FM audio transmitter • Trasmettitore FM audio
mod. TX FM AUDIO

FM audio transmitter usable in conjunction with mod. RX FM AUDIO receiver module.
Ideal for applications like audio HI-FI transmission, radio call alert and remote control (DTMF) systems. ETS 300 220 homologable.

Modulo trasmettitore FM audio abbinabile al modulo ricevitore mod. RX FM AUDIO. Ideale per applicazioni quali trasmissione audio HI-FI, allarme via radio (telesoccorso) e controllo remoto (DTMF). Omologabile ETS 300 220.

Pin-out
1) +12V  7) Input 2 (LF)
2) Tx-Enable (5÷12V)  9) Ground
3) Ground  13) Ground
4) Input 1 (LF)  15) RF Output
5) Ground  16) Ground
6) Output 1 (LF)

Technical Specification
* High-reliability SIL thick-film hybrid circuit;
* Carrier frequency: 433.8 MHz obtained by SAW resonator;
* FM modulation with Δf_max = ± 75 KHz;
* Modulation sensitivity: 100 mVpp in order to reach Δf_max (see application note);
* Audio bandwidth: 20 Hz to 30 KHz;
* Supply: +12V ± 10%;
* 15 mA consumption with TX enabled (pin 2 = 5 to 12V);
* NULL consumption with TX disabled (pin 2 = 0V);
* LF input impedance: 10 KΩ;
* RF output impedance: 50 Ω;
* RF output power with 50 Ω load: <10 mW (+10 dBm);
* Switch-on time lower than 100 μs;
* Endowed with tx-enable facility (pin 2) by means of TTL or CMOS logics;
* Possible insertion of a pre-emphasis network;
* Dimensions: 40.6 x 26 x 4.5 mm. Pin pitch 2.54 mm;

Caratteristiche Tecniche
* Realizzazione su allumina ad alta affidabilità intrinseca;
* Frequenza portante: 433,8 MHz ottenuta mediante risonatore SAW;
* Tipo di modulazione: FM con Δf_max = ± 75 KHz;
* Sensibilità di modulazione: 100 mVpp per raggiungere Δf_max (vedi nota applicativa);
* Banda audio: da 20 Hz a 30 KHz;
* Alimentazione a +12V ± 10%;
* Assorbimento con TX attivo (pin 2 = 5÷12V): 15 mA;
* Assorbimento nullo con TX disattivato (pin 2 = 0V);
* Impedenza d’ingresso BF: 10 KΩ;
* Impedenza di uscita RF: 50 Ω;
* Potenza di uscita RF misurata su carico da 50 Ω: <10 mW (+10 dBm);
* Tempo di commutazione On-Off < 100 μs;
* Possibilità di abilitare la trasmissione (pin 2) mediante logiche TTL o CMOS;
* Possibilità di inserimento rete di pre-enfasi;
* Dimensioni: 40,6 x 26 x 4,5 mm. Pins passo 2,54 mm;

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In order to improve TX FMAUDIO performance it’s necessary to make the following remarks.

**LF section and modulator**

The Low Frequency section is made up by two AC-coupled amplifiers with voltage gain, respectively, AMP 1 = 20 and AMP 2 = 5, and LF bandwidth 20 Hz to 30KHz. The FM modulator is made up by an oscillator stabilized by means of a SAW resonator and modulated by a varicap diode. This one can be driven by means of a signal having a maximum peak-to-peak voltage ($V_{pp}$) of 10V and, therefore, the maximum $V_{pp}$ that can be impressed to the AMP 2 input (pin 7) is 10V : 5 = 2V.

In case the two stages AMP 1 and AMP 2 are directly connected (by short-circuiting pin 6 with pin 7) in order to amplify the LF input signal as much as possible, the max $V_{pp}$ applicable to pin 4 is 10V : (5 x 20) = 100mV.

**Pre-emphasis network**

In order to improve the signal-to-noise ratio and the dynamics of the demodulated signal (see RX FMAUDIO application note) it’s advisable to fit in between the 1° and 2° LF amplifier stages a pre-emphasis network.

The one above shown, lowering the bass-tones by about 6 times respect to the trebles makes the FM modulation index approximately constant over all the audio bandwidth and increases the available dynamics for the bass-tones.

Even if the pre-emphasis network is used, the max $V_{pp}$ impressable to pin 4 remains 100 mV.

**TX-enable**

Pin 2 makes it possible to enable or disable the FM transmitter simply by interfacing it with TTL or CMOS logic families supplying output logic levels respectively of 0 to 5V and 0 to 12V.

It's necessary that pin 2 driving guarantees a 0 logic level lower than 0.5V in order to ensure the FM transmitter switch-off.

The maximum Off/On switching-time is about 100μs.