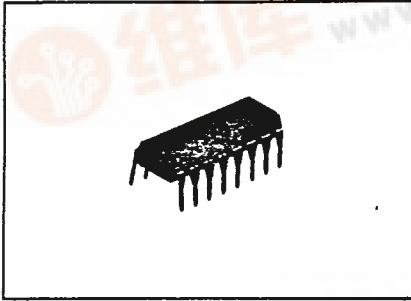


AM/FM IF Amplifier  
BA4224

T-77-05-07



Dimensions (Unit: mm)

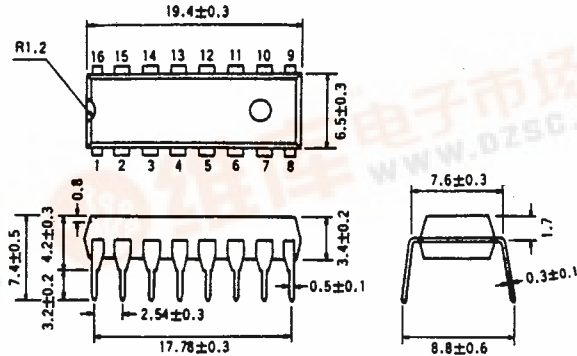


Fig. 1

The BA4224 is a monolithic integrated circuit having the FM IF amplifier and detector and AM mixer IF amplifier and detector functions used in radio cassette recorders.

Features

1. Wide operating voltage range ( $V_{CC}=4\sim 15V$ ).
2. The AM section uses a double-balanced mixer for good usable sensitivity.
3. High FM sensitivity ( $V_{IN}=26dB$ , measured with test circuit 3).
4. High AM sensitivity and S/N ratio (10mV sensitivity= $20dB\mu V$ , and S/N= $50dB$ , measured with test circuit 3).
5. An internal 5.2V regulated supply can be used for the front end circuitry as well.
6. Few external components.

Applications

AM/FM radios  
Radio cassette recorders

Block Diagram

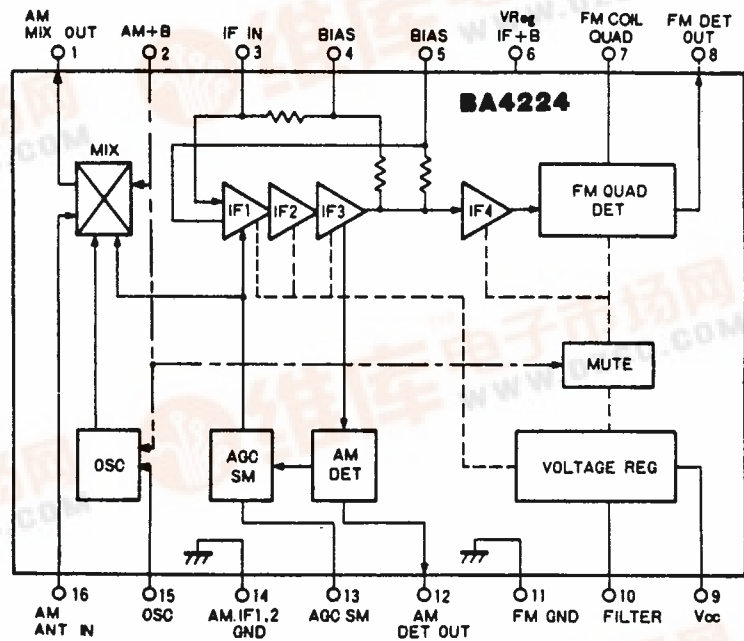


Fig. 2

Absolute Maximum Ratings ( $T_a=25^\circ C$ )

| Parameter                   | Symbol    | Limit   | Unit       |
|-----------------------------|-----------|---------|------------|
| Supply voltage              | $V_{CC}$  | 16      | V          |
| Power dissipation           | $P_d$     | 550*    | mW         |
| Operating temperature range | $T_{opr}$ | -25~75  | $^\circ C$ |
| Storage temperature range   | $T_{stg}$ | -55~125 | $^\circ C$ |

\* Derating is done at 5.5mW/ $^\circ C$  for operation above  $T_a=25^\circ C$



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Electrical Characteristics (Unless otherwise noted, Ta=25°C, Vcc=12V)

|            | Parameter                 | Symbol      | Min. | Typ. | Max. | Unit       | Conditions                              | Test circuit |
|------------|---------------------------|-------------|------|------|------|------------|---|--------------|
| FM Section | Quiescent current         | $I_o$       | 4.0  | 10.5 | 16   | mA         | —                                       | Fig 3        |
|            | Detector output           | $V_o$       | 30   | 40   | 65   | mV         | 100dB $\mu$ V, 10.7MHz, 100% MOD, 400Hz | Fig 3        |
|            | Total harmonic distortion | THD         | —    | 0.4  | 0.8  | %          | 100dB $\mu$ V, 10.7MHz, 100% MOD, 400Hz | Fig 3        |
|            | Signal-to-noise ratio     | S/N         | 60   | 68   | —    | dB         | 100dB $\mu$ V, 10.7MHz, 100% MOD, 400Hz | Fig 3        |
|            | Limiting sensitivity      | $V_N$ (lim) | —    | 26   | 30   | dB         | At $V_o = -3$ dB                        | Fig 3        |
|            | Signal meter output       | $V_s$       | —    | 1.0  | —    | V          | With 100dB $\mu$ V input                | Fig 3        |
| AM Section | Quiescent current         | $I_o$       | 7.5  | 11.5 | 18.5 | mA         | —                                       | Fig 3        |
|            | Detector output           | $V_o$       | 24   | 34   | 48   | mV         | 80dB $\mu$ V, 1MHz, 30% MOD, 400Hz      | Fig 3        |
|            | Total harmonic distortion | THD         | —    | 1.0  | 2.5  | %          | 80dB $\mu$ V, 1MHz, 30% MOD, 400Hz      | Fig 3        |
|            | Signal-to-noise ratio     | S/N         | 45   | 55   | —    | dB         | 80dB $\mu$ V, 1MHz, 30% MOD, 400Hz      | Fig 3        |
|            | Maximum sensitivity       | SIF         | —    | 20   | 25   | dB $\mu$ V | With $V_o = 10$ mV input                | Fig 3        |
|            | Signal meter output       | $V_s$       | —    | 1.6  | —    | V          | With $V_{AV} = 80$ dB $\mu$ V input     | Fig 3        |

RF and IF Amplifiers

Test Circuit

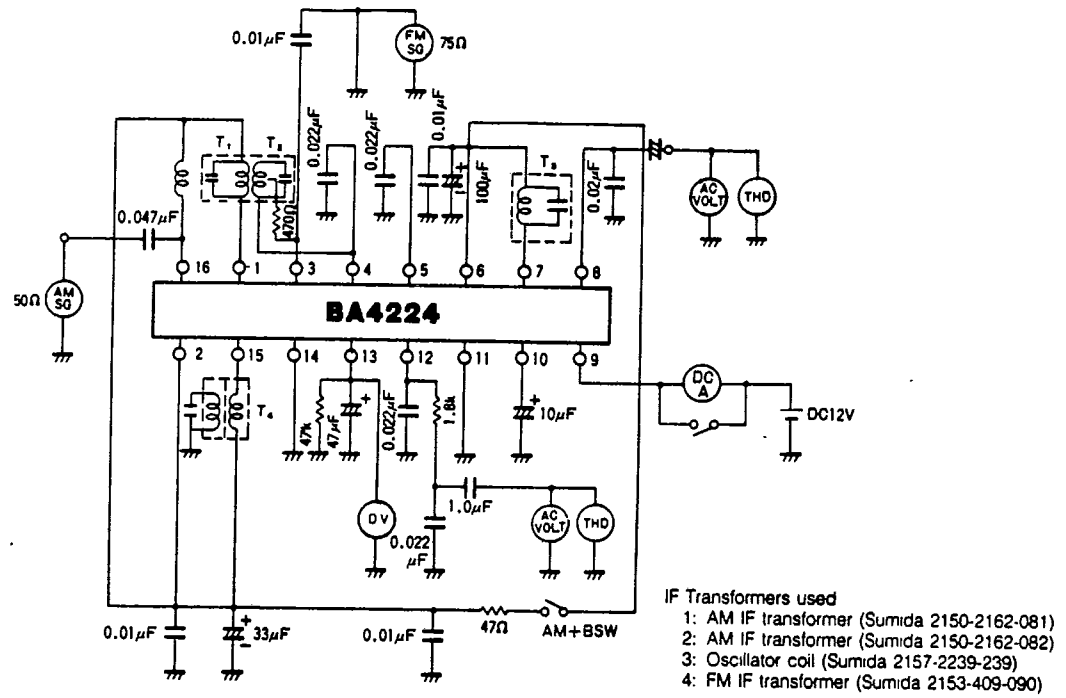


Fig. 3