

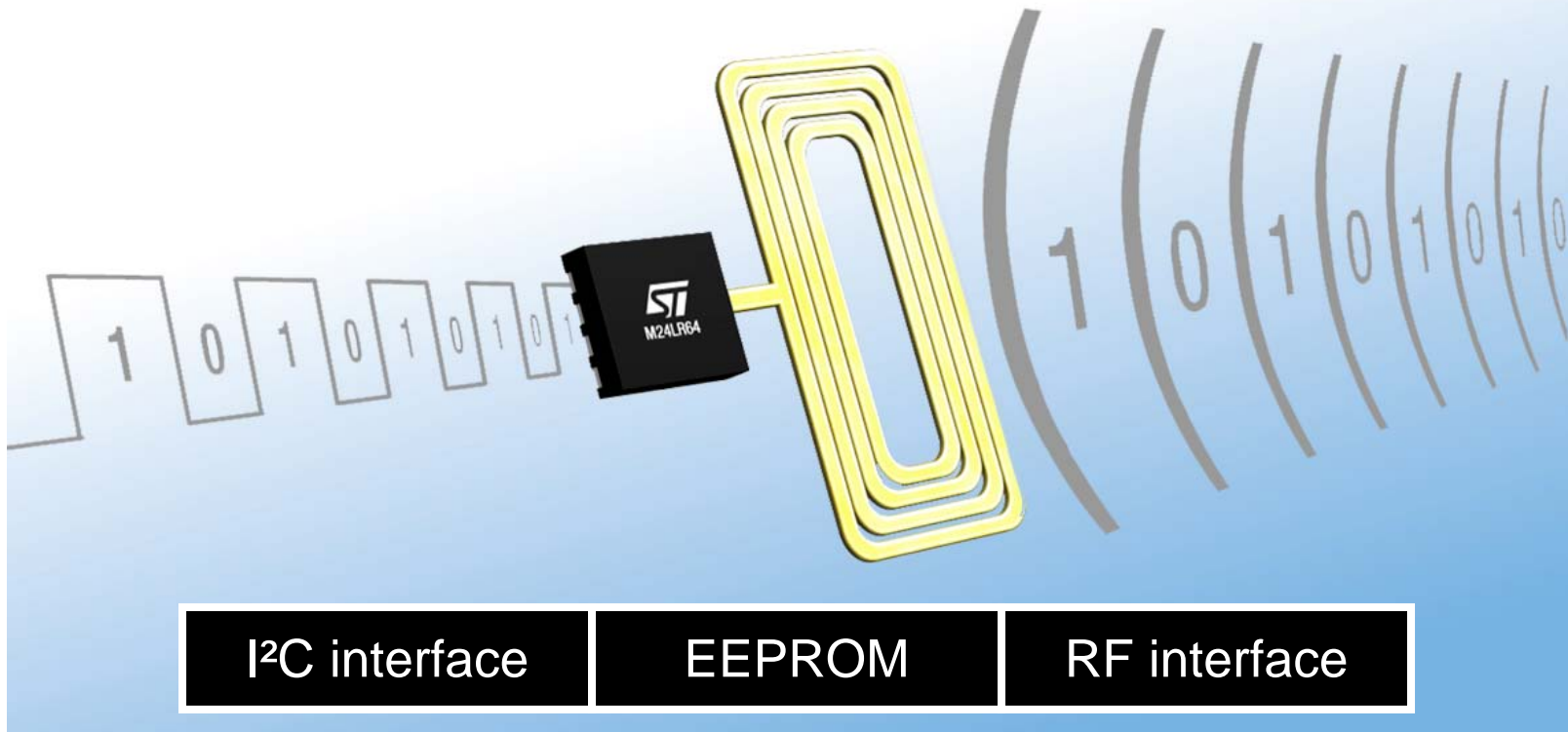


M24LR64-R

Product features

Dual Interface EEPROM

Two worlds connected

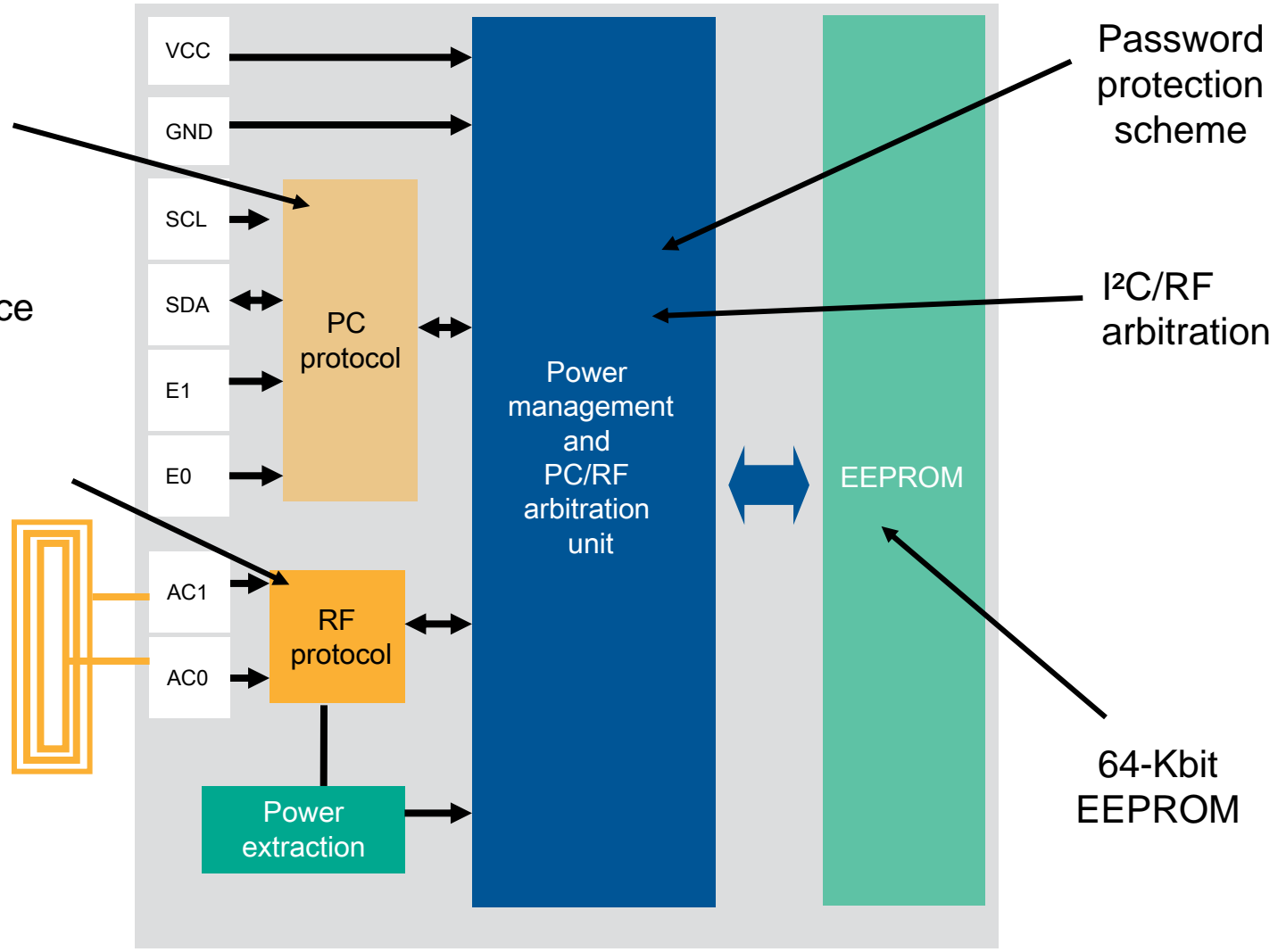


M24LR64 features - overview



I²C interface
- industry standard
- 1.8v-5.5v, 400kHz

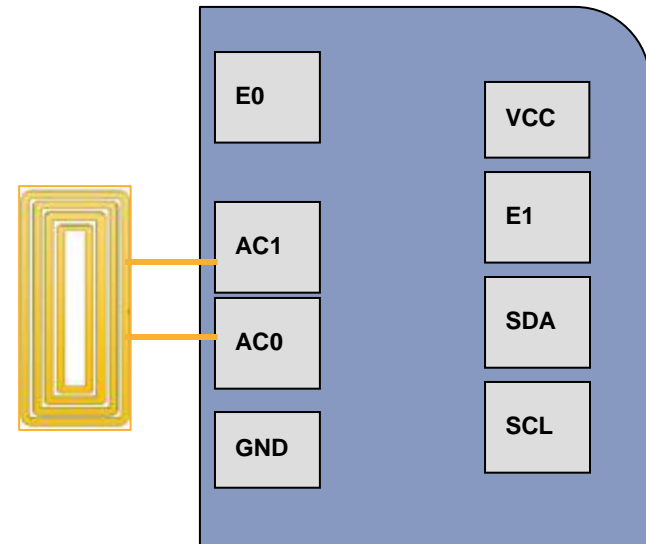
ISO 15693 RF interface
- industry standard
- passive RFID technology
- high-speed mode (up to 53 Kbit/s)



- In I2C mode, the M24LR64 (dual interface EEPROM) operates like a M24C64 (standard serial EEPROM) except for :

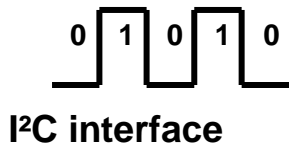
	M24LR64	M24C64
Page size	4 bytes	32 bytes
Write protection	Extensive, software	hardware (/WC pin)
Chip Enable Inputs	2 pins (E0 E1)	3 pins (E0 E1 E2)

- Based on ISO15693 passive RFID standard
- Up to 53kb/s data rate
- Up to 1 meter - 3 feet (depending on reader and M24LR64 antennas)
- 2 pins (AC0 AC1) for external inductive antenna, needed to capture both
 - the energy (power)
 - the signal (data)
- Read and Write access
From the RFID reader

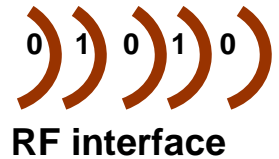


Product features: RF-I²C arbitration block

- The basic principle of the arbitration unit is:
 - When supplied only from the RF side:
 - the M24LR64-R can be accessed only by the RF reader
 - When supplied only from VCC
 - the M24LR64-R can be accessed only by the I²C interface
 - When supplied from both the VCC pin and the RF field:
 - the M24LR64-R will apply an internal ready/busy flag and serve the first decoded command (either RF or I²C) and will not decode any command from the other interface (either I²C or RF) until the first decoded command is complete.



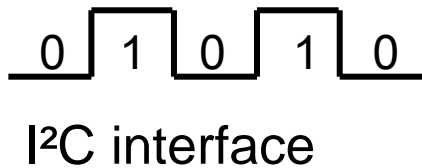
OFF	M24LR64 is reset		OFF
OFF	RF transfer= yes	I ² C transfer= no	ON
ON	RF transfer= no	I ² C transfer= yes	OFF
ON	Both RF and I ² C transfers possible see AN3057 for details		ON



- 64k-bit EEPROM
 - 40 years data retention
 - 1 Million E/W cycles
 - Programming time
 - 5ms in I²C mode
 - 5.758ms in RF mode
 - Organized in
 - 8192 bytes in I²C mode
 - 2048 blocks of 32 bits in RF mode
 - Accessible in read and write, both in I²C and RF

Product features - data protection scheme

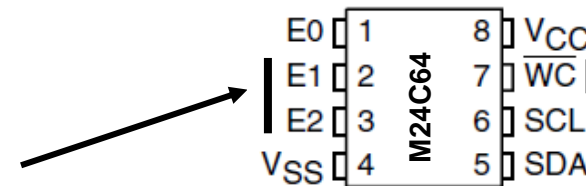
- Access protection to each sector depends on the access link:
 - I²C access:
 - Read always
 - Write: protected (or not) if the correct password was previously presented
 - RF access:
 - Read protected (or not) if the correct password was previously presented
 - Write protected (or not) if the correct password was previously presented



Access rights for PC	M24LR64 User memory	Access rights For RF
Read-write	Sector 0 Status: shared	Read-write
Read-write	Sector 1 Status: I ² C only	No access
Read only	Sector 2 Status: RF mastered	Read-write
Read only	Sector 3 Status: PC read only	No access
	
Read-write	Sector 63 Status: I ² C only	No access

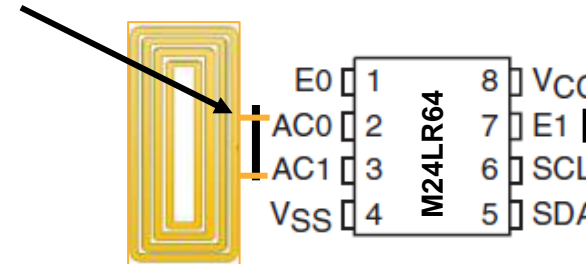


M24C64 pinout (standard serial EEPROM)



M24LR64 Antenna connection pins
replacing M24C64 E1 E2 pins

M24LR64 E1 pin
replacing M24C64 /WC pin



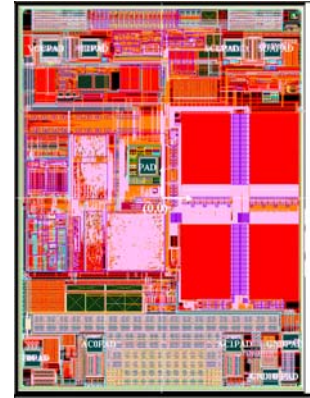
M24LR64 pinout (dual interface EEPROM)

- Bottom line
 - Different addressing pinout
 - No /WC hardware pin on the M24LR64 but extensive software password protection

M24LR64-RS185/2 – die format



- M24LR64 chip in die form (meant for wire bonding technology)
- Ultra thin: 140 μ m thickness +/-10 μ m
- Sawn wafers on UV tape and 8" ring
- Bad chips on the wafer are identified by electronic wafermap provided by ST or by ink dots (M24LR64-RZ185/2 version)
- 6 months lifetime @25 degC (UV tape limited)
- Production Minimum Ordering Quantity (MOQ) is 42.5ku



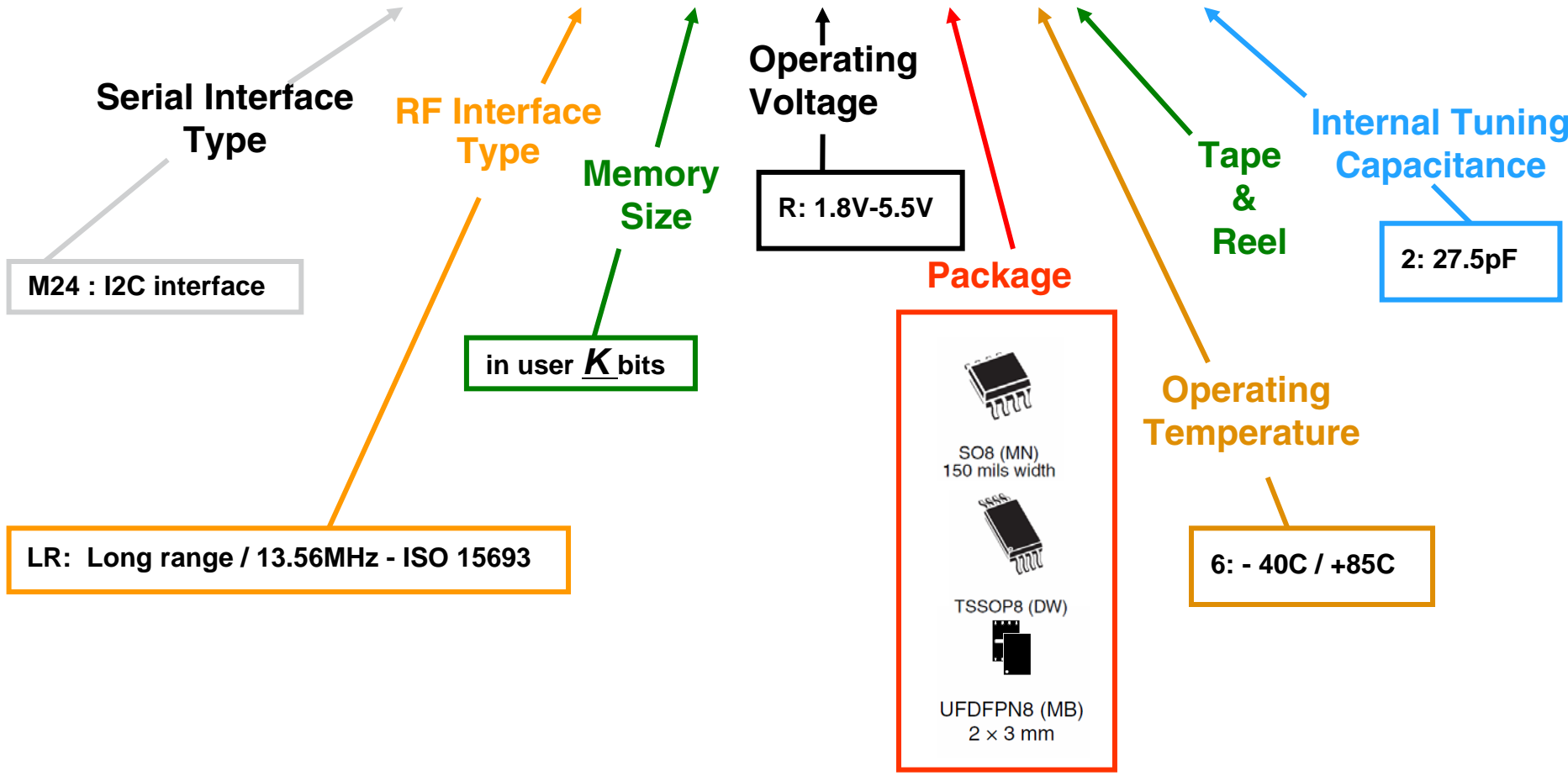
Ask for TN0185 for complete die form delivery information

Dual Interface EEPROM

Nomenclature for package delivery



M24 LR 64-RMN6T/2



Dual Interface EEPROM

Nomenclature for die delivery



M24 LR 64-RS185/2

Serial Interface
Type

M24 : I2C interface

RF Interface
Type

LR: Long range / 13.56MHz - ISO 15693

Memory
Size

in user K bits

Operating
Voltage

R: 1.8V-5.5V

Package

S: Sawn wafer on metallic frame and UV tape – inkless
Z: Sawn wafer on metallic frame and UV tape – inked
1: wafer orientation in frame
8: wafer size in inches
5: wafer thickness = 140µm

Internal Tuning
Capacitance

2: 27.5pF