

EV01S Rx

Subwoofer Module

承認書

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Version: 1.0

Subject to change without further notice.

2017/04/11
Everestek Inc.

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1. Spec

Module	EV01S
FW	SUREV2B703135E56
Main Chip	ETK51
RF	5.8GHz
Modulation	FSK

2. Features

- Radio Frequency: 5.8GHz unlicensed bands
- Uncompressed Audio
- Short Audio Latency: < 13ms (analog to analog)
- Link Distance: up to 40 Meters
- Advanced RF Selection Algorithm
- Small RF Foot Print
- Best Coexistence with Wi-Fi/Bluetooth
- Highly Integrated SoC: RF/PA/CPU/Flash Embedded
- Wide-Band Antenna on Module
- Short RBOM List
- RF Modulation: FSK
- Digital I2S (master or slave) Audio Interface, 16/24bit , 32/44.1/48KHz Sampling Rate
- Low Power Consumption
- Supply Voltage: 2.7~3.6V
- Support I2C master/slave mode and SPI/UART
- Optional module version with MHF connector for external antenna
- Compliant with EMC Regulations (FCC/CE)

3. Application

- Wireless Soundbar/Subwoofer

4. Electrical Specifications

RF Specification

Item	Min	Typ	Max	Unit	Note
RF Carrier Frequency	5731	—	5820	MHz	For 5.8Ghz
-20dB bandwidth	—	2	—	MHz	
Output Power		7		dBm	
RF Sensitivity	—	-81		dBm	

Audio Specification(I2S to I2S)

Item	Min	Typ	Max	Unit	Note
SNR		142		dB	@1kHz
THD + N		-135		dB	@1kHz
Frequency response		6		KHz	Programmable, <=6KHz
Dynamic range		-140		dB	@1kHz

Operation Condition

Item	Min	Typ	Max	Unit	Note
VDD	2.7	3.3	3.6	V	Power Supply Voltage
Operating Temperature	-5	25	60	°C	Ambient temperature

Electrical Specification (MCU+RF)

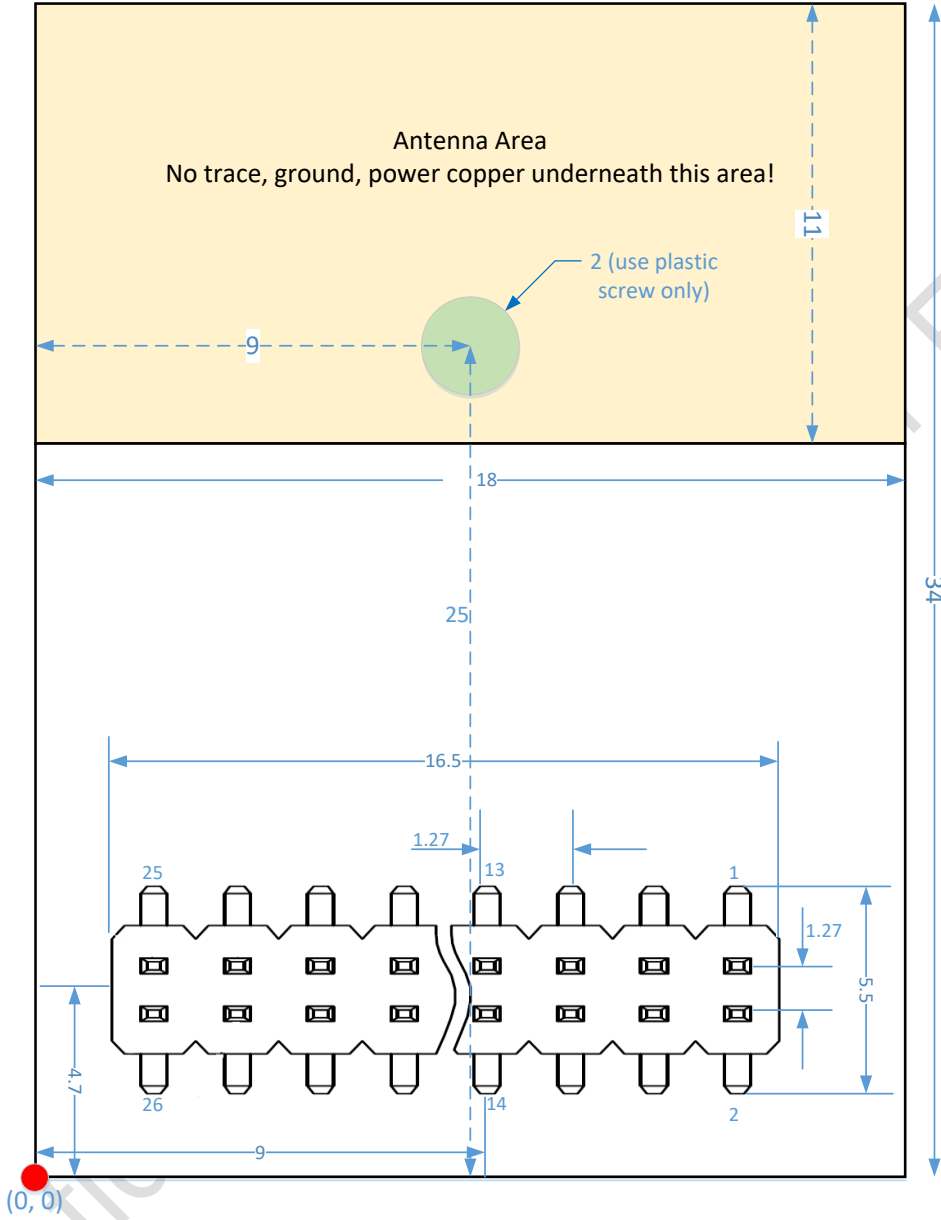
Item	Min	Typ	Max	Unit	Note
Transmitter current		47		mA	Output power 7dBm
Receiver current		45		mA	
sleep mode		2		mA	Crystal enable, timer or interrupt wake up system

Digital interface

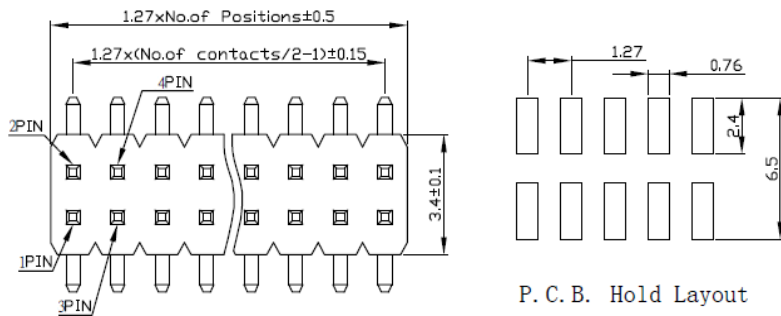
Item	Min	Typ	Max	Unit	Note
VIH	0.7VDD		VDD+0.2	V	Input High Threshold
VIL	VSS		0.3VDD	V	Input Low Threshold
VOH	VDD-0.3		VDD	V	Output High Threshold
VOL	0		0.3	V	Output Low Threshold

5. Mechanical Specification

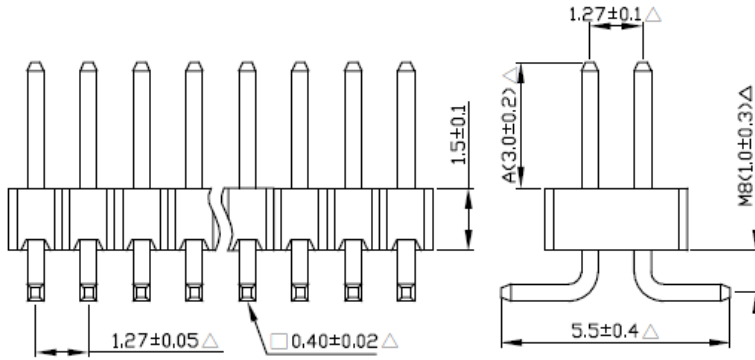
- Dimension : 34 mm x 18 mm
- PCB 4 Layers
- Mechanical Drawing:
Bottom view



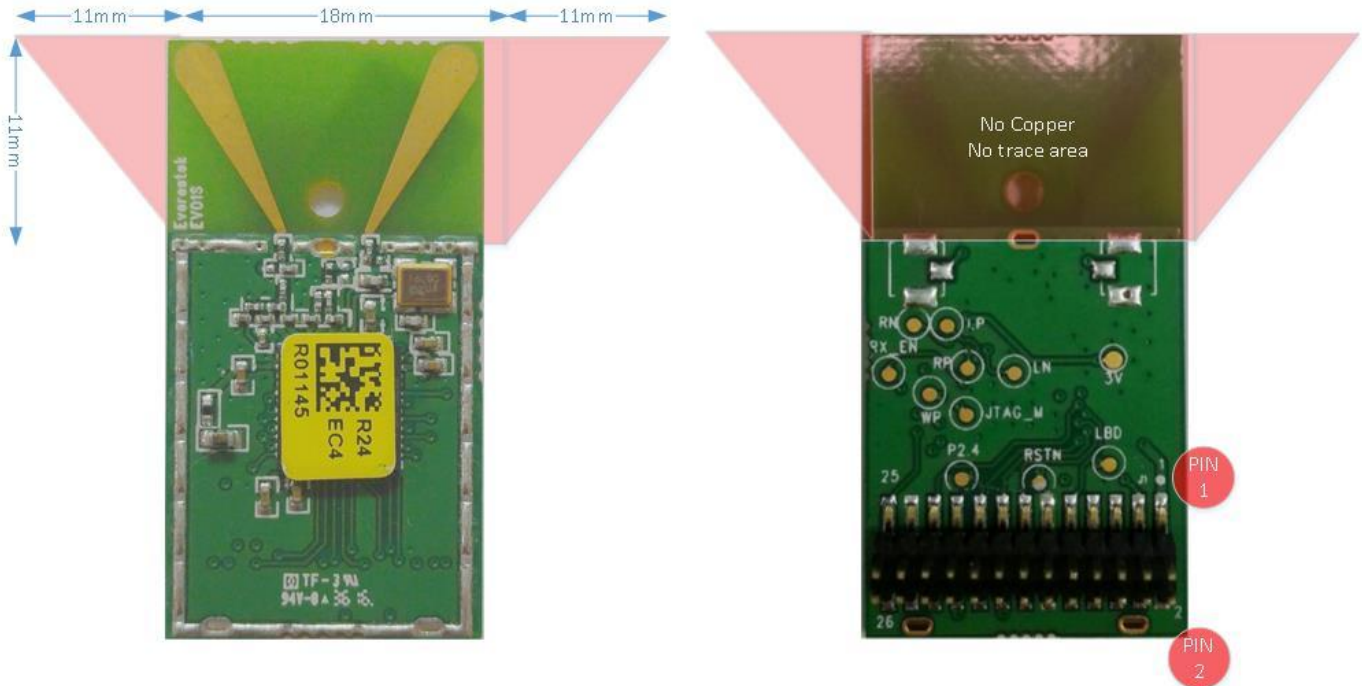
■ Connector Drawing:



P. C. B. Hold Layout

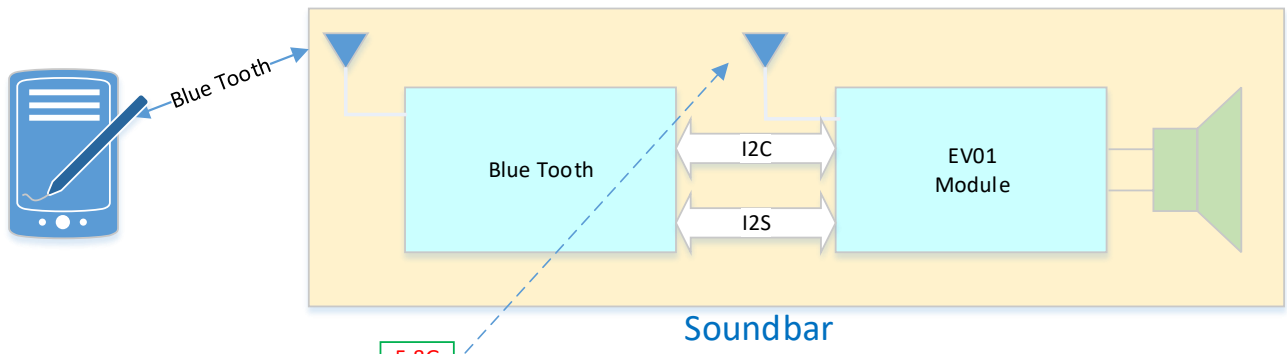


The no copper area is showed below in pink color. The main board layout should no copper, no trace underneath this area.

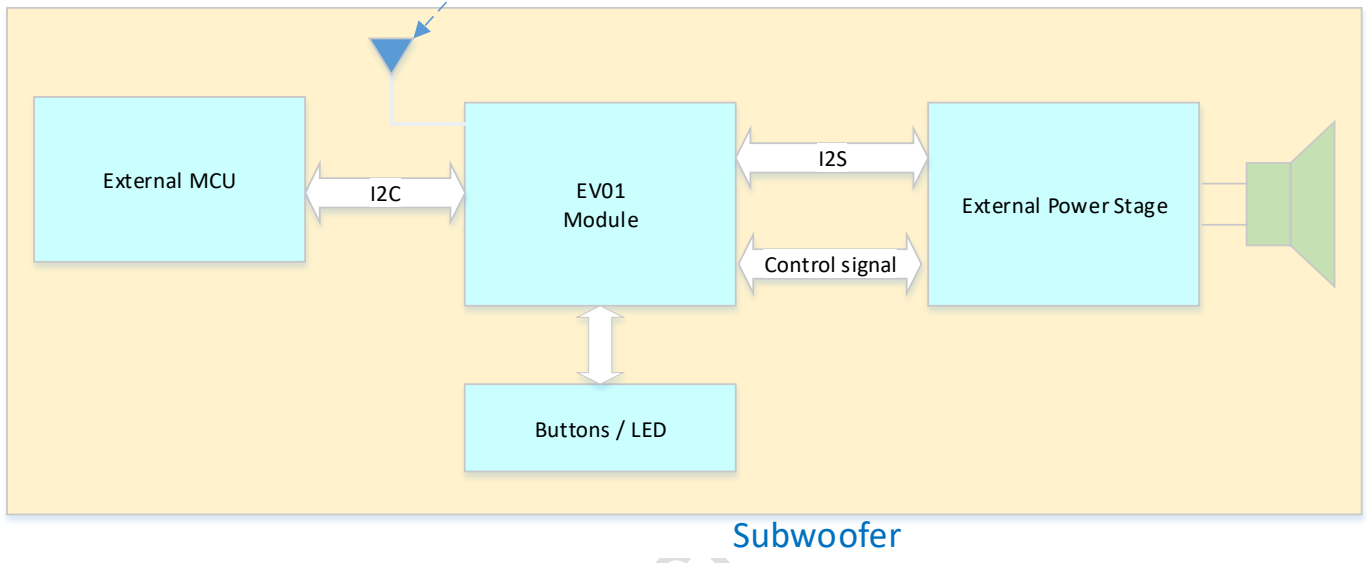


6. Application

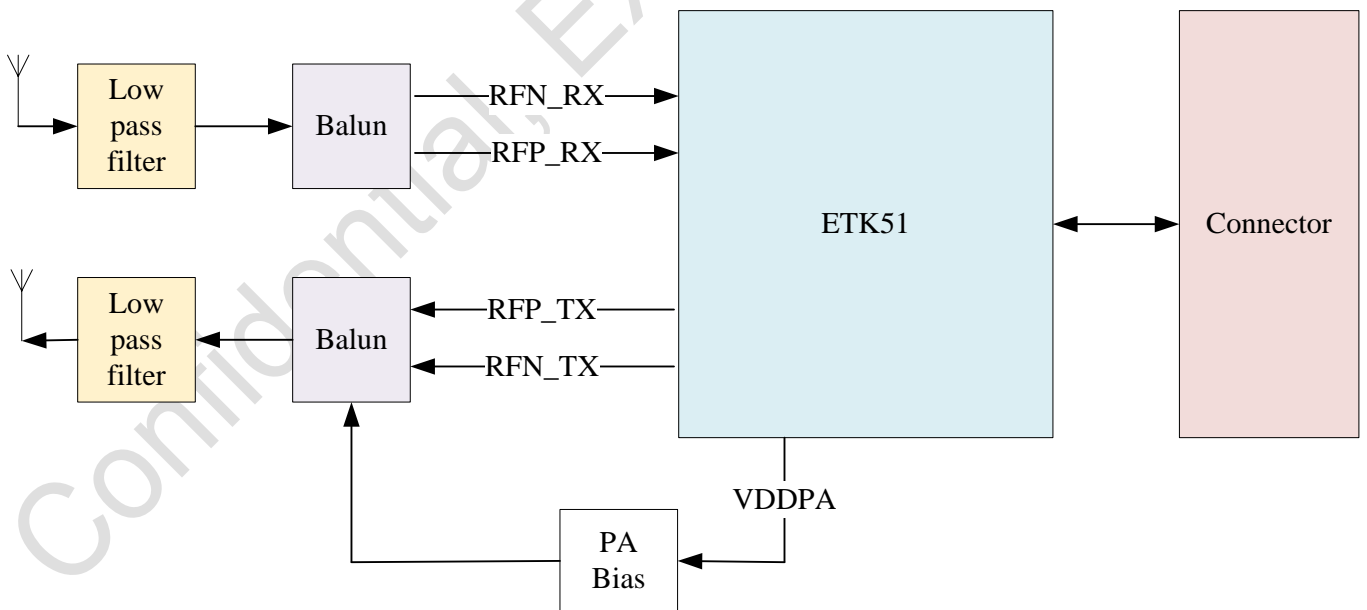
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5.8G
RF



7. Block Diagram

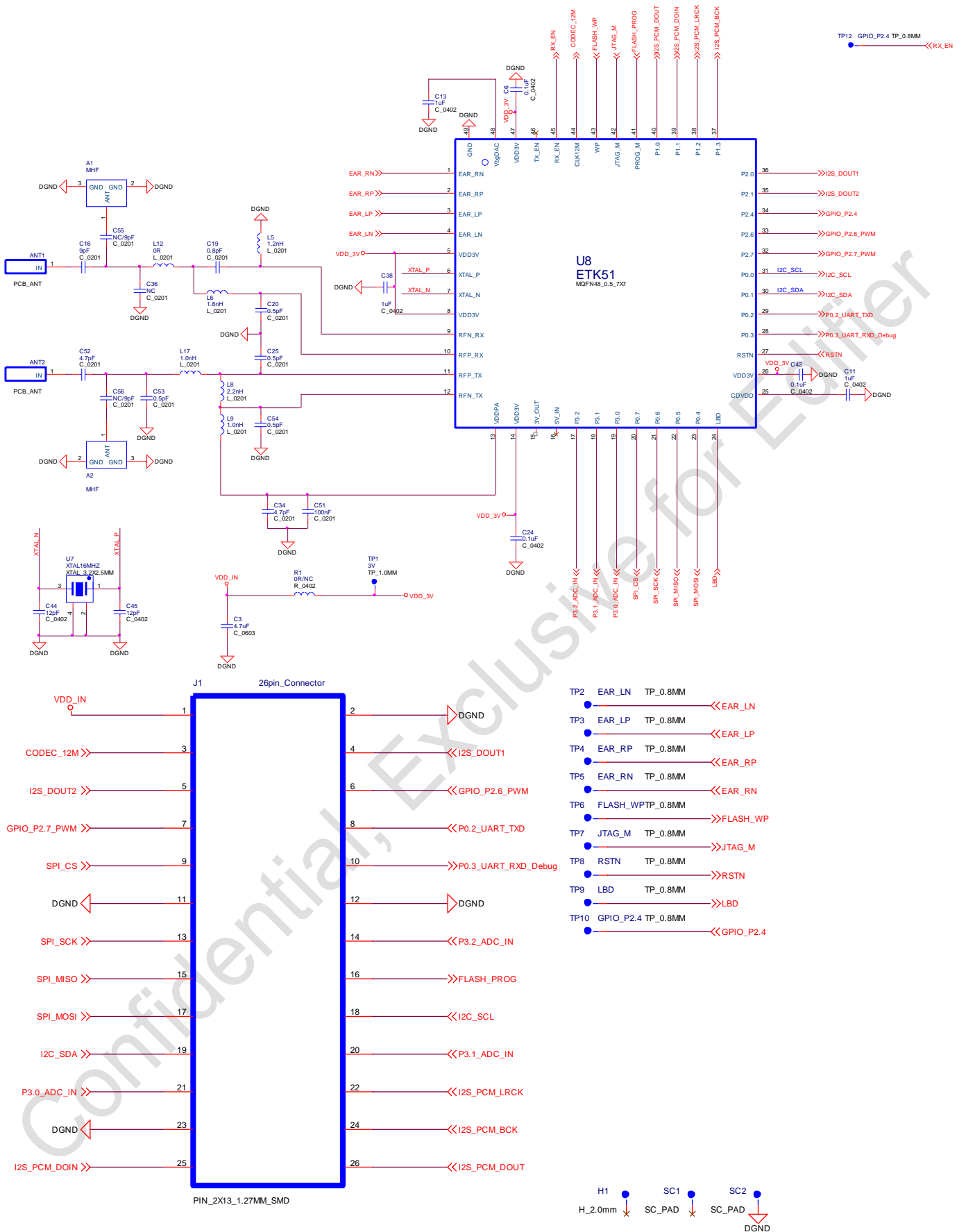


8. Module Pin Definition

Pin	Name	I/O	Function Definition
1	VDD	P	VDD (2.7V~3.6V)
2	DGND	P	System ground
3	CODEC_12M	O	For audio codec system clock(12.288MHz or 11.2896MHz)
4	P2.0	I/O	GPIO
5	P2.1	I/O	GPIO
6	P2.6_PWM	I/O	GPIO or PWM
7	P2.7_PWM	I/O	GPIO or PWM
8	P0.2_UART_TXD	I/O	GPIO or UART TXD
9	P0.7_SPI_CS	I/O, C	GPIO and SPI chip select for programming internal flash mode, or Arm Debug port
10	P0.3_UART_RXD_Debug	I/O	General I/O or UART RXD, ARM debug port
11	DGND	P	System ground
12	DGND	P	System ground
13	P0.6_SPI_SCK	I/O	General I/O and SPI SCK for SPI in programming internal flash mode, or Arm Debug port
14	P3.2_ADC_IN	I/O, A	GPIO or ADC input
15	P0.5_SPI_MISO	I/O, C	General I/O and SPI MISO for SPI in programming internal flash mode, or Arm Debug port
16	FLASH_PROG	C	Program mode select, active high, default pull low For programming internal flash memory Please leave this pin float for normal operation.
17	P0.4_SPI_MOSI	I/O, C	General I/O and SPI MOSI for SPI in programming internal flash mode, or Arm Debug port
18	P0.0_I2C_SCL	I/O	General I/O, I2C clock
19	P0.1_I2C_SDA	I/O	General I/O, I2C data
20	P3.1_ADC_IN	I/O, A	GPIO or ADC input
21	P3.0_ADC_IN	I/O, A	GPIO or ADC input
22	I2S_PCM_LRCK	I/O	I2S LRCK(input for I2S slave, output for I2S master)
23	DGND	P	Power ground
24	I2S_PCM_BCK	I/O	I2S BCK(input for I2S slave, output for I2S master)
25	I2S_PCM_DIN	I/O	I2S Data in(from audio codec, or from ADC I2S DATA out)
26	I2S_PCM_DOUT	I/O	I2S Data out(to audio codec, or to DAC I2S DATA in)

Note: P:Power, I/O:GPIO, S:System use only, A:DAC/ADC, C:control

9. Reference Schematics

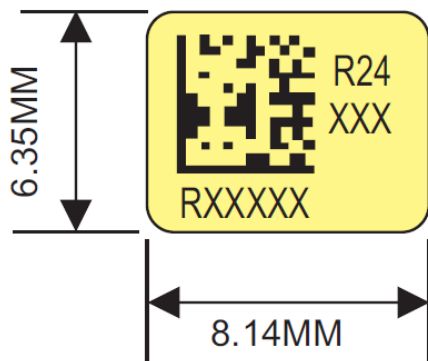


BOM:

Items	Type	Package	Spec	Quantity	Part ref	Remark
1	C CHIP	0201	0.5pF±0.1pF_25V	4	C20,C25,C53,C54	
2	C CHIP	0201	0.8pF±0.1pF_25V	1	C19	

3	C CHIP	0201	4.7pF±0.25pF_25V	2	C34,C52	
4	C CHIP	0201	9pF±0.25pF_25V	1	C16	
5	C CHIP	0201	100nF±10%_6.3V	1	C51	
6	C CHIP	0402	100nF±10%_6.3V	3	C6,C24,C42	
7	C CHIP	0402	1uF-20%~+80%_6.3V	3	C11,C13,C38	
8	C CHIP	0402	12pF±5%_50V	2	C44,C45	
9	C CHIP	0603	4.7uF-20%~+80%_6.3V	1	C3	
10	L CHIP	0201	1nH±0.3nH	2	L9,L17	
11	L CHIP	0201	1.2nH±0.3nH	1	L5	
12	L CHIP	0201	1.6nH±0.3nH	1	L6	
13	L CHIP	0201	2.2nH±0.3nH	1	L8	
14	R CHIP	0201	0R±5%	1	L12	
15	R CHIP	0402	0R±5%_1/16W	1	R1	
16	26pin_Connector		PIN_2X13_1.27MM_SMD	1	J1	
17	XTAL		XTAL16MHZ	1	U7	
18	ETK51		MQFN48_0.5_7X7	1	U8	
	C CHIP	0201	9pF±0.25pF_25V	2	C55,C56	NC
	C CHIP	0201	NC 0201	1	C36	NC
	MHF		MHF_3.1X3_SMD	2	A1,A2	NC

10. Sticker and Package



The 1st Line: Module Model Number

The 2nd Line: F/W Version

The 3rd Line: Serial Number

11. Revision History

Date	Revision	Descriptions
2017/04/10	1.0	Initial Version

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The statements for 5.8G module:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications do not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Please notice that if the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains FCC ID: Z9G-EDF54" any similar wording that expresses the same meaning may be used.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The module is limited to OEM installation ONLY.

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application;

A separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

There is requirement that the grantee provide guidance to the host manufacturer for compliance with Part 15B requirements.

This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Please notice that if the IC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains IC: 10004A-EDF54" any similar wording that expresses the same meaning may be used.

This module will be install in the specific Host, B8 subwoofer.