



點通科技股份有限公司

SPECIFICATION

SPEC. NO. : _____ REV : _____

DATE : 2017.08.31

PRODUCT NAME : PT7682W-S**

	APPROVED	CHECKED	PREPARED	DCC ISSUE
NAME				

PTCOM Technology

PT7682W-S

PT7682W-SA: Wi-Fi 802.11b/g/n+MCU+Chip Antenna

PT7682W-SC: Wi-Fi 802.11b/g/n+MCU+RF connector

PT7682W-SP: Wi-Fi 802.11b/g/n+MCU+RF pinout

Product Specification Sheet

Revision History

Date	Revision Content	Revised By	Version
2017/06/21	-Preliminary Specification	Howard.Chen	0.1
2017/08/31	-Preliminary Specification	Howard.Chen	0.2
2017/10/3	-Pin 1 /Pin 2 Correction, power consumption update	Howard Chen	0.3
2017/11/2	Peripheral interface update Add PCB thickness	Howard Chen	0.4
2017/11/3	EINT19 pin description updated	Howard Chen	0.5

Contents

1. Introduction	3
2. Features	4
3. General Specification	5
3.1 General Specification	5
3.2 Voltages	5
3.2.1 Absolute Maximum Ratings	5
3.2.2 Recommended Operating Ratings	5
3.2.2 DC Characteristics	5
4. Wi-Fi RF Specification	6
4.1 2.4GHz RF Specification	6
4.2 Power Consumption	8
5. Peripheral interface	9
5.1 GPIOs	9
5.2 UART interface	9
5.3 I2C Serial Interface	9
5.4 Auxiliary ADC function	10
5.5 SPI Master Interface	10
5.6 I2S interface	11
5.7 Pulse Width Modulation (PWM)	12
5.8 SD memory card controller (SDIO)	12
6. Pin Assignments	13
6.1 PT7686/7682W-S PCB Pin Outline (TOP view)	13
6.2 Pin Description	13
7. Dimensions	18
7.1 PT7686/7682W-S Physical Dimensions	18
7.2 Layout Recommendation	19
8. Recommended Reflow Profile	20
9. RF path and Antenna configuration	21
9.1 RF path setting	21
9.2 Antenna configuration	22

1. Introduction

PT7682W-S** series are a low-cost, low-power consumption and highly-integrated embedded 1X1 11b/g/n single-band Wi-Fi module specially designed for IOT (Internet of Things) market. This module adopts the SOC chip from MTK which contains an ARM Cortex-M4F MCU application process running at 192MHz, Wi-Fi subsystem and power management unit (PMU).

PT7682W-S** series have embedded 384KB SRAM, 32KB L1 cache and optional 1MB serial flash running at RTOS environment. It also support many peripherals which including SPI, SDIO, I2S, I2C, UART, PWM and auxiliary ADC. This is perfectly suitable for all variety of applications in the IOT market.

A dedicated high-performance 32-bit RISC CPU N9 up to 160MHz clock speed is implemented to achieve robust Wi-Fi connection with support variety of security encryptions. PT7682W-S** series compliant with IEEE 802.11 b/g/n standard with 20MHz and 40MHz bandwidth and up to 150Mbps data rate.

Highly integrated PT7682W-S** series modules enable easy configurations, all types of power saving mode to maximize battery life, seamless roaming capabilities and advanced security. It can be also interact with different access point (AP) from different vendors.

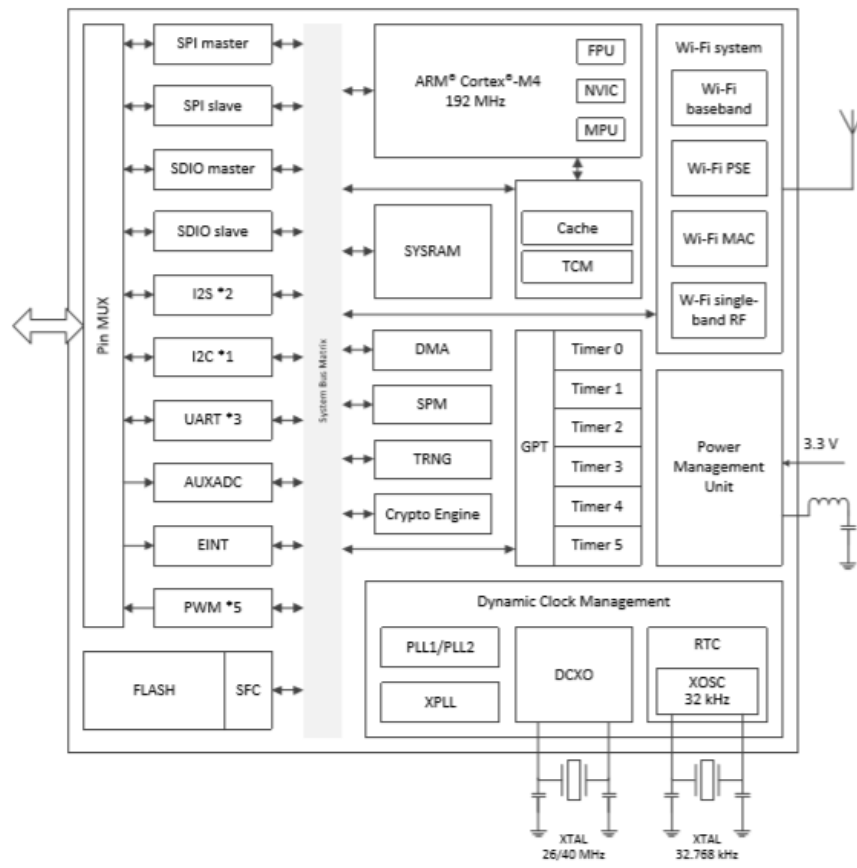
A high-performance printed antenna is designed on the module to obtain low-cost, easy to use and compact module size. PT7682W-S** series modules also provide several RF connector variants (ex. PT7682W-SC*, PT7682-SA*, PT7682-SP*) that allow customers to use external antenna when it is required.

2. Features

- Single-band 2.4GHz IEEE 802.11b/g/n with 20MHz, 40 MHz bandwidth supported.
- Supports peripherals including SPI, SDIO, I2S, I2C, UART, PWM and auxiliary ADC
- Integrated ARM Cortex-M4F MCU with on-chip memory enables running IEEE802.11 firmware that can be field-upgraded with future features.
- Dynamically switching between STA and SoftAP modes at runtime
- Lead-Free / RoHS
- Single power supply voltage 3.3V +/-10%.
- 4K bits effuse to store device specific and calibration data.
- Security:
 - Hardware data encryption AES, DES/3DES, MD5, SHA1, IEEE 802.11i compatibility
 - WPS, WPA™ – and WPA2™ - (Personal) support for powerful encryption and authentication

A simplified block diagram of the module is depicted in the figure below.

Note: SPI, SDIO, I2S, I2C, UART, PWM and auxiliary ADC are multiplexed together. See detail pin configure table.



3. General Specification

3.1 General Specification

Model Name	PT7682W-S**
Product Description	Wi-Fi 802.11b/g/n + MCU Module
PCBA Dimension	21 mm x 15 mm x 2.2mm +/-0.5mm
PCB Dimension	21 mm x 15 mm x 0.6mm +/-0.1mm
Module Interface	SPI, SDIO, I2S, I2C, UART, PWM, ADC.
Operating temperature	-30°C to 85°C
Storage temperature	-40°C to 125°C
Humidity	Operating Humidity 10% to 95%

3.2 Voltages

3.2.1 Absolute Maximum Ratings

Symbol	Description	Min.	Max.	Unit
VDD_3V3	Power supply for SIP Module	-0.3	3.63	V

3.2.2 Recommended Operating Ratings

Symbol	Min.	Typ.	Max.	Unit
VDD_3V3	3.0	3.3	3.6	V
RTC_3V3	1.7		3.6	

3.2.2 DC Characteristics

Symbol	Parameter	Conditions	Min	Max.	Unit
V _{IL}	Input Low Voltage	LVTTL	-0.28	0.8	V
V _{IH}	Input High Voltage	LVTTL	2	3.6	V
V _{OL}	Output Low Voltage	I _{oL} = 4~16mA	-0.28	0.4	V
V _{OH}	Output High Voltage	I _{oH} = 4~16mA	2.4	3.6	V
R _{PU}	Input Pull-UP Resistance	PU=high, PD=low	40	190	KΩ
R _{PD}	Input Pull-Down Resistance	PU=low, PD=high	40	190	KΩ

4. Wi-Fi RF Specification

4.1 2.4GHz RF Specification

Conditions : VDD_3V3=3.3V ; Temp:25°C

Feature	Description
WLAN Standard	IEEE 802.11b/g/n, WiFi compliant
Frequency Range	2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band)
Number of Channels	2.4GHz : Ch1 ~ Ch14
Modulation	802.11b : CCK, DQPSK, DBPSK 802.11 g/n : OFDM /64-QAM, 16-QAM, QPSK, BPSK
TX Output Power	802.11b /11Mbps : 18 dBm , typical @ EVM ≤ -9dB
	802.11g / 6Mbps : 18 dBm , typical @ EVM ≤ -5dB
	802.11g /54Mbps : 16 dBm , typical @ EVM ≤ -25dB
	HT20/11n /MCS0 : 18 dBm , typical @ EVM ≤ -5dB
	HT20/11n /MCS7 : 16 dBm , typical @ EVM ≤ -28dB
	HT40/11n /MCS0 : 15 dBm , typical @ EVM ≤ -5dB
	HT40/11n /MCS7 : 15 dBm , typical @ EVM ≤ -27dB
Receive Sensitivity (11b) @8% PER	- 1Mbps PER @ -93dBm, typical
	- 2Mbps PER @ -90Bm, typical
	- 5.5Mbps PER @ -89 dBm, typical
	- 11Mbps PER @ -86 dBm, typical
Receive Sensitivity (11g) @10% PER	- 6Mbps PER @ -91Bm, typical
	- 9Mbps PER @ -88dBm, typical
	- 12Mbps PER @ -88dBm, typical
	- 18Mbps PER @ -85dBm, typical
	- 24Mbps PER @ -82dBm, typical
	- 36Mbps PER @ -78Bm, typical
	- 48Mbps PER @ -74dBm, typical
	- 54Mbps PER @ -72dBm, typical
Receive Sensitivity (11n,20MHz, 800ns) @10% PER	- MCS=0 PER @ -88dBm, typical
	- MCS=1 PER @ -86dBm, typical
	- MCS=2 PER @ -84dBm, typical
	- MCS=3 PER @ -81dBm, typical
	- MCS=4 PER @ -78Bm, typical
	- MCS=5 PER @ -74 dBm, typical
	- MCS=6 PER @ -72 dBm, typical

	- MCS=7 PER @ -70 dBm, typical
Receive Sensitivity (11n,40MHz, 800ns) @10% PER	- MCS=0 PER @ -88.5dBm, typical
	- MCS=1 PER @ -81dBm, typical
	- MCS=2 PER @ -80dBm, typical
	- MCS=3 PER @ -76dBm, typical
	- MCS=4 PER @ -73dBm, typical
	- MCS=5 PER @ -70 dBm, typical
	- MCS=6 PER @ -67 dBm, typical
	- MCS=7 PER @ -66 dBm, typical
Channel Rejection	- 11Mbps 40dBm, typical
	- 6Mbps 34dBm, typical
	- 54Mbps 22dBm, typical
	- HT20 MCS=0 33dBm, typical
	- HT20 MCS=7 15dBm, typical
	- HT40 MCS=0 29dBm, typical
	- HT40 MCS=7 9dBm, typical
Data Rate	802.11b : 1, 2, 5.5, 11Mbps
	802.11g : 6, 9, 12, 18, 24, 36, 48, 54Mbps
(20MHz ,Long GI,800ns)	802.11n : 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps
(20MHz ,short GI,400ns)	802.11n : 7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65,72.2Mbps
Maximum Input Level	802.11b : -10 dBm
	802.11g/n : -20 dBm
Antenna Reference	On board Antenna: PT7682W-SA* Small antennas with 0 dBi peak gain U.FL connector for external antenna: PT7682W-SC* RF output pin for external antenna: PT7682W-SP*

4.2 Power Consumption

Conditions: VDD_3V3=3.3V ; Temp:25°C (TBD)

Mode	Description	Typ.	Unit
Retention	<ul style="list-style-type: none"> ● RTC Timer ● 0KB SRAM data retention 	2.7	uA
	<ul style="list-style-type: none"> ● RTC Timer ● 8KB SRAM data retention 	4.7	uA
Sleep	<ul style="list-style-type: none"> ● Cotex-M4 in sleep mode ● TCM 96KB SRAM is retained ● XTAL 32KHz 	80	uA
	<ul style="list-style-type: none"> ● Cotex-M4 in sleep mode ● TCM 96KB SRAM is retained ● Internal 32KHz 	350	uA
Active Mode TX Power	<ul style="list-style-type: none"> ● CCK 19 dBm ● N9 in Idle State ● Cotext-M4 in sleep state ● TCM 96KB SRAM is retained ● XTAL 32K Hz 	248	mA
	<ul style="list-style-type: none"> ● OFDM 16.5 dBm ● N9 in Idle State ● Cotext-M4 in active state ● TCM 96KB SRAM is retained ● XTAL 32K Hz 	220	mA
Active Mode RX Power	<ul style="list-style-type: none"> ● HT20_MCS7 ● N9 in Idle State ● Cotext-M4 in active state ● XTAL 32K Hz 	42	mA
	<ul style="list-style-type: none"> ● HT20_MCS7 ● N9 in Idle State ● Cotext-M4 in sleep state ● XTAL 32K Hz 	21	mA
Active & Sleep DTIM=1	<ul style="list-style-type: none"> ● Cotext-M4 in sleep state ● TCM 96KB SRAM is retained ● XTAL 32K 	620	uA

5. Peripheral interface

Several peripheral interface are multiplexed with GPIOs. PT7682W-S* has one SDIO 2.0 master and One SDIO 2.0 slave interface, an SPI master and SPI slave interface, up to three UART interfaces with flow control, one I2C interface, two I2S interfaces, five PWM channels, and a signal channel 12-bit AUXADC.

5.1 GPIOs

Each of the General Purpose Input/Output (GPIO) pins are software configurable as an output (push-pull or opendrain) or as an input (with or without pull-up or pull-down) that supports input floating with buffer gating to reduce power consumption. Most of the GPIOs are multiplexed with peripheral functions and have selectable output driving strength. If the MCU handles more than one GPIO at a time or receives an interrupt, a rapid performance degradation may occur.

Dedicated IOs operate at higher speeds depending on the peripheral or interface usage. For example, PWM IOs can output 20 MHz when V_{CORE} is 1.15V.

The maximum toggling speeds of a single GPIO are listed in Table below.

V _{CORE}	Cortex-M4 speed	Maximum toggling speed of single GPIO pins
1.15V	192MHz	1MHz
1.15V	96MHz	500kHz
0.85V	N/A	N/A (Cortex-M4 is in deep sleep mode)

5.2 UART interface

PT7682W-S* chipset houses three UART interfaces that provide full duplex serial communication between the baseband chipset and external devices. UART has both M16C450 and M16550A modes of operation compatible with a range of standard software drivers.

UARTs support baud rates from 110bps up to 921,600bps and baud rate auto-detection function. They provide hardware and software flow control of the RTS/CTS signals.

UARTs can configure data transfer lengths from 5 to 8 bits, with an optional parity bit and one or two stop bits by software. They can be served by the DMA controller.

5.3 I2C Serial Interface

PT7682W-S* provides one I2C master controllers. There are three types of speed modes in the I2C controllers: standard mode (100kbps), fast mode (400kbps) and high-speed mode (3.4Mbps), supporting 7-bit/10-bit addressing and can be served by the DMA controller.

The I2C package size supports up to 1,024 bytes per transfer and 1,024 transfers per transaction in DMA mode and 8 bytes per transfer in non-DMA mode.

START/STOP/REPEATED START condition can be increased to support single or multi transfer. These features can be configured by software based on design requirements.

5.4 Auxiliary ADC function

PT7682W-S* features one auxiliary ADC function. The ADC function contains a single channel analog switch, a signal-end input asynchronous 12-bit SAR (successive Approximation Register) ADC, and a digital averaging function. The digital averaging function can perform on-the-fly averaging function of 1/2/4/8/16/32/64 points. The ADC features the dithering function to enhance the DNL performance.

- Input channel number: 1 channels
- Sampling and output data rate: 2MS/s
- DNL without dithering and averaging: <+/-2LSB
- DNL with dithering and averaging:<+/-1LSB
- Dithering function: 16 levels with step size of 4LSB.

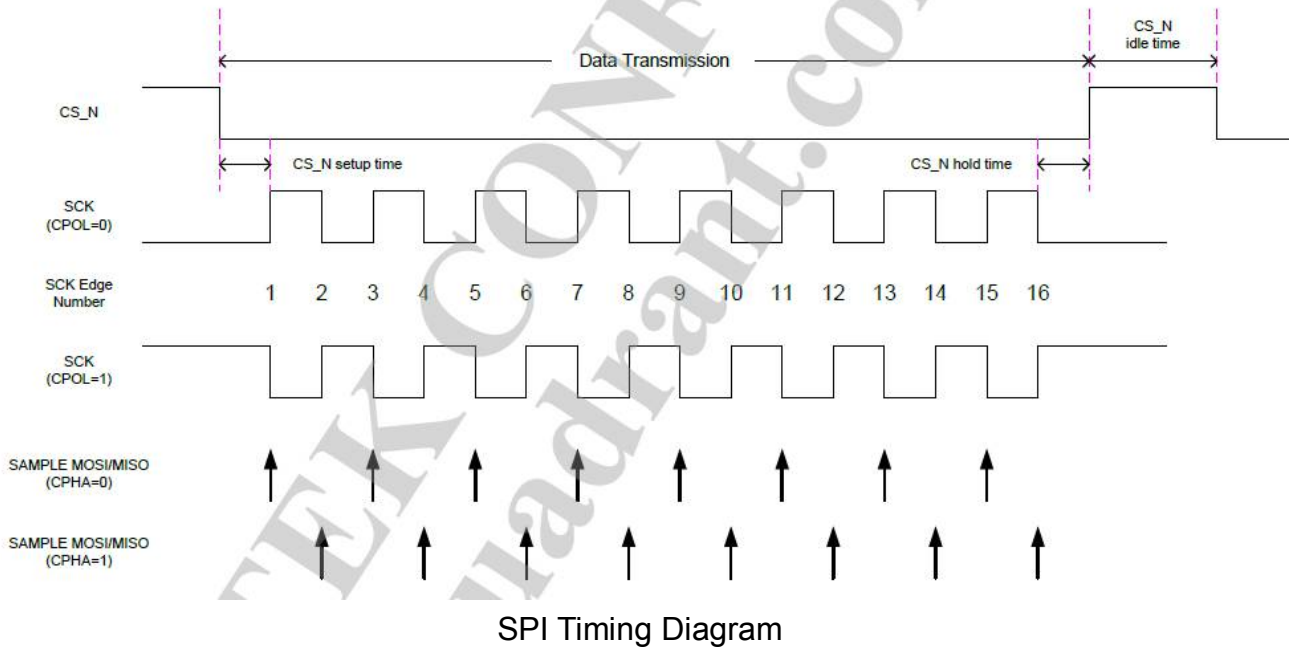
5.5 SPI Master Interface

PT7682W-S* features one SPI master controller and one SPI slave controller to receive/transmit device data using single, dual and quad SPI protocols. The SPI controllers can communicate at up to 48 Mbps.

The chip select signal and SPI clock of SPI master controllers are configurable. The SPI controllers also support DMA mode for large amounts of data transmission.

Signal Name	Signal Description	Direction
CS	Chip select	Output
SCK	Serial clock	Output
MISO	Master in, Slave out	Input
MOSI	Master out, Slave in	Output

SPI Pin Description



5.6 I2Sinterface

PT7682W-S* provides two Inter-IC Sound Interface (I2S) controllers. The controllers can be selected as master or slave. There are two types of transfer protocol in the I2S controllers: one is I2S protocol, supporting 24-bit/16bit addressing and mono/stereo transaction; the other one is TDM protocol, supporting 16-bit addressing and TDM32/TDM64/TDM128 transaction. I2S controllers can be served by the DMA controller and the sample rate can support either 16/24/48/96/192KHz or 11.025/22.05/44.1KHz when sharing only one internal PLL. Detail SPEC of I2S and TDM are in Table below.

I2S Protocol	Bit Width	Input/output Sample
Master Mode	I2S0: 16b	XO or XPLL 26MHz: 8, 12, 16, 24, 32, 48 kHz, mono/stereo
	I2S1: 16b/24b	XPLL 22.5792MHz: 11.025, 22.05, 44.1, 88.2, 176.4 kHz, mono/stereo XPLL 24.576MHz: 8, 12, 16, 24, 32, 48, 96, 192 kHz, mono/stereo
Slave Mode	I2S0: 16b	XO or XPLL 26MHz: 8, 12, 16, 24, 32, 48 kHz, mono/stereo
	I2S1: 16b/24b	XPLL 22.5792MHz: 11.025, 22.05, 44.1, 88.2, 176.4 kHz, mono/stereo XPLL 24.576MHz: 8, 12, 16, 24, 32, 48, 96, 192 kHz, mono/stereo

TDM Protocol	Bit Width	Input/output Sample
Master Mode	I2S0: 16b	XO or XPLL 26MHz: 8, 12, 16, 24, 32, 48 kHz, TDM32/TDM64
		XPLL 22.5792MHz: 11.025, 22.05, 44.1, 88.2, 176.4 kHz, TDM32/TDM64
		XPLL 24.576MHz: 8, 12, 16, 24, 32, 48, 96, 192 kHz, TDM32/TDM64
Slave Mode	I2S0: 16b	XO or XPLL 26MHz: 8, 12, 16, 24, 32, 48 kHz, TDM32/TDM64/TDM128 (up to 4 channel if TDM128)
		XPLL 22.5792MHz (either of the following):
		<ul style="list-style-type: none"> 11.025, 22.05, 44.1, 88.2 kHz, TDM32/TDM64/TDM128 (up to 4 channel if TDM128) 176.4 kHz, TDM32/TDM64
		XPLL 24.576MHz (either of the following):
		<ul style="list-style-type: none"> 8, 12, 16, 24, 32, 48, 96 kHz, TDM32/TDM64/TDM128 (up to 4 channel if TDM128) 192 kHz, TDM32/TDM64

5.7 Pulse Width Modulation (PWM)

There are six PWM controllers to generate pulse signals. The duty cycle, high time and low time of pulse signals can be programmed. The PWM controllers can be configured to use 40MHz, 13MHz or 32kHz clock source to support a wide range of output pulse frequencies.

5.8 SD memory card controller (SDIO)

The controller supports the SD memory card bus protocol as defined in SD Memory Card Specification Part 1 Physical Layer Specification version 2.0.

Furthermore, the controller also partially supports the SDIO card specification version 2.0. However, the controller can only be configured as the host of the SD memory card.

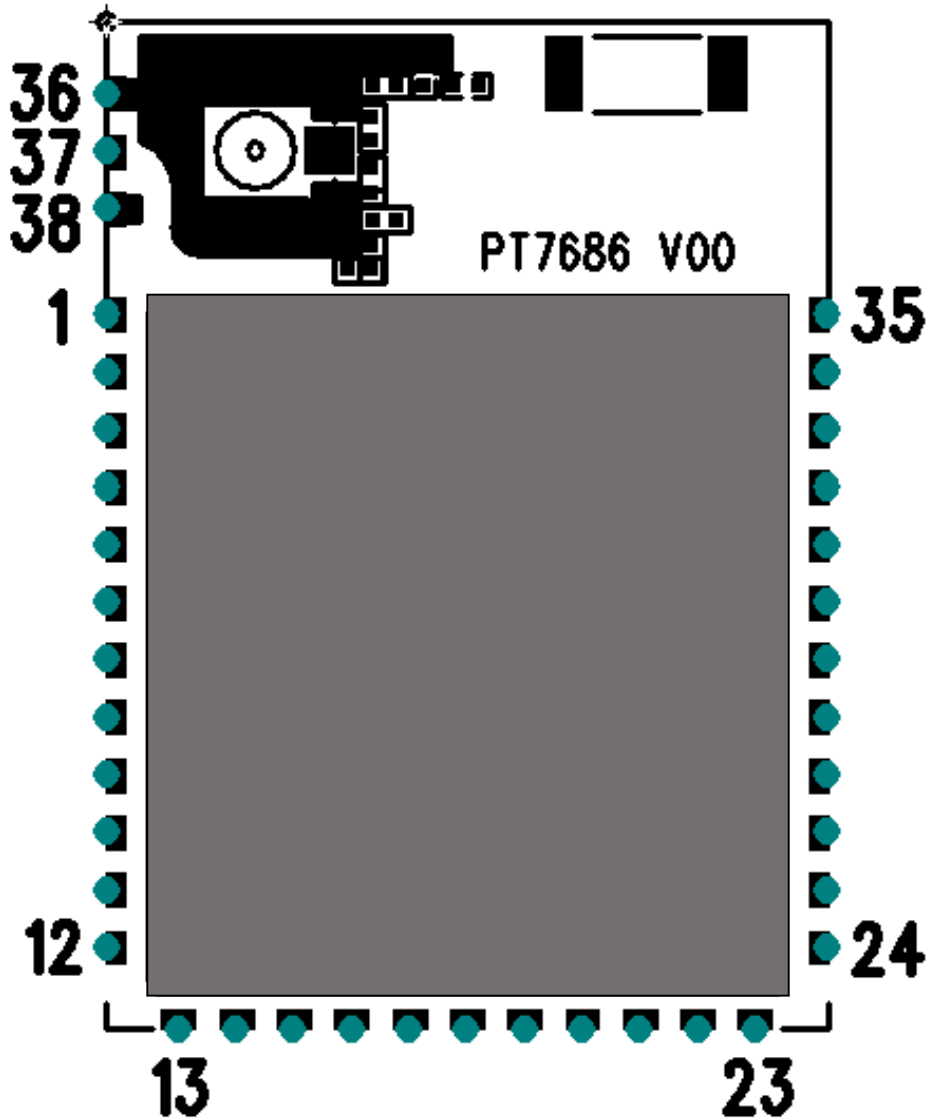
Hereafter, the controller is abbreviated as the SD controller.

Main features of the controller:

- 32-bit access for control registers
- 8, 16 and 32-bit access for FIFO in PIO mode
- Built-in CRC circuit
- Supports PIO mode, basic DMA mode, and descriptor DMA mode for SD controller.
- Interrupt capabilities
- Data rate of up to 48Mbps in 1-bit mode and 48x4 Mbps in 4-bit mode. The module is targeted at 48MHz operating clock.
- Programmable serial clock rate on SD bus (256 gears)
- Card detection capabilities (MT7682 uses the EINT controller for card detection)
- Does not support SPI mode for SD memory card
- Does not support suspend/resume for SD memory card.

6. Pin Assignments

6.1 PT7686/7682W-S PCB Pin Outline (TOP view)



6.2 Pin Description

Each pin is multiplexed with several functions, the default setting is colored in below table.

No	Name	Pin Type	Power Domain	Description
1	GPIO22	I/O	DVDD_IO_0	General purpose input, output

	UTXD0	O		UART(0) TXD
	EINT20	I		External interrupt
2	GPIO21	I/O	DVDD_IO_0	General purpose input, output
	URXD0	I		UART(0) RXD
	EINT19	I		External interrupt
	SCL1	I/O		I2C(1) SCL
	PWM5	O		Pulse-width-modulated output
3	NC			
4	GPIO17	I/O	DVDD_IO_0	General purpose input, output
	SPISLV_B_CS	O		SPI CS
	SPIMST_B_CS	O		SPI CS
	TDM_CK	O		I2S CLK
	PWM5	O		Pulse-width-modulated output
	CLKO3	O		CLK3 OUT
	AUXADC0	I		Auxiliary ADC input
	EINT17	I		External interrupt
	BT_PRI0	O		BT Priority(0)
5	GND	-	-	-
6	GPIO16	I/O	DVDD_IO_0	General purpose input, output
	SPISLV_B_SCK	O		SPI CLK
	SPIMST_B_SCK	O		SPI CLK
	TDM_WS	I/O		I2S WS
	MA_MC0_DA3	I/O		SDIO Master Data3
	SLV_MC0_DA3	I/O		SDIO Slave Data3
	SDA1	I/O		I2C(1) SDA
	EINT16	I		External interrupt
7	GPIO15	I/O	DVDD_IO_0	General purpose input, output
	SPISLV_B_SIO0	O		SPI MOSI
	SPIMST_B_SIO0	O		SPI MOSI
	TDM_TX	O		I2S TX
	MA_MC0_DA2	I/O		SDIO Master Data2
	SLV_MC0_DA2	I/O		SDIO Slave Data2
	SCL1	I/O		I2C(1) SCL
EINT15	I		External interrupt	

	PWM3	O		Pulse-width-modulated output
8	GND	-	-	-
9	GPIO14	I/O	DVDD_IO_0	General purpose input, output
	SPISLV_B_SIO1	I		SPI MISO
	SPIMST_B_SIO1	I		SPI MISO
	TDM_RX	I		I2S RX
	MA_MC0_DA1	I/O		SDIO Master Data1
	SLV_MC0_DA1	I/O		SDIO Slave Data1
	PWM4	O		Pulse-width-modulated output
	EINT14	I		External interrupt
	CLKO4	O		CLK4 OUT
10	GPIO13	I/O	DVDD_IO_0	General purpose input, output
	SPISLV_B_SIO2	O		SPI WP
	SPIMST_B_SIO2	O		SPI WP
	U2RTS	O		UART(2) RTS
	MA_MC0_DA0	I/O		SDIO Master Data0
	SLV_MC0_DA0	I/O		SDIO Slave Data0
	CLKO4	O		CLK4 OUT
	EINT13	I		External interrupt
	I2S_WS	I/O		I2S WS
11	GPIO12	I/O	DVDD_IO_0	General purpose input, output
	SPISLV_B_SIO3	O		SPI HOLD
	SPIMST_B_SIO3	O		SPI HOLD
	UTXD2	O		UART(2) TXD
	MA_MC0_CM0	O		SDIO Master CMD
	SLV_MC0_CM0	O		SDIO Slave CMD
	EINT12	I		External interrupt
	WIFI_ANT_SEL1	O		WiFi ANT Select(1)
	I2S_TX	O		I2S TX
12	GPIO11	I/O	DVDD_IO_0	General purpose input, output
	EINT11	I		External interrupt
	PWM3	O		Pulse-width-modulated output
	URXD2	I		UART(2) RXD
	MA_MC0_CK	O		SDIO Master CLK
	SLV_MC0_CK	O		SDIO Slave CLK
	CLKO2	O		CLK2 OUT
	WIFI_ANT_S EL0	O		WiFi ANT Select(0)

	I2S_RX	I		I2S RX
13	GND	-	-	-
14	RTC_EINT	I/O	AVDD33_VRTC	Dedicate EINT input in RTC
15	EXT_PWR_EN	O	AVDD33_VRTC	PMU enable
16	VRTC	P	-	RTC domain power supply
17	CHIP_EN	I	AVDD33_VRTC	Chip enable
18	DVDD_IO_0	P		Power input of GPIO right group (VIO_0)
19	VDD	P		3.3V
20	DVDD_IO_1	P		Power input of GPIO left group (VIO_1)
21	DVDD18	P		1.8V
22	NC			
23	NC			
24	NC			
25	GND	-	-	-
26	NC			
27	NC			
28	NC			
29	NC			
30	GND	-	-	-
31	GPIO4	I/O	DVDD_IO_1	General purpose input, output
	SPI_SLV_A_SIO2	O		SPI WP
	SPIMST_A_SIO2	O		SPI WP
	EINT4	I		External interrupt
	I2S_MCLK	O		I2S MCLK
	JTDO	O		JTAG TDO
	WIFI_ANT_SEL3	O		WiFi ANT Select(3)
	I2S_MCLK	O		I2S MCLK
32	GPIO2	I/O	DVDD_IO_1	General purpose input, output
	EINT2	I		External interrupt
	URXD1	I		UART(1) RXD
	PWM0	O		Pulse-width-modulated output
	I2S_WS	I/O		I2S WS
	JTCK	I		JTAG CLK
	CLKO0	O		CLK0 OUT
	BT_PRI0	O		BT Priority(0)
	WIFI_ANT_SEL4	O		WiFi ANT Select(4)
33	GPIO3	I/O	DVDD_IO_1	General purpose input, output

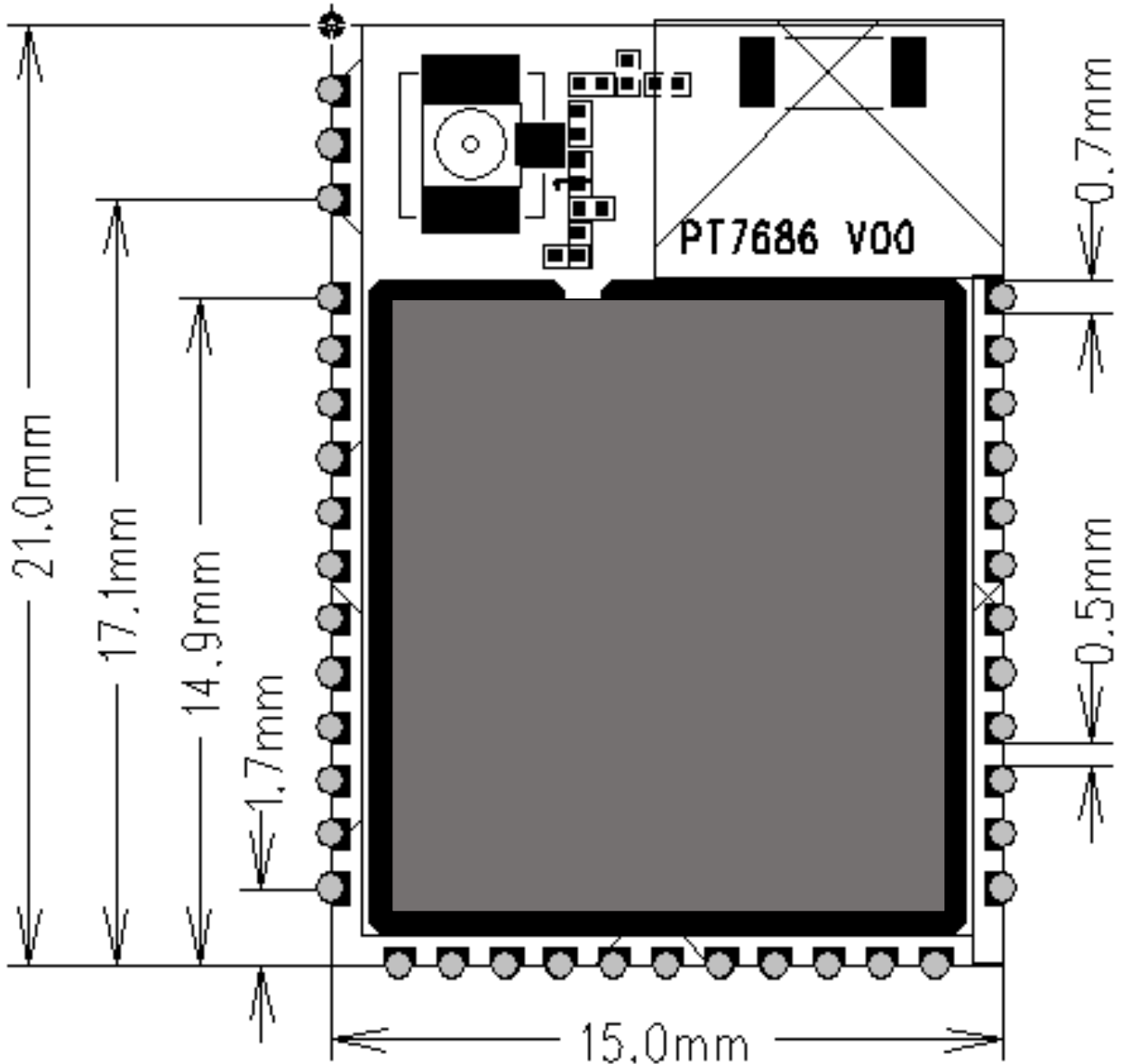
	EINT3	I		External interrupt
	UTXD1	O		UART(1) TXD
	PWM1	O		Pulse-width-modulated output
	I2S_CK	O		I2S CLK
	JTRST_B	I		JTAG RST_B
	WIFI_ANT_S EL2	O		WiFi ANT Select(2)
34	GPIO1	I/O	DVDD_IO_1	General purpose input, output
	EINT1	I		External interrupt
	U1CTS	I		UART(1) CTS
	SDA1	I/O		I2C(1) SDA
	I2S_TX	O		I2S TX
	JTMS	I		JTAG TMS
	WIFI_ANT_S EL1	O		WiFi ANT Select(1)
	BT_PRI3	O		BT Priority(3)
	PWM1	O		Pulse-width-modulated output
35	GPIO0	I/O	DVDD_IO_1	General purpose input, output
	EINT0	I		External interrupt
	U1RTS	O		UART(1) RTS
	SCL1	I/O		I2C(1) SCL
	I2S_RX	I		I2S RX
	JTDI	I		JTAG TDI
	WIFI_ANT_S EL0	O		WiFi ANT Select(0)
	BT_PRI1	O		BT Priority(1)
	PWM0	O		Pulse-width-modulated output
36	GND	-	-	-
37	RF_PAD			RF Port
38	GND	-	-	-

7. Dimensions

7.1 PT7686/7682W-S Physical Dimensions

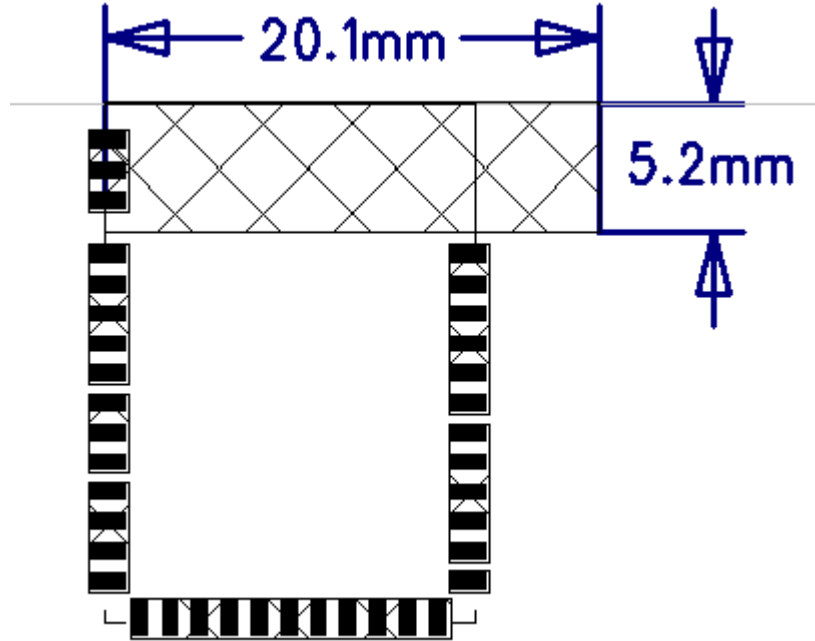
(TOP view)

Note: Pin pitch = 1.2mm, pad width = 0.7mm

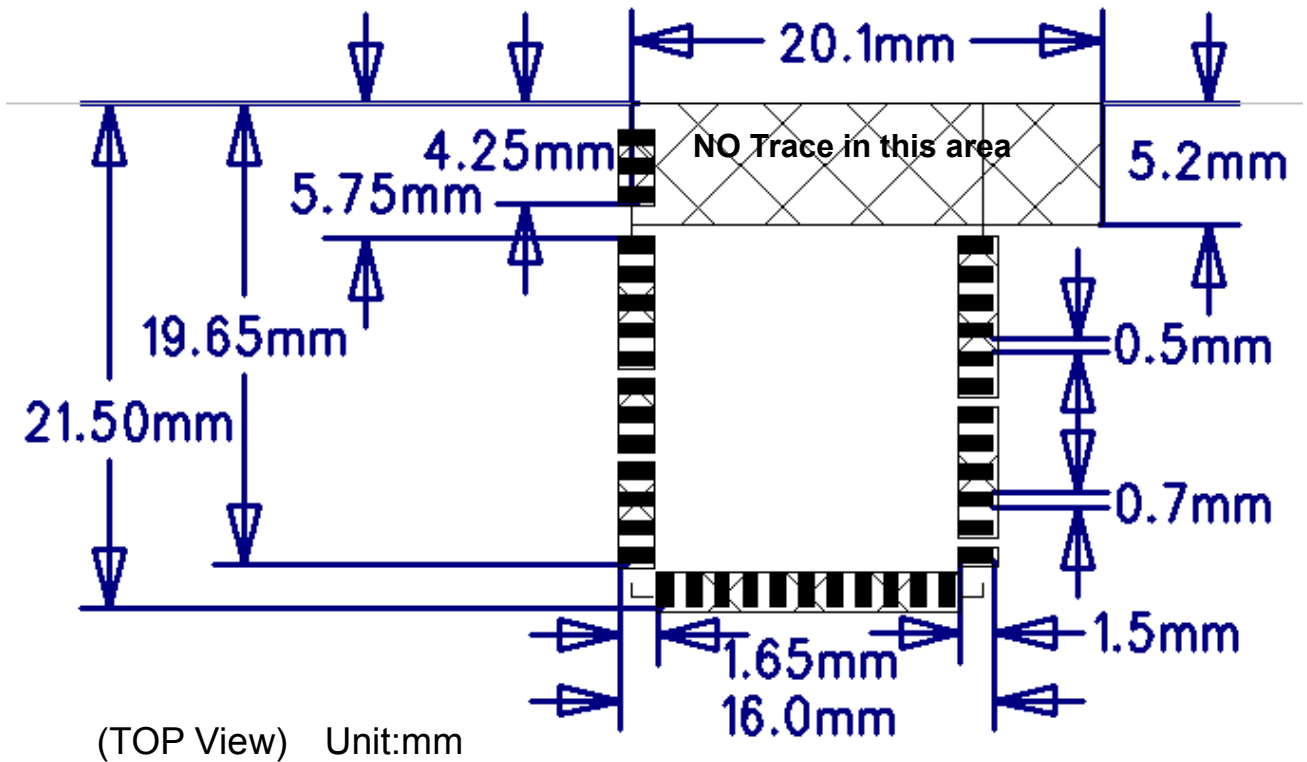


7.2 Layout Recommendation

Note: Please place the module at the edge of the board and the antenna keep out area at the PCB edge.



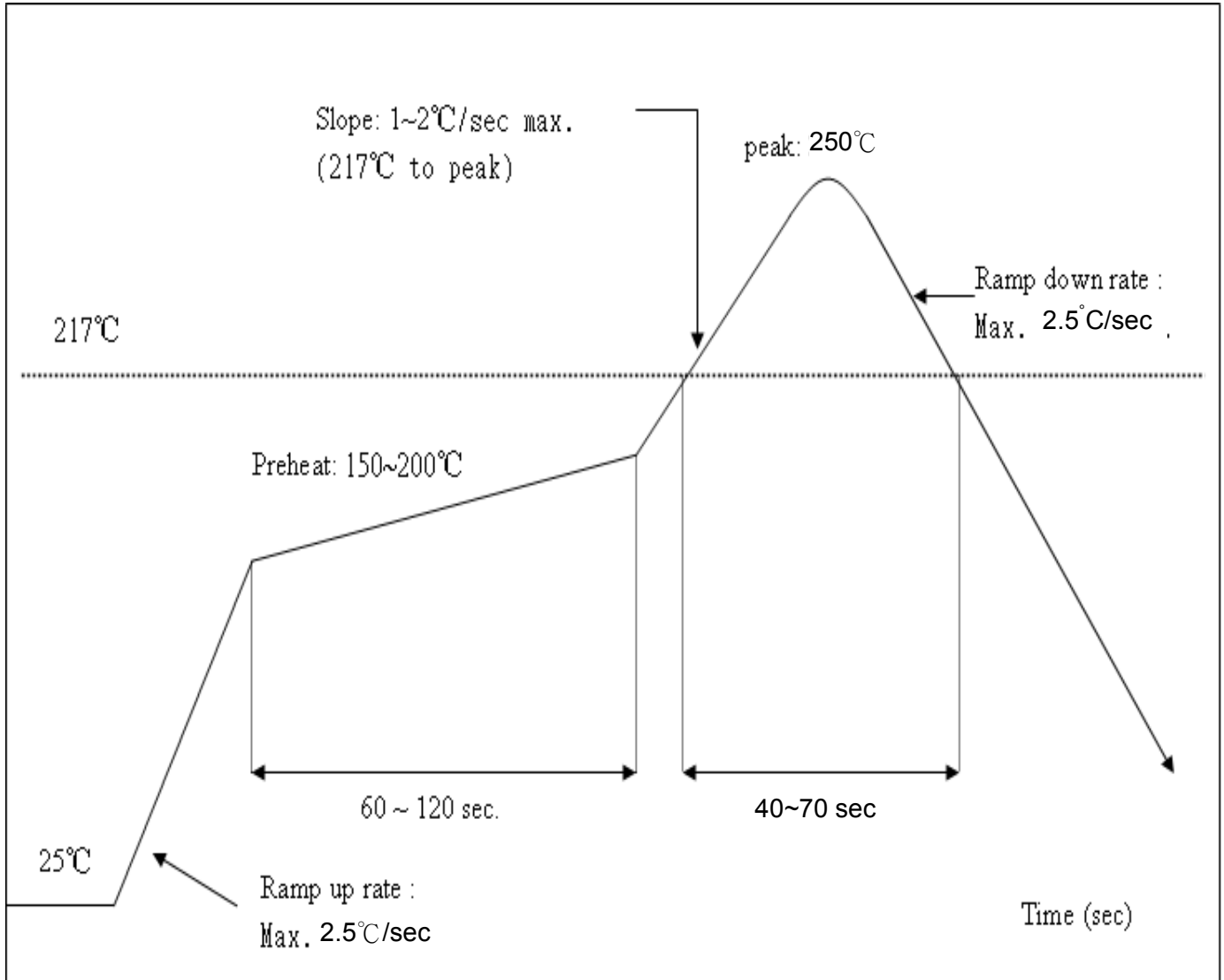
The recommend landing pad size is 0.7x1.5mm and the pin pitch is 1.2mm.



8. Recommended Reflow Profile

Referred to IPC/JEDEC standard. Peak Temperature : <math><250^{\circ}\text{C}</math>

Number of Times : ≤ 2 times

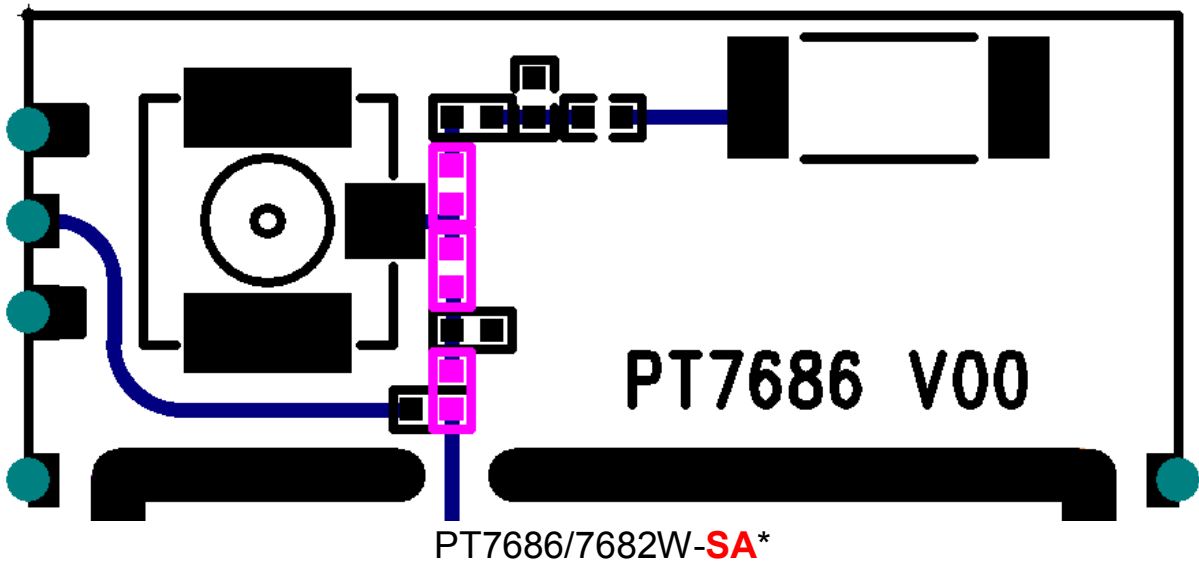


9. RF path and Antenna configuration

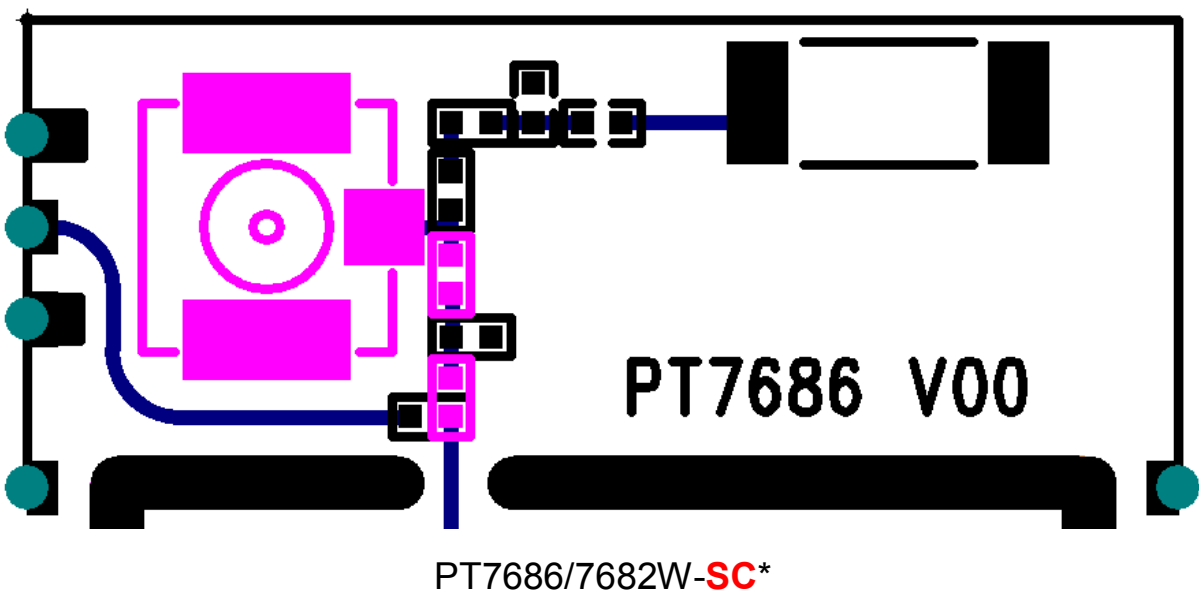
9.1 RF path setting

PT7686/7682W-S has four different variants of products that provide flexible of antenna selections to optimize the application.

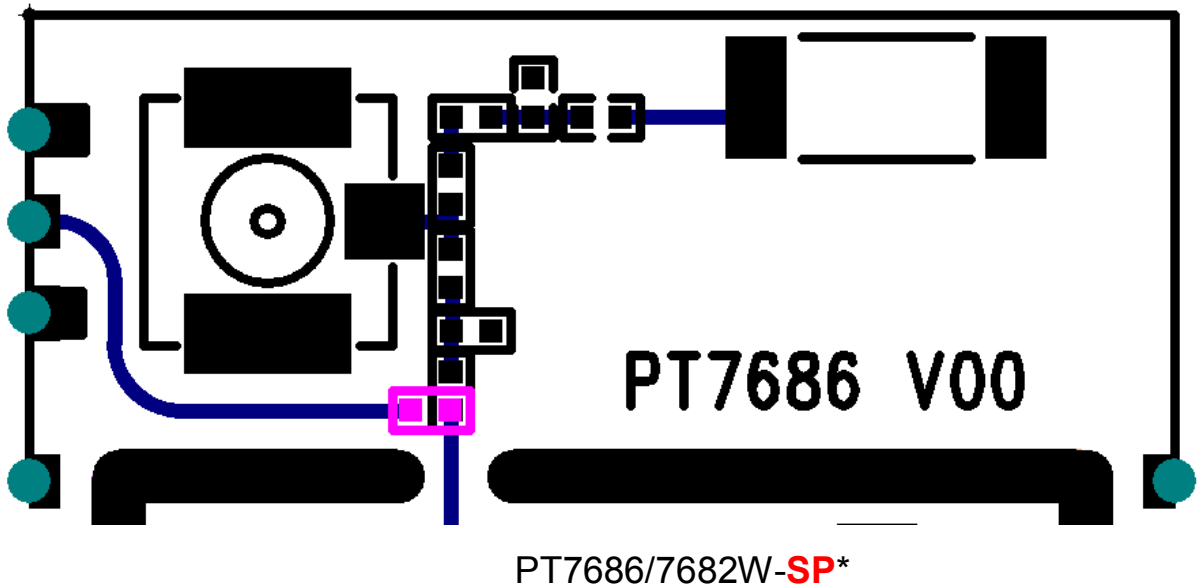
PT7686/7682W-**SA*** using the Chip Antenna on the module. C17,C18 and C19 shown in below is mounted on the board to have RF path to the on board PCB antenna.



On PT7686/7682W-**SC***, C18, C19 and U.FL connector are mounted to enable customer using external cable antenna with U.FL mating connector.



PT7686/7682W-**SP*** has C14 installed to bring RF signal to the pin-37 of the module. This allow to support antenna diversity feature. Please consult Pocom for further information support.



9.2 Antenna configuration

TBD