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: 18μV 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°C unless otherwise specified)

Maximum Supply Voltage (Pin11), V_{CC}max 16V
Maximum Input Voltage (Pin1–2), V_I . . . . . ±1$V_{P–P}$
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, $P_D$max 650mW
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)

Supply Voltage, V_{CC} 12V

Electrical Characteristics: (T_A = +25°C, V_{CC} = 12V, f = 10.7MHz unless otherwise specified)

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