A7105 module specification

MD7105-A08(-01)

Important Notice:

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Revision History

Rev.	History	Issue Date	Remark
0.0	Initial issue MD7105-A08-01	November, 2008	Preliminary
0.1	MD7125-A08-01 Adjust top solder layer Add Viking Inductor part number	December, 2008	Preliminary

General Description

The MD7105-A08 module is designed for 2.4GHz ISM band wireless applications using AMICCOM A7105 FSK/GFSK transceiver. This module features a fully programmable frequency synthesizer by SPI. The maximum data rate is 500Kbps. This module is designed for COB (Chip on PC Board).

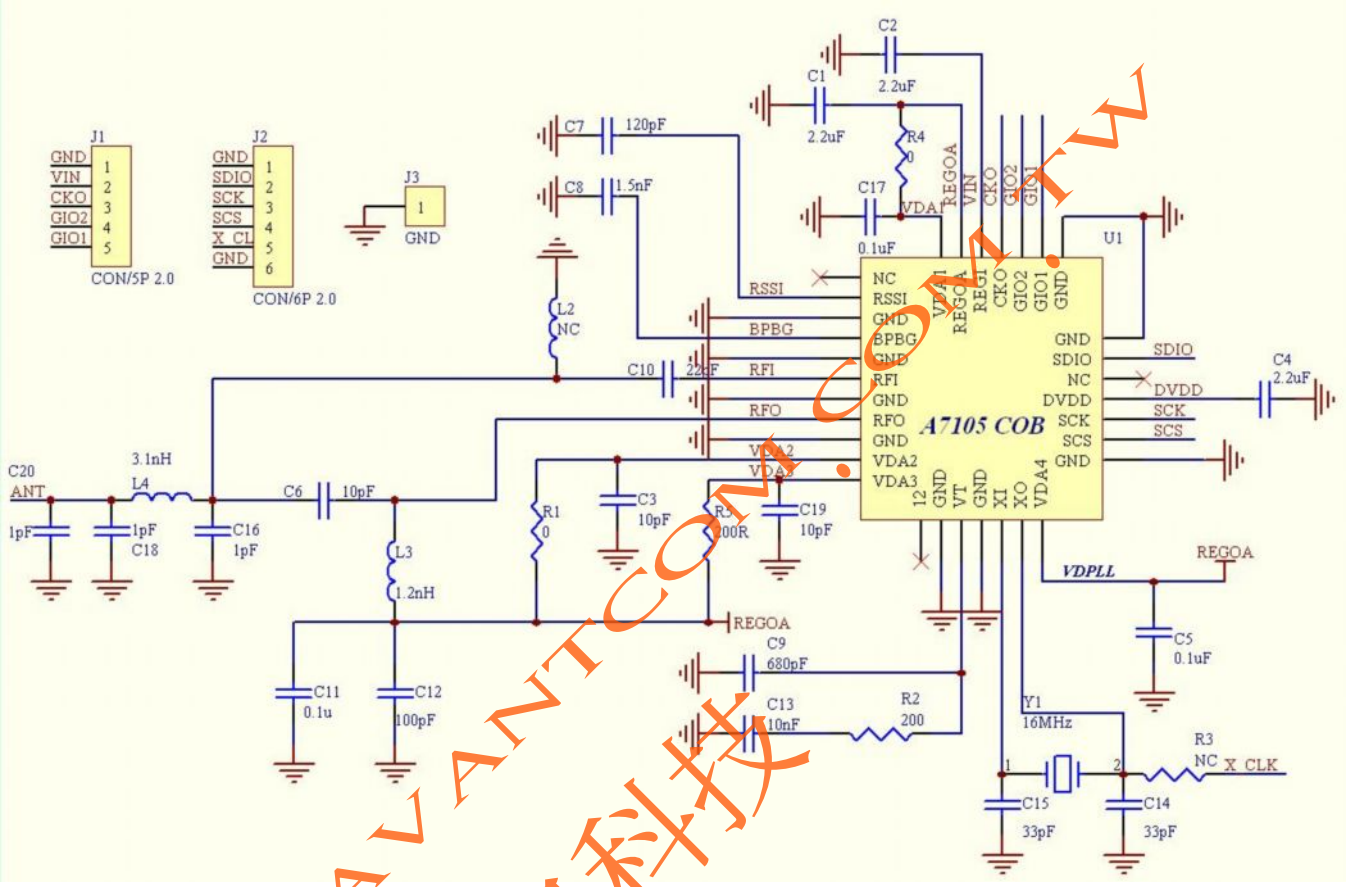
Electrical specification

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 – 2483 MHz	ISM band
Transmit output power	0 dBm @ room temperature	typical
Rx sensitivity	-110 dBm (typical) @ 2.5Kbps mode, Dev = 93 KHz -104 dBm (typical) @ 25Kbps mode, Dev = 93 KHz -97 dBm (typical) @ 250Kbps mode, Dev = 93 KHz -93 dBm (typical) @ 500Kbps mode, Dev = 186 KHz	BER≦1E-3
Modulation	FSK or GFSK	
Transmission distance	18 meter	BER≦1E-3
Interface	5 pin 2mm header, 6 pin 2mm header	
Dimension	20mm(L) x 13mm(W) x 2mm(H)	
Operating temperature	-40 ~ 85 ℃	

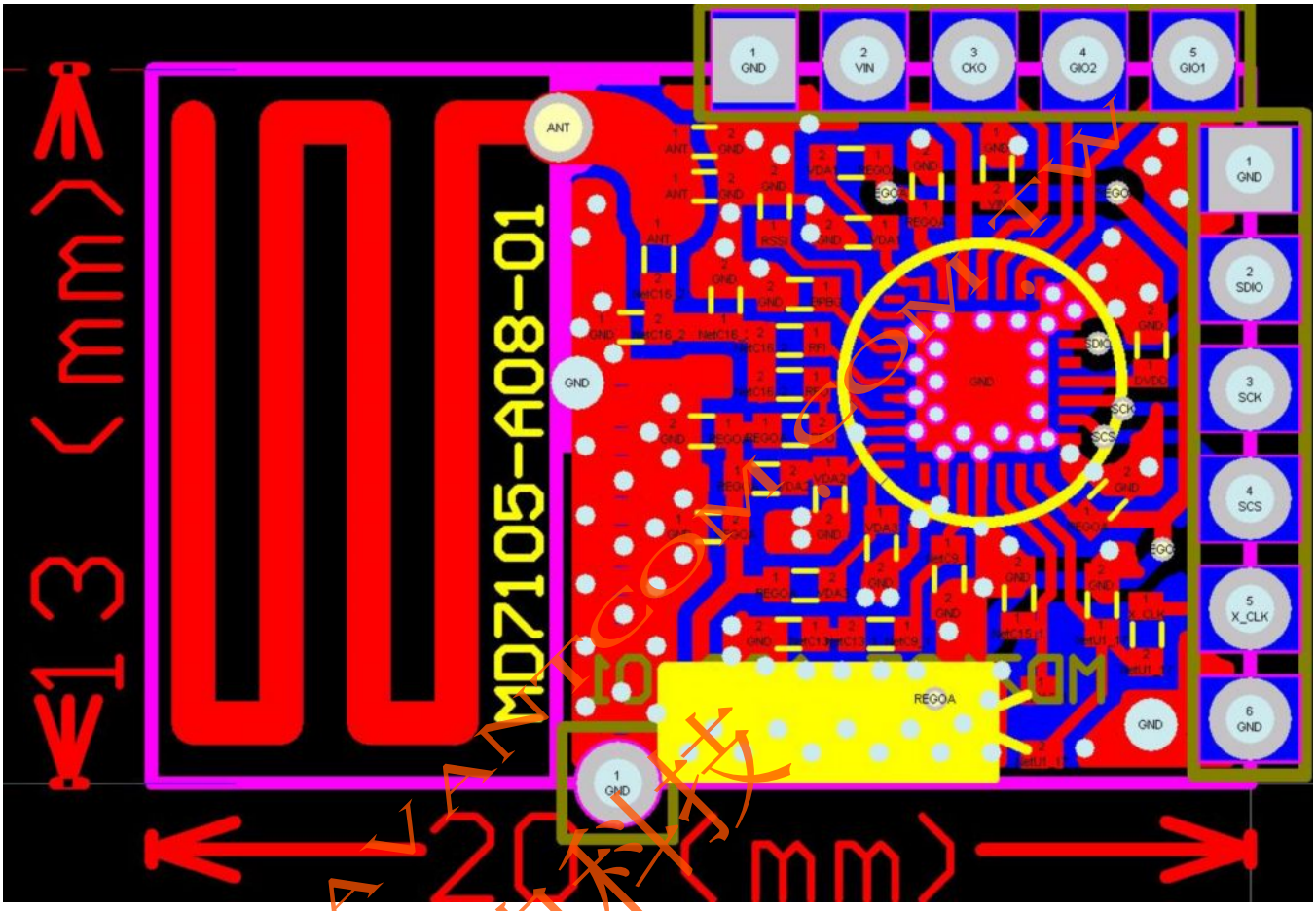
Interface

Pin No.	Symbol	Function Description	Remark
1	GND	Ground	J1 Pin1
2	VIN	RF Module Supply Voltage Input	1.9V ~ 3.6V, J1 Pin2
3	CKO	Clock Output	J1 Pin3
4	GIO2	General Purpose I/O 2	J1 Pin4
5	GIO1	General Purpose I/O 1	J1 Pin5
6	GND	Ground	J2 Pin1
7	SDIO	SPI Data I/O	J2 Pin2
8	SCK	SPI Clock	J2 Pin3
9	SCS	SPI Chip Selection	J2 Pin4
10	X_CLK	X'tal Clock Output	J2 Pin5
11	GND	Ground	J2 Pin6
12	GND	Ground	J3 Pin1

Application Circuit



Module dimension drawing



1. **The back plate of the IC should connect to GND.**
2. **When using cylinder crystal, please take special care as below:**
   - **(1) Please don't apply solder to the body directly, as it may cause characteristic deterioration.**
   - **(2) Please fix the unit firmly with elastic glue on the board.**
   - **(3) Please don't cut or bend the leads within 0.5 mm from the base of the cylinder body.**
   - **(4) Please don't use ultrasonic washing and ultrasonic welding on the unit, because it may be damaged.**
   - **(5) Please ask how to use it to avoid damage for detail from your crystal supplier.**

Bill of Material

Item	Component	Description	Size	Value	Tol.	Remark
1	C1	Y5V ceramic capacitor	0402	2.2uF	20%	Annotation 1
2	C2	Y5V ceramic capacitor	0402	2.2uF	20%	
3	C3	NPO ceramic capacitor	0402	10pF	5%	Annotation 1
4	C4	Y5V ceramic capacitor	0402	2.2uF	20%	Annotation 1
5	C5	Y5V ceramic capacitor	0402	0.1uF	20%	
6	C6	NPO ceramic capacitor	0402	10pF	5%	Tx matching circuit
7	C7	NPO ceramic capacitor	0402	120pF	10%	
8	C8	X7R ceramic capacitor	0402	1.5nF	10%	
9	C9	X7R ceramic capacitor	0402	680pF	10%	PLL Loop Filter
10	C10	NPO ceramic capacitor	0402	22pF	5%	Rx matching circuit
11	C11	Y5V ceramic capacitor	0402	0.1uF	20%	
12	C12	NPO ceramic capacitor	0402	100pF	5%	Tx matching circuit
13	C13	X7R ceramic capacitor	0402	10nF	10%	PLL Loop Filter
14	C14	NPO ceramic capacitor	0402	33pF	5%	Annotation 2
15	C15	NPO ceramic capacitor	0402	33pF	5%	Annotation 2
16	C16	NPO ceramic capacitor	0402	1pF	0.25pF	LPF
17	C17	Y5V ceramic capacitor	0402	0.1uF	20%	
18	C18	NPO ceramic capacitor	0402	1pF	0.25pF	LPF
19	C19	NPO ceramic capacitor	0402	10pF	5%	
20	C20	NPO ceramic capacitor	0402	1pF	0.25pF	for antenna matching
21	L3	Chip inductor	0402	1.2nH	0.1nH	Viking AL02BT1N2
22	L4	Chip inductor	0402	3.1nH	0.1nH	Viking AL02BT3N1
23	R1	Chip resistor	0402	0 ohm	5%	
24	R2	Chip resistor	0402	200ohm	5%	PLL Loop Filter
25	R4	Chip resistor	0402	0 ohm	5%	
26	R5	Chip resistor	0402	200 ohm	5%	
27	U1	TRX	die	A7105		AMICCOM
28	Y1	Crystal	Cylinder 2x6 mm	16MHz		Yoke. Cload 20 pF, Annotation 3

	L2		0402	NC		
	R3		0402	NC		

Annotation:

1. If the module is operated in the temperature range: 0~60 degree C, The value of C1, C2, C4 can be changed to 1uF.
2. The value of C14, C15 maybe change to correct the frequency offset.
3. Abut the spec. of X'tal, please see AN_A7105_00 v0.2 page 3 for detail.
4. There is no L1.