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NTE1489
Integrated Circuit
Stereo Demodulator

Description:

The NTE1489 is a silicon monolithic integrated circuit in a 16–Lead DIP type package designd for use as an FM multiplex demodulator for high class stere FM tuners. As the IC adopts a PLL (Phase Lock Loop) system, complexity of contol is usually experienced when using conventional external coil is eliminated and the demodulator can easily be constructed by simply controlling the external semi–fixed potentiometer. Internal circuits are composed of a stereo demodulator, a lamp driver, an input stage pre–amplifier that is capable of establishing variable input signal levels, a VCO (Voltage Controlled Oscillator) constituting PLL, a phase comparator, a LPF (Low Pass Filter), a frequency divider, and a DC amplifier. A stereo–monaural automatic switching circuit, a circuit for manual switching, VCO forced stop circuit, etc. are built–in.

Features:

- Fewer External Components. Coil is not used.
- Low Monaural Total Harmonic Distortion
- Low Stereo Total Harmonic Distortion
- High Channel Separation
- Built–In Output Stage Post Amplifier
- Stereo–Monaural Switching can be made either Automatically or Manually from Outside. The Shock Noise at Switching is Reduced Considerably.
- Stereo–Monaural Switching Operation is perfectly Synchronized with the Stereo Indicator Lamp
- Monitoring of VCO Free Running Frequency can be Performed by Directly Connecting the Frequency Counter to Pin9.
- High Signal–to–Noise Ratio
- Wide Maximum Input Level

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Supply Voltage, V_{CC} 15V
Lamp Current, I_L 75mA
Package Dissipation (T_A = +70°C), P_D 400mW
Operating Temperature Range, T_{opr} . . . . . –20° to +70°C
Storage Temperature Range, T_{stg} . . . . . –40° to +125°C

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

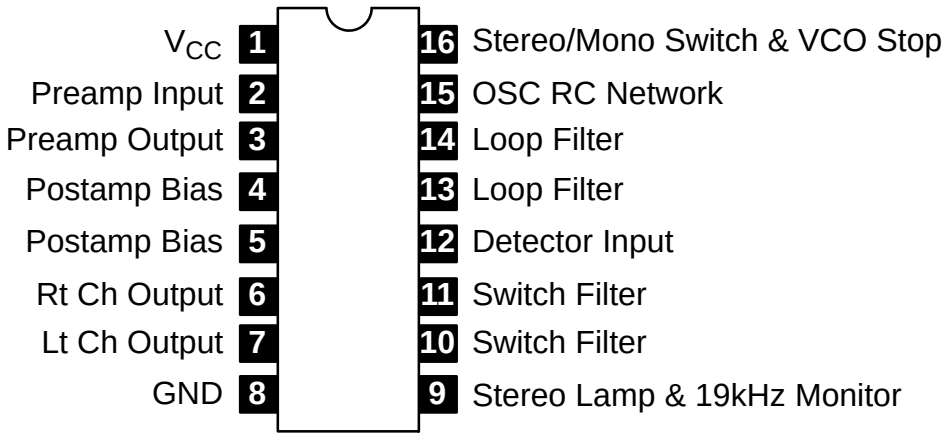
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		9	12	15	V

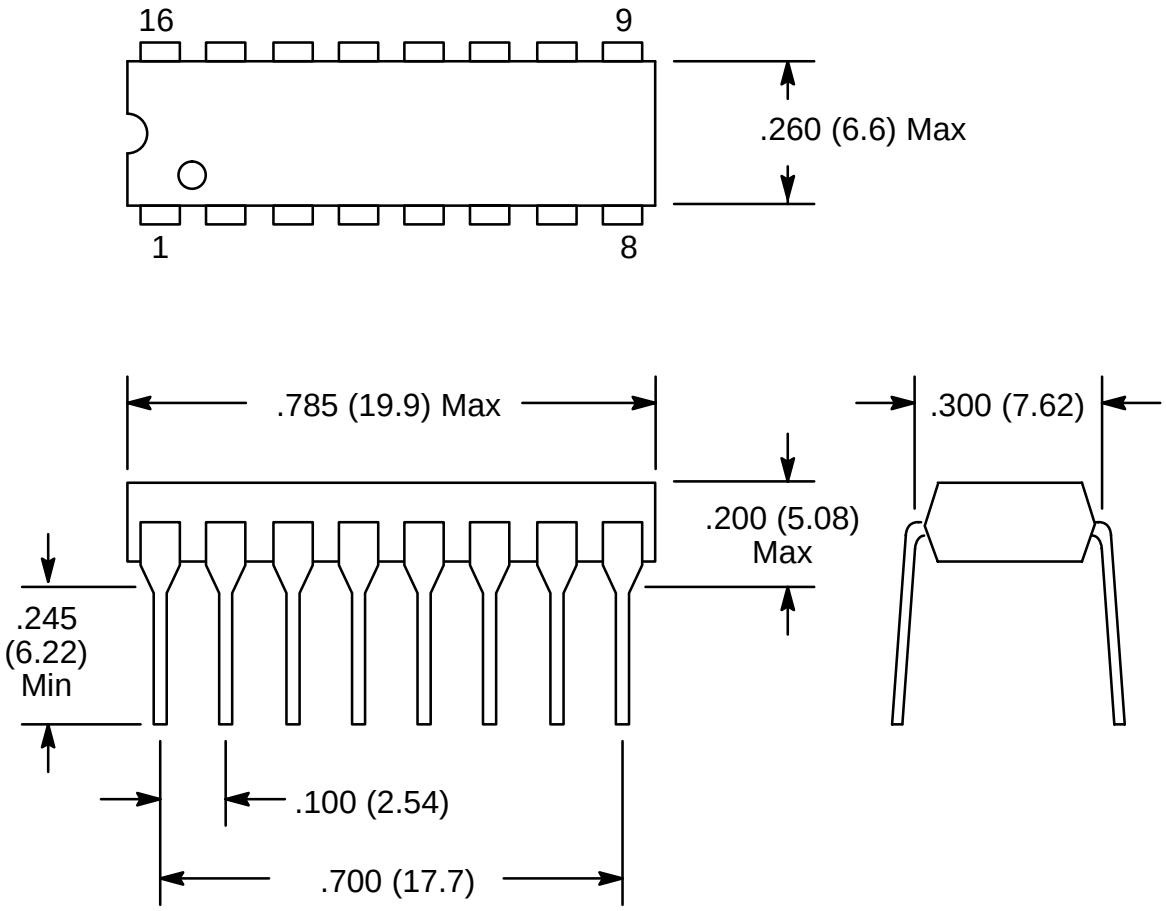
Electrical Characteristics: (T_A = +25°C, V_{CC} = 12V, f = 1kHz, R_1 = 47kΩ, R+L = 270mV, Pilot = 30mV unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Supply Current	I_{CC}	No Signal		12	20	30	mA
Channel Separation	Sep.	Pilot = 30mV	f = 100Hz	40	50	–	dB
			f = 1kHz	45	55	–	dB
			f = 10kHz	35	45	–	dB
Voltage Gain	A_V	Monaural, V_{in} = 300mV, Note 1		9	13	17	dB
Channel Balance	CB	Monaural, V_{in} = 300mV		–1.5	0	1.5	dB
		Stereo, Pilot = 30mV		–1.5	0	1.5	dB
Monaural Total Harmonic Distortion	THD	V_{in} = 300mV		–	0.02	0.1	%
Stereo Total Harmonic Distortion	THD	R+L = 270mV, Pilot = 30mV	f = 100Hz	–	0.02	–	%
			f = 1kHz	–	0.02	0.1	%
			f = 10kHz	–	0.12	–	%
Pilot Level for Lamp ON	L –ON	Pilot Level, R_1 = 47kΩ		6	12	20	mV_{rms}
Stereo Lamp Hysteresis	Hy.	Pilot Level		–	6	–	dB
Capture Range	CR	Pilot = 30mV		±1.5	±3.0	–	%
Ultrasonic Frequency Rejection	19kHz Rej.	Pilot = 30mV		–	35	–	dB
	38kHz Rej.	Pilot = 30mV		–	45	–	dB
SCA Rejection	SCA Rej.	Pilot = 30mV, SCA = 30mV		–	70	–	dB
Maximum Input Level	V_{in}	Monaural, THD = 1%		–	0.7	–	V_{rms}
Signal–to–Noise Ratio	S/N	V_{in} = 300mV, After LPF		–	82	–	dB
Stereo–Monaural Switching SW–ON Voltage	V_S	Pin16 Voltage where Stereo Lamp – OFF		–	1.4	1.6	V
VCO Stop Voltage	V_o	Pin16 Voltage where VCO Stops		7	–	V_{CC}	V

Note 1. A_V is from the output level measured at the IC output terminal. A_V can be set by the input impedance R_1.

Pin Connection Diagram




16
9
.260 (6.6) Max
1
8
.785 (19.9) Max
.300 (7.62)
.200 (5.08)
Max
.245
(6.22)
Min
.100 (2.54)
.700 (17.7)