

# UTC7613AP

# LINEAR INTEGRATED CIRCUIT

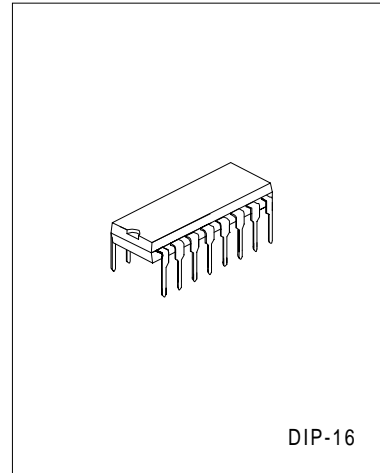
## AM/FM 1 CHIP RADIO

### DESCRIPTION

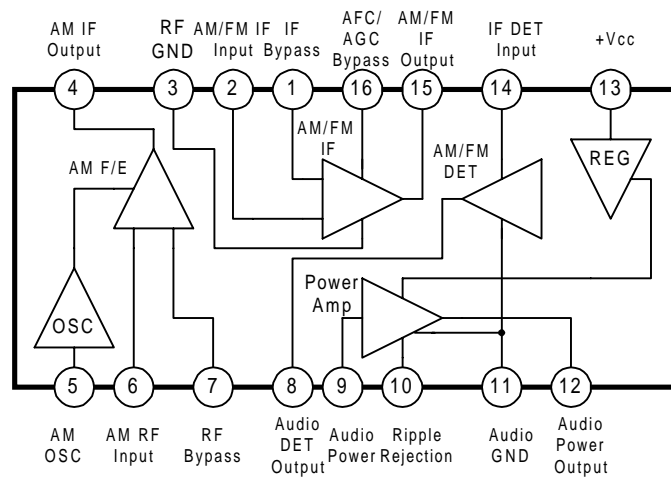
The UTC7613AP is a monolithic integrated circuit designed for the portable AM/FM radio or AM/FM clock Radios.

### FEATURES

- \*Portable AM/FM 1-chip radio
- \*Wide operating supply voltage range:  $V_{cc}=3V-13V$
- \*Power output:  $P_o=0.28W(\text{min})$  at THD=10%  
(  $V_{cc}=5.5V/8 \text{ ohms}$  )



### BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

Characteristic	Symbol	Value	Unit
Supply Voltag	$V_{cc}$	13	V
Supply Current	$I_{cc}$	44	mA
Operating Temperatur	$T_{opr}$	-20 to +70	$^\circ\text{C}$
Storage Temperatur	$T_{stg}$	-45 to 150	$^\circ\text{C}$
Power dissipation	$P_d$	600	mW

**ELECTRICAL CHARACTERISTICS**

(Ta=25°C,Vcc=5.5V,fm=1kHz; Am: f=1mHz.30% Mod. FM: f=10.7MHz,Δf=22.5kHz,unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Quiescent circuit current	IccQ	SW:FM,Vcc=3V	10	15	20	mA
		SW:FM,Vcc=9V	13	20	26	mA
Pin 16 Terminal Voltag	V16(FM)	SW:FM,Vcc=9V,Vi=0	2.0	2.4	3.1	V
-3dB Limiting Sensitivity	Vi(lim)	SW:FM,-3dB,V16=22.4V, Vr min		57		dBμ
Internal Regulated Voltag	Vcc	SW:AM,Icc=42mA	12	13.2	14.0	V
Pin 16 Voltag	V16(AM)	SW:AM,Vcc=9V,Vi=0	1.4		1.9	V
Maximum Sensitivity	Smax	SW:AM,Vcc=12V, Vi=37dBμ,RL=45Ω	1.5	3.0		V
Total Harmonic Distortion	THD	Icc=42mA, f=1kHz,Vo=2V, Vr Min		0.5	4.0	%
Output Power	Po	f=1kHz,THD=10%,Vo=2V, Vr Min,RL=45Ω	0.28			W
Voltage Gain	Gv	f=1kHz, RL=45Ω,Po=50mW		41		dB

**FUNCTION DESCRIPTION**

1. IF Gain Grouping Table:

- 1). Test Condition:  
 Vcc=9V(Pin13)  
 Pin 8 resistance AM=47k Ω  
 Pin 16 resistance AM=1.2 k Ω
- 2). Grouping tabl

AM V16	FM V16
1.4~1.7V	2.4~2.85V

2. IF gain is determined by DC voltage appeared at IC Pin16.

The DC voltage at Pin 16 to the following Values:

- AM=1.4~1.65V(DC)
- FM=1.9~2.10V(DC)

AM gain can be adjusted by the loading resistor value of Pin 8(AM) from 33kΩ to infinity.  
 FM gain can be adjusted by the loading resistor value of Pin 16(FM) from 390Ω to 680Ω.

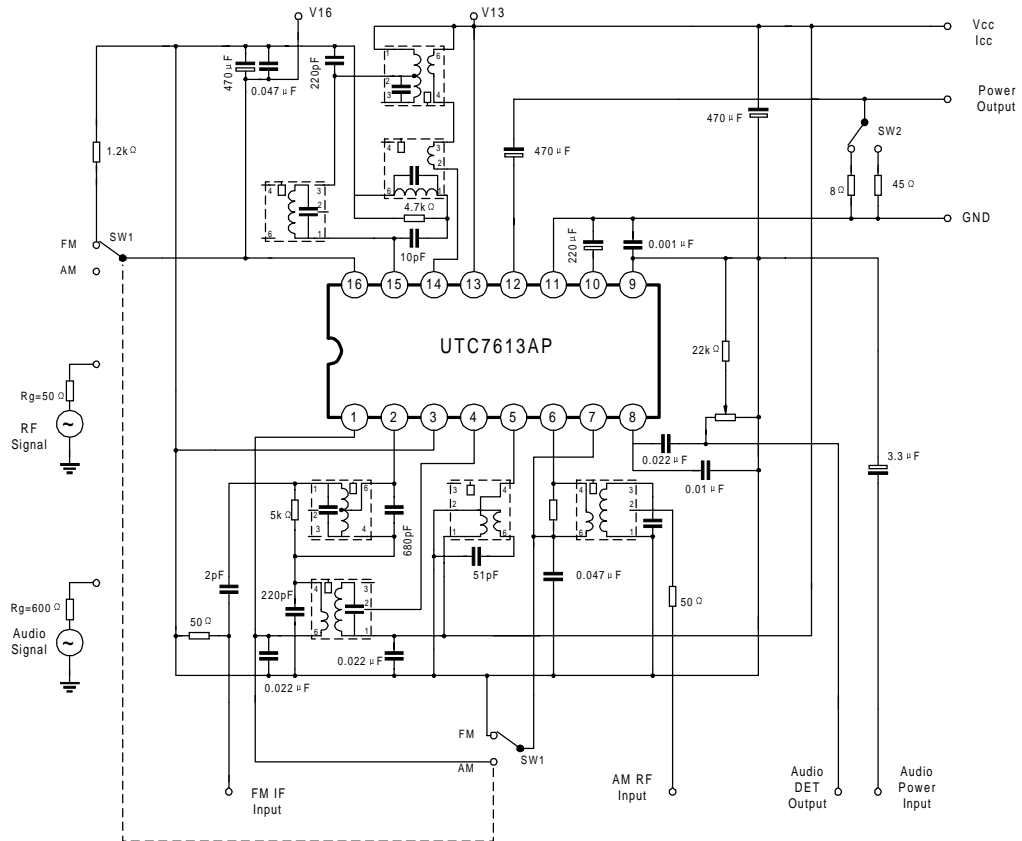
Recommended resistance:

- Pin 8(AM)= 47kΩ
- Pin 16(FM)=470Ω.

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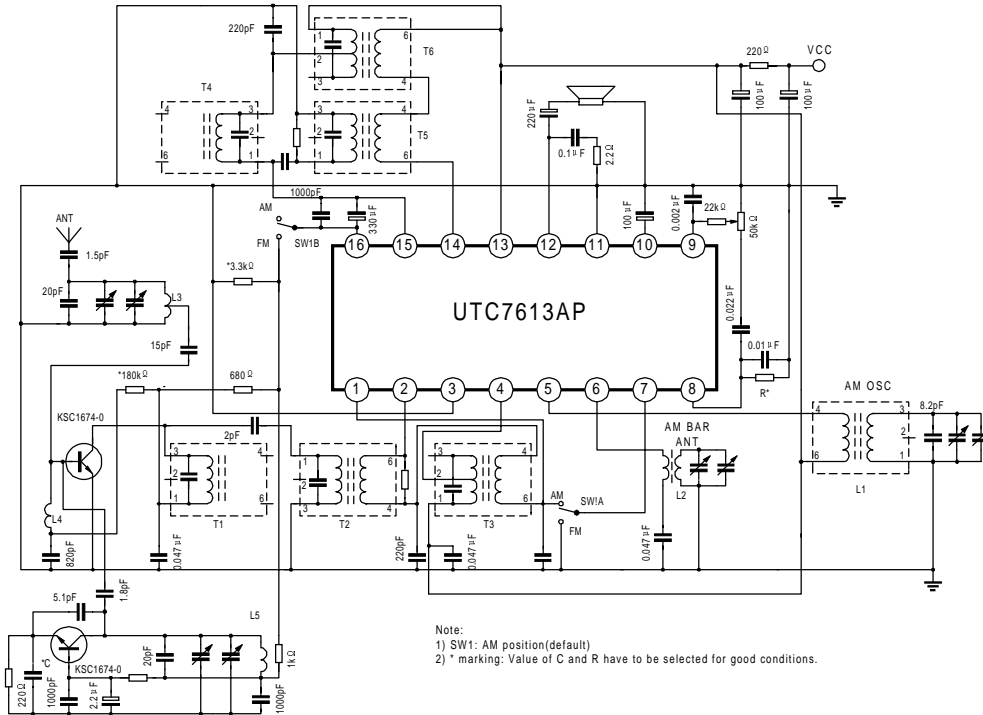
## TEST CIRCUIT



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## TYPICAL APPLICATION



COIL SPECIFICATION

Coil No.	frequency	Q0	Turns		C0	Connection
T1	10.7MHz	120	1-3	8T	150pF	
T2	10.7MHz	70min	1-3, 4-6	11T, 2T	70~80pF	
T3(T6)	455kHz	80min	1-2, 2-3, 4-6	91T, 55T, 6T	175~185pF	
T4	10.7MHz	45min	1-3	11T	79~85pF	
T5	10.7MHz	25min	1-3, 4-6	7T, 7T	180pF	
L1	AM Local Oscillator	90min	1-3, 4-6	86T, 7T		
L2	AM ANT	200	1-2 (L=560μH) 3-4	138T, 9T		Core:10mm(D)x55mm 
L3	FM ANT		0.8mm (D), UEW, TAP	5T, 0.5T		
L4	Trap		0.32mm (D), UEW	10T		
L5	FM Oscillator		0.8mm (D), UEW	4T		