HA12402

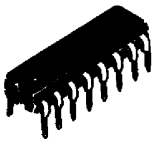
—PRELIMINARY—

FM/AM TUNER WITH 200MW AUDIO POWER AMPLIFIER

The HA12402 is a monolithic integrated circuit for use in AM/FM radios.

The IC performs the following functions.

- AM RF Amplifier
- AM Local Oscillator
- AM Mixer
- AM/FM IF Amplifier
- AM/FM Detectors
- AM AGC/FM AFC Contorol Voltage
- Audio Power Amplifier



(DP-16)

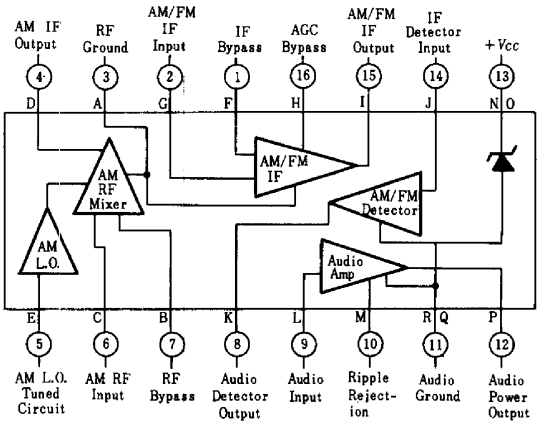
■ FEATURES

The features include an operating voltage of from 3 volts to approximately 13 volts, depending on the internal voltage, regulator tolerance. A shunt voltage regulator circuit is used, across the supply voltage terminals to permit a constant current mode (approximately 42 mA) of operation which is desirable, for low cost AC line powered products. Below 11 volts the IC operates as a Class B audio circuit which is desirable for battery operated portable products.

AM to FM switching is accomplished by switching only DC circuitry.

This allows maximum flexibility in the placement and type of AM/FM switch.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless otherwise specified)

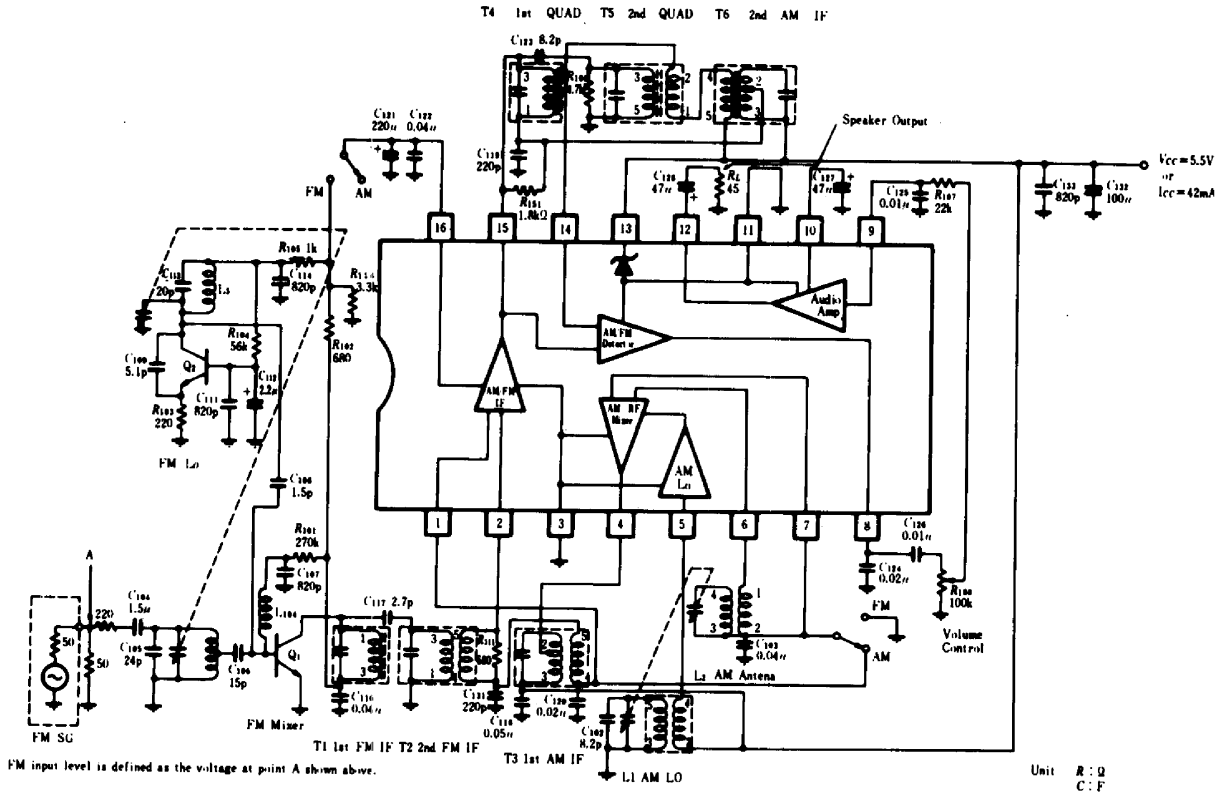
Item	Symbol	Rating	Unit
Supply Voltage (Voltage Source)	V_{CC}	11	V
Supply Current (Current Source)	I_{CC}	44	mA
Power Dissipation	P_T	600	mW
Operating Temperature Range	T_{opr}	−18 to +65	°C
Storage Temperature Range	T_{stg}	−40 to +125	°C

■ELECTRICAL CHARACTERISTICS (Ta=25°C)

	Item	Symbol	Test Condition	typ	Unit
AM	Maximum Sensitivity		Note 1, P_O=50mW	500	μV/m
	Usable Sensitivity		Note 1, P_O=50mW, S/N=20dB	600	μV/m
	AGC Figure of Merit	AGC	Note 1, 100mV/m Ref, −10dB	42	dB
	Quiescent Current	I_{QAM}	V_{CC}=9V	160	mA
FM	Maximum Sensitivity		Note 2, P_O=50mV	10	μV
	Input Limiting Voltage		Note 2, P_O=50mW, −3dB	20	μV
	30 dB Quieting Sensitivity		Note 2, P_O=50mW, S/N=30dB	20	μV
	Quiescent Current	I_{QFM}	V_{CC}=9V	17.5	mA
Power	Power Output (1)	P_{O1}	I_{CC}=42mA, R_L=45Ω, T.H.D=10%	150	mW
	Power Output (2)	P_{O2}	V_{CC}=5.5V, R_L=8Ω, T.H.D=10%	300	mW
	Power Output (3)	P_{O3}	V_{CC}=6V, R_L=8Ω, T.H.D=10%	450	mW

Note : 1. I_{CC}=42mA, f_C=1000kHz, f_m=400Hz, m=30%, R_L=45Ω,
2. I_{CC}=42mA, f_C=98MHz, f_m=400Hz, △f=22.5kHz, R_L=45Ω,

APPLICATION INFORMATION



FM input level is defined as the voltage at point A shown above.

■ CIRCUIT SCHEMATIC