

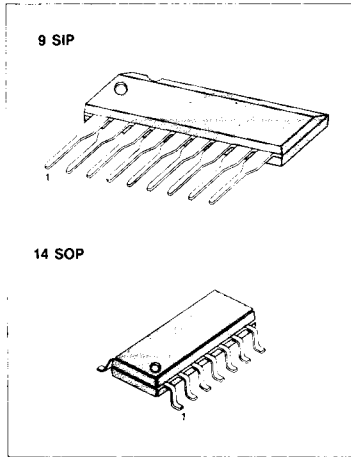
FM FRONT END

The KA22495 is a monolithic integrated circuit designed for the front end of portable radio cassettes or music centers. It consists of RF AMP, local OSC, OSC buffer and mixer. etc. Compared with conventional types, it is improved in the following characteristics:

- 1) Low supply voltage.
- 2) Strong input.
- 3) Spurious radiation.

FEATURES

- Wide supply voltage range: $V_{CC} = 1.6V \sim 6.0V$
- Low local oscillation stop voltage: $V_{STOP} = 0.9V$ (Typ)
- Improved inter-modulation characteristics by double balanced type mixer circuit.
- Low spurious radiation.
- Built-in clamping diode in the mixer output stage.



ORDERING INFORMATION

| Device | Package | Operating Temperature |
|----------|---------|-----------------------|
| KA22495 | 9 SIP | -25°C ~ +75°C |
| KA22495D | 14 SOP | |

BLOCK DIAGRAM

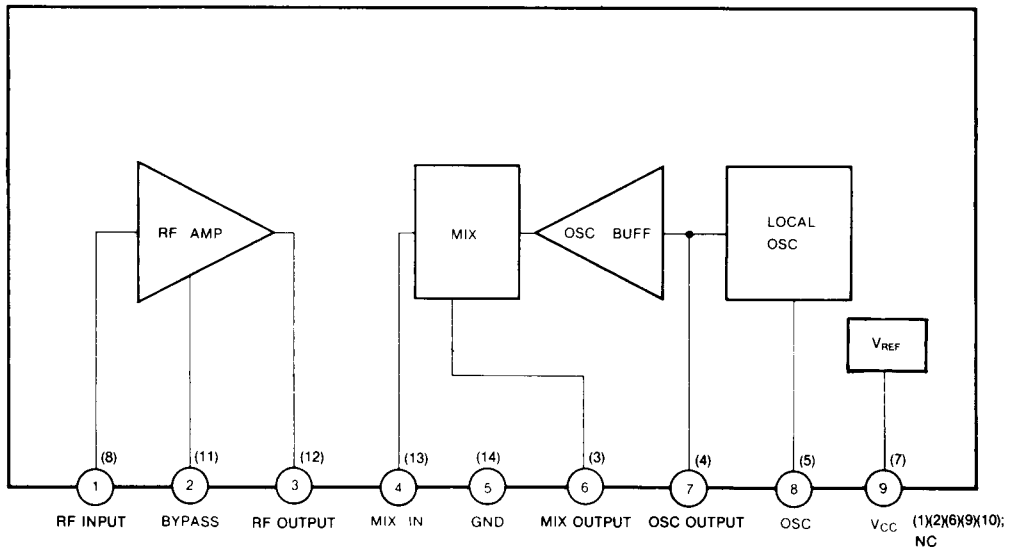


Fig. 1

() : KA22495D

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

| Characteristic | Symbol | Value | Unit |
|-----------------------|-----------|--------------|------------------|
| Supply Voltage | V_{CC} | 8 | V |
| Power Dissipation | P_D | KA22495 | 600 |
| | | KA22495D | 300 |
| Operating Temperature | T_{OPR} | - 25 ~ + 75 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | - 55 ~ + 150 | $^\circ\text{C}$ |

*: Derated above $T_a = 25^\circ\text{C}$ in the proportion of $4\text{mW}/^\circ\text{C}$.

ELECTRICAL CHARACTERISTICS

($T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $f = 98\text{MHz}$, $f_m = 1\text{KHz}$, $\Delta f = \pm 22.5\text{KHz}$, unless otherwise specified)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|----------------------------|--------------|--|-----|-----|-----|----------------|
| Quiescent Circuit Current | I_{CCQ} | $V_i = 0$ | | 5.0 | 8.0 | mA |
| - 3dB Limiting Sensitivity | $V_{I(LIM)}$ | $V_o (V_i = 60\text{dB}\mu) - 3\text{dB Down}$ | | 3.0 | 7.0 | $\text{dB}\mu$ |
| Conversion Gain | G_V | $V_i = 60\text{dB}\mu$ | 25 | 31 | | dB |
| Usable Sensitivity | S_{USA} | $S/N = 30\text{dB}$ | | 11 | | $\text{dB}\mu$ |
| Oscillation Voltage | V_{OSC} | $f_{osc} = 108\text{MHz}$ | 90 | 165 | 250 | mV |
| Oscillation Stop Voltage | V_{STOP} | | | 0.9 | 1.3 | V |

TEST CIRCUIT 1

(I_{CCQ} , $V_{I(LIM)}$, S_{USA} , G_V , V_{OSC} , V_{STOP})

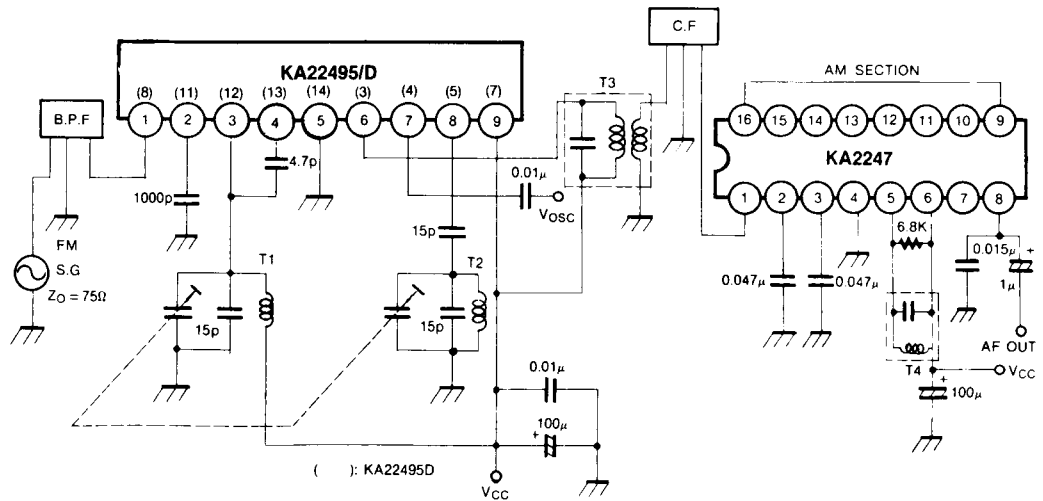


Fig. 2

When using the KA22471 for the IF stage.

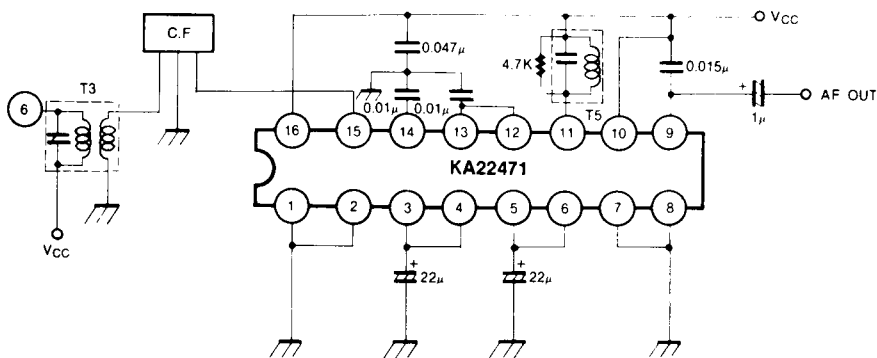
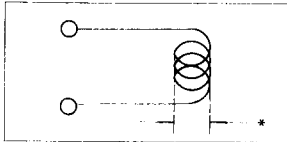


Fig. 3

COIL SPECIFICATIONS (BOTTOM VIEW)

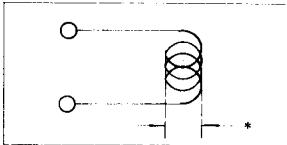
T1 FM RF



| f (MHz) | Q_o | Turns |
|--------------|-------|-------|
| 98 | 100 | 4 |

* In a Diameter of 5.5mm
0.8mm \varnothing UEW

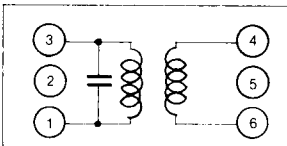
T2 FM OSC



| f (MHz) | Q_o | Turns |
|--------------|-------|-------|
| 98 | 100 | 3 |

* In a Diameter of 5.5mm
0.8mm \varnothing UEW

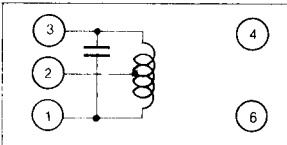
T3 FM IFT



| C_o (pF) 1-3 | f (MHz) | Q_o 1-3 | Turns 1-3 4-6 | |
|-------------------|--------------|--------------|------------------|---|
| 75 | 10.7 | 115 | 12 | 1 |

KOREA TOKO
0.12mm \varnothing UEW

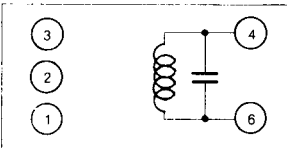
T4 FM IFT (DET)



| C_o (pF) 1-3 | f (MHz) | Q_o 1-3 | Turns 1-3 |
|-------------------|--------------|--------------|--------------|
| 56 | 10.7 | 95 | 12 |

KOREA TOKO
0.12mm \varnothing UEW

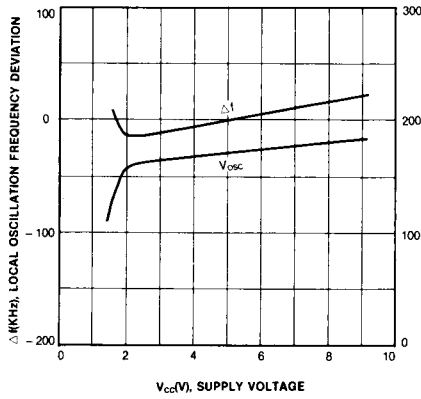
T5 FM IFT (DET)



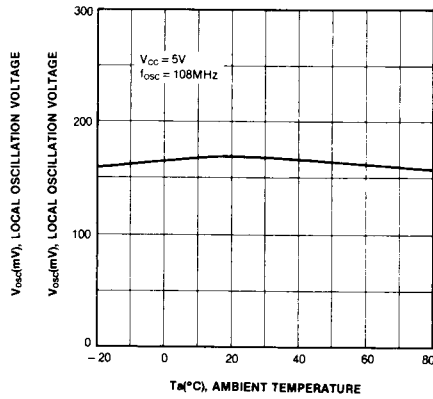
| C_o (pF) 4-6 | f (MHz) | Q_o 4-6 | Turns 4-6 |
|-------------------|--------------|--------------|--------------|
| 47 | 10.7 | 115 | 14 |

KOREA TOKO
0.12mm \varnothing UEW

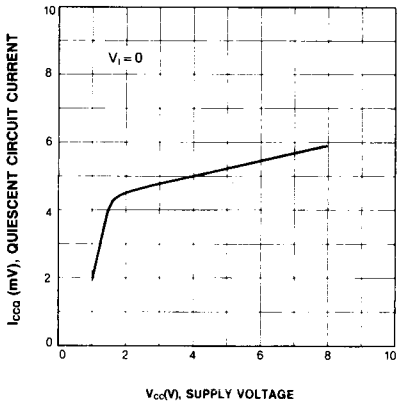
LOCAL OSCILLATION FREQUENCY DEVIATION,
LOCAL OSCILLATION VOLTAGE-SUPPLY VOLTAGE



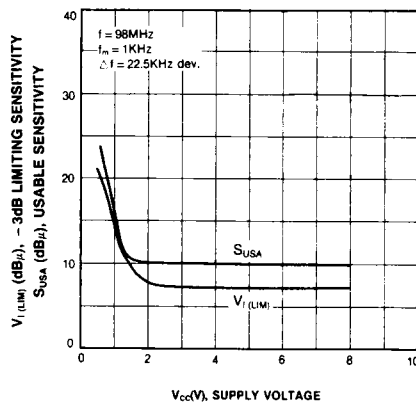
LOCAL OSCILLATION VOLTAGE
-AMBIENT TEMPERATURE



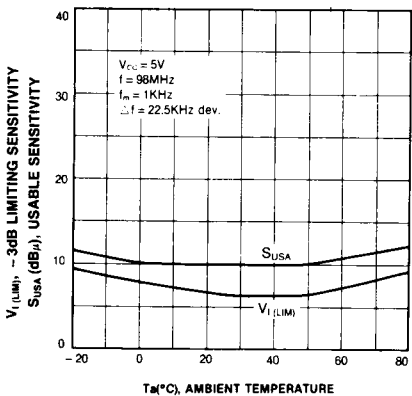
QUIESCENT CIRCUIT CURRENT-SUPPLY VOLTAGE



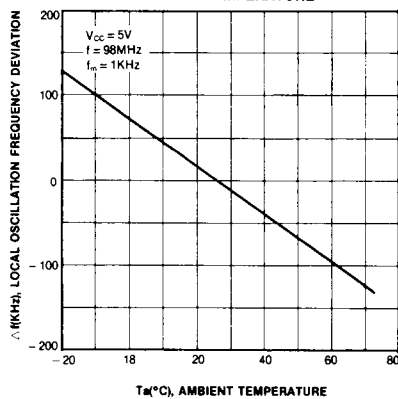
SENSITIVITY-SUPPLY VOLTAGE



SENSITIVITY-AMBIENT TEMPERATURE



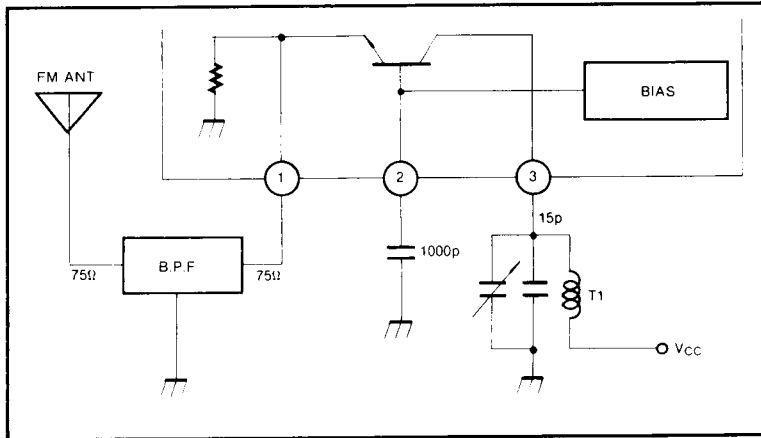
LOCAL OSCILLATION FREQUENCY DEVIATION
-AMBIENT TEMPERATURE



APPLICATION INFORMATION

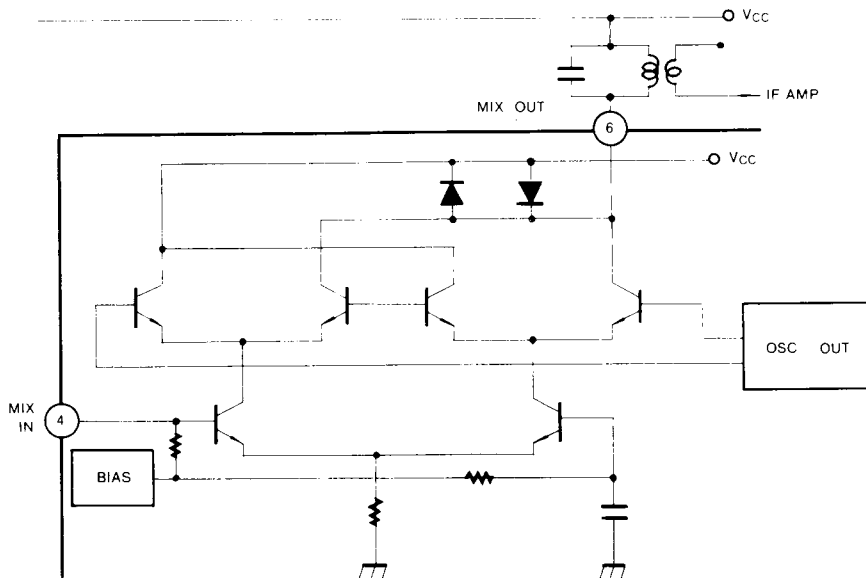
1. RF AMP

The RF AMP is a common base type, so the operating frequency range is improved. The GND of the bypass capacitor (Pin2) should be located closely at Pin 5 (GND). When using the bypass capacitor at V_{CC} line of Pin 3, we can expect an improvement of the S/N ratio.



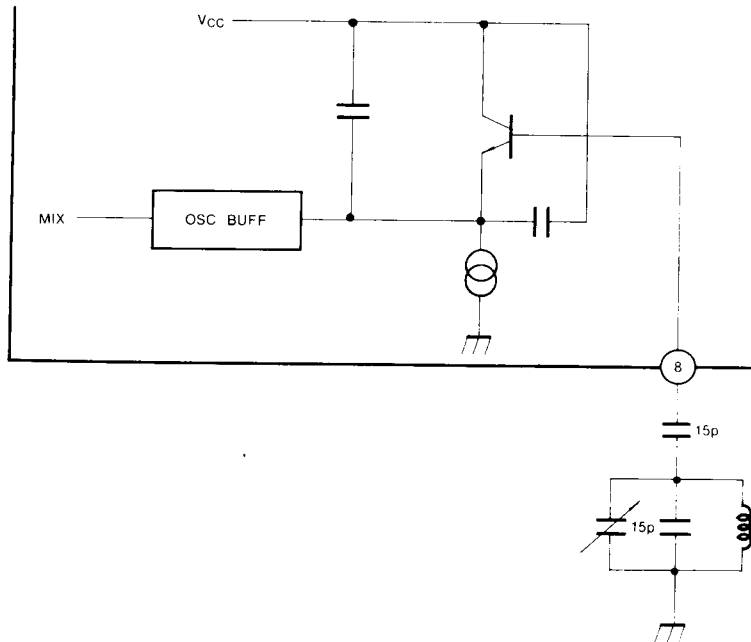
2. MIXER

The mixer stage uses a double balanced type in order to protect the leakage of OSC, spurious radiation. Also, this is built into the limiter in order to improve the strong input characteristic.



LOCAL OSCILLATION

The local oscillator uses a colpitts oscillator for stable oscillation at high frequency. This is built into the OSC buffer in order to stably operate the OSC frequency and OSC voltage at strong input.



This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.