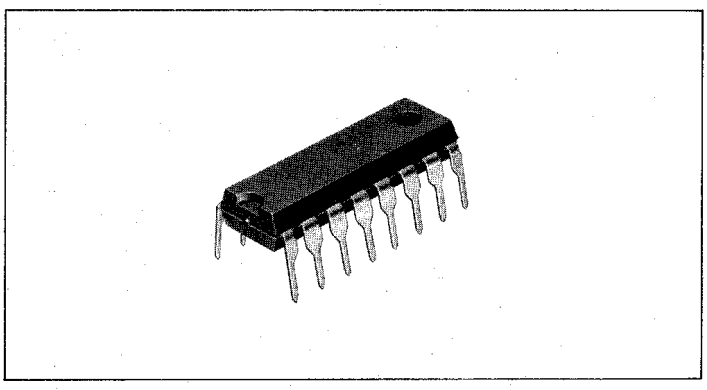
AM/FM IF Amplifier

BA4220



Dimensions (mm)

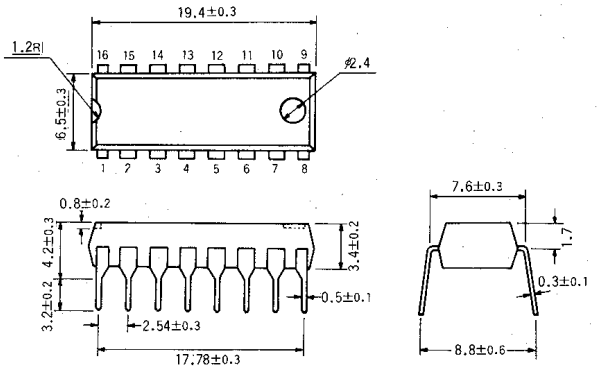


Fig. 1

The BA4220 is a monolithic integrated circuit developed for use as an AM/FM IF amplifier and detector for use in radio cassette combinations and home stereo equipment. It includes an AM/FM level meter circuit and an FM tuning meter circuit making it ideal for use as an IF system. Also, operating voltage range is wide, with stable operation at low voltages.

Features

1. Wide operating voltage range (V_{CC} = 3.0~14.0V)
2. Low current drain (typically 11.0mA for FM operation)
3. AM/FM level meter output
4. AFC output
5. High FM sensitivity
6. Low residual noise
7. High S/N ratio
8. Excellent AM: AGC characteristics

Block Diagram

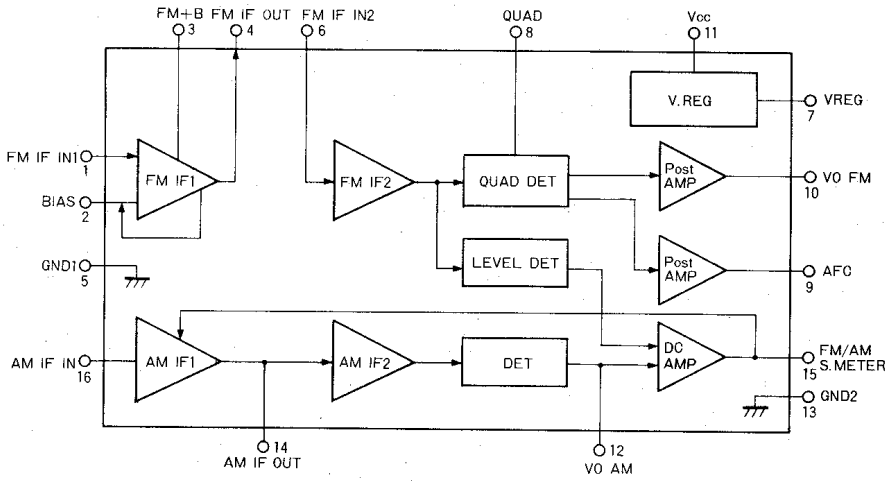


Fig. 2

Applications

1. Radio cassette combinations
2. System components
3. Music centers
4. AM/FM radios

Absolute Maximum Ratings (T_a = 25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	16	V
Power dissipation	P_d	550	mW
Operating temperature	T_{opr}	−25~+75	°C
Storage temperature	T_{stg}	−40~+125	°C

Electrical Characteristics (T_a = 25°C, V_{CC} = 6.0V)

FM: fc = 10.7MHz, fm = 1kHz, 100% MOD
AM: fc = 455kHz, fm = 1kHz, 30% MOD

Parameter		Symbol	Min	Typ	Max	Unit	Conditions	Test circuit
FM	Supply current	I_{CC}	7.0	11	16.5	mA	Quiescent condition	Fig. 3
	Detector output	V_O (FM)	180	250	320	mVrms	V_{IN} = 100dBμ	Fig. 3
	Total harmonic distortion	THD	—	0.3	0.9	%	V_{IN} = 100dBμ	Fig. 3
	Limiting sensitivity	V_{IN} (lim)	—	33	38	dBμ	V_O = −3dB	Fig. 3
	Signal-to-noise ratio	S/N	72	80	—	dB	V_{IN} = 100dBμ	Fig. 3
	Residual noise	V_N	—	40	—	dB	V_{IN} = −10dBμ	Fig. 3
	Level meter voltage	V_M	—	2.4	—	V	V_{IN} = 100dBμ	Fig. 3
AM	Detector output	V_O (AM)	60	80	100	mVrms	V_{IN} = 74dBμ	Fig. 3
	Total harmonic distortion	THD	—	0.3	0.9	%	V_{IN} = 74dBμ	Fig. 3
	Maximum sensitivity	S_{IF}	34	40	—	dBμ	V_O = 10mV	Fig. 3
	Signal-to-noise ratio	S/N	45	55	—	dB	V_{IN} = 74dBμ	Fig. 3
	Level meter voltage	V_M	—	1.4	—	V	V_{IN} = 100dBμ	Fig. 3

Test Circuit

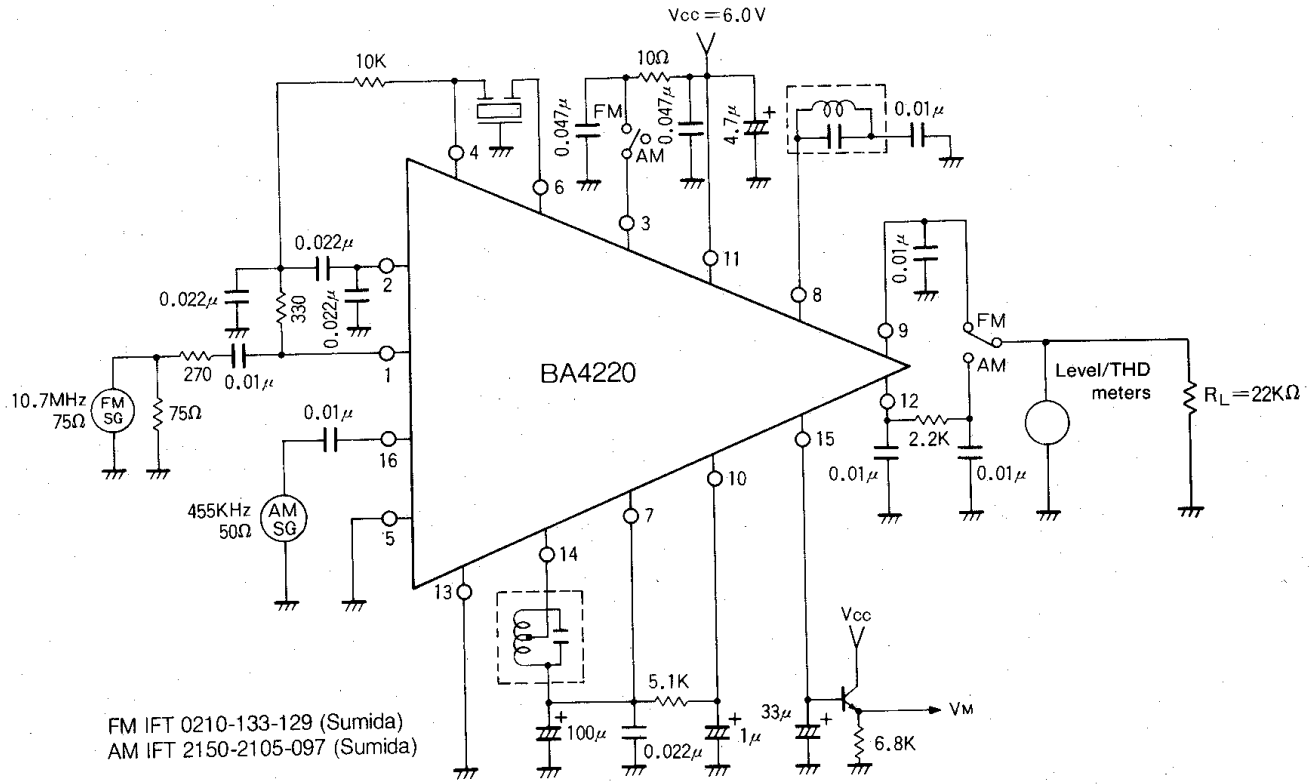


Fig. 3