

Introduction

LW210 is one chip FM/AM transmitter system designed for FM/AM communication systems. It includes a Colpitts oscillator, a microphone amplifier, an operational amplifier and an optional RF power amplifier. Targeted applications are in the frequency band from 27MHz to 400MHz. By changing a few external components, energy saving LW210 can support both AM and FM communication at low cost.

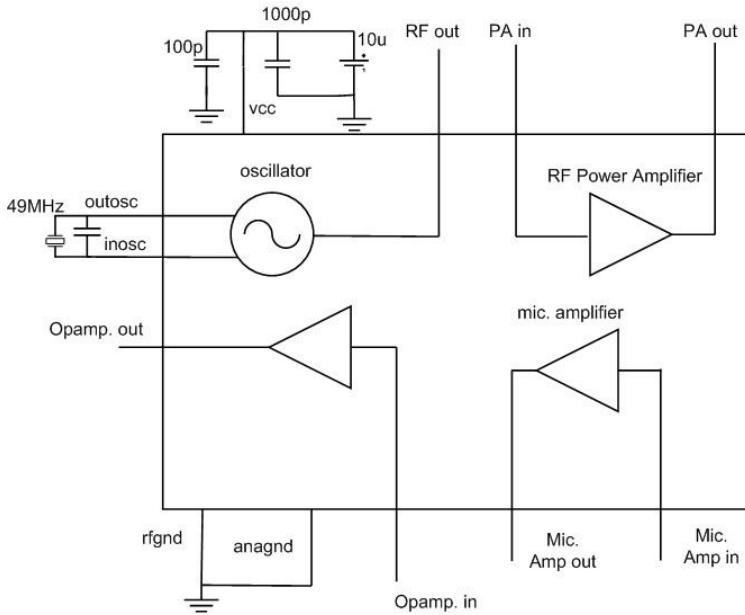
Features

- Frequency range from 27 MHz to 400 MHz
- Optional RF power amplifier
- Versatile configuration to accommodate various application with different requirements
- Low power consumption
- Operate from 0 °C to 70 °C
- Only require a few inexpensive external components
- Low cost
- SOP-16 package or die form for PCB bonding

Applications

- Baby monitors
- Toys
- Wireless audio links
- Alarm and security systems
- radio controlled toys
- Monitoring systems

Block Diagram



Pin Description

Pin no.	Symbol	Description
1	OUTPA	Power amplifier output
2	INPA	Power amplifier input
3	GNDPA	Power amplifier ground
4	OUTOSC	Oscillator output
5	INOSC	Oscillator input
6	BIASOSC	Oscillator bias input
7	RFGND	RF ground
8	VDD	Power supply
9	ANAGND	Analog ground
10	INN	Mic. amp. negative input
11	INP	Mic. amp. positive input
12	OUT	Mic. amp. output
13	IBIAS	Op. amp. bias
14	INPOP	Op. amp. positive input
15	INNPOP	Op. amp. negative input
16	OUTOP	Op. amp. output

Electrical Characteristics

Maximum ratings

Rating	Symbol	Value	Unit
Power Supply Voltage	V_{BATT}	6	Vdc
Junction Temperature	T_J	125	°C
Storage Temperature Range	T_{STg}	-55 to 125	°C

Recommended Operating Conditions

Characteristics	Value	Unit
Supply voltage	2.5 – 5	V
RF frequency range	27 – 400	MHz

DC Electrical Characteristics

Characteristics	Minimum	Typical	Maximum	Unit
Operating current				
With PA	7	-	10	mA
Without PA	3	-	5	

AC Electrical Characteristics

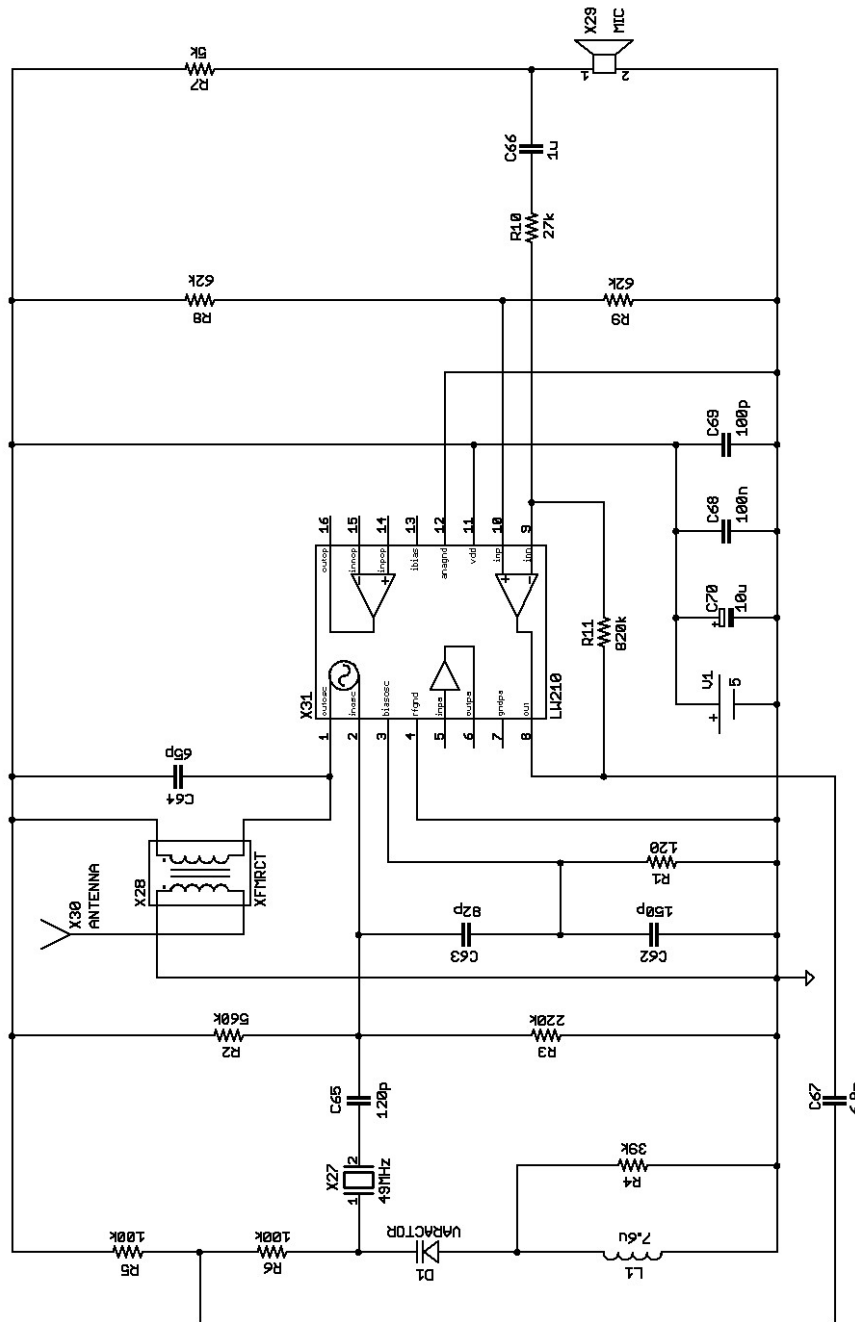
Characteristics	Minimum	Typical	Maximum	Unit
Output power (at 50 ohm)				
With PA	-	6	-	dBm
Without PA	-	0	-	
Mic. amplifier gain	-	30	-	dB
Op. amplifier gain	-	10	-	dB

Functional Descriptions

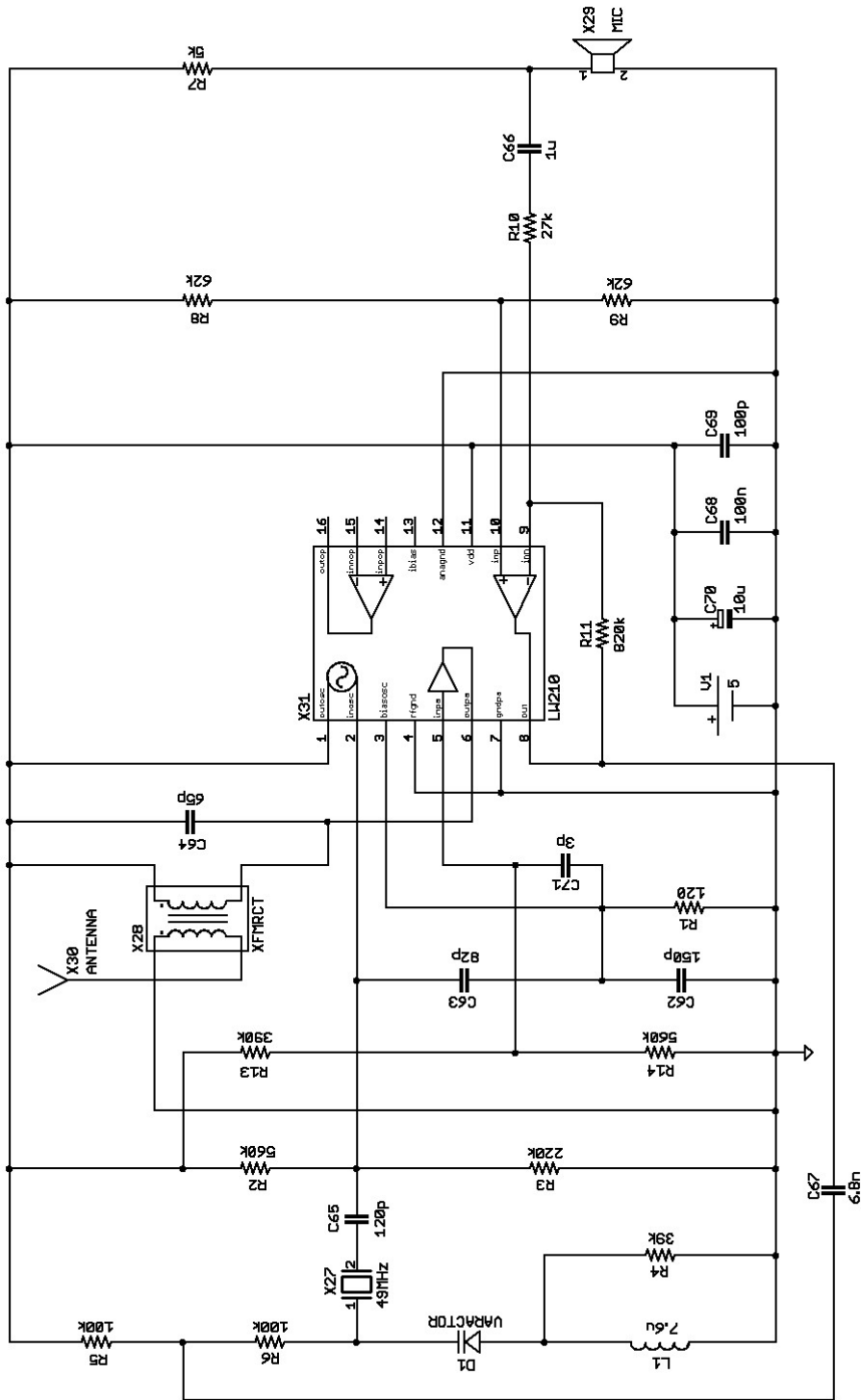
LW210 includes a Colpitts oscillator, a microphone amplifier, an operational amplifier and an optional RF power amplifier. The output power of the Colpitts oscillator is 0 dBm at 50 ohm load. For higher output power, the RF power amplifier can be connected to the Colpitts oscillator output. The microphone amplifier gain can be set by an external resistor for optimum voltage level. For AM application, the operational amplifier can be cascaded to provide higher output driving capability. The gain of the operational amplifier is set internally to 10dB. A bandgap reference is implemented inside the chip for stable operating conditions over temperature and supply voltage.

Application Example

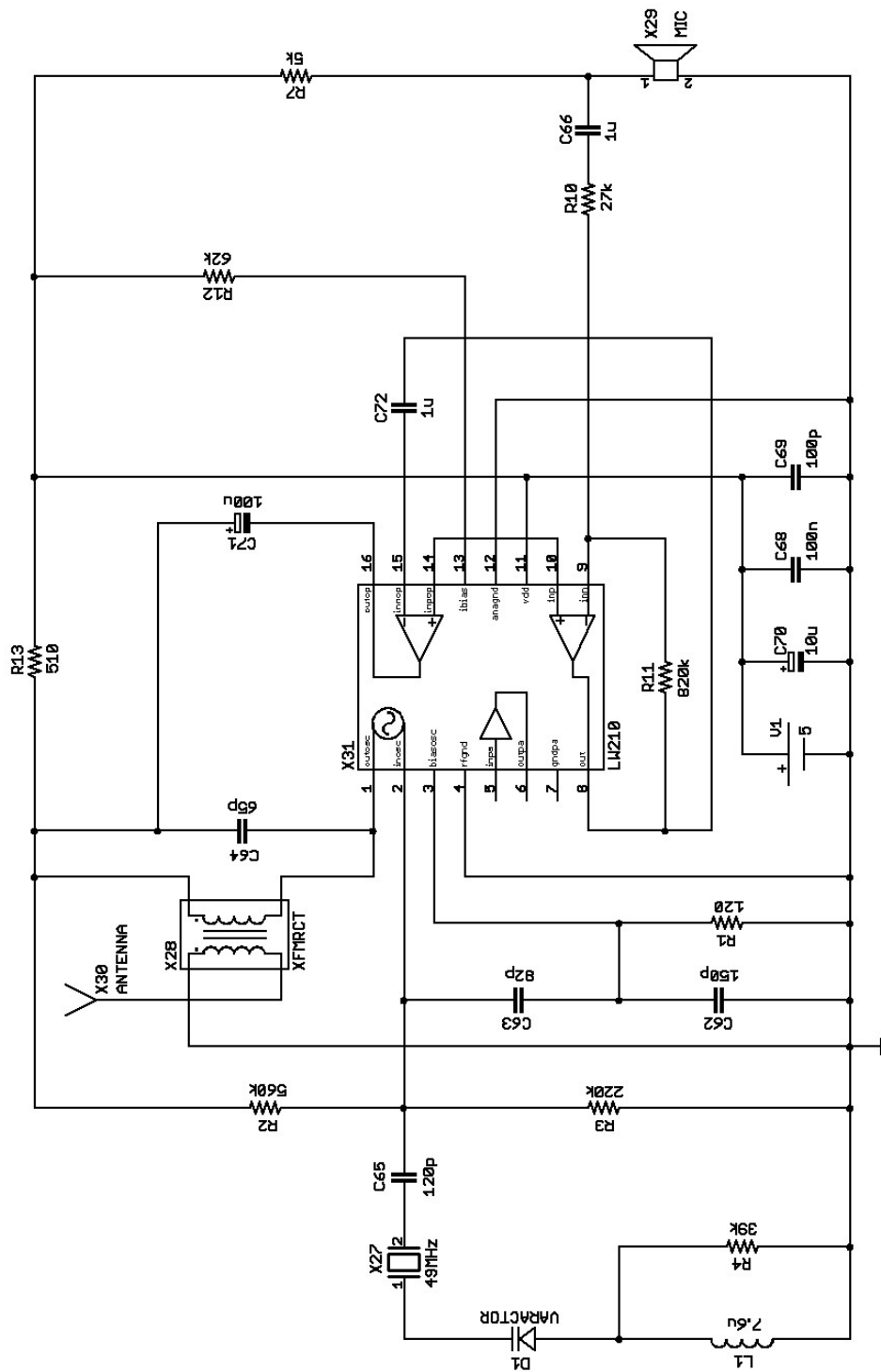
A. 49MHz FM Transmitter



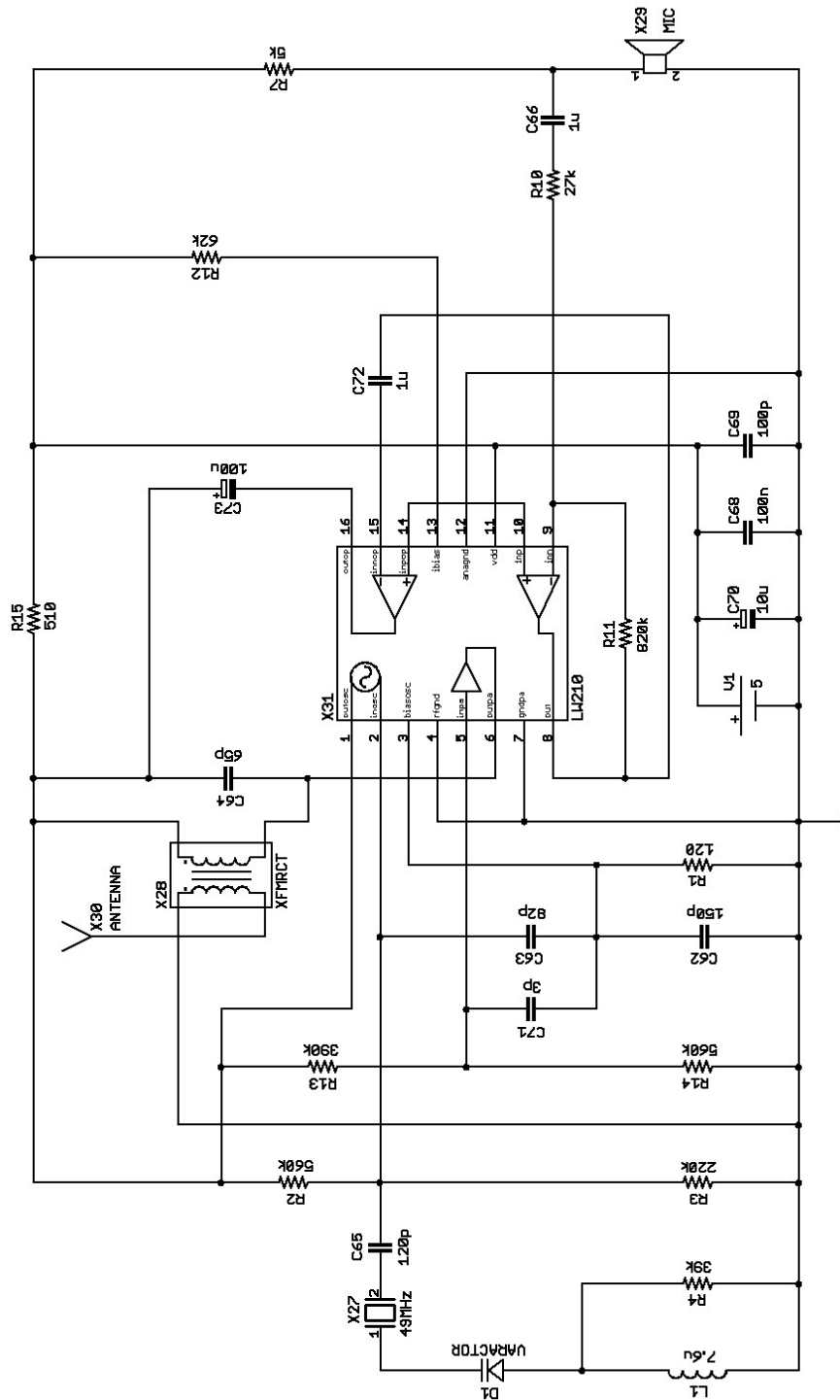
B. 49MHz FM Transmitter with power amplifier



C. 49MHz AM Transmitter



D. 49MHz AM Transmitter with power amplifier



Evaluation Board

- Based on application example A (49MHz FM Transmitter)

External Components:

Part	Value	Package
C62	150 pF	0603
C63	82 pF	0603
C64	65 pF	0603
C65	120 pF	0603
C66	1 uF	1206
C67	6.8 nF	0603
C68	100 nF	0603
C69	100 pF	0603
C70	10 uF	1210 or lead
R1	120 Ω	0603
R2	560 k Ω	0603
R3	220 k Ω	0603
R4	39 k Ω	0603
R5	100 k Ω	0603
R6	100 k Ω	0603
R7	5 k Ω	0603
R8	62 k Ω	0603
R9	62 k Ω	0603
R10	27 k Ω	0603
R11	820 k Ω	0603
L1	7.6 uH	0603
D1	Varactor	lead
X27	49MHz Crystal	lead
X28	7.3 IFT	lead
X29	---	Microphone
X30	---	Antenna

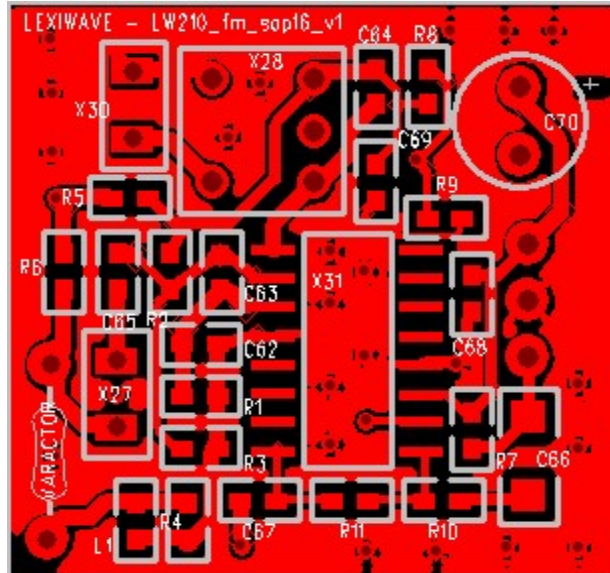
Lexiwave Technology (Hong Kong) Ltd.

LW210 49 MHz FM/AM Transmitter
Preliminary Data Sheet

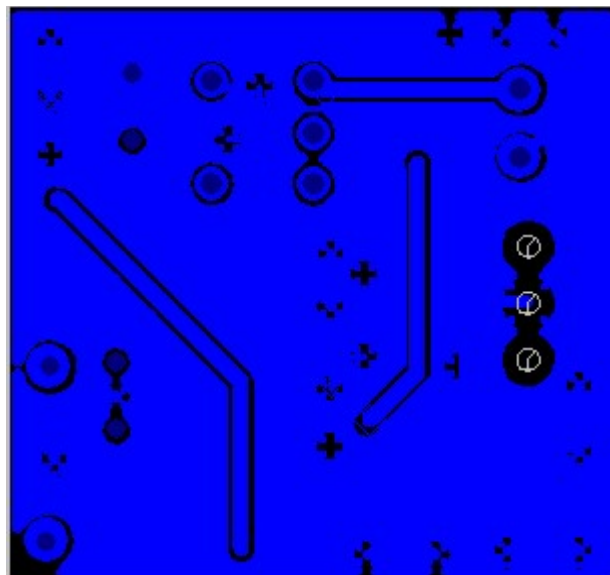


Rev 0.2, August, 2006

PCB Layout:



LW210-SOP16-FM PCB Top Layer



LW210-SOP16-FM PCB Bottom Layer

Lexiwave Technology (Hong Kong) Ltd.



LW210 49 MHz FM/AM Transmitter
Preliminary Data Sheet

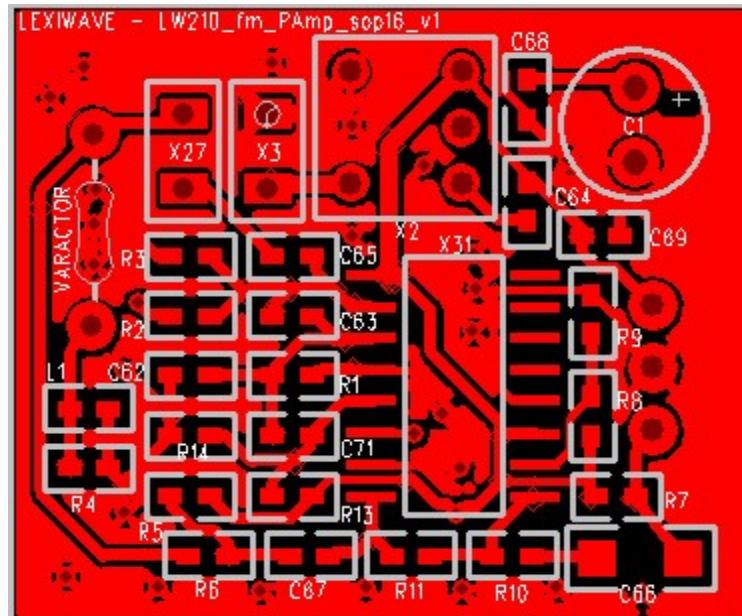
Rev 0.2, August, 2006

- Based on application example B (49MHz FM Transmitter with power amplifier)

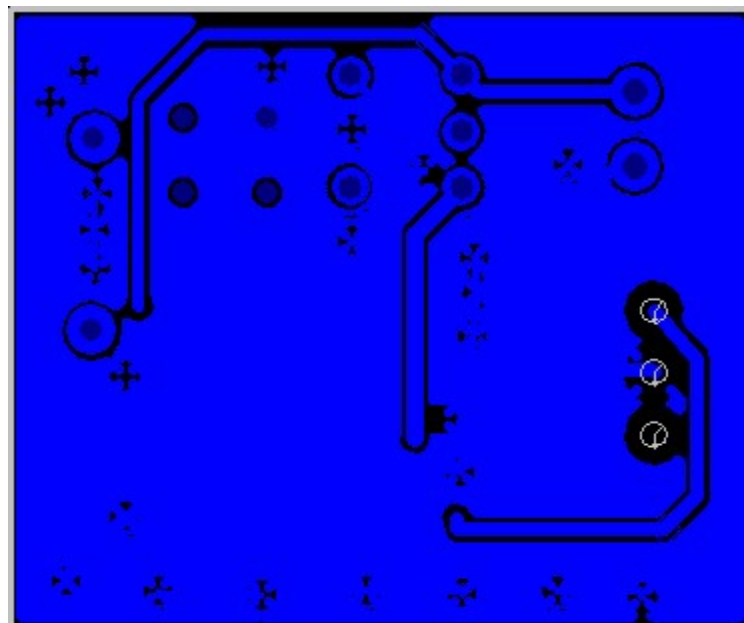
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C63	82 pF	0603
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C67	6.8 nF	0603
C68	100 nF	0603
C69	100 pF	0603
C70	10 uF	1210 or lead
C71	3 pF	0603
R1	120 Ω	0603
R2	560 k Ω	0603
R3	220 k Ω	0603
R4	39 k Ω	0603
R5	100 k Ω	0603
R6	100 k Ω	0603
R7	5 k Ω	0603
R8	62 k Ω	0603
R9	62 k Ω	0603
R10	27 k Ω	0603
R11	820 k Ω	0603
R13	390 k Ω	0603
R14	560 k Ω	0603
L1	7.6 uH	0603
D1	Varactor	lead
X27	49MHz Crystal	lead
X28	7.3 IFT	lead
X29	---	Microphone
X30	---	Antenna

PCB Layout:



LW210-SOP16-FMwithPAmp PCB Top Layer



LW210-SOP16-FMwithPAmp PCB Bottom Layer