

### 3V FM IF/AM TUNER SYSTEM

The KA2248 is a monolithic integrated circuit developed for the headphone stereo.

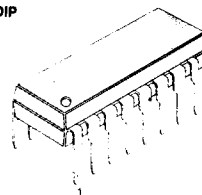
### FUNCTIONS

- AM SECTION: Converter, IF amplifier, Detector, Tuning indicator
- FM SECTION: IF amplifier, Quadrature detector, Tuning indicator

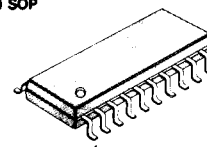
### FEATURES

- Low quiescent current: AM:  $I_{CCQ} = 3\text{mA}$  (Typ),  $V_{CC} = 3\text{V}$   
FM:  $I_{CCQ} = 8\text{mA}$  (Typ),  $V_{CC} = 3\text{V}$
- Wide operating voltage range:  $V_{CC} = 1.8\text{V} \sim 6\text{V}$ .
- Built-in AM/FM function switch.
- Tuning indicator: direct LED driving capability: 10mA (Max).
- One terminal AM/FM detector output.
- A minimum number of external parts required.

16 DIP



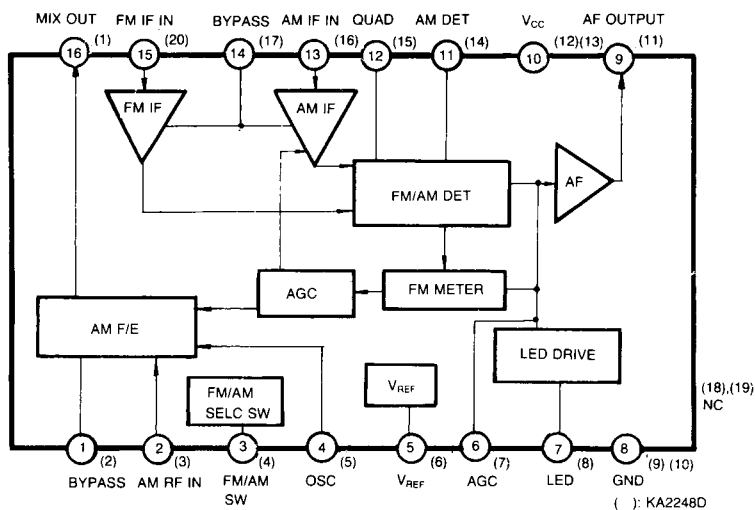
20 SOP



### ORDERING INFORMATION

| Device  | Package | Operating Temperature |
|---------|---------|-----------------------|
| KA2248A | 16 DIP  | -20°C ~ 70°C          |
| KA2248D | 20 SOP  |                       |

### BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

| Characteristic        |         | Symbol    | Value           | Unit             |
|-----------------------|---------|-----------|-----------------|------------------|
| Supply Voltage        |         | $V_{CC}$  | 6               | V                |
| Power Dissipation     | KA2248A | $P_D$     | 600             | mW               |
|                       | KA2248D |           | 350             |                  |
| Operating Temperature |         | $T_{OPR}$ | $-20 \sim +70$  | $^\circ\text{C}$ |
| Storage Temperature   |         | $T_{STG}$ | $-40 \sim +125$ | $^\circ\text{C}$ |

## ELECTRICAL CHARACTERISTICS

( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 3\text{V}$ , unless otherwise specified)

\* **FM Section** ( $f = 10.7\text{MHz}$ ,  $f_m = 1\text{KHz}$ ,  $\Delta f = 22.5\text{KHz}$ )

| Characteristic            | Symbol       | Test Conditions         | Min | Typ | Max | Unit             |
|---------------------------|--------------|-------------------------|-----|-----|-----|------------------|
| Quiescent Circuit Current | $I_{CCQ}$    | $V_i = 0$               |     | 8   | 13  | mA               |
| -3dB Limiting Sensitivity | $V_{i(LIM)}$ | $V_i = 86\text{dB}\mu$  |     | 46  | 52  | $\text{dB}\mu$   |
| Detector Voltage          | $V_{O(DET)}$ | $V_i = 86\text{dB}\mu$  | 60  | 85  | 120 | mV               |
| Signal to Noise Ratio     | S/N          | $V_i = 86\text{dB}\mu$  | 50  | 65  |     | dB               |
| Total Harmonic Distortion | THD          | $V_i = 86\text{dB}\mu$  |     | 0.1 | 1.0 | %                |
| AM Rejection Ratio        | AMR          | $V_i = 86\text{dB}\mu$  | 30  | 45  |     | dB               |
| Tuning Indication Voltage | $V_L$        | $I_{LAMP} = 1\text{mA}$ |     | 50  | 58  | $\text{dB}\mu$   |
| Output Resistance         | $R_O$        | $f = 1\text{KHz}$       |     | 0.7 |     | $\text{K}\Omega$ |

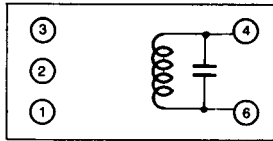
\* **AM Section** ( $f = 1\text{MHz}$ ,  $f_m = 1\text{KHz}$ , 30% Mod)

| Characteristic            | Symbol       | Test Conditions         | Min | Typ | Max | Unit             |
|---------------------------|--------------|-------------------------|-----|-----|-----|------------------|
| Quiescent Current         | $I_{CCQ}$    | $V_i = 0$               |     | 3   | 7   | mA               |
| Voltage Gain              | $G_V$        | $V_i = 26\text{dB}\mu$  | 15  | 30  | 50  | mV               |
| Detector Voltage          | $V_{O(DET)}$ | $V_i = 60\text{dB}\mu$  | 35  | 50  | 70  | mV               |
| Signal to Noise Ratio     | S/N          | $V_i = 60\text{dB}\mu$  | 35  | 45  |     | dB               |
| Total Harmonic Distortion | THD          | $V_i = 60\text{dB}\mu$  |     | 1.0 | 3.5 | %                |
| Oscillator Stop Voltage   | $V_{STOP}$   |                         |     | 1.2 |     | V                |
| Output Resistance         | $R_O$        | $f = 1\text{KHz}$       |     | 8.3 |     | $\text{K}\Omega$ |
| Tuning Indication Voltage | $V_L$        | $I_{LAMP} = 1\text{mA}$ |     | 26  | 40  | $\text{dB}\mu$   |

Fig. 2

## COIL SPECIFICATIONS (BOTTOM VIEW)

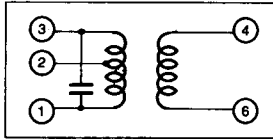
T1 FM IF (DET)



| C <sub>o</sub> (pF) | f<br>(MHz) | Q <sub>o</sub> | TURNS |
|---------------------|------------|----------------|-------|
| 4-6                 | 10.7       | 4-6            | 4-6   |
| 100                 |            | 150            | 14    |

Seoul Jupa  
0.12mmφ UEW

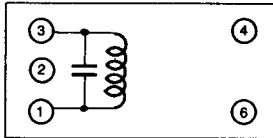
T2 AM IFT (MIX OUT)



| C <sub>o</sub> (PF) | f<br>(KHz) | Q <sub>o</sub> | TURNS |     |     |
|---------------------|------------|----------------|-------|-----|-----|
| 1-3                 | 455        | 1-3            | 1-2   | 2-3 | 4-6 |
| 180                 |            | 110            | 90    | 62  | 8   |

Seoul Jupa  
0.07mmφ UEW

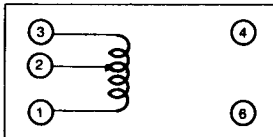
T3 AM IFT (DET)



| C <sub>o</sub> (pF) | f<br>(KHz) | Q <sub>o</sub> | TURNS |
|---------------------|------------|----------------|-------|
| 1-3                 | 455        | 1-3            | 1-3   |
| 180                 |            | 110            | 152   |

Seoul Jupa  
0.07mmφ UEW

T4 (MW OSC)



| f<br>(KHz) | L (μH) | Q <sub>o</sub> | TURNS |     |
|------------|--------|----------------|-------|-----|
| 796        | 1-3    | 1-3            | 1-2   | 2-3 |
|            | 288    | 120            | 13    | 75  |

Seoul Jupa  
0.08mmφ UEW