

## AM/FM 1 CHIP RADIO

## KA22426D

## INTRODUCTION

The KA22426D is a monolithic integrated circuit designed for radio-cassette tape recorders, clock radios and headphone radios.

## FUNCTIONS

- AM/FM RF AMP
- AM AGC Control
- Audio Power AMP
- DC Volume
- FM Quadrature DET
- Local OSC
- FM AFC Control
- Tuning Indicator
- AM/FM IF AMP
- AM DET

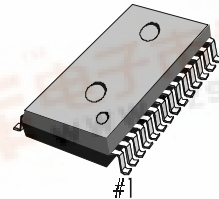
## FEATURES

- Built-in AM/FM Switching Circuit
- Wide operating supply voltage:  $V_{CC} = 2V \sim 7.5V$
- Low current consumption ( $V_{CC} = 3V$ )
  - FM:  $I_{CCQ} = 5.3 \text{ mA}$  (Typ)
  - AM:  $I_{CCQ} = 3.4 \text{ mA}$  (Typ)
- High Power Audio Amplifier: 0.5W (typ) at  $V_{CC} = 6V$ ,  $R_L = 8\Omega$ , THD = 10%

## ORDERING INFORMATION

| Device   | Package    | Operating Temperature                          |
|----------|------------|------------------------------------------------|
| KA22426D | 28-SOP-375 | $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$ |

28-SOP-375



BLOCK DIAGRAM

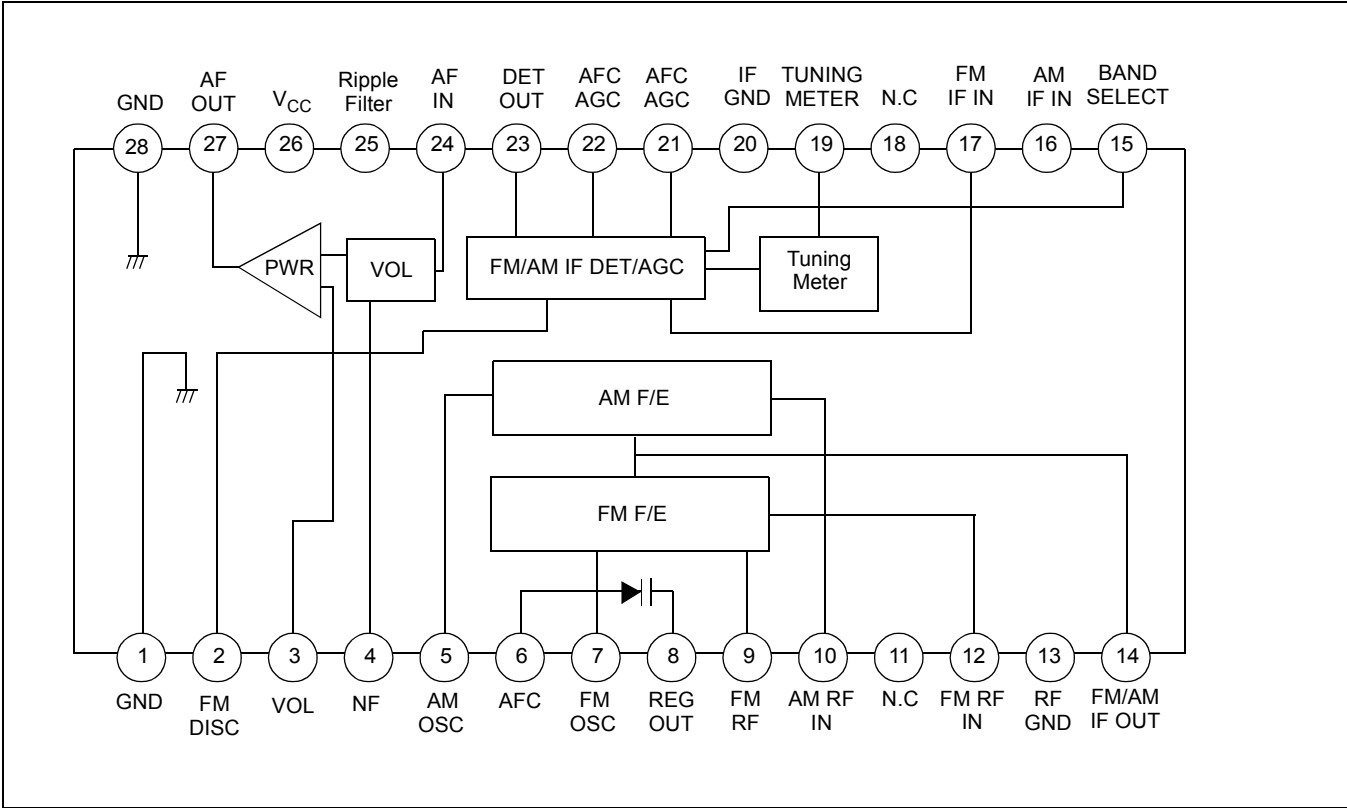


Figure 1.

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

| Characteristic        | Symbol           | Value      | Unit |
|-----------------------|------------------|------------|------|
| Supply Voltage        | V <sub>CC</sub>  | 9          | V    |
| Power Dissipation     | P <sub>D</sub>   | 1000       | mW   |
| Operating Temperature | T <sub>OPR</sub> | -20 ~ +70  | °C   |
| Storage Temperature   | T <sub>STG</sub> | -40 ~ +125 | °C   |

**ELECTRICAL CHARACTERISTICS**(V<sub>CC</sub> = 6V, Ta = 25°C, FM; f = 22.5kHz, fm = 1kHz, AM; 30% Mod, unless otherwise specified)

|    | Characteristic            | Symbol               | Test Condition                                                               | Min. | Typ. | Max. | Unit |
|----|---------------------------|----------------------|------------------------------------------------------------------------------|------|------|------|------|
| FM | Quiescent Circuit Current | I <sub>CCQ</sub>     | V <sub>I</sub> = 0                                                           | –    | 7.0  | 14.0 | mA   |
|    | F/E Voltage Gain          | G <sub>V1V</sub>     | V <sub>I</sub> (1) = 40dBμ, f <sub>c</sub> = 100MHz, Δf = 0                  | 32   | 39   | 46   | dB   |
|    | Detect Output Gain        | V <sub>O</sub> (1)   | V <sub>I</sub> (3) = 90dBμ, f <sub>i</sub> = 10.7MHz                         | –26  | –20  | –14  | dBm  |
|    | IF-3 dB Sensitivity       | V <sub>I(LIM)</sub>  | V <sub>O</sub> (VI3) = 90dBμ, -3 dB, f <sub>i</sub> = 10.7MHz                | –    | 24   | 32   | dBμ  |
|    | Total Harmonic Distortion | THD <sub>1</sub>     | V <sub>I</sub> (3) = 90dBμ, f <sub>i</sub> = 10.7MHz(Δf = 75kHz)             | –    | 0.3  | 2.0  | %    |
|    | Meter Drive Current       | I <sub>M</sub> (1)   | V <sub>I</sub> (3) = 60dBμ, f <sub>i</sub> = 10.7MHz                         | 1.8  | 3.5  | 7.0  | mA   |
| AM | Quiescent Circuit Current | I <sub>CCQ</sub> (2) | V <sub>I</sub> = 0                                                           | –    | 3.5  | 10.0 | mA   |
|    | F/E Voltage Gain          | G <sub>V</sub> (2)   | V <sub>I</sub> (2) = 60dBμ, f <sub>c</sub> = 1660kHz, m = 0%                 | 15   | 22   | 29   | dB   |
|    | IF Voltage Gain           | G <sub>V</sub> (3)   | V <sub>O</sub> (3) = –34dBm, f <sub>i</sub> = 455kHz                         | 14   | 20   | 27   | dBμ  |
|    | AM Detect Output Voltage  | V <sub>O</sub> (2)   | V <sub>I</sub> (3) = 85dBμ, f <sub>i</sub> = 455kHz                          | –26  | –20  | –14  | dBm  |
|    | Total Harmonic Distortion | THD <sub>2</sub>     | V <sub>I</sub> (2) = 95dBμ, f <sub>c</sub> = 1660kHz, V <sub>CC</sub> = 7.8V | –    | 0.6  | 2.0  | %    |
|    | Meter Drive Current       | I <sub>M</sub> (2)   | V <sub>I</sub> (3) = 85dBμ, f <sub>i</sub> = 455kHz                          | 1.3  | 3.0  | 7.0  | mA   |
| AF | Closed Loop Voltage Gain  | G <sub>V</sub> (4)   | V <sub>O</sub> (4) = 0dBm, f = 1kHz                                          | 27   | 31.5 | 36   | dB   |
|    | Total Harmonic Distortion | THD <sub>3</sub>     | P <sub>O</sub> = 50mW, f = 1kHz                                              | –    | 0.3  | 2.5  | %    |
|    | Output Power              | P <sub>O</sub>       | R <sub>L</sub> = 8Ω, THD = 10%, f = 1kHz                                     | 0.4  | 0.5  | –    | W    |

## APPLICATION CIRCUIT

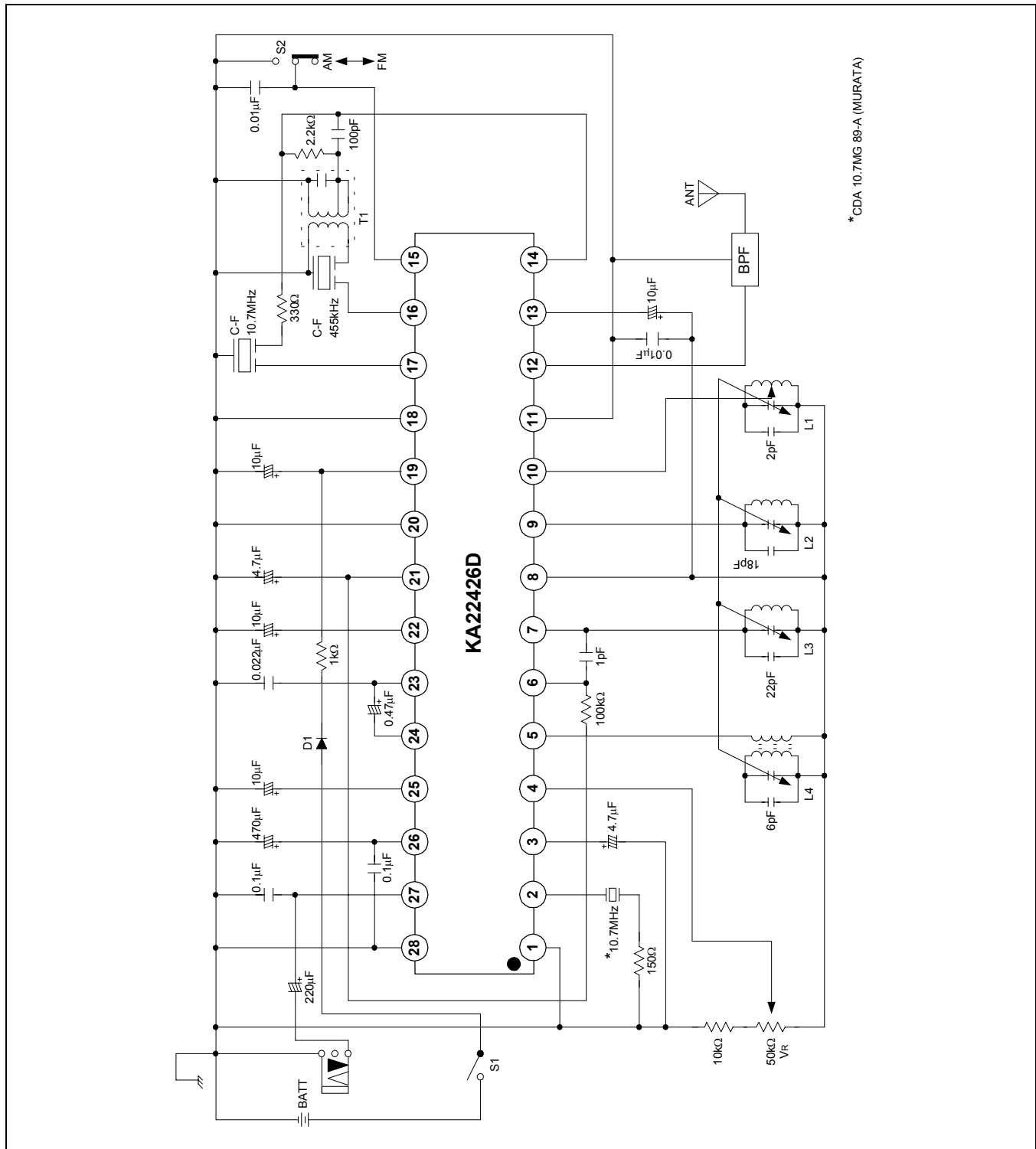


Figure 2.