

**OEM-SAM-M890-TTL**  
**13.56 MHz OEM RFID Module with SAM Option**  
**Hardware Description**

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Contents

1

Installation .....

4

1.1

Key Features .....

4

1.2

Dimensions .....

4

1.3

Pinout.....

4

2

Technical Data .....

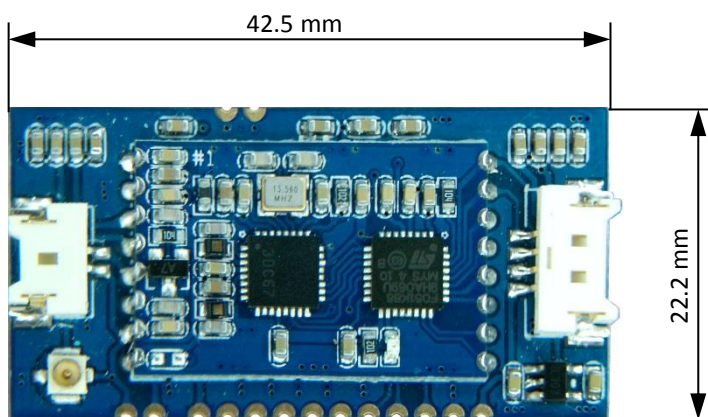
6

## 1 Installation

### 1.1 Key Features

- 3.3V power supply, UART-TTL interface
- Compliant with ISO14443A/B, ISO15693, ISO18092 Standard
- Read/Write or Read UID only of MIFARE® Desfire and MIFARE® Classic cards, etc.
- Optional with ISO7816 T=1 PSAM standard
- Available to operate MIFARE® DESFire PICC level, Application ID create/delete/format, etc.
- Support to create Standard DataFile&BackupFile, and ValueFile, RecordFile, etc.
- External LED and BUZ available (external driver circuit needed)

### 1.2 Dimensions



### 1.3 Pinout

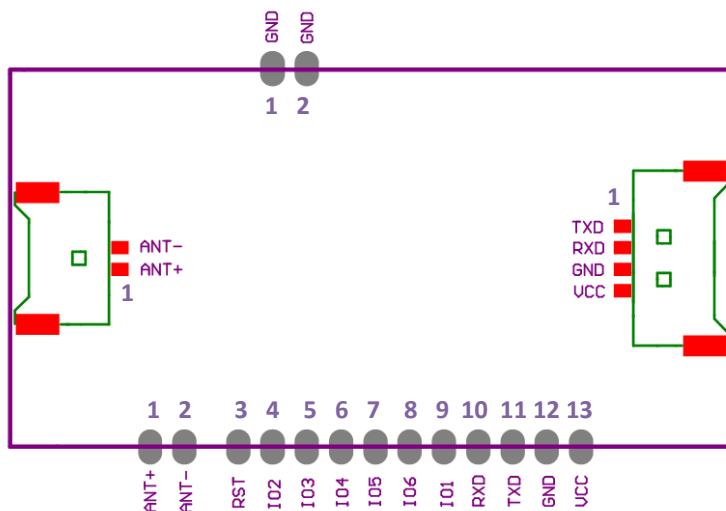


Figure 1 Pinout

#### Solder Joints

PIN	Name	Description
1	GND	Power Supply –
2	RST	Low Power Reset, active level for the RST is low (shortened to GND), normal status (operating) is open (not connected) or pullup with 10 k $\Omega$ resistor to +3.3 V.

**Connector J1**

PIN	Name	Description
1	Ant+	External Antenna
2	Ant–	External Antenna

**Connector J2**

PIN	Name	Description
1	TXD	Transmit Data (Green)
2	RXD	Receive Data (Yellow)
3	GND	Power Supply – (Black)
4	VCC	Power Supply + (Red), 3.3...5 Vdc

**Solder Joints**

PIN	Name	Description
1	Antenna+	External Antenna
2	Antenna–	External Antenna
3	RST	Low Power Reset, active level for the RST is low (shortened to GND), normal status (operating) is open (not connected) or pullup with 10 k $\Omega$ resistor to +3.3 V.
4	IO2	SAM-RST
5	IO3	SAM-IO
6	IO4	SAM-CLK
7	IO5	SAM-S2
8	IO6	SAM-S1
9	IO1	External Buzzer
10	RXD	Receive Data, TTL level
11	TXD	Transmit Data, TTL level
12	GND	Power Supply –
13	VCC	Power Supply +, 3.3...5 Vdc

## 2 Technical Data

Electrical Specifications	
Power supply	3.3V...5 Vdc
Power consumption	Max current: < 150 mA, Standby current: < 1 mA
Operation frequency	13.56 MHz
Baudrate	9600...115200 Baud (default 115200 Baud)
Interface	UART TTL, 3.3 V output levels, the input is not 5 V tolerant!
Antenna	External, U.F.L/Molex connector, or stamp hole
Reading range	4 ... 10 cm( depends on antenna and cards)
Reader IC	CL 663
RF TX Speed	Up to 848 kBd

Mechanical Specifications	
Dimensions	42 × 22 × 3 mm
Weight	6 g
Material	FR-4, Blue

Environmental Conditions	
Operating Temperature	-20 °C ... +80 °C
Storage Temperature	-40 °C ... +85 °C
Humidity	up to 95 %, non condensing
MTBF	200'000 h

Supported Standards / Tags	
ISO 14443 A and compatible	Read/write: MIFARE® Classic Mini / 1K /4K, MIFARE Ultralight®, MIFARE Ultralight® C, MIFARE® DESFire®EV1, MIFARE® Smart MX, MIFARE® Plus S / X, MIFARE® Pro X, NTAG 21x Read UID only of all other ISO14443A RFID tags
ISO 14443 B and compatible	SRI4K, SR1X4K, AT88RF020, 66CL160S, SR176
ISO 15693 and compatible	EM4135, EM4043, EM4x33, EM4x35, I-Code SLI / SLIX, M24LR16/64, TI Tag-it HF-I, SRF55Vxx (my-d vicinity)
ISO 7816	PSAM T=1

Applicable Standards	
EMC	EN 301489-1:2012-04 (v1.9.21) EN 301489-3:2013-12 (V1.6.1)
Radio Regulation	EN 300330-1:2015-08 (V1.8.1) EN 300330-2:2015-08 (V1.6.1)
Safety	EN 60950-1:2014-08 EN 62369-1:2010-03 EN 50364:2010-11
RoHS	EC Guideline 2011/65/EU

SDK Information	
Supported OS	Windows XP, Vista, 7, 8, 8.1, 10
Supported Languages	ASCII command protocol, C#
Demo Software	Windows

Other functions and details to be continued and upgraded.