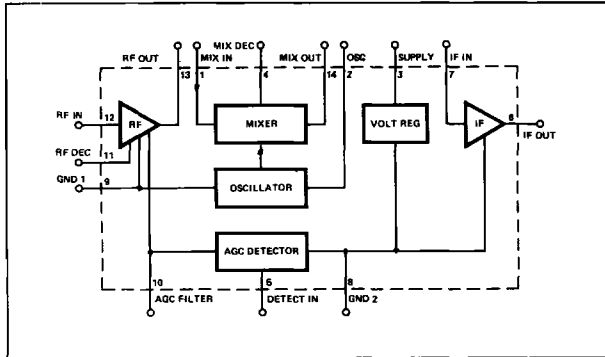


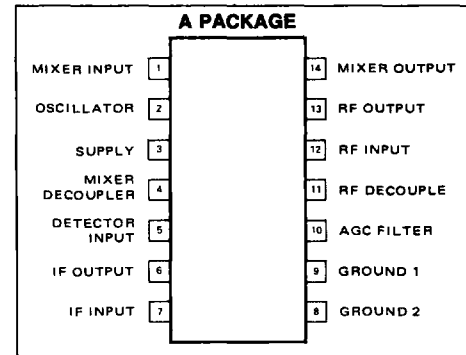
FEATURES

- LOW NOISE
- BUILD IN AGC CIRCUIT
- SEPARATELY ACCESSIBLE AMPLIFIERS
- MIXER-OSCILLATOR STAGE WITH INTERNAL FEEDBACK
- HIGH SELECTIVITY
- HIGH IMAGE REJECTION

BLOCK DIAGRAM



PIN CONFIGURATION

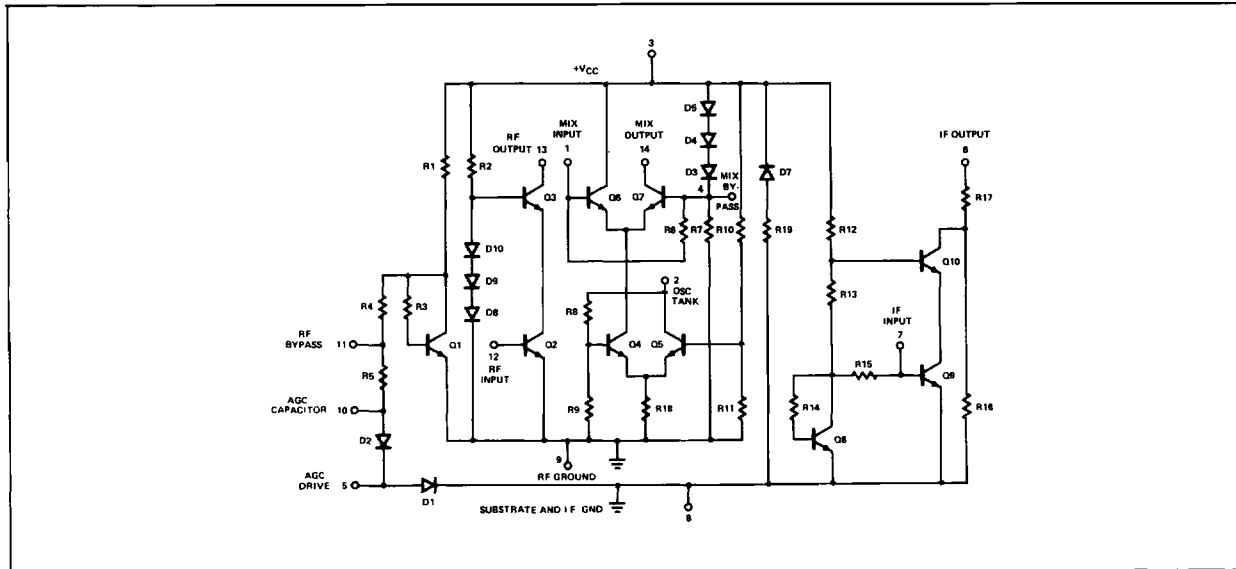


ABSOLUTE MAXIMUM RATINGS

VCC Supply Voltage Pins 3, 13, 14 at Pin 6	16V
DC Supply Voltage (V+)	40V
DC Supply Current	35mA
Internal Power Dissipation (Note 1)	750mW
Lead Temperature	300°C
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-65°C to +150°C

NOTE
Rating applies for temperatures up to 55°C. Derate linearly at 6.67mW/°C above 55°C.

AM RADIO CIRCUIT SCHEMATIC



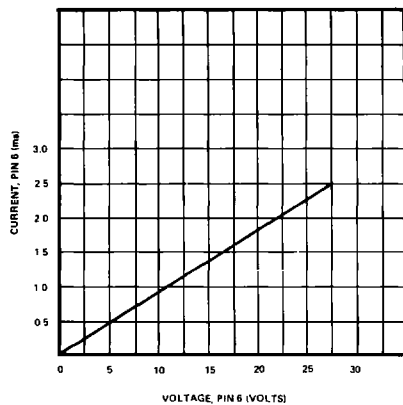
ANALOG

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ at $V_{CC}=11.0\text{V}$)

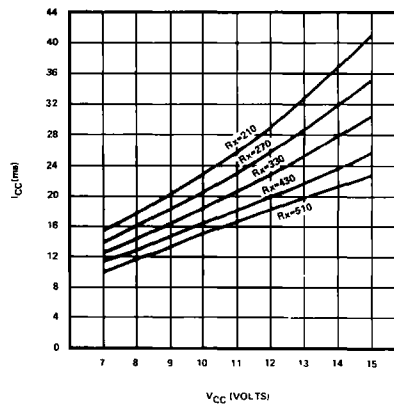
CHARACTERISTIC	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
DC Voltage:						
Supply Voltage	$+V_{CC}$		9.0		15.0	
Mixer balance	$V_{OS} (V_1-V_4)$			1.0	10	mV
Zener voltage	V_3		5.5	6.0	7.0	V
At Terminal 5						
AGC voltage	V_5		0.1	0.25	0.4	V
Pin 7 voltage	V_7		0.55	0.70	0.80	V
Pin 12 voltage	V_{12}		0.6	0.71	0.8	V
Pin 13 voltage	V_{13}			4.0		V
DC Current:						
Supply current	I_{CC}		15	18	22	mA
Oscillator current	I_2			1.0		mA
Zener current	I_3		12	14	16	mA
IF current	I_6		3.5	4.3	6	mA
RF current	I_{13}			4.0	5	mA
Mixer current	I_{14}			0.17	0.38	mA
Static:						
I.F. breakdown & linearity	V_6	Apply 5 volts to Pin 6 only. $V_{CC}=0$ volts. Measure I _{Pin 6}	400	500	600	μA
I.F. breakdown & linearity	V_6	Apply 25 volts to Pin 6 only. $V_{CC}=0$ volts. Measure I _{Pin 6} . Note: Linearity @ 25V should be within 5% of linearity @ 5V.	2.0	2.5	3.0	mA
Performance Characteristics in Circuit of Figure 3						
Saturation		Per sensitivity test interrupting input signal measure output voltage.	500			mV
Sensitivity		Input Signal to Dummy Antenna at $f_{IN} = 1$ MHz, 30% AM Modulation at $f_{MOD} = 400$ Hz, for 11 mV output at V_O .		2.5	5	μV
Signal-to-Noise Ratio	S/N	Ratio of Output at V_O with Modulation ON and then OFF, Input Signal = $100\mu\text{V}$, 30% AM Modulation at $f_{MOD} = 400$ Hz.	34	40		dB
Overload Distortion		Input Signal set at 1 MHz, 90% AM Modulation, Distortion at V_O must be $\leq 10\%$	100	155	250	mV
Dynamic Characteristics for Indicated Stages in Circuit of Figure 3						
STAGE	PARALLEL CAPACITANCE		PARALLEL RESISTANCE		TRANSCONDUCTANCE	
	INPUT pF	OUTPUT pF	INPUT Ω	OUTPUT Ω	AT 1 MHz CARRIER μmhos	
RF Amplifier	20	6	670	2×10^6 min	150,000 @ 1 MHz	
IF Amplifier	35	3.5	850	10^4	100,000 @ 262.5 kHz	
Mixer	4	2	2000	2×10^6 min	10,000	

TYPICAL CHARACTERISTICS

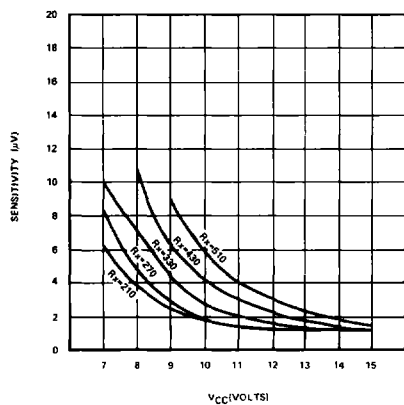
IF OUTPUT LINEARITY



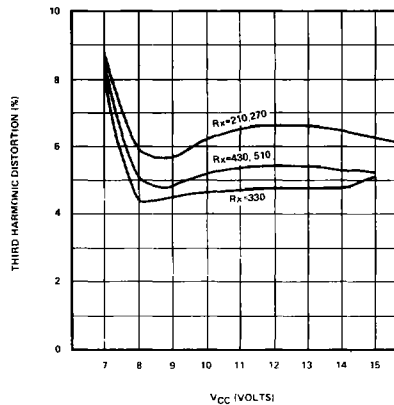
ICC VS. SUPPLY VOLTAGE



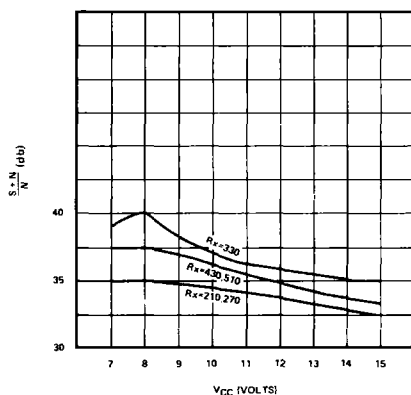
SENSITIVITY VS. SUPPLY VOLTAGE



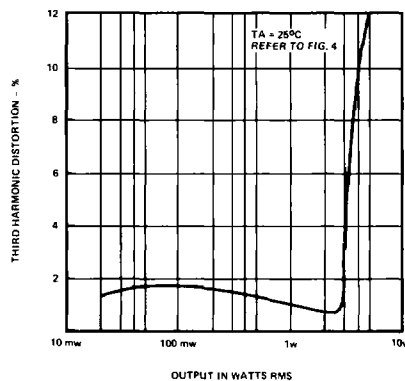
THIRD HARMONIC DISTORTION VS. SUPPLY VOLTAGE



SIGNAL TO NOISE VS. SUPPLY VOLTAGE



THIRD HARMONIC DISTORTION VERSUS OUTPUT POWER

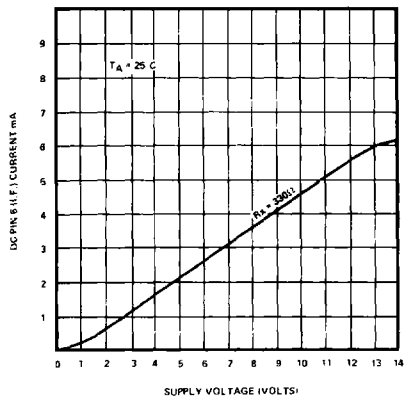


NOTE: Rx is external resistor between pins 3 and V supply.

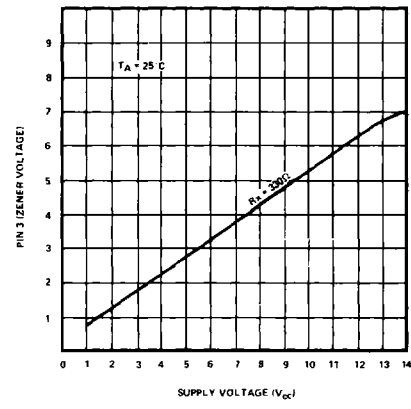
ANALOG

TYPICAL CHARACTERISTICS (Cont'd)

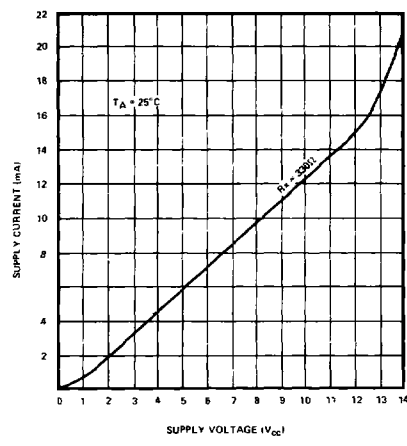
IF CURRENT VERSUS SUPPLY VOLTAGE



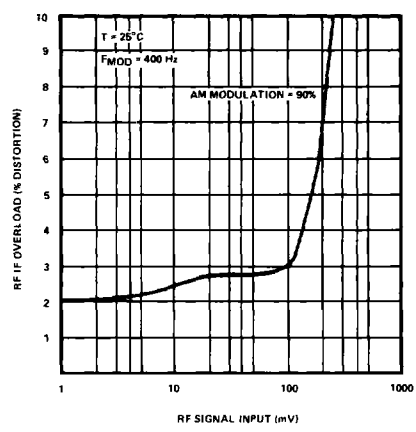
PIN 3 VOLTAGE VERSUS SUPPLY VOLTAGE



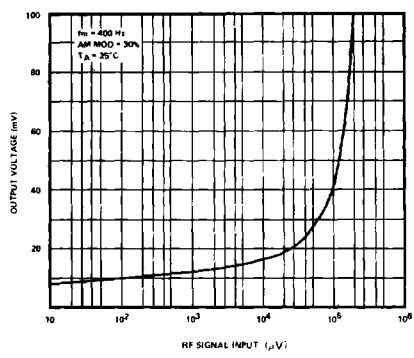
ICC VERSUS VCC



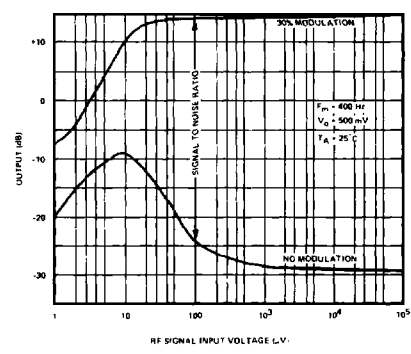
OVERLOAD RESPONSE DISTORTION VERSUS RF INPUT



AGC CURVE



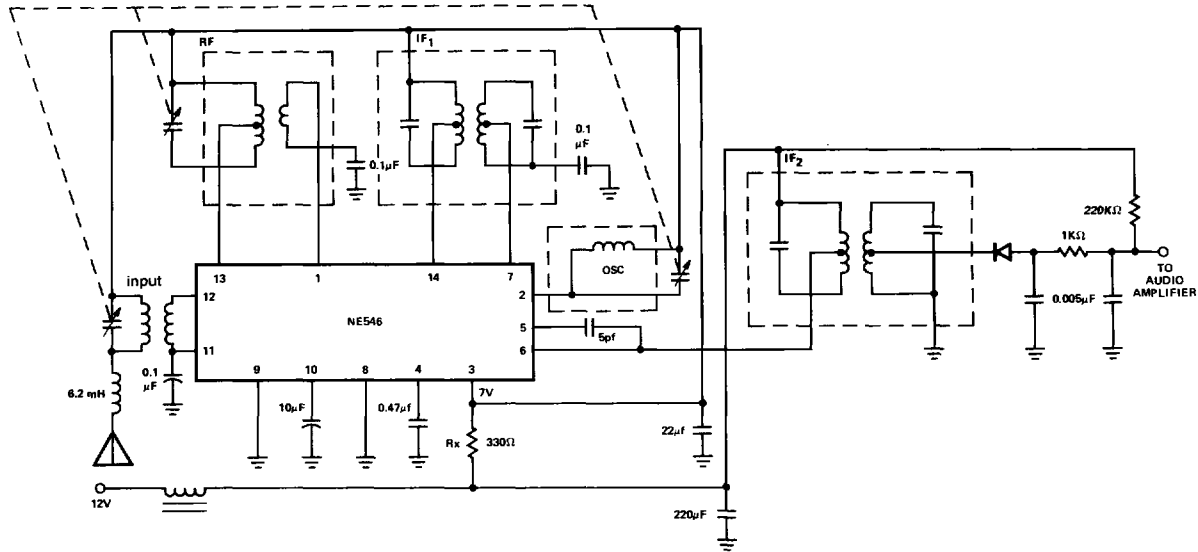
SIGNAL TO NOISE RATIO



NOTE: Rx is external resistor between pins 3 and V supply.

TYPICAL APPLICATIONS

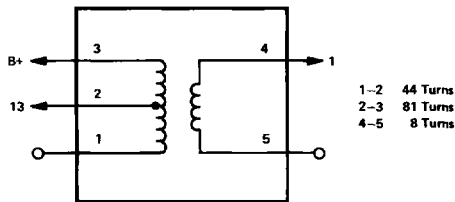
AM RADIO (Capacitor Tuned)



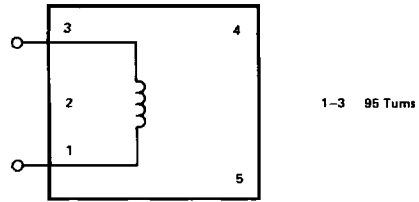
VARIABLE CAPACITOR (Air Varicon)
 ANT & RF 13 pF ~ 190 pF
 OSC 12 pF ~ 80 pF

ANTENNA COIL
 10 mm ϕ < 120 mm Ferrite Antenna

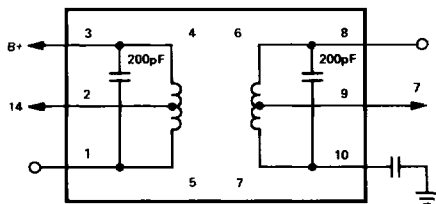
RF COIL



OSC COIL



1st. IF COIL



2nd IF COIL

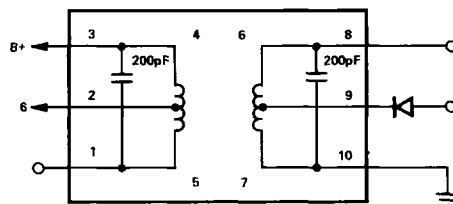
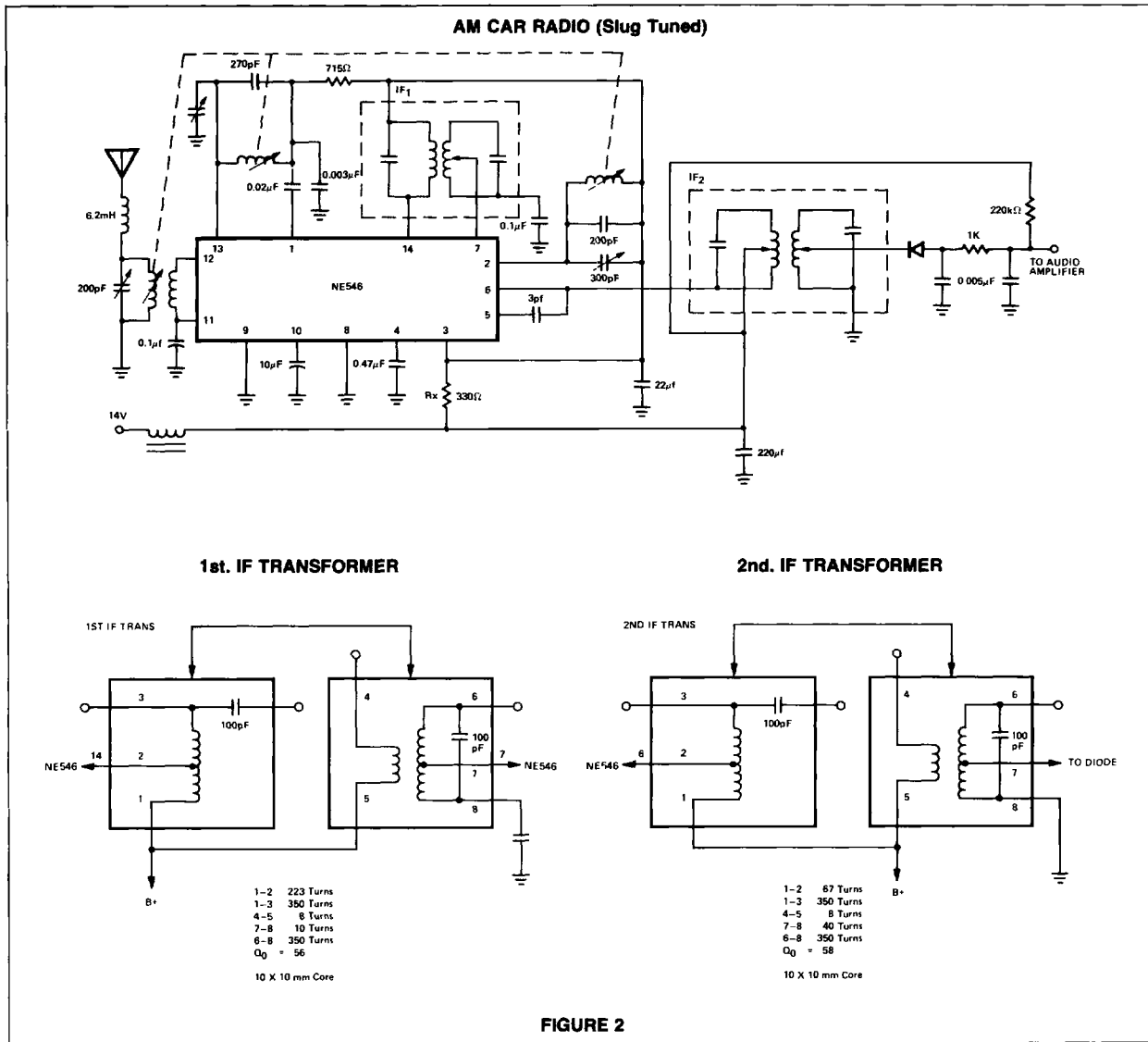


FIGURE 1

ANALOG

TYPICAL APPLICATIONS (Cont'd)



SCHEMATIC DIAGRAM

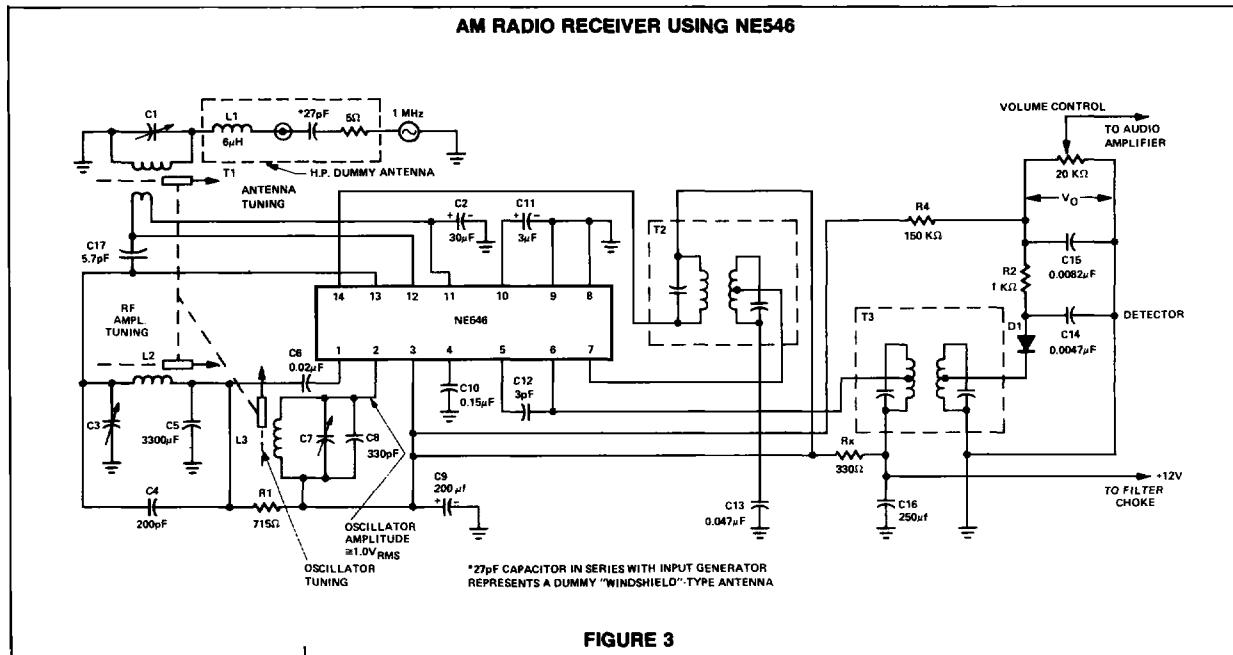


FIGURE 3

TRANSFORMER	SYMBOL	FREQUENCY	INDUCTANCE μh (≈)	CAPACITANCE pF (≈)	Q (≈)	TOTAL TURNS TO TAP TURNS RATIO
First IF:						
Primary	T ₂	262.5 kHz	2840	130	60	none 30:1 OR 13:1
Secondary			2840	130	60	
Second IF:						
Primary	T ₃	262.5 kHz	2840	130	60	8.5:1
Secondary			2840	130	60	
Antenna:						
Primary	T ₁	1 MHz	195	(C ₁) - 130	65	Adjusted to an impedance of 75Ω with primary resonant at 1 MHz. Coupling should be as tight as practical. Wire should be wound around end of coil away from tuning core.
Secondary						
Coils	L ₁	7.9 MHz	6		50	
	L ₂	1 MHz	55		50	
	L ₂	1.262 MHz	41		40	

SCHEMATIC DIAGRAM

