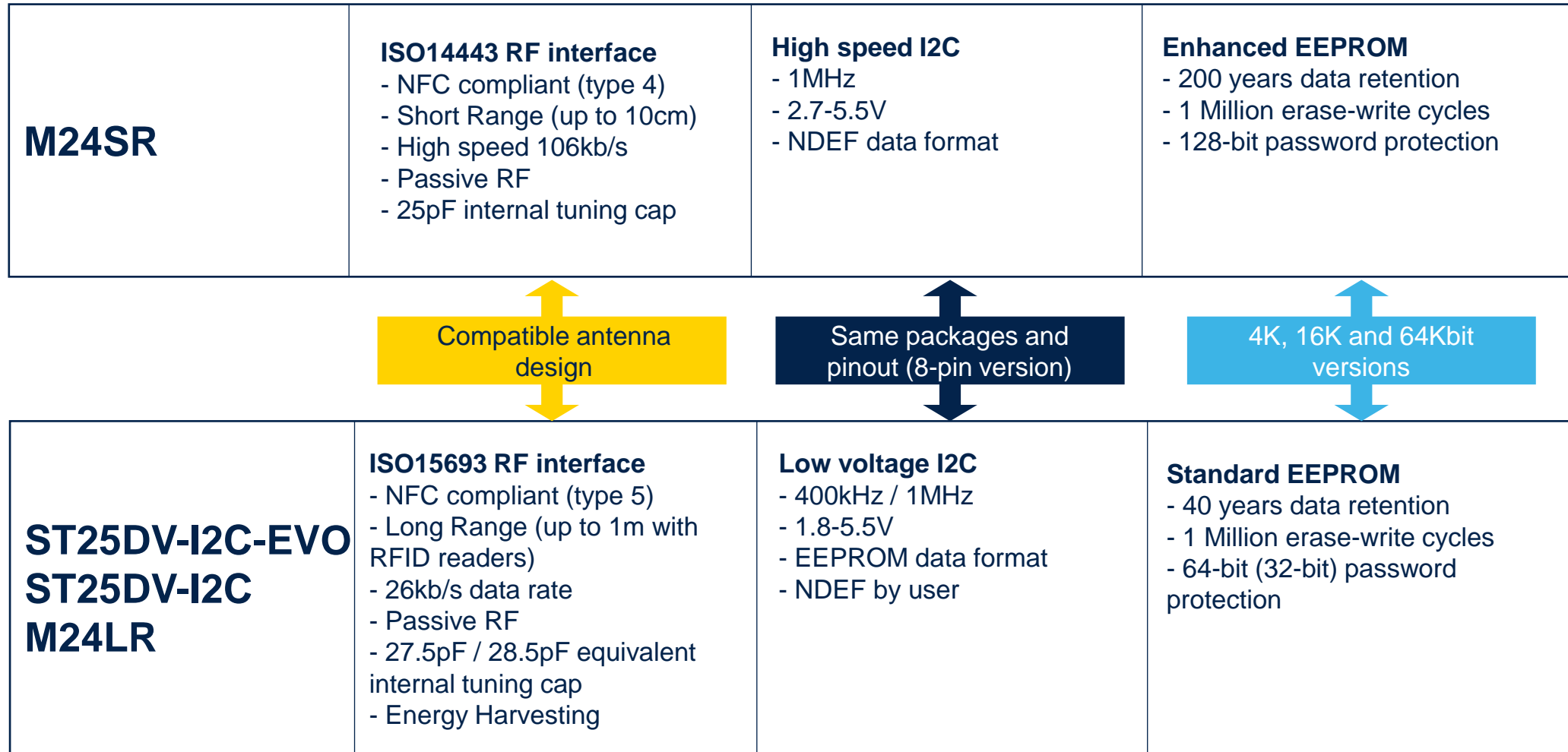
ST25DV-I2C-EVO vs ST25DV-I2C / M24LR / M24SR

(2/2)

	M24SR	M24LR	ST25DV-I2C	ST25DV-I2C-EVO
Memory format	EEPROM (preformatted NDEF)	EEPROM data	EEPROM data	EEPROM data
Memory size	2k / 4k / 16k / 64k-bit	4k / 16k / 64k-bit	4k / 16k / 64k-bit	4k / 16k / 64k-bit
Data retention	200-year at 55°C	40-year at +55°C	40-year at 55°C	40-year at 55°C
Erase/Write cycles	1M cycles at +25°C 600k cycles at + 85°C 500k cycles at +105°C	1M cycles at +25°C 100k cycles at + 85°C	1M cycles at +25°C 600k cycles at + 85°C 500k cycles at +105°C 400k cycles at +125°C	1M cycles at +25°C 600k cycles at + 85°C 500k cycles at +105°C 400k cycles at +125°C
Data protection	Password 128-bit	Password 32-bit	Password 64-bit	Password 64-bit
Temperature range	-40°C to +85°C -40°C to +105°C (85°C RF)	-40°C to +85°C	-40°C to +85°C -40°C to +125°C (105°C RF)	-40°C to +85°C -40°C to +125°C (105°C RF)
Package	SO8 / TSSOP8 / FPN8 / SBN12*	SO8 / TSSOP8 / FPN8	SO8 / TSSOP8 / FPN8 / FPN12 / WLCSP10	SO8 / TSSOP8 / FPN8 / FPN12 / WLCSP10



Design compatibility with other dynamic tags



ST25DV-I2C-EVO tuning capacitance

	M24SR	M24LR	ST25DV-I2C & ST25DV-I2C-EVO
Standard	ISO14443	ISO15693	ISO15693
Main carrier frequency	13.56MHz	13.56MHz	13.56MHz
Data sub-carrier frequency	+ 848kHz	+ 424kHz	+ 424KHz
Optimal frequency tuning	14MHz – 14.4MHz	13.6MHz – 14MHz	13.6MHz – 14MHz
Internal capacitor (measured at 0.5V)	25pF	27.5pF	28.5pF (*)
Recommended internal capacitor value for antenna design	27pF	29pF	29pF

- **28.5pF** : The tuning capacitance value is measured with ST characterization equipment at chip Power On Reset. This value is used as reference for antenna design and allow to use the same antenna design for M24SR, M24LR, ST25DV-I2C and ST25DV-I2C-EVO.

M24LR 40x20mm
rectangular antenna



M24SR 40x20mm
rectangular antenna



Can be reused simply by
replacing M24LR or M24SR
with the **ST25DV-I2C-EVO**

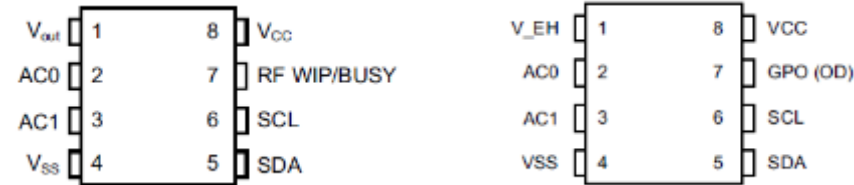
Compatibility with M24LR dynamic tags



ST25DV-I2C-EVO vs M24LR

Easy migration path

- M24LR and ST25DV-I2C-EVO compatibility from HW viewpoint
 - Same 8-pin out (ST25DV-I2C-EVO available also with 12 pins)



- V_{out} = V_{EH}, wherever EH mode enable/disabled
- GPO: configurable output signal that can mix several Interruption modes pin
 - it can select various events like RF Busy (as in M24LR).
 - Note: RF Write WIP now replaced by RF Write and handled through SW (see next pages)
- PCB design is identical...
 - Same way to calculate pull up resistor connected to V_{CC}
- Same antenna design

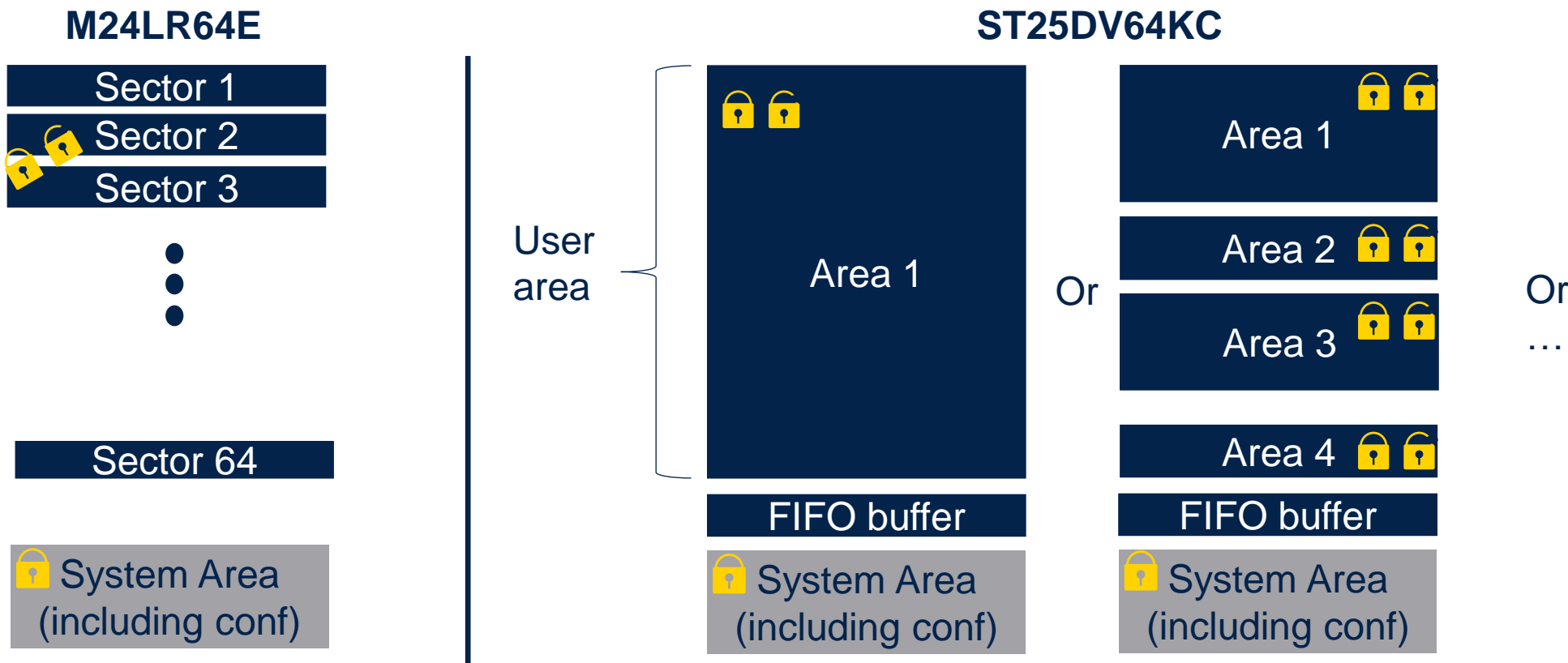


Can be reused simply
by replacing M24LR
with ST25DV-I2C-EVO

ST25DV-I2C-EVO vs M24LR

Memory mapping & protection (1/2)

- Memory user area is changing
 - But RF block size remain the same: 32-bit



- Backward compatibility possible when using up to 4 sectors
 - Impact on memory protection to be taken into account (moving from 32-bit to 64-bit password)

ST25DV-I2C-EVO vs M24LR

Memory mapping & protection (2/2)

	M24LR	ST25DV-I2C-EVO
Memory organization	1Kbits sectors	4 configurable zones (32 Bytes min)
Protection (user)	RF: Individually in Read or Write with 3 passwords	
	I2C: Write protection with 1 pwd	I2C: Read or Write protection with 1 pwd
	32 bits passwords (POR needed after 3 fails)	64 bits passwords
	-	Individual lock on first 2 blocks possible (CCFile)
Protection (system)	RF & I2C: 1x32 bits password	RF & I2C: 1x64 bits password

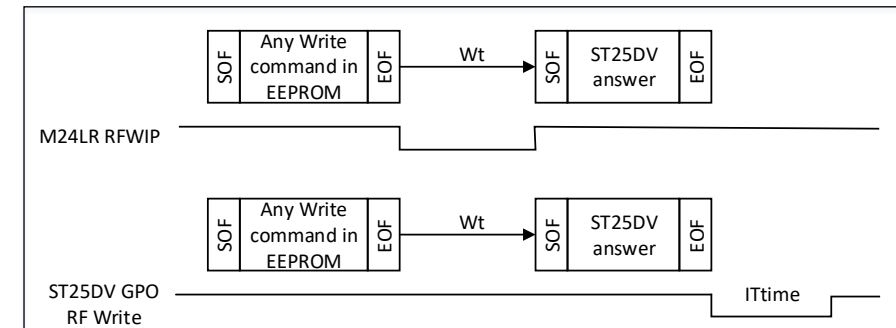
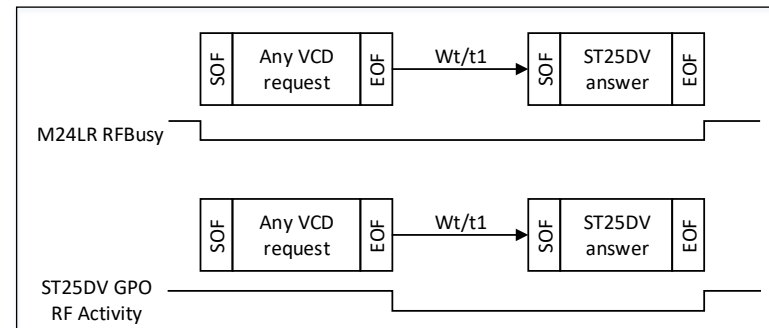
ST25DV-I2C-EVO vs M24LR Interfaces

	M24LR	ST25DV-I2C-EVO
I2C interface	400KHz	1MHz
	Multiple write 4 bytes max	Multiple write 256 bytes max (internally 16 bytes at a time)
	Same power supply (1.8V to 5.5V)	
RF interface	ISO 15693	ISO15693 (2019) / NFC Forum type 5
	16K&64K version: not standard commands for memory addressing above 8Kbits	Standard extended command set for memory access below and above 8Kbits
	-	Write multiple block command (max 4)
	not standard "Initiate" commands	-
	Multiple read commands	
	Proprietary Fast read commands (downlink 53Kbits/s)	
	RF block size: 4 bytes	

ST25DV-I2C-EVO vs M24LR

RF events interruption

	M24LR	ST25DV-I2C-EVO
RF events interruption	RFWIP/RFBusy pin (OD)	GPO pin (OD or CMOS)
	RFBusy: from VCD SOF to M24LR EOF	RFActivity: from VCD EOF to DV EOF
	RFWrite: during internal write time	RFWrite: interrupt pulse after valid write (after ST25DV-I2C-EVO's EOF)
	-	RF User RF Interrupt Field change RF Put and Get message
	-	I2CWrite: interrupt pulse after valid write RF switch off from I2C
	-	Multi events IT status register for host to check event type



ST25DV-I2C-EVO vs M24LR

Specific features & packages

	M24LR	ST25DV-I2C-EVO
Fast transfer mode	-	256 Bytes buffer
RF Management	-	RF control from host (disable, sleep)
Energy harvesting	Minimum RF field level requested	No minimum RF field level requested
Power management	-	Low power standby < 1µA (LPD)

	M24LR	ST25DV-I2C-EVO
Package & pinout	Same pinout in 8 pins / Same 8 pins packages Same equivalent tuning capacitance 27.5pF Same power supply => PCB and antenna reuse possible	
	-	12 pins package

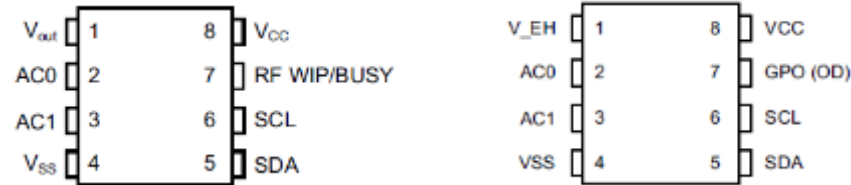
Compatibility with ST25DV-I2C dynamic tags



ST25DV-I2C-EVO vs ST25DV-I2C

Very easy migration path

- ST25DV-I2C and ST25DV-I2C-EVO compatibility from HW viewpoint
 - Same pin out (12 pins and 8 pins)



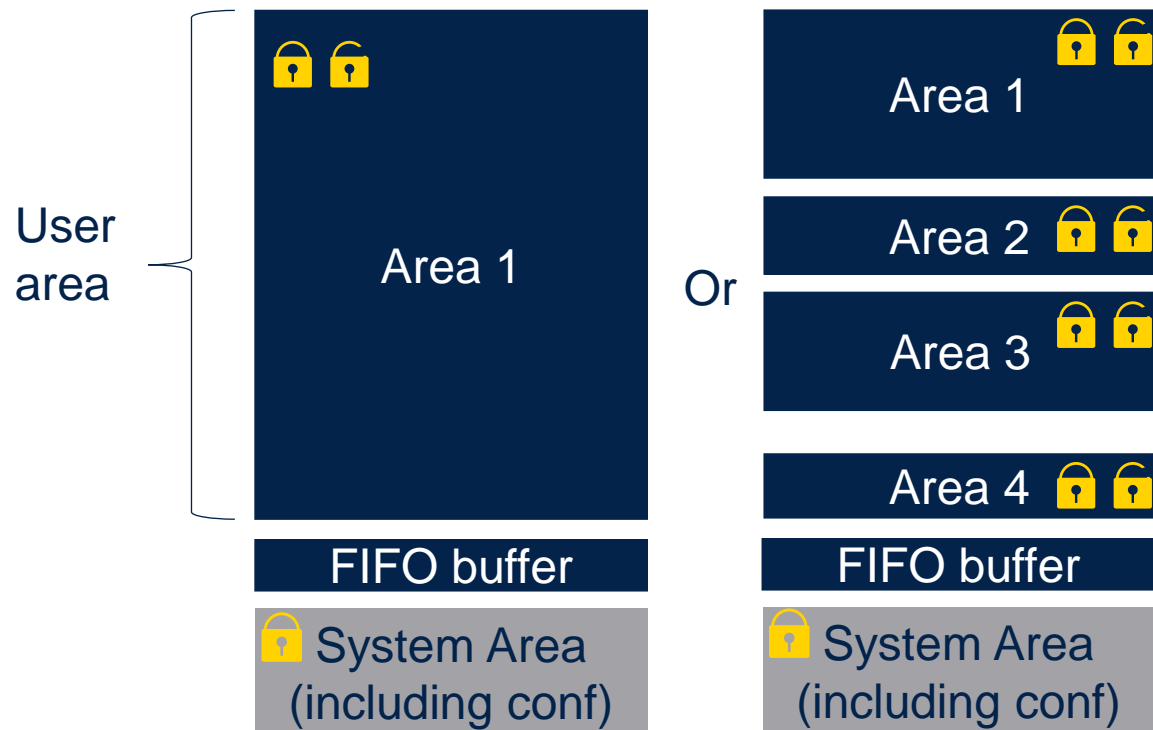
- V_{out} = V_{EH}, wherever EH mode enable/disabled
- GPO: configurable output signal that can mix several Interruption modes pin
 - it can select various events like RF Busy.
- PCB design is identical...
 - Same way to calculate pull up resistor connected to V_{cc}
- Same antenna design

ST25DV-I2C-EVO vs ST25DV-I2C

Memory mapping & protection

- Memory user area is NOT changing

ST25DV64KC / ST25DV64K



	ST25DV-I2C-EVO ST25DV-I2C
Memory organization	4 configurable zones (32 Bytes min)
Protection (user)	RF: Individually in Read or Write with 3 pwds
	I2C: Read or Write protection with 1 pwd
	64 bits passwords
	Individual lock on first 2 blocks possible (CCFile)
Protection (system)	RF & I2C: 1x64 bits password

ST25DV-I2C-EVO vs ST25DV-I2C Interfaces

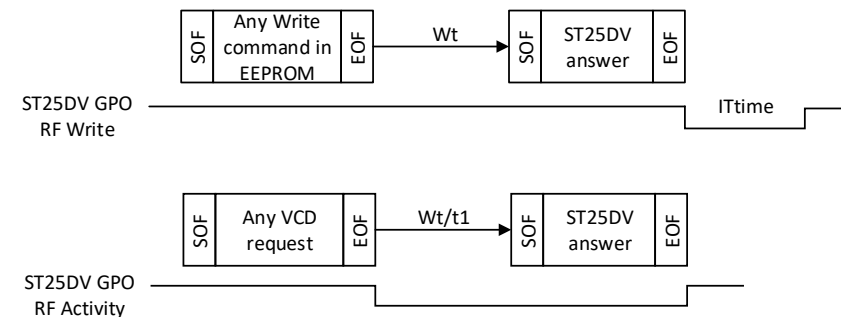
	ST25DV-I2C	ST25DV-I2C-EVO
I2C interface	1MHz	
	Multiple write 256 bytes max (internally 4 bytes at a time)	Multiple write 256 bytes max (internally 16 bytes at a time)
	Same power supply (1.8V to 5.5V)	
RF interface	ISO15693 (2019) / NFC Forum type 5	
	Standard extended command set for memory access below and above 8Kbits	
	Write multiple block command (max 4)	
	Multiple read commands	
	Proprietary Fast read commands (downlink 53Kbits/s)	
	RF block size: 4 bytes	

ST25DV-I2C-EVO vs ST25DV-I2C

RF events interruption

- RF events interruption are NOT changing
- ST25DV-I2C-EVO has 2 additional interrupts

	ST25DV-I2C	ST25DV-I2C-EVO
RF events interruption	GPO pin (OD or CMOS)	
	RFActivity: from VCD EOF to DV EOF	
	RFWrite: interrupt pulse after valid write (after ST25DV's EOF)	
	RF User RF Interrupt Field change RF Put and Get message	
	-	I2CWrite: interrupt pulse after valid write RF switch off from I2C
	Multi events IT status register for host to check event type	



ST25DV-I2C-EVO vs ST25DV-I2C

Specific features & packages

- Same specific features
- Same packages and pinouts

	ST25DV-I2C / ST25DV-I2C-EVO
Fast transfer mode	256 Bytes buffer
RF Management	RF control from host (disable, sleep)
Energy harvesting	No minimum RF field level requested
Power management	Low power standby < 1µA (LPD)
	ST25DV-I2C / ST25DV-I2C-EVO
Package & pinout	Same pinout in 8 pins / Same 8 pins packages Same tuning capacitance 27.5pF Same power supply => PCB and antenna reuse possible
	Same pinout in 10/12 pins / Same 10/12 pins packages



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