

OEM-DES-M900
13.56 MHz OEM RFID Module
Hardware Description

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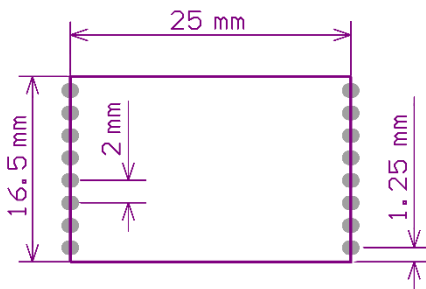
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1 Installation

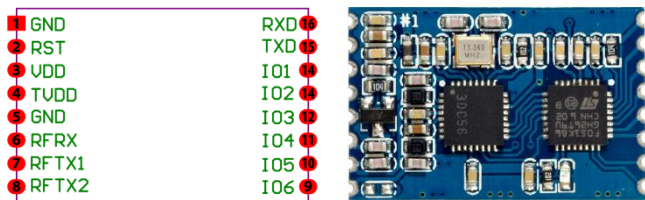
1.1 Key Features

- Adopts ARM MCU solution
- Tiny size, single-face laying components with stamp-hole
- Compliant with ISO14443A/B, ISO15693, ISO18092 Standard
- 3.3 V power supply
- TTL interface

1.2 Dimensions



1.3 Pinout



Pin	Signal	IO Type	Description
1	GND	GND	GND, use this ground pin for power supply
2	RST	Input	Low level reset, connect 10 kOhm pull-up resistor to VDD
3	VDD	PWR	Power supply +3.3 Vdc for μ C
4	TVDD	PWR	Power supply +3.3...5 Vdc for RF IC
5	GND	GND	GND, use this ground pin for antenna connection
6	RFRX	Input	RFU, do not connect
7	RFTX1	Output	RX out, antenna, use this pin and pin 5 for antenna connection
8	RFTX2	Output	RX out, antenna 2, not in use, do not connect
9	IO6	Output	A group of IOs used for control full colour RGB LED, active low, open collector
10	IO5	Output	
11	IO4	Output	
12	IO3	Output	External Buzzer, active high
13	IO2	Output	
14	IO1	Output	External Buzzer, active high
15	TxD	Output	UART TxD
16	RxD	Input	UART RxD

2 EMC Notes

2.1 RF Connection

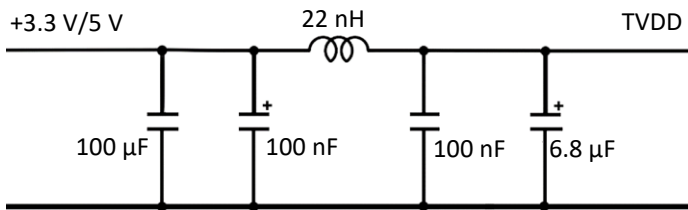
Keep the traces to an RF connection as short as possible.

Do not intermix the supply GND with RF GND. Use the GND connector #5 from the OEM Module.

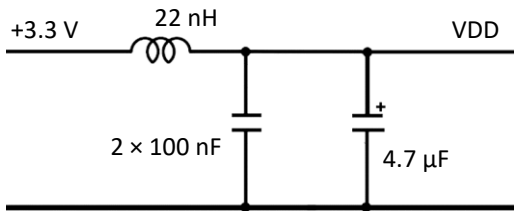
In the case you have to fulfil strict EMC regulations, try these filters:

2.2 Power Supply

Filter the VDD and TVDD power supply lines with separate C-L-C filters:

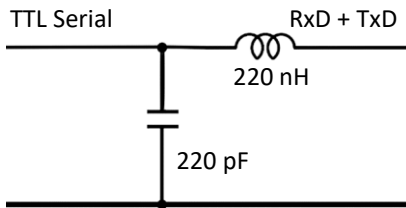


Values taken from the Application Note AN11022.pdf from NXP



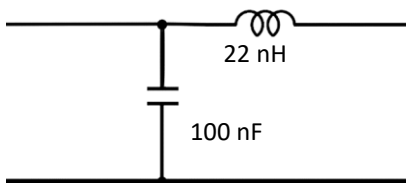
Values taken from the µC Data Sheed from ST

2.3 Serial Interfaces



-3 dB point @ 7 MHz

2.4 Other IOs (LED, Buzzer, Reset, etc.)



-3 dB Point @ 4.4 MHz

3 Technical Data

Electrical Specifications	
Power Supply	3.3 Vdc for the μ C on Pin VDD 3.3...5 Vdc for the RX IC on Pin TVDD
Power Consumption	< 150 mA, standby current < 1 mA (low power mode)
Operating Frequency	13.56 MHz
Baudrate	9600...115200 bit/s
Antenna	External
Reader IC	CL 663
RF TX Speed	up to 848 kBd
Interfaces	TTL, 3.3 V output levels, the input is not 5 V tolerant!
Maximum Output Current	Max 25 mA on each single output, max 80 mA in total.

Mechanical Specifications	
Dimensions	25 × 16.5 × 2.8 mm
Weight	3 g
Material	FR4, 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, SRIX4K, 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)

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	EC Guideline 2011/65/EU and amendment 2015/863 EN 50581:2012 (valid till 2024-07-07) EN 63000:2018
RoHS 2	EC Guideline 2011/65/EU
REACH	EU Guideline 1907/2006, updated by 2018/2005/EU
Certificates	FCC, CE

SDK Information	
Supported OS	Windows XP, Vista, 7, 8, 8.1, 10
Supported Languages	Binary command protocol, VS2005 C++
Demo Software	Windows

Other functions and details to be continued and upgraded.