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NTE1608
Integrated Circuit
AM Tuner W/Electronic Tuning

Description:

The NTE1608 is a high performance integrated circuit in a 20–Lead DIP type package to be used as an AM electronic tuner. It provides an automatic search–stop signal, local oscillator buffer–output, and the low level local oscillation, as well as providing all other functions required of an AM tuner. Moreover, the stable local oscillation from LW to SW facilities the use of many bands.

Functions:

- RF Amplifier
- IF Amplifier
- MIX
- AGC
- OSC (with ALC)
- Detection
- Local Oscillation Buffer–Output
- Signal Meter Driving Output (also used as an Automatic Search Stop–Signal).

Features:

- **Narrow–Band Signal Meter:** Available as an automatic search–stop signal (also available as a wide–band signal meter). Signal meter output = 1/2 frequency ± 1.5kHz typ.
- **Local Oscillation Buffer–Output::** Facilitates the design of electronic tuning systems and frequency representation.
- **OSC (with ALC):** The oscillation output has been stabilized at a low level ($350mV_{rms}$) for a varactor diode, and tracking error has been minimized.
- **RF Amplifier:** Excellent in usable sensitivity by incorporating low–noise transistors in cascode circuit (45dB/m typ)
- **MIX:** Double balanced differential MIX prevents the influence of spurious radiation and IF interferences (IF interference = 85dB typ)
- **Low Noise:** Excellent in S/N for intermediate input (57dB typ).
- **Compensation for V_{CC} Fluctuation:** Allows little gain fluctuation and little distortion fluctuation (8 to 16V).
- **Low Shock Noise:** Able to decrease the shock noise by selecting AGC time constant when changing V_{CC}–on and/or switching the mode.

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Supply Voltage (Pin8, Pin14), V_{CC}max 16V
Output Voltage (Pin5, Pin7), V_o 24V
Input Voltage (Pin3), V_i 5.6V
Supply Current (Pin5 + Pin7 + Pin8 + Pin14), I_{CC}max 32mA
Output High Drive Current (Pin18), I_{18} 5mA
Output High Drive Current (Pin20), I_{20} 2mA
Allowable Power Dissipation, $P_D$max 700mW
Operating Temperature Range, T_{opr} . . . . . –20° to +70°C
Storage Temperature Range, T_{stg} . . . . . –40° to +125°C

Recommended Operating Condition: (T_A = +25°C unless otherwise specified)

Recommended Supply Voltage, V_{CC} 12V

Electrical Characteristics: (T_A = +25°C, V_{CC} = 12V, f_r = 1MHz, f_m = 400Hz unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Current Dissipation	I_{CC}	Quiescent	16	25	35	mA
		With 107dBμ Input	19	29	40	mA
Detector Output	v_o	With 23dBμ Input, MOD = 30%	–27.5	–23.0	–18.5	dBm
		With 80dBμ Input, MOD = 30%	–15.5	–12.5	–9.5	dBm
Signal–to–Noise Ratio	S/N	With 23dBμ Input, MOD = 30%	16	20	–	dB
		With 80dBμ Input, MOD = 30%	52	57	–	dB
Total Harmonic Distortion	THD	With 80dBμ Input, MOD = 30%	–	0.4	1.0	%
		With 107dBμ Input, MOD = 30%	–	0.3	1.0	%
Signal Meter Output	V_{SM}	Quiescent	–	0	0.5	V
		With 107dBμ Input	3.0	4.5	7.0	V
Input at Signal Meter Output = 1V	V_{in}		19	25	31	dBμ
Local Oscillation–Buffer Output	V_{OSC}		250	350	–	mV_{rms}

Reference Characteristics:

Parameter	Symbol	Test Conditions	Typ	Unit
Signal Meter Output	V_{SM}	With 40dBμ Input	2.5	V
Total Harmonic Distortion	THD	With 112dBμ Input, MOD = 30%	2	%
Local Oscillation Fluctuation within a Band	ΔV_{OSC}	From $V_{OSC(L)}$ (522kHz) to $V_{OSC(H)}$ (1647kHz)	10	mV_{rms}
Signal Meter Bandwidth (Note 1)	$V_{SM–BW}$	With 80dBμ Input, 1/2 Output Frequency	±1.5	kHz
		With 80dBμ Input, 1/10 Output Frequency	–4.5 +7.0	kHz
Selectivity		±10kHz at 30% MOD	45	dB
IF Interference		f_r = 600kHz	85	dB
Image Frequency Interference Ratio		f_r = 1400kHz	40	dB

Note 1. BFB450C4 (Murata, japan) was used as a narrow band filter (0dBm = 775mV, 0dBμ = 1μV).

Pin Connection Diagram





