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NTE1495 Integrated Circuit AM RF Mixer, IF Amplifier

Description:

The NTE1495 is a monolithic integrated circuit in a 15-Lead Staggered SIP type package. This device is suitable for use as an AM tuner in automotive radio receivers, specifically where compact mounting is required and contains an RF amplifier, mixer, IF amplifier, and two types of AGC circuits.

Features:

- High Sensitivity
- Excellent Two-Signal Selectivity Characteristics which Permits Receiving any Weak Signal Without Interference from the Next Strongest Signal
- Wide AGC Range Provided by Two AGC Circuits (Delay Type) Employed in the IF and RF Stages, in Addition to the Ability to Withstand Large Input and to the Yield of High S/N Ratio

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| | |
|--|-------------------|
| Supply Voltage, V_{CC} | 16V |
| Input Voltage, V_i | 7V _{P-P} |
| Power Dissipation ($T_A = +75^\circ\text{C}$), P_D | 310mW |
| Operating Temperature Range, T_{opr} | -20° to +75°C |
| Storage Temperature Range, T_{stg} | -40° to +125°C |

Recommended Operating Conditions: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-------------------------------|----------|-----------------|-----|-----|-----|------|
| Operating Supply Voltage | V_{CC} | | 9 | 13 | 16 | V |
| Operating Ambient Temperature | T_A | | -20 | - | +75 | °C |

Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = 13\text{V}$, $f = 1\text{MHz}$, $f_{mod} = 400\text{Hz}$, $\text{MOD} = 30\%$, $R_L = 10\text{k}\Omega$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------|----------|---|-----|-----|-----|-------------------|
| Circuit Current | I_{CC} | At No Signal | 18 | 26 | 34 | mA |
| Maximum Sensitivity | MS | Input level (v_i) at which detector output v_o gets 20mV _{rms} | - | 10 | 17 | dB μV |
| Signal-to-Noise Ratio | S/N | $v_i = 24\text{dB}\mu\text{V}$ | 15 | 20 | - | dB |
| Detector Output | v_o | $v_i = 74\text{dB}\mu\text{V}$ | 40 | 60 | 90 | mV _{rms} |
| Total Tarmonic Distortion | THD | $v_i = 126\text{dB}\mu\text{V}$ | - | 0.4 | 3.0 | % |

Tuner Performance Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = 13\text{V}$, $f = 1\text{MHz}$, $f_{\text{mod}} = 400\text{Hz}$, $\text{MOD} = 30\%$, $R_L = 10\text{k}\Omega$ unless otherwise specified)

| Parameter | Test Conditions | Value | Unit |
|-----------------------|--|-------|--------------------------|
| Maximum Sensitivity | Input voltage at which detector output voltage is 20mV_{rms} | 10 | $\text{dB}\mu\text{V}$ |
| Usable Sensitivity | Input voltage at which S/N Ratio is 20dB | 24 | $\text{dB}\mu\text{V}$ |
| Detector Output | Resistors connected to Pin5 are $47\text{k}\Omega$ and $33\text{k}\Omega$, $v_i = 74\text{dB}\mu\text{V}$ | 60 | mV_{rms} |
| Detector Distortion | $v_i = 74\text{dB}\mu\text{V}$ | 0.4 | % |
| Signal-to-Noise Ratio | $v_i = 74\text{dB}\mu\text{V}$ | 50 | dB |
| Overload Distortion | $v_i = 126\text{dB}\mu\text{V}$ | 0.4 | % |
| IF Rejection | $f = 1\text{MHz}$, $v_o = 20\text{mV}_{\text{rms}}$, $\text{IF} = 450\text{kHz}$ | 67 | dB |
| Image Rejection | $f = 1\text{MHz}$, $v_o = 20\text{mV}_{\text{rms}}$, $f + 2 \text{ IF}$ | 80 | dB |
| Selectivity | $f = 1\text{MHz}$, $\Delta f = \pm 10\text{kHz}$ | 31 | dB |
| Tweet | $v_i = 74\text{dB}\mu\text{V}$ 2 IF = 900kHz | 45 | dB |
| | 3 IF = 1350kHz | 50 | dB |

Pin Connection Diagram
(Front View)



