

Features

- Bluetooth Specification V.1.2 compliant
- Output Power Class 1 (20 dBm max)
- Transmission rate up to 721 Kbps
- ACL and SCO links
- Supports USB (1.1)/UART/PCM (pulse code modulation) interfaces
- Bluetooth protocol layers support up to HCI
- Optimized link manager and control
- Working distance up to 100 meters
- Support Wireless LAN coexistence
- Integrated 4-Mbit flash, 64 Kbytes RAM, 4 KBytes ROM
- 3.3 V single supply voltage
- CE compliant (IMQ Exp. Opinion 0081-AREF00017)
 - Safety EN60950-1 (2001)
 - EMC EN301 489 17V1.2.1
 - Radio ES 300 328 V1.6.

Applications

- Cable replacement
- Personal Computers accessories
- Laptop PCs and accessories
- Hand held devices and accessories
- HID devices (for example, keyboard, mouse, joystick and game controller)
- Internet access points
- Industrial controls



Description

Bluetooth class 1 module is a highly integrated module for fast implementation in various applications to enable electronic devices to communicate wirelessly with other Bluetooth enabled devices. It is a true saver for manufacturers to provide time-to market products.

With three different types of interface, (USB/UART/PCM), the module can be used in applications such as Notebook PCs and accessories, PDA, Access Points, Headphones and PC peripherals.

The module is based on the ST STA2416 baseband controller with 4-Mbit flash memory and STLC 2150 radio transceiver.

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1 Overview

1.1 Absolute maximum ratings

Operation of the module beyond these limits is not guaranteed. Sustained exposure to these limits adversely affects device reliability.

Table 1. Absolute maximum ratings

Symbol	Parameter	Min	Max	Unit
Vdd	Module supply voltage		4	V
Vin	Input voltage on any digital pin	Vss1-0.5	Vdd+0.3	V
Tstg	Storage temperature	-40	+85	°C
Tsold	Soldering temperature		240	

1.2 Operating ranges

Operating ranges define the limits for functional operation and parametrics characteristics of the module. Functionality outside these limits is not implied.

Table 2. Operating ranges

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vdd	Module supply voltage	-20°C < T < 70 °C	3.13	3.3	3.47	V
Tstg	Operating ambient temperature		-20		+70	°C

1.3 I/O specifications

Table 3. DC input/output specification

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Vil	Low Level Input Voltage	3.13 V < Vdd < 3.47 V			0.8	V
Vih	High Level Input Voltage	3.13 V < Vdd < 3.47 V	2			V
Vhyst	Schmitt trigger hysteresis	3.13 V < Vdd < 3.47 V	0.4			V
Vol	Low Level Output Voltage	Io load = pin drive capability			0.15	V
Voh	High Level Output Voltage	Io load = pin drive capability	Vdd-0.15			V

1.4 Bluetooth section

Table 4. Bluetooth section

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Ptr	Transmission power	3.13 V < Vdd < 3.47 V	16	18	20	dBm
Sens	Sensitivity	3.13 V < Vdd < 3.47 V	-70			dBm
Flim	Frequency limit	3.13 V < Vdd < 3.47 V	2402		2480	MHz
CHs	channel space			1		MHz
Hop	Hopping			1600		hops/ sec
RF ck	RF crystal oscillator			13		MHz
BB ck	Baseband crystal oscillator GSBT2416C1			32		KHz
BB ck	Baseband crystal oscillator GSBT2416C1.A			32,768		KHz
Tra	Transmission rate asynchronous				721	kbits/ sec
Trs	Transmission rate synchronous				432	kbits/ sec
Iop	Operation Current TX mode			180		mA
Iop	Operation Current RX mode			60		mA

2 Block diagram, mechanical dimensions and land pattern

Figure 1. Block diagram

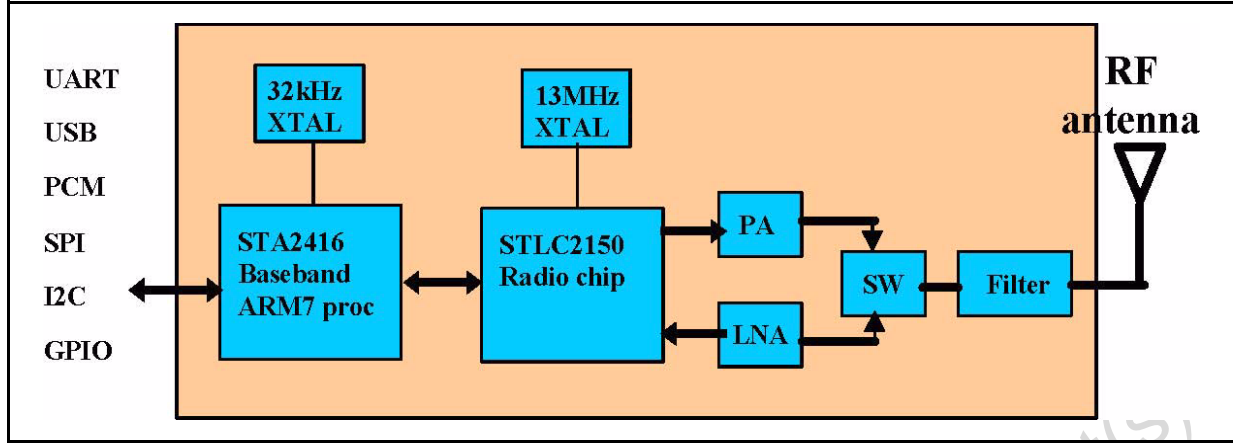


Figure 2. Mechanical dimensions

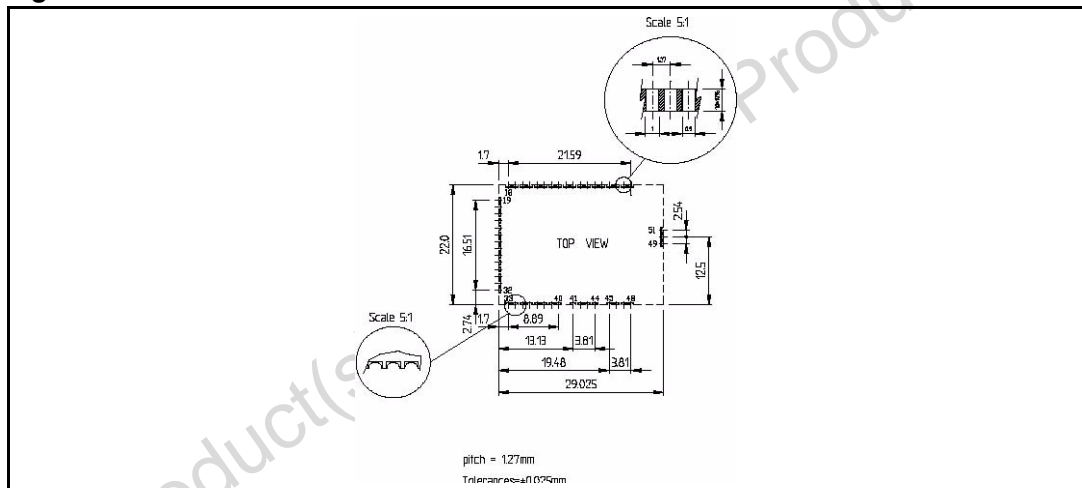
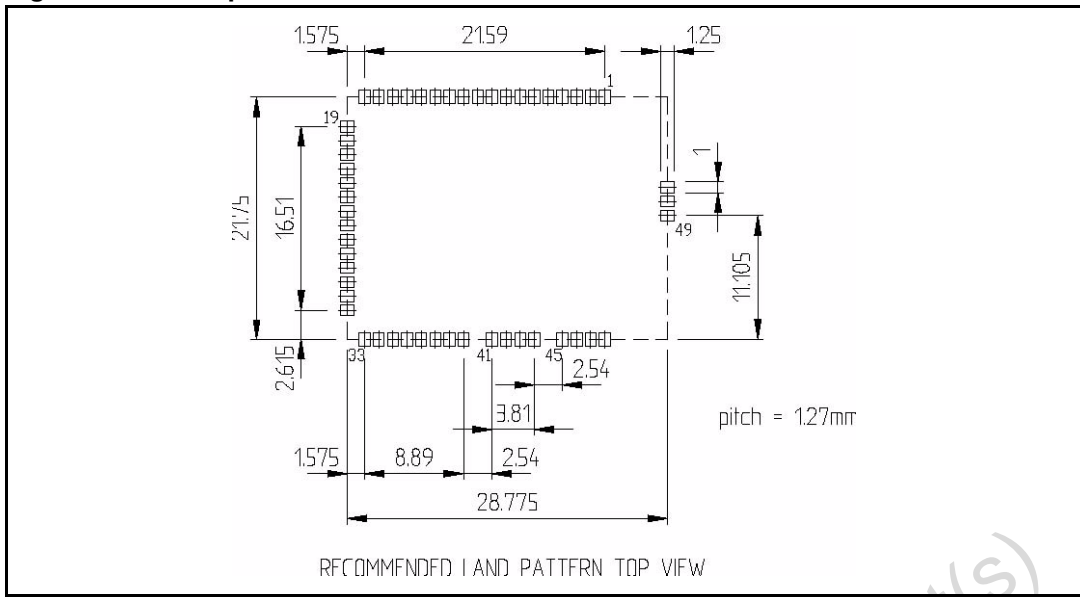


Figure 3. Land pattern



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3 Pin list

Table 5. Pin list

Pin number	Pin name	I/O	Description
1	Vss1		GND
2	Vdd		Module supply voltage- Single 3.3V
3	GPIO0	I/O	General purpose I/O line
4	GPIO1	I/O	General purpose I/O line
5	GPIO2	I/O	General purpose I/O line
6	GPIO3	I/O	General purpose I/O line
7	GPIO4	I/O	General purpose I/O line
8	GPIO5	I/O	General purpose I/O line
9		I/O	Not to be used Internally used for RX/TX switch
10	GPIO7	I/O	General purpose I/O line
11	GPIO8	I/O	General purpose I/O line
12	GPIO9	I/O	General purpose I/O line
13	LP CLOCK OUT		32 KHz out - GSBT 2416C1 32,768 KHz out - GSBT 2416C1.A
14	GPIO11	I/O	General purpose I/O line
15		I/O	Not to be used Internally used for TX gain setting
16		I/O	Not to be used Internally used for TX gain setting
17		I/O	Not to be used Internally used for TX gain setting
18		I/O	Not to be used Internally used for TX gain setting
19	TDI		JTAG pin
20	TDO		JTAG pin
21	TMS		JTAG pin
22	NTRST		JTAG pin
23	TCK		JTAG pin If not used connect to VSS1

Table 5. Pin list (continued)

Pin number	Pin name	I/O	Description
24	I2C_dat	I/O	I2C bus interface data To be connected to Vdd with 10 KOhm resistor
25	I2C_clk	I/O	I2C bus interface clock To be connected to Vdd with 10 KOhm resistor
26	INT1	I	External Interrupt signal Internally connected to Vss1 with 10 KOhm If not used connect to Vss1
27	PCM_SYNC	I/O	PCM 8 KHz synch
28	PCM_CLK	I/O	PCM clock
29	PCM_A	I/O	PCM Data In/Out
30	PCM_B	I/O	PCM Data In//Out
31	USB_DN	I/O	USB data - If not used connect to Vss1
32	USB_DP	I/O	USB data + If not used connect to Vss1
33	UART2_RXD	I	UART2 data input If not used connect to Vdd
34	UART2_TXD	O	UART2 data output
35	UART2_I1	I	UART2 clear to send input If not used connect to Vdd
36	UART2_O2	O	UART1 ready to send output
37	SPI_FRM	I/O	Synchronous Serial Interface frame synch
38	SPI_CLK	I/O	Synchronous Serial Interface clock
39	SPI_TXD	O/T	Synchronous Serial Interface transmit data
40	SPI_RXD	I	Synchronous Serial Interface receive data If not used connect to Vss1
41	1V8	O	1.8 V digital supply out (test purpose) To be left Not Connected
42	3V3	O	3.3 V I/O power supply out (test purpose) To be left Not Connected

Table 5. Pin list (continued)

Pin number	Pin name	I/O	Description
43	Vss1	-	GND (test purpose) To be left Not Connected
44	2V7	O	2.7 digital core supply out (test purpose) To be left Not Connected
45	RESET	I	Reset pin (active low)
46	BOOT	I	External downloading Enable (active low) Internally pulled-up to 1.8 V by 10 KOhm
47	UART10_TXD	O	UART1 data output
48	UART11_RXD	I	UART1 data input If not used connect to Vdd
49	Vss2 (RF GND)		RF GND
50	+ANTENNA		Antenna out
51	Vss2 (RF GND)		RF GND

4 Revision history

Table 6. Document revision history

Date	Revision	Changes
21-Dec-2006	1	Initial release.

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