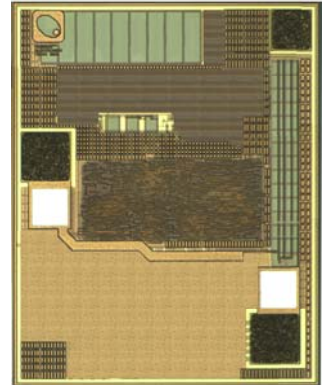


The air interface of QR2213 chip complies with part 2 and 3 of the ISO/IEC 14443 -A standard. QR2213 implements anti-collision function. It contains 7-byte UID (Unique Identification) and supports cascade level 2 according to ISO/IEC 14443-3. The 7-byte UID is programmed during fabrication and can't be modified later. QR2213 contains 32 bits OTP (One-Time-Program) memory for the users programming. The field programmable read-only locking function allows users to fix data per page to unchangeable value. This function may be used to uniquely program the device for dedicated applications.



1. Features

- ◆ Contactless data transmission and energy supply (no battery is needed)
- ◆ Operating distance: Up to 100mm (Depending on inlay antenna and reader)
- ◆ Working magnetic field strength:
 - Minimal: 0.3A/m (standard ID-1 antenna size)
 - Maximal: 7.5A/m (standard ID-1 antenna size)
- ◆ Operating Frequency: 13.56MHz
- ◆ Data rate: 106kbit/s
- ◆ True anti-collision, 7 bytes serial number UID (cascade level 2 according to ISO/IEC 14443-3)
- ◆ Typical ticketing transaction: < 100ms
- ◆ Fast counter transaction: < 10ms
- ◆ 512 bits, organized in 16 pages with 4 bytes each
- ◆ Field programmable read-only locking function per page
- ◆ 32 bits user definable One Time Programmable (OTP) area
- ◆ 384 bits user read/write memory area (12 pages)
- ◆ Data retention of 10 years minimum
- ◆ Write/Erase endurance: 100,000 cycles minimum
- ◆ 32 bits user programmable OTP area
- ◆ Field programmable read-only locking function per page
- ◆ Operating temperature: -40~125°C

2. Applications

- ◆ Ticketing
- ◆ Access

3. Operation conditions & electrical characteristics

	Parameter	Remark	Min	Typ	Max	Units
Operating Conditions	Operating Temperature		-40		125	°C
	Operating Frequency		13.55	13.56	13.57	MHz
	Working Magnetic Field Strength	Standard ID-1 antenna size	0.3		7.5	A/m
	Operating distance	Depending on inlay antenna and reader			100	mm
	Data Rate			106		kbits/s
Electrical Characteristics	Input Capacitance¹		14.9	15.7	16.5	pf
	Data Retention		10			years
	Programming Cycles		100,000			cycles

4. Memory map

Bank	Address	Description	Memory	bits
UID	0x000~0x04F	Programming during fabrication	ROM-NVM	80
Lock control	0x050~0x05F	Field programmable read-only locking function	NVM	16
OPT	0x060~0x07F	OPT (One-Time-Program)	NVM	32
User	0x080~0x1FF	User data	NVM	384
Reserved	0x200~0x27F	Reserved	NVM	128