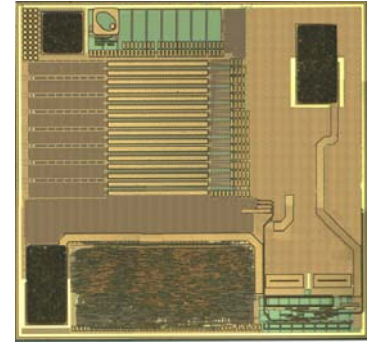


The air interface of QR2217 chip complies with part 2 and 3 of the ISO/IEC 14443 -A standards. QR2217 implements anti-collision function. It contains 4-byte UID (Unique Identification) and supports cascade level 1 according to ISO/IEC 14443-3. The 4-byte UID is programmed during fabrication and can't be modified later. The data transmission is protected by stream ciphering. The card and system offers multi-application functionality. Two different keys for each sector support hierarchical security functions.



## 1. Features

- ◆ Contactless data transmission and energy supply (no battery needed)
- ◆ Operating distance: Up to 100mm (depending on inlay antenna and reader)
- ◆ Working magnetic field strength:
  - Minmal: 0.3 A/m (standard ID-1 antenna size)
  - Maximal: 7.5A/m (standard ID-1 antenna size)
- ◆ Operating frequency: 13.56 MHz
- ◆ Data rate: 106kbits/s
- ◆ True anti-collision, 4 bytes serial number UID (cascade level 1 according to ISO/IEC 14443-3)
- ◆ Typical ticketing transaction: < 100ms
- ◆ 8k bits, organized in 16 sectors with 4 blocks each, and 16 bytes in each block
- ◆ The access of each block can be customized
- ◆ Data retention of 10 years minimum
- ◆ Write/Erase endurance 100,000 cycles minimum
- ◆ 3-pass authentication: ISO/ IEC DIS9798-2
- ◆ All data are encrypted in communication to prevent being intercepted
- ◆ Individual set of two keys per sector (per application) to support multi-application with hierarchical security control.
- ◆ Stream Ciphering protects data transmission
- ◆ Operating Temperature:-40~125℃

## 2. Applications

- ◆ Ticketing
- ◆ Parking
- ◆ Membership
- ◆ Time&attendance
- ◆ Identify



### 3. Operation conditions & electrical characteristics

	Parameter	Remark	Min	Typ	Max	Units
<b>Operating Conditions</b>	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
<b>Electrical Characteristics</b>	<b>Input Capacitance<sup>1</sup></b>		14.9	15.7	16.5	pf
	Data Retention		10			years
	Programming Cycles		100,000			cycles

### 4. Memory map

Sector Address	Block Address	Remark	Description	Memory	bits
0	0	Manufacturer Data	Manufacturer Data block	ROM-NVM	128
0	1~2	Data/Value	User data in Sector 0	NVM	256
0	3	Trailer Block	Key and Access Control in Sector 0	NVM	128
1	0~2	Data/Value	User data in Sector 1	NVM	384
1	3	Trailer Block	Key and Access Control in Sector 1	NVM	128
2	0~2	Data/Value	User data in Sector 2	NVM	384
2	3	Trailer Block	Key and Access Control in Sector 2	NVM	128
.....	.....	.....	.....	.....	.....
15	0~2	Data/Value	User data in Sector 15	NVM	384
15	3	Trailer Block	Key and Access Control in Sector 15	NVM	128