



复旦微电子

FM17510

Contactless Transceiver IC

Short Datasheet

Apr. 2019



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1 Product Overview

1.1 Introduction

The FM17510 is a highly integrated Transceiver IC for Contactless communication at 13.56MHz. The FM17510 Transceiver IC support Reader/Writer mode supporting ISO14443A protocol.

The FM17510's internal transmitter part is able to drive a reader/writer antenna designed to communicate with ISO/IEC14443A cards and transponders without additional active circuitry. The receiver part provides a robust and efficient implementation of a demodulation and decoding circuitry for signals from ISO/IEC14443A compatible cards and transponders. The digital part handles the complete ISO/IEC 14443A framing and error detection. The FM17510 supports ISO/IEC14443A cards and transponders with transfer speeds from 106kbit/s to 424kbit/s in both directions.

With the features of low voltage, low power and large operating distance, FM17520 is especially suitable for contactless Reader/Writer equipment with low power, low voltage and low cost requirements.

1.2 Features

- **Supports ISO14443A/M1 reader/writer mode**
- **ISO/IEC14443A 106kbit/s and higher transfer speed at 212kbit/s and 424kbit/s**
- **Typical operating distance in reader/writer mode for communication to a ISO14443A card up to 50mm (depending on the antenna size and tuning)**
- **Supports SPI up to 10Mbit/s, with voltage levels according pad voltage supply**
- **Comfortable 64 byte send and receive FIFO-buffer**
- **Flexible interrupt modes**
- **Multiple low-power modes**
 - ◇ Soft power down mode
 - ◇ Hard power down mode
 - ◇ Deep power down mode (typical 1uA)
- **Programmable timer**
- **Internal oscillator to connect 27.12MHz quartz**
- **Wide voltage supply: 2.2V ~ 3.6V**
- **Integrated CRC Co-processor**
- **Programmable I/O pins**

1.3 Pinning information

1.3.1 QFN16 Pinning Assignment

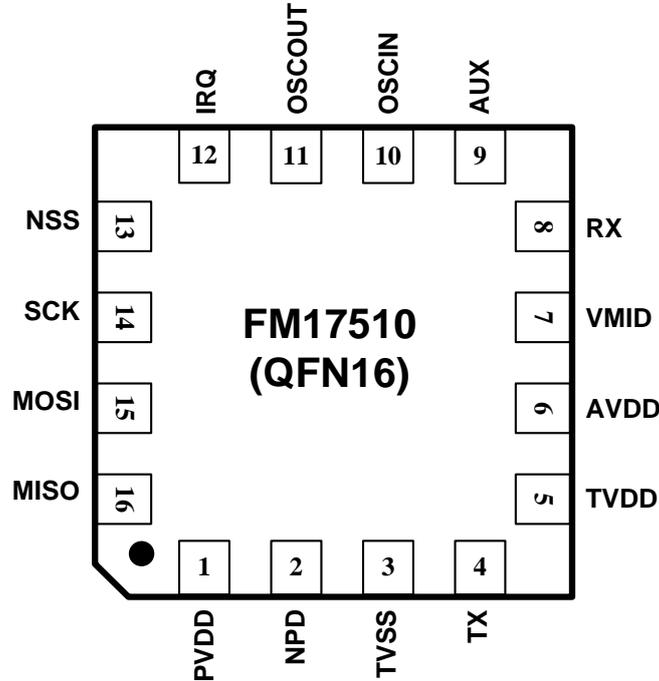


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FM17510 QFN16 Pinning assignment

1.3.2 Pin description

Pin	Symbol	Type	Description
1	PVDD	P	pin power supply
2	NPD	I	power-down input, active low, reset chip when positive edge on NPD pin
3	TVSS	G	transmitter output 1 ground
4	TX	O	transmitter modulated 13.56MHz energy carrier output
5	TVDD	P	transmitter power supply
6	AVDD	P	analog power supply
7	VMID	P	internal reference voltage
8	RX	I	RF signal input
9	AUX	O	auxiliary outputs for test
10	OSCIN	I	crystal oscillator input; also input for externally generated clock (27.12MHz)
11	OSCOUT	O	crystal oscillator output
12	IRQ	O	interrupt request output, indicates an interrupt event
13	NSS	I	SPI signal input
14	SCK	I	SPI serial clock input
15	MOSI	I	SPI master out, slave in
16	MISO	O	SPI master in, slave out



Pin	Symbol	Type	Description
0	VSS	G	chip ground (connect to PCB ground)

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2 Characteristics

2.1 Limiting Values

Parameter	最小值	最大值	单位
AVDD, DVDD, TVDD, PVDD, PVDD2	-0.5	4.0	V
ESD (HBM)		2K	V
ESD (CDM)		500	V

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2.2 Reference Data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T_A	Working temperature		-40		+85	°C
AVDD	Analog supply voltage		2.2	3.0	3.6	V
DVDD ^[1]	Digital supply voltage		2.2	3.0	3.6	V
TVDD ^[2]	Transmitter supply voltage		2.2	3.0	3.6	V
PVDD ^[3]	Pin supply voltage		1.62		3.6	V
PVDD2 ^[4]	Test pin supply voltage		1.62		3.6	V
I_{DPD}	Deep power-down current	AVDD=DVDD=TVDD=P VDD=3V NPD=0, enter DPD		1	10	uA
I_{HPD}	Hard power-down current (register retention)	AVDD=DVDD=TVDD=P VDD=3V NPD=0, enter HPD		2	12	uA
I_{SPD}	Soft power-down current	AVDD=DVDD=TVDD=P VDD=3V enter SPD mode		35	60	uA
I_{AVDD}	analog supply current	AVDD=3V, receiver switched on		10	13	mA
		AVDD=3V, receiver switched off		6	8	mA
I_{TVDD} ^[5]	TVDD supply current	continuous wave $V_{TVDD}=3.0V$		60	100	mA

Table Error! Use the Home tab to apply 标题 1 to the text that you want to appear here.-2 FM17510 Reference data

- [1] AVDD and DVDD must always be the same voltage.
 [2] TVDD must always be the same or higher voltage than AVDD.
 [3] PVDD must always be the same or lower voltage than AVDD.
 [4] PVDD2 is better the same voltage with PVDD
 [5] I_{TVDD} depends on TVDD and the external circuit connected to pins TX1 and TX2.
 [6] I_{DPD} 、 I_{HPD} 、 I_{SPD} is the total current for all supplies.



3 Ordering information

Device number	Package	Wrap	Operating Environment
FM17510-QNE-A-G	QFN16	tray	(-40°C ~ +85°C)



Revision history

Version	Publication date	Pages	Paragraph or Illustration	Revise Description
1.0	Apr.2019	9		initial version



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