

## **Technical Description**

The Equipment Under Test (EUT) is a 2.4GHz Controller operating from 2405.5-2463.5MHz with 0.5MHz channel spacing for RC Car. The EUT is powered by 3\*1.5V AA batteries. After switch on the EUT and paired with RC Car, the RC Car can be controlled to fly forward, backward, turn left/right by EUT.

**The brief circuit description is listed as below:**

- 1) U1 acts as MCU (GPCE2P064A).**
- 2) U2 acts as 2.4GHz RF Module Circuit (A7105).**
- 3) Y1 is 16MHz crystal oscillator providing clock for U2.**
- 4) U3 acts as SPI Flash (GPR25L6403F).**

**Antenna Type: Internal antenna**

**Antenna Gain: 0Bi**

**Nominal rated field strength: 93.7dB $\mu$ V/m at 3m**

**Maximum allowed field strength of production tolerance: +/- 3dB**

## 2.4GHz FSK / GFSK Transceiver Module

**TNT-7105-QN**

**Data Sheet**



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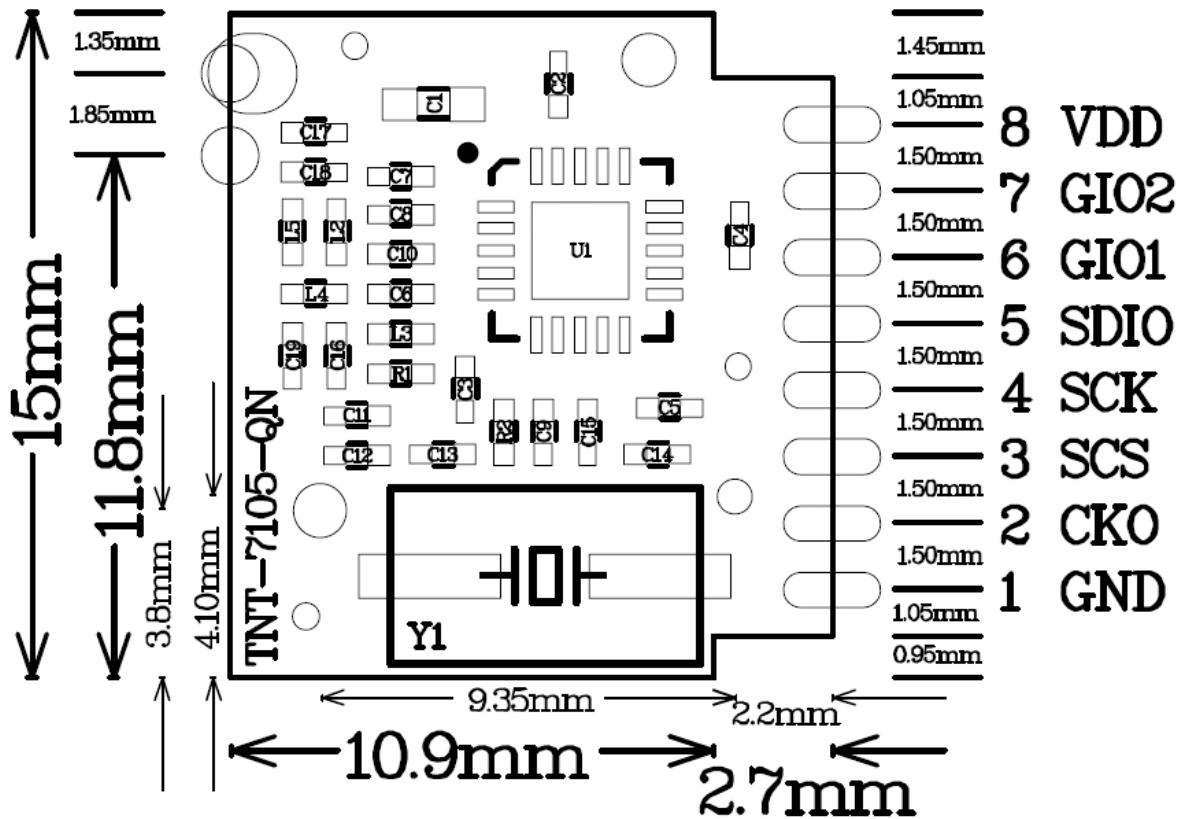
## General Description

The TNT-7105-QN module is designed for 2.4GHz ISM band wireless application using FSK / GFSK transceiver. This module features a fully programmable frequency synthesizer by SPI. The maximum data rate is 500Kbps.

## Electrical specification

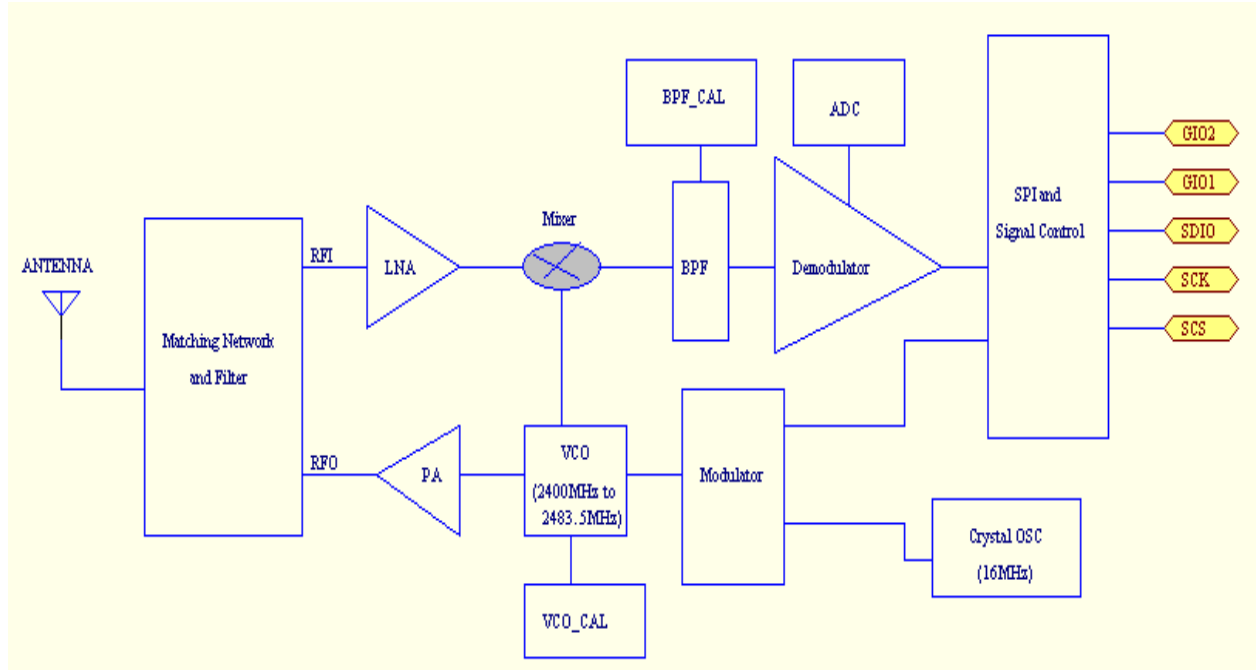
Item	Specification	Remark
Supply Voltage	1.9V ~ 3.6V	
Current consumption	0.7uA @Sleep mode 0.3mA @Idle mode 1.7mA @Stand-by mode 15.5mA @Rx mode 20.5mA @Tx mode (Pout=0dBm)	Typical
Frequency	2400 – 2483MHz	ISM band
Transmit output power	0 dBm @ room temperature	Typical
Rx sensitivity	-107dBm (typical) @2Kbps mode, Dev = 124KHz -104dBm (typical) @25Kbps mode, Dev = 124KHz -97dBm (typical) @250Kbps mode, Dev = 186KHz -95dBm (typical) @500Kbps mode, Dev = 186KHz	BER ≤ 1E-3
Modulation	FSK or GFSK	
Transmission distance	30 meter	BER ≤ 1E-3
Interface	8 x 1 pin 1.5mm solder pad	
Dimension	15mm(L) x 13.6mm (W) x 5mm(H)	Not include connector
Operating temperature	-40 ~ 85 °C	

## Pad Description

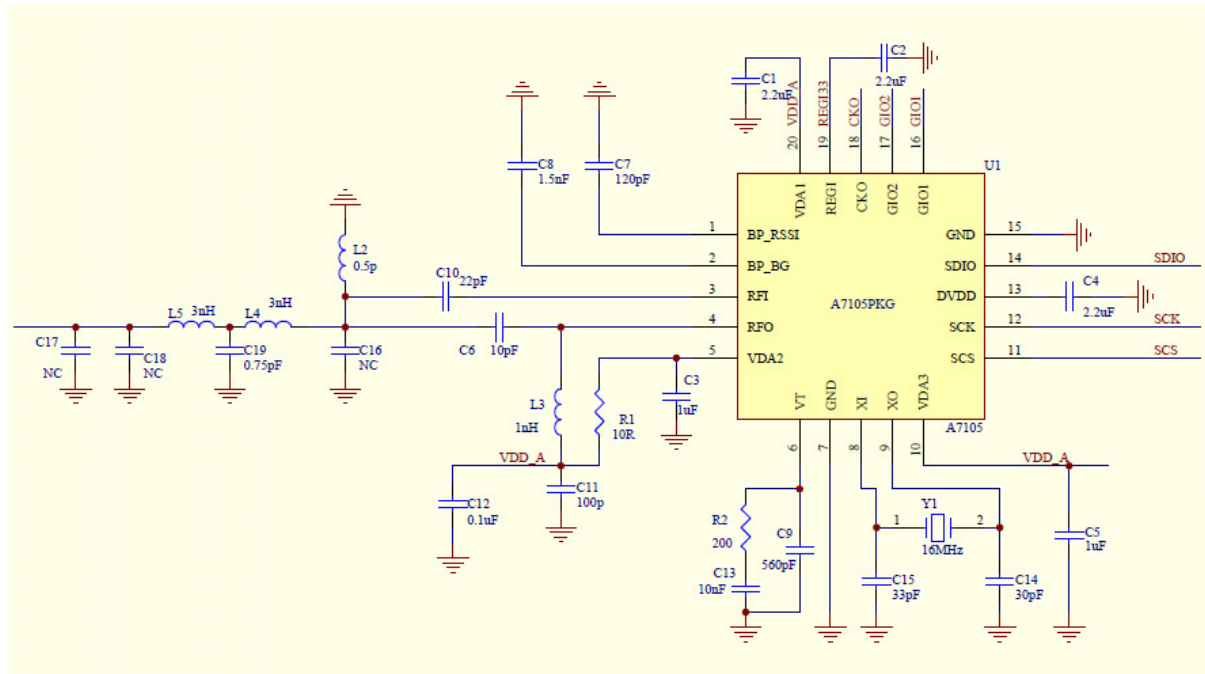


Pad No.	Symbol	Function Description	Remark
1	GND	Ground	
2	CKO	N.C.	
3	SCS	SPI Chip Selection	
4	SCK	SPI Clock	
5	SDIO	SPI read /write data pin	
6	GIO1	Multi-function IO1	
7	GIO2	Multi-function IO2	
8	VIN	Supply voltage	1.9V ~ 3.6V

## Block Diagram

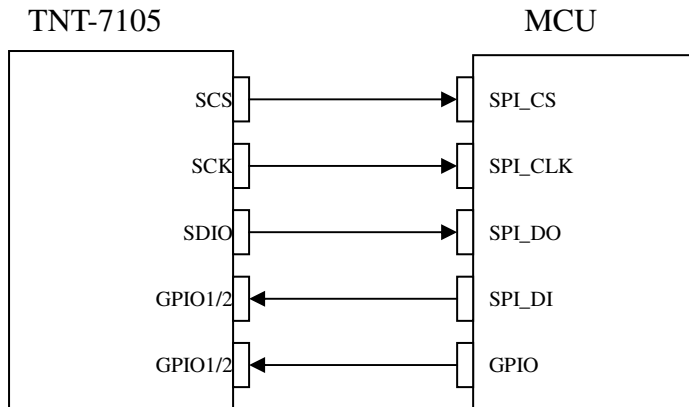


## Circuit Diagram

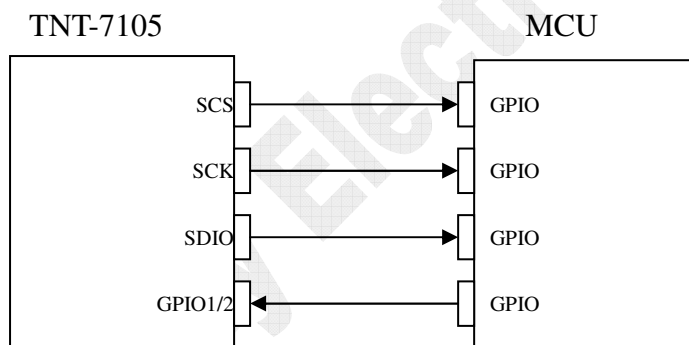


## Application circuit

### SPI serial bus (4 wires)



### Serial bus (3 wires)





## Bill of Materials

Material Name	Description	Location	Qty	Remark
PCB	13.6x15x1.0mm, RoHS	Main PCB	1	
IC	A7105 QFN-20 RoHS	U1	1	
	0.5pF ±0.25pF NPO 0402 50v C-Cap RoHS	L2	1	
Capacitor	1.2pF ±0.25pF NPO 0402 50v C-Cap RoHS	C18	1	
	0.75pF ±0.25pF NPO 0402 50v C-Cap RoHS	C19	1	
	3.9pF ±2% NPO 0402 50v C-Cap RoHS	C6	1	
	33pF ±5% NPO 0402 50v C-Cap RoHS	C15	1	
	30pF ±5% NPO 0402 50v C-Cap RoHS	C14	1	
	22pF ±5% NPO 0402 50v C-Cap RoHS	C10	1	
	100pF ±5% NPO 0402 50v C-Cap RoHS	C11	1	
	120pF ±5% NPO 0402 50v C-Cap RoHS	C7	1	
	560pF ±5% NPO 0402 50v C-Cap RoHS	C9	1	
	1.5nF ±10% ,X7R 0402 50v C-Cap RoHS	C8	1	
	10nF ±10% ,X7R 0402 25v C-Cap RoHS	C13	1	
	0.1uF ±20% ,Y5V 0402 16V C-Cap RoHS	C12	1	
	2.2uF ±20% ,Y5V 0402 6.3V C-Cap RoHS	C2,C4	2	
	2.2uF ±20% ,Y5V 0603 6.3V C-Cap RoHS	C1	1	
1uF ±20% ,Y5V 0402 6.3V C-Cap RoHS	C3,C5	2		
Resistor	10 ohm +/-5% 0402 Resistor RoHS	R1	1	
	200 ohm +/-5% 0402 Resistor RoHS	R2	1	
Inductor	3nH +/-0.3nH 0402 Inductor RoHS	L4,L5	2	
	1.2nH +/-0.3nH 0402 Inducto RoHS	L3	1	
Crystal	16M +/-20ppm CL=18pF SMT-49SB RoHS	Y1	1	
Antenna	#22 3302 33mm	ANT	1	

## Data Sheet Document History

Revision	Date	Description
A1	2011 / 6	Preliminary version I
A2	2014 / 7	Modify the PCB layout
A3	2016 / 7	Change the IC package to QFN

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