Datasheet and User Manual for RX-AUDIO-2.4

Features

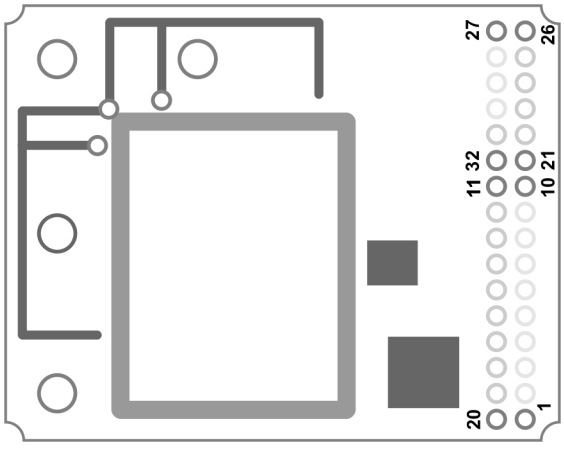
1. Non-compression for high sound quality with delay time 0.5 ms.
2. Digital audio with 44.1 KHz sampling rate and 16-bit resolution.
3. FSK digital demodulation
4. Embedded antenna for cost-effect and fast development
5. Improved performance in harsh environment by antenna diversity
6. 8 selectable channels
7. Low power consumption for mobile application
8. To be used with 650201004G TX-AUDIO-2.4 and 650201062G TX-AUDIO-2.4/AE transmitter modules

Specification

Model	RX-AUDIO-2.4
Supply voltage	5±0.1 Vdc and 2.2 to 3.6Vdc (headphones)
Current consumption	65 mA (typ)
Operating temperature	-10 ÷ +60 C
Frequency range	2400 ÷ 2483.5 MHz
Modulation	FSK
Channel number	8
Channel spacing	9 MHz
Frequency stability	± 100 KHz
Sensitivity	-83 dBm (typ)
Output impedance (headphones)	12 Ohm
Output level (headphones)	1.8 Vpp (max)
* Response	20 Hz ÷ 20 KHz
* Dynamic range	92 dB (typ)
* Separation	80 dB (typ)
* SN ratio	87 dB (typ)

* When used with TX-AUDIO-2.4 650201004G

Board dimensions: 47 x 32 x 7 mm



Pin configuration

Pin #	Pin name	Pin description
1	PWR ON	The level will be logical high (2.7V) with 1-2 seconds delay after DC power supply is supplied to the module. It can then be used to turn on the audio power amplifier to prevent pop-noise when turn on RX module
2	MUTE	The level will be logical low during poor receiving condition. A few functions can be presented with simple circuits, such as receiving indicator, extra noise reduction when TX is turn off, etc…
3	USER_BIT	The data stream output, which is correspondent to the data stream applied to USER_BIT of TX module (Max data rate is 5Kbps).
4	FORMAT	Pull up for scrambling with "01" pattern. Pull down for digital audio scrambled at 650201062G transmitter with random pattern (internal pull high)
5	OB	Pull down to enable reception of out-band channel (650201062G transmitter) for testing purpose (internal pull high)
6	TACT_SW	Impulse low to scan channel for TACT mode (internal pull high) (see table for channel setting mode)
7	VCC.	5±0.1Vdc
8	DAC_L	L channel of audio output from DAC directly. Useful to feed audio signal to a power amplifier. A DC blocking capacitor (>10 uF) should be added, unless the load is high-impedance than 10KOhm
9	GND	Ground
10	DAC_R	R channel of audio output from DAC directly. Useful to feed audio signal to a power amplifier. A DC blocking capacitor (>10 uF) should be added, unless the load is high-impedance than 10KOhm
11	SW2	Pull low for DIP mode channel selection (internal pull high) IF in DIP MODE (see table for channel selection settings), used to select channel (see table for channel selection settings)
12	SW1	
13	SW0	
14	ID3	Pull low for ID selection (internal pull high) Only Receiver(s) with same 650201062G transmitter ID combination will be reproduce transmitted audio.
15	ID2	
16	ID1	
17	ID0	
18	CH_MODE	See channel mode setting table for detail. Pull high for TACT mode and low for DIP mode (internal pull high) (see table for channel selection settings)
19	TACT_SCAN	See channel mode setting table for detail. Pull high to enable scanning to next proper channel (internal pull high) (see table for channel selection settings)
20	CT_INU	See channel mode setting table for detail. Pull high to enable automatically channel-scan poor receiving condition (internal pull high) (see table for channel selection settings)
21	GND	Ground
22	DC_IN	Headphone amplifier Supply Voltage at 2.2 to 3.6Vdc. If supplied voltage is less then 2.2Vdc, amplifier will go in "battery-low" protection mode.
23	GND	Ground
24	CH_R	R-channel of audio out from headphone driver directly. A DC blocking capacitor (>100 uF) should be added.
25	GND	Ground
26	CH_L	L-channel of audio out from headphone driver directly. A DC blocking capacitor (>100 uF) should be added.
27	DAC_L	Same as pin 8, internally connected.
28	DAC_R	Same as pin 10, internally connected.
29	AMP_R	Headphone driver R-channel input
30	AMP_L	Headphone driver L-channel input
31	GND	Ground.
32	TACT_SW	Same as pin 6.

Channel mode setting table

Channel mode	CH_MODE (pin 18)	TACT_SCAN (pin 19)	CT_INU (pin 20)	Function
DIP	GND	X	X	Set SW0, SW1, and SW2 to change channel. SEE NOTE
TACT	X	GND	X	Switch channel by channel when each low-impulse is applied to TACT_SW (pin 6)
TACT SCAN	X	X	GND	Automatically search channel when low-impulse is applied to TACT_SW (pin 6)
AUTO SCAN	X	X	X	Automatically search channel when poor receiving condition.

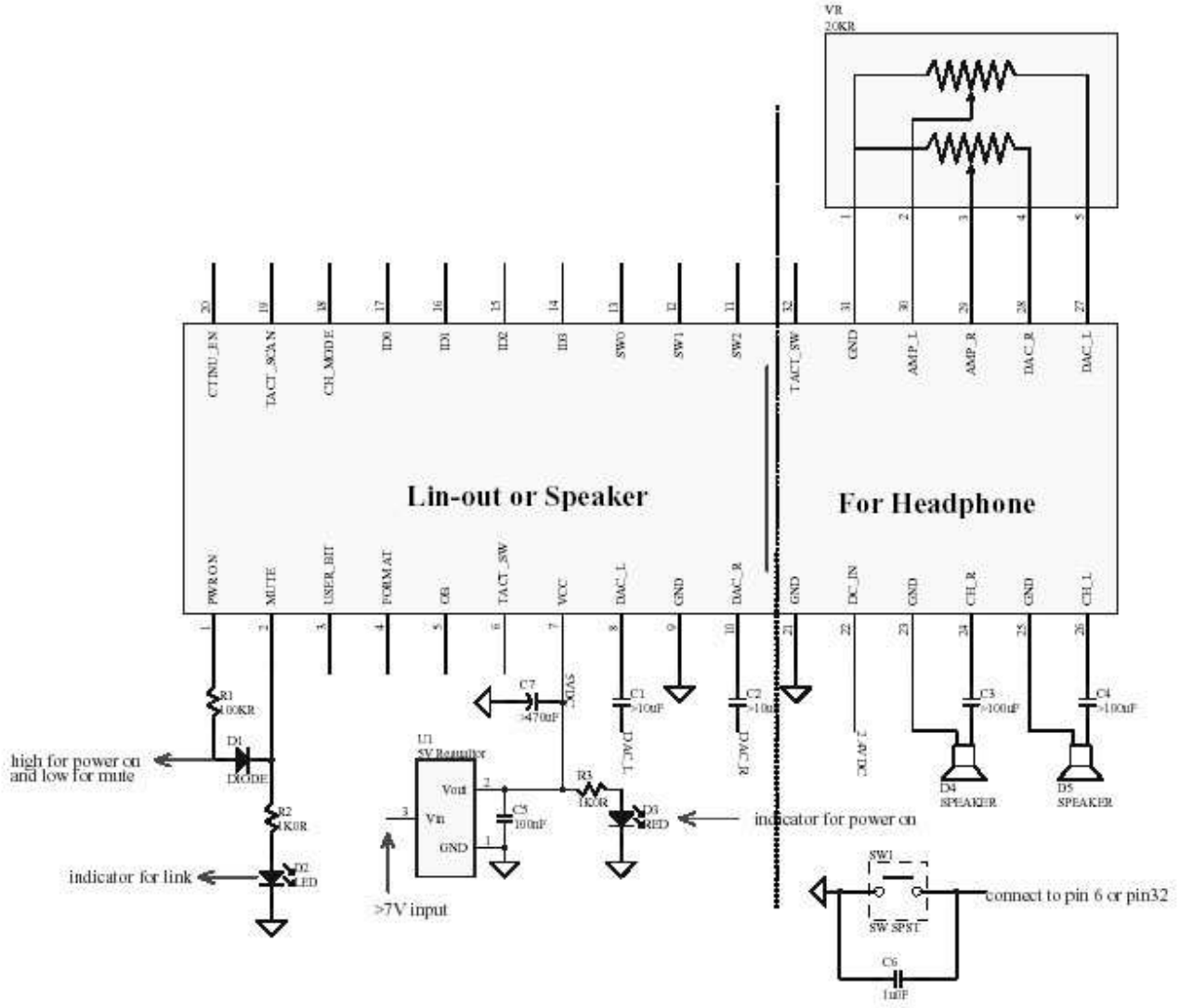
X = floating pin

Note: The channel at lower frequency (about 2410MHz) is with SW0, SW1, SW2 in OPEN Condition (pull up installed)

The higher frequency channel (about 2473MHz) is with SW0, SW1, SW2 in CLOSED to GND Condition.

SW2 is the most significant bit of the Hexadecimal NEGATED combination.

Application Circuit



NOTES to APPLICATION CIRCUIT

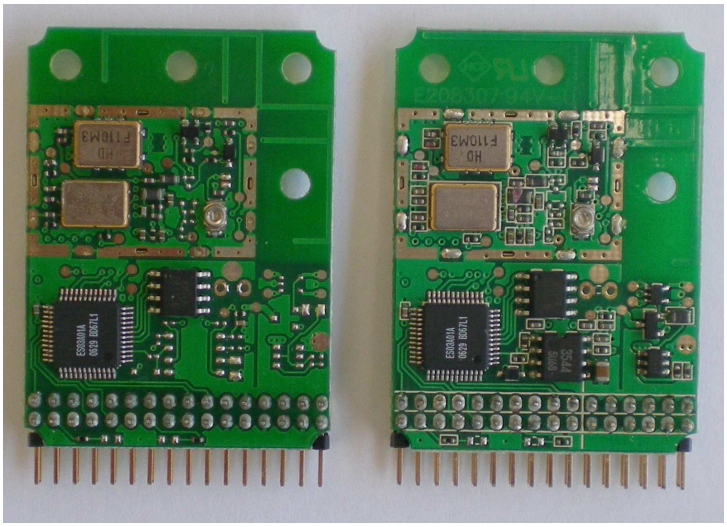
1) At USER_BIT pin, serialized data stream (max. 5Kbps) is available, as delivered from corresponding USER_BIT pin of Transmitter, with no interference on digitalized audio.
Data examples:

a) remote control command,
b) title of musical composition being transmitted, etc…

2) Pin 4(FORMAT), pin 5 (OB), pins 14 to 17 (ID3-2-1-0) are functional **only when used transmitter is TX-AUDIO-2.4/AE** (Code 650201062G).
Functions are **NOT** available when transmitter is TX-AUDIO-2.4 Code 650201004G.

3) RX AUDIO 2.4 modules (Code 650201005G) delivered prior of MID 2008 are using pins 1 to 20 ONLY (pins 21 to 32 NOT connected)

From today on will be delivered version second series with the same Code 650201004G as default.



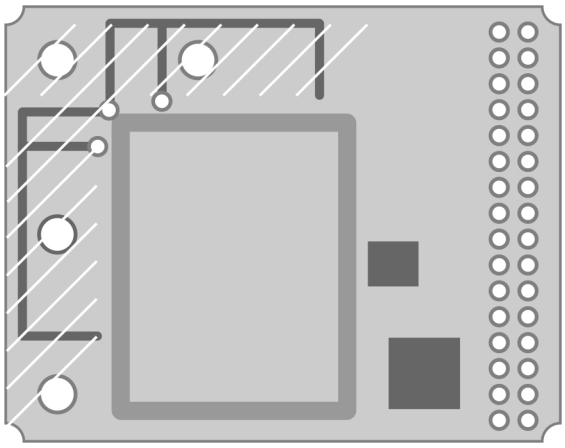
First series (pins 1 to 20) **Second series (full pin-out)**

Application information

When you design the transmitter module in wireless speakers and headphones, pay attention to the following considerations:

1. Do not let any metal objects too close to antenna.
2. Transmitter module must be kept away from speaker over 3 cm to avoid magnetic interference.
3. Power supply to receiver module must be independent, different from the power of amplifier.
4. Avoid to put any cable or circuit nearby antenna (1-2 cm).

Antenna area marked by diagonal lines



Mod. RX-AUDIO-2.4