



ELECTRONICS, INC.

44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748-5089

NTE1441 Integrated Circuit FM IF Amplifier, Detector

Function:

- IF Amplification, Limiter
- Quadrature Detector
- AF Preamplifier
- Muting at Weak Input
- Muting at the Detuning
- Signal Meter Drive Output
- AFC Tuning Meter Drive Output
- Delay AGC Output
- Inverting Circuit for Muting Drive Voltage
- IF Amplifier Stop Circuit

Features:

- High Limiting Sensitivity: 18 μ V Typ.
- Low Distortion: 0.05% Typ Determined by the Linearity of Phase Characteristics in Phase Shifting Circuit
- High Demodulation Output: 330mV_{rms} Typ
- High S/N Ratio: 78.5dB Typ
- Muting at Detuning with Little Shock Noise
- Single Meter Drive Output Proportional with the Input Signal Level dB
- Detuning Muting Band having Good Symmetrics
- Tuning Meter Driving Output having Wide Swing Width
- Delay AGC Drive Output for Front End
- Constant Voltage Circuit is Built-In: Operating Voltage Range = 9V to 14V
- Muting Characteristics Between Adjacent Stations are Distinguished

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

Maximum Supply Voltage (Pin11), V_{CCmax}	16V
Maximum Input Voltage (Pin1-2), V_I	$\pm 1V_{P-P}$
Maximum Supply Current (Pin11), I_{CC}	40mA
Maximum Flow-In Current	
Pin15, I_{15}	1mA
Pin16, I_{16}	1mA
Maximum Flow-Out Current	
Pin10, I_{10}	2mA
Pin12, I_{12}	2mA
Pin13, I_{13}	2mA
Pin15, I_{15}	2mA
Allowable Power Dissipation, P_{Dmax}	650mW
Operating Temperature Range, T_{opr}	-20° to $+70^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+125^\circ\text{C}$

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

Supply Voltage, V_{CC}	12V
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Electrical Characteristics: ($T_A = +25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $f = 10.7\text{MHz}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Quiescent Current	I_{CCO}		–	22	30	mA
Current Dissipation	I_{CC}	$V_{IN} = 100\text{dB}\mu$	–	26.5	33.0	mA
Demodulated Output	V_O	$V_{IN} = 100\text{dB}\mu$, 400Hz – 100% MOD	240	330	460	mV_{rms}
Signal-to-Noise Ratio	S/N	$V_{IN} = 100\text{dB}\mu$, 400Hz – 100% MOD	72.0	78.5	–	dB
Input Limiting Voltage	$V_{IN(\text{lim})}$	V_O 3dB down, 400Hz – 100% MOD	–	25	31	$\text{dB}\mu$
Total Harmonic Distortion	THD	$V_{IN} = 100\text{dB}\mu$, 400Hz – 100% MOD	–	0.05	0.3	%
Muting Sensitivity	$V_{IN(\text{mute})}$	$V_{12} = 1.4\text{V}$	23	29	35	$\text{dB}\mu$
Muting Attenuation	$\text{Mute}_{(\text{att})}$	$V_5 = 2\text{V}$, $V_{IN} = 100\text{dB}\mu$, 400Hz – 100% MOD	60	65	–	dB
Muting Bandwidth	$\text{BW}_{(\text{mute})}$	$V_{IN} = 100\text{dB}\mu$, $V_{12} = 1.4\text{V}$	140	220	370	kHz
AM Rejection Ratio	AMR	$V_{IN} = 100\text{dB}\mu$, FM: 400Hz – 100% MOD, AM: 1kHz – 30% MOD	45	60	–	dB
Muting Driving Output	V_{12}	Quiescent	4.0	4.9	6.0	V
		$V_{IN} = 100\text{dB}\mu$	0	0	0.3	V
Signal Meter Driving Output	V_{13}	Quiescent	0	0	0.1	V
		$V_{IN} = 70\text{dB}\mu$	1.9	3.0	4.2	V
		$V_{IN} = 100\text{dB}\mu$	4.5	5.5	–	V
AGC Output	V_{15}	Quiescent	4.2	5.0	5.5	V
		$V_{IN} = 100\text{dB}\mu$	0	0	0.5	V
IF OFF Current	$I_{15(\text{off})}$	Quiescent, $V_{8-10} \leq 20\text{mV}$	10	35	60	μA
Voltage of Muting Operation	$V_{16(\text{mute})}$	$V_{IN} = 100\text{dB}\mu$, $V_{12} = 1.4\text{V}$	0.7	0.84	1.0	V
Offset Voltage	$V_{6-10\text{B}}$	Quiescent, Pin6 – Pin10	–0.5	0	+0.5	V
	$V_{7-10\text{B}}$	Quiescent, Pin7 – Pin10, $R_{7-10} = 5.1\text{k}$	–0.25	0	+0.25	V
Pin Voltage	V_1	Quiescent	–	2.6	–	V
	V_2		–	2.6	–	V
	V_3		–	2.6	–	V
	V_6		–	5.6	–	V
	V_7		–	5.6	–	V
	V_8		–	5.4	–	V
	V_{10}		–	5.6	–	V
	V_{12}		–	4.9	–	V
	V_{13}		–	0	–	V
V_{15}	–	5.0	–	V		

Pin Connection Diagram

