ACI8105 6dBm module specification

Version :20140318

Avant-Com Inc TW-TEL:886-2-6601-0015 SZ-TEL:86-755-8279-3556
E-Mail：david_liao@avantcom.com.tw;jackie_lee@avantcom.com.tw; service@avantcom.com.cn
Website：www.avantcom.com.tw / www.avantcom.com.cn

General Description

A8105 is a high performance and low cost 2.4GHz FSK/GFSK system-on-chip (SOC) wireless transceiver. With on chip fraction-N synthesizer, it can support the application of data rate from 4Kbps to 2Mbps and frequency hopping system. This device integrates high speed pipeline 8051 MCU, 16KBytes In-system programmable flash memory, 2KB SRAM, various powerful functions and excellent performance of a leading 2.4GHz FSK/GFSK RF transceiver. It can be operated with wide voltage from 2.0V ~ 3.6V. A8105 has various operating modes, making it highly suited for systems where ultra-low power consumption is required. The device is in QFN5X5 40 pin package.

Electrical specification

Item	Specification	Remark
Supply Voltage	2.0V ~ 3.6V	
Current Consumption	0.8μA @Deep Sleep mode 3mA @Stand-by mode 9.5mA @PLL mode 18mA @RX mode 23.5mA @Tx mode (Pout = 6dBm)	typical
Frequency	2402-2480 MHz	ISM band
Transmit output power	6 dBm @ room temperature	Typical Annotation 1
Rx sensitivity	-92 dBm (typical) @ 1Mbps mode	BER≦1E-3
Modulation	GFSK	
Dimension	18mm(L) x 12mm(W) mm² with PCB Antenna	
Operating temperature	-40 ~ 85℃	

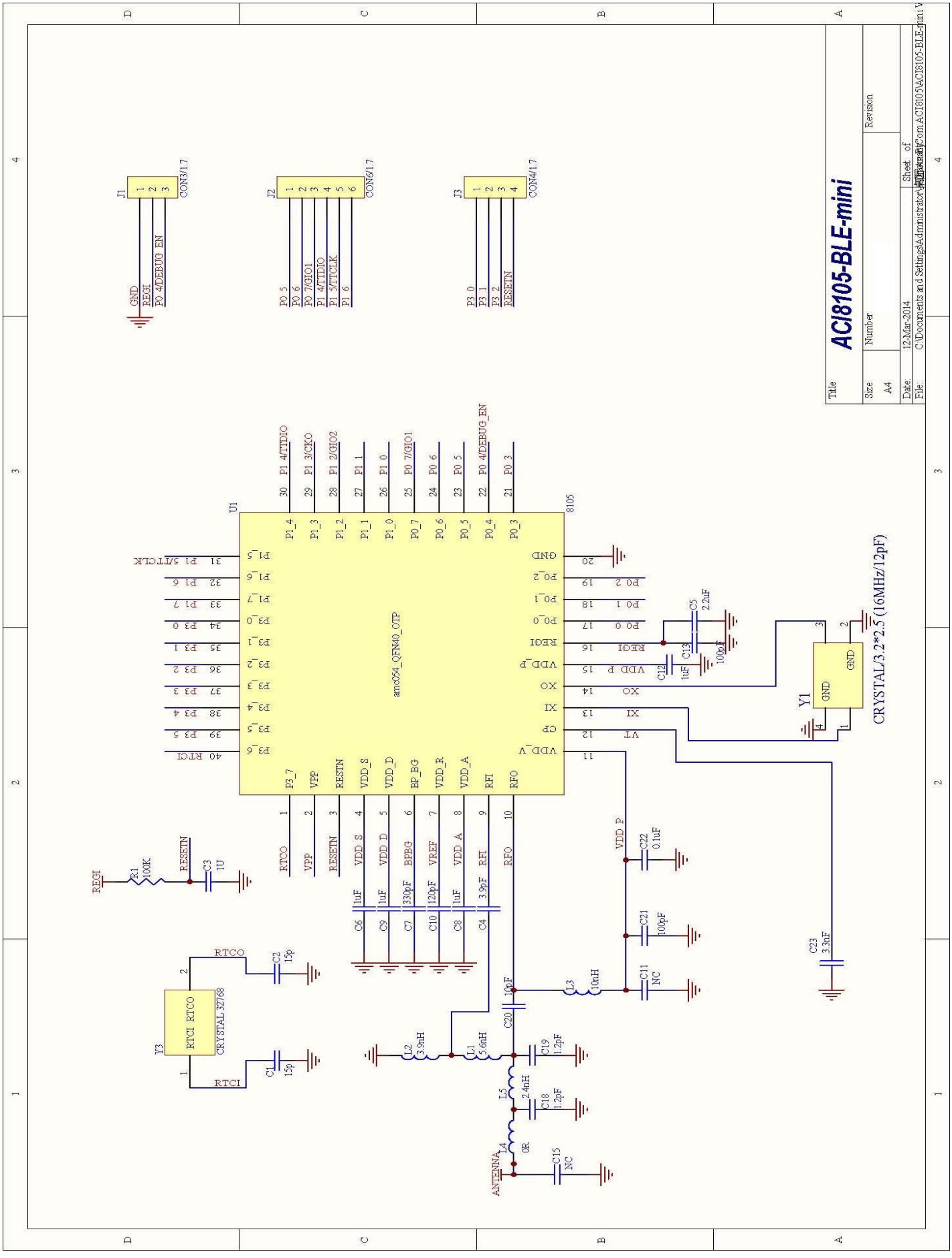
Annotation 1:

1. Tx output power = 6dBm
   Register: [082C] Tx test (TBG: 6 , PAC: 3, TXCS: Low Current) Value:0X5E
2. TX output power can be set by Register: [082C] Tx test.

Interface

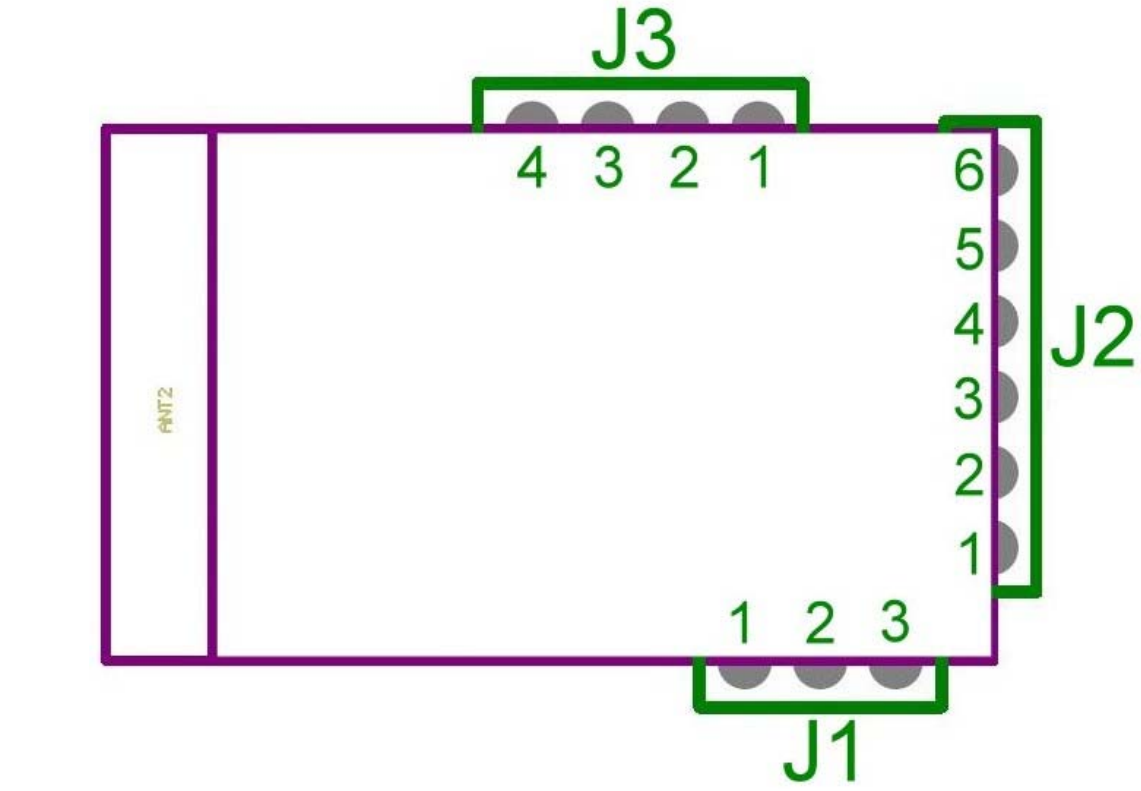
Pin No.	Symbol	I/O	Function Description
J1-1	GND	DIO	GND
J1-2	REGI	AI	REGI
J1-3	P0.4	DIO	GPIO/ICE mode / Debug EN
J2-1	P0.5	DIO	I2C_SCL
J2-2	P0.6	DIO	I2C_SDA
J2-3	P0.7	DIO	INT2 / GIO1
J2-4	P1.4	DIO	TTAG_TTDIO
J3-5	P1.5	DIO	TTAG_TTCK
J3-6	P1.6	DIO	PWM0 / ADC4
J3-1	P3.0	DIO	UART0_RX / ADC6
J3-2	P3.1	DIO	UART0_TX / ADC7
J3-3	P3.2	DIO / AI	INT0 / ADC0
J3-4	RESETN	DI	RESETN

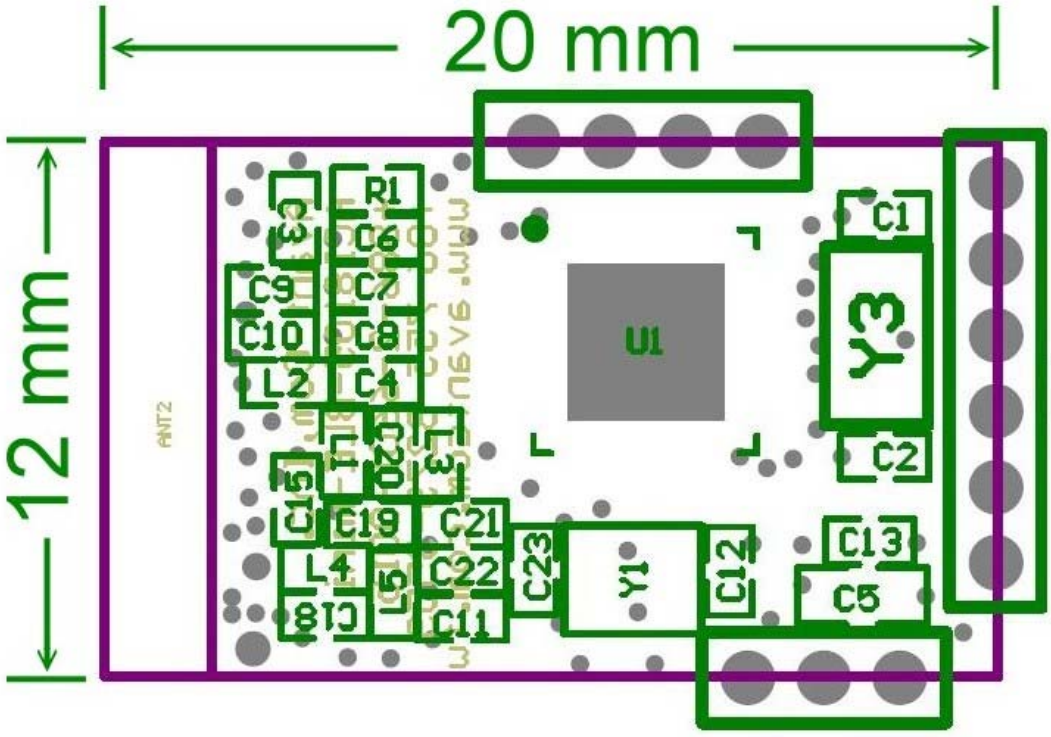
Schematic



Avant-Com Inc TW-TEL:886-2-6601-0015 SZ-TEL:86-755-8279-3556
E-Mail：david_liao@avantcom.com.tw;jackie_lee@avantcom.com.tw; service@avantcom.com.cn
Website：www.avantcom.com.tw / www.avantcom.com.cn

Define Diagram





Avant-Com Inc TW-TEL:886-2-6601-0015 SZ-TEL:86-755-8279-3556
E-Mail：david_liao@avantcom.com.tw;jackie_lee@avantcom.com.tw; service@avantcom.com.cn
Website：www.avantcom.com.tw / www.avantcom.com.cn

Bill of Material

Item	Component	Description	Size	Value	Tol.	Manufacturer	Manufacturer Number
1	C1 , C2	C0G ceramic capacitor	0402	15pF	±5%	Murata	GRM1555C1H150JA01
2	C2, C6, C8, C9, C12	X5R ceramic capacitor	0402	1μF	±10%	Murata	GRM155R61A105KE15
3	C4	C0G ceramic capacitor	0402	3.9pF	±0.25pF	Murata	GRM1555C1H3R9CA01
4	C5		0603	2.2μF	±20%		
5	C7	C0G ceramic capacitor	0402	330pF	±5%	Murata	GRM1555C1H331JA01
6	C10	C0G ceramic capacitor	0402	120pF	±5%	Murata	GRM1555C1H121JA01
7	C11, C15		0402	NC			
8	C13, C21	C0G ceramic capacitor	0402	100pF	±5%	Murata	GRM1555C1H101JA01
9	C18, C19	C0G ceramic capacitor	0402	1.2pF	±0.25pF	Murata	GRM1555C1H1R2CA01
10	C20	C0G ceramic capacitor	0402	10pF	±5%	Murata	GRM1555C1H100JA01
11	C22	X7R ceramic capacitor	0402	0.1μF	±10%	Murata	GRM155R71C104KA88
12	C23	X7R ceramic capacitor	0402	3.3nF	±10%	Murata	GRM155R71C333KA88
13	L1	Chip inductor	0402	5.6nH	±0.3nH	Murata	LQG15HS5N6S02
14	L2	Chip inductor	0402	3.9nH	±0.3nH	Murata	LQG15HS3N9S02
15	L3	Chip inductor	0402	10nH	±5%	Murata	LQG15HS10NJ02
16	L4	Chip inductor	0402	0 ohm			
17	L5	Chip inductor	0402	2.4nH	±0.3nH	Murata	LQG15HS2N4S02
18	R1	Chip inductor	0402	100K ohm			
19	U1		QFN 40 (5x5)	A8105		Amiccom	
20	Y1	Crystal	3.2 x 2.5 mm	16MHz CL=12pF	±20ppm	AURUM	Annotation1
21	Y3	Crystal	3.2 x 1.5 mm	32.768KHz CL = 12.5pF	±20ppm		

Annotation 1

1. A8105 has built-in loading. User can set VCOSC[5:0] to meet crystal loading requirement.
2. Recommend VCOSC = 20, if crystal load = 12pF
   Recommend VCOSC = 13, if crystal load = 9pF

Avant-Com Inc TW-TEL:886-2-6601-0015 SZ-TEL:86-755-8279-3556
E-Mail：david_liao@avantcom.com.tw;jackie_lee@avantcom.com.tw; service@avantcom.com.cn
Website：www.avantcom.com.tw / www.avantcom.com.cn

Order Information

Item	Part number	dimension	Tary	BOX	Remark
1	ACI8105-BLE-Mini module	18 x 12 mm	100 pcs	3000 pcs	

Avant-Com Inc TW-TEL:886-2-6601-0015 SZ-TEL:86-755-8279-3556
E-Mail：david_liao@avantcom.com.tw;jackie_lee@avantcom.com.tw; service@avantcom.com.cn
Website：www.avantcom.com.tw / www.avantcom.com.cn