

AM 1-CHIP RADIO

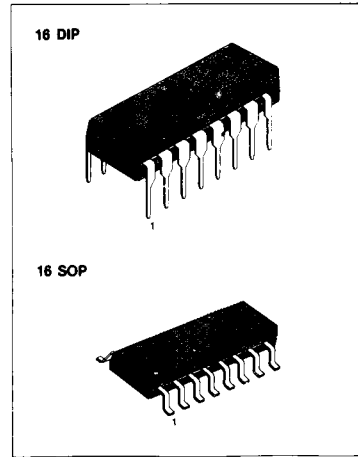
The KA22421 is a monolithic integrated circuit designed for the portable AM radio.

FUNCTIONS

- Converter
- IF Amp
- AM DET
- Power Amp

FEATURES

- Portable AM 1-chip radio.
- Low quiescent current: $I_{CCQ} = 1.6\text{mA (Typ)}$ at $V_{CC} = 3\text{V}$.
- Operating supply voltage range: $V_{CC} = 2\text{V} - 5\text{V}$.
- High power efficiency
- Power output: $P_o = 100\text{mW(Typ)}$ at $\text{THD} = 10\%$.



ORDERING INFORMATION

Device	Package	Operating Temperature
KA22421	16 DIP	- 20°C ~ + 70°C
KA22421D	16 SOP	

BLOCK DIAGRAM

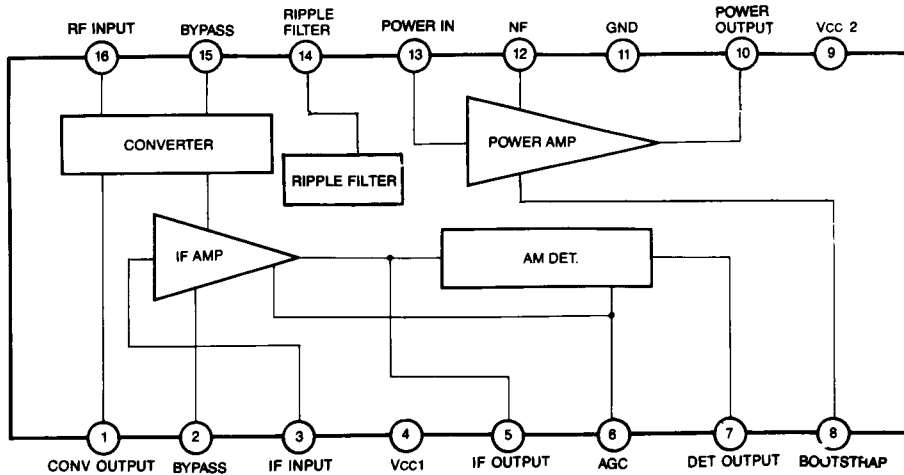


Fig. 1

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

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	6	V
Power Dissipation	KA22421	750	mW
	KA22421D	350	
Output Peak Current	I_{PK}	0.2	A
Operating Temperature	T_{OPR}	-20 ~ +70	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: Derated above $T_a = 25^\circ\text{C}$ in the proportion of 6mW/ $^\circ\text{C}$ (KA22421D: 2.8mW/ $^\circ\text{C}$)

ELECTRICAL CHARACTERISTICS

($V_{CC} = 3\text{V}$, $f = 1\text{MHz}$, $f_m = 1\text{KHz}$, 30% Mod, $R_o = 50\Omega$, $R_L = 8\Omega$, $T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Circuit	Test Conditions	Min	Typ	Max	Unit
Quiescent Circuit Current	I_{CCO}	1	$V_i = 0$	0.7	1.6	3.0	mA
Maximum Sensitivity	S_{MAX}	1	$V_i = 20\text{dB}\mu$, $V_R = \text{Max}$	200			mV
Output Power	P_O	1	$V_i = 42\text{dB}\mu$, $V_R = \text{Max}$	80	100		mW
Total Harmonic Distortion	THD	1	$V_i = 42\text{dB}\mu$		2	6	%
Signal to Noise Ratio	S/N	1	$V_O = 200\text{mV}$		44		dB
Output Noise Voltage	V_{NO}	1	$V_i = 0$, $V_R = \text{Max}$		3.5		mV

APPLICATION CIRCUIT

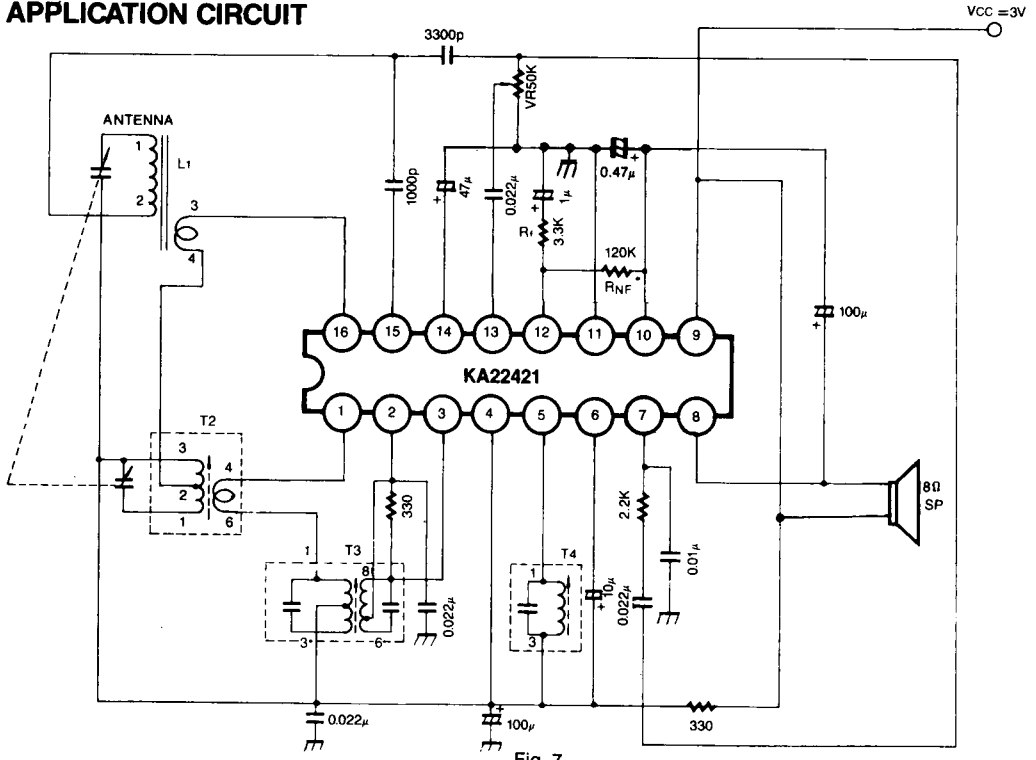


Fig. 7

TEST CIRCUIT 1

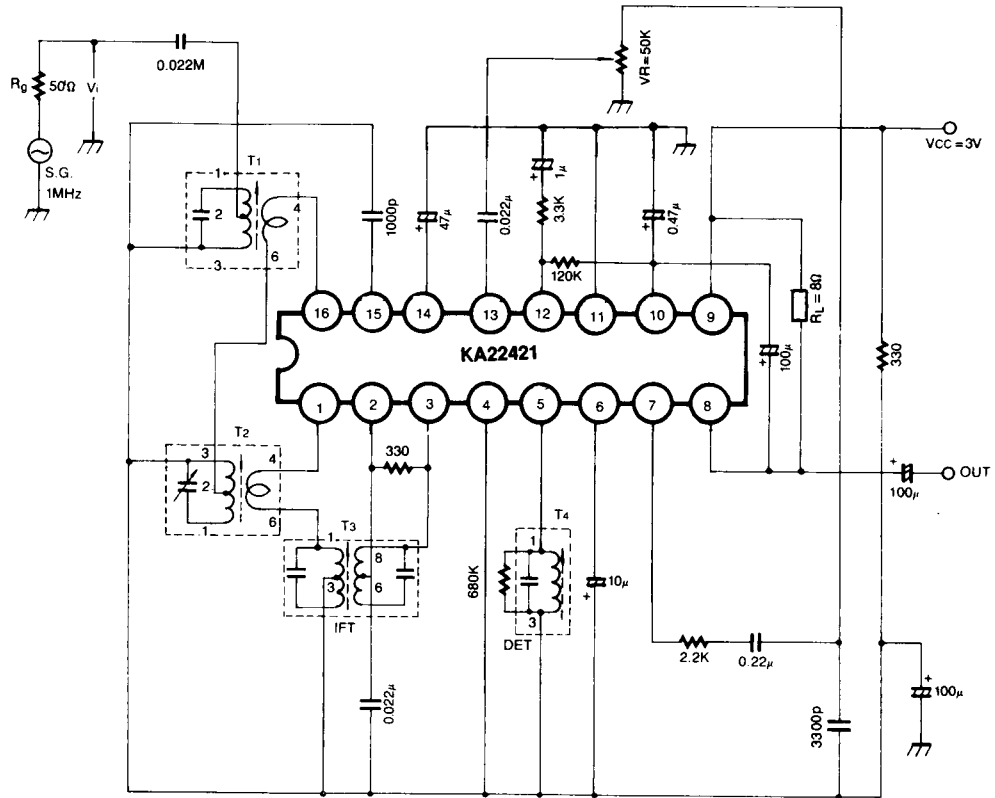
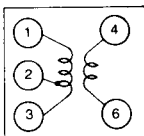


Fig. 2

COIL SPECIFICATIONS

T1 Antenna Coil



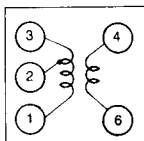
(Bottom View)

f (kHz)	L (μH)	Q _o	TURNS		
			1-2	2-3	4-6
300	600	115	2	130	8

KOREA TOKO

Wire: 0.07mmφUEW

T2 OSC Coil



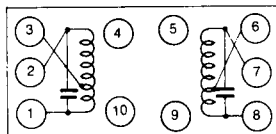
(Bottom View)

f (kHz)	L (μH)	Q _o	TURNS		
			1-2	2-3	4-6
796	360	125	92½	8	10½

KOREA TOKO

Wire: 0.08mmφUEW

T3 AM IFT



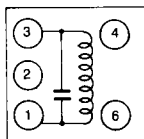
(Bottom View)

C _o (pF)		f (kHz)	Q _o	TURNS			
1-2	7-8			1-2	1-3	2-3	6-7
150	150	455	65	80	148	196	32

KOREA TOKO

Wire: 0.08mmφUEW

T4 Detector Coil



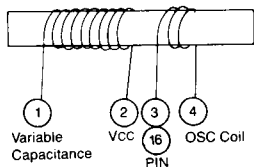
(Bottom View)

C _o (pF)	f (kHz)	Q _o	TURNS
1-3	1-3	1-3	1-3
180	455	65	142

KOREA TOKO

Wire: 0.08mmφUEW

L1 Bar Antenna Coil



f (kHz)	L (μF)	Q _o	TURNS	
			1-2	3-4
796	625	200 Min	105	20

Core: 12mmφ × 52mmφ

Wire: USTC-0.1mmφ