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NTE1577
Integrated Circuit
Dual, Low Noise Preamp w/Auto Reverse

Description:

The NTE1577 is a dual preamplifier with tape autoreverse facilityin a 16–Lead DIP type package designed for the amplification of low level signals in applications requiring very low noise performance, as stereo cassette players. Each channel consists of two independent amplifiers. The first has a fixed gain of 30dB while the second one is an operational amplifier optimized for high quality audio application.

Features:

- Very Low Noise
- High Gain
- Large Output Voltage Swing
- Low Distortion
- Tape Autoreverse Facility
- Single Supply Operation
- Short Circuit Protection
- Wide Supply Range

Absolute Maximum Ratings:

Supply Voltage, V_S 36V
Total Power Dissipation (T_A = +60°C), P_D 600mW
Operating Junction Temperature Range, T_J . . . . . –40° to +150°C
Storage Temperature Range, T_{stg} . . . . . –40° to +150°C
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 150°C/W

Electrical Characteristics: (T_A = +25°C, V_S = 14.4V, G_V = 60dB unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current	I_S	V_S = 8V to 30V	–	10	–	mA
Output Current (Pin1 to Pin15) Source	I_O	V_S = 8V to 30V	–	10	–	mA
Sink			–	1	–	mA
Closed Loop Gain	G_V	f = 20Hz to 20kHz	–	60	–	dB

Electrical Characteristics (Cont'd): (T_A = +25°C, V_S = 14.4V, G_V = 60dB unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Input Resistance	R_i	f = 1kHz		50	80	–	kΩ
Output Resistance (pins 1–15)	R_o	f = 1kHz		–	50	–	Ω
Total Harmonic Distortion	THD	V_O = 300mV	f = 1kHz	–	0.05	–	%
			f = 10kHz	–	0.05	–	%
Output Voltage Swing (Pin1 to Pin15)	V_O	Peak–to–Peak	V_S = 14.4V	–	12	–	V
			V_S = 30V	–	28	–	V
Total Input Noise	e_n	Note 1	R_g = 50Ω	–	0.25	–	μV
			R_g = 600Ω	–	0.4	0.6	μV
			R_q = 5kΩ	–	1.3	–	μV
Signal–to–Noise Ratio	S/N	V_{in} = 0.3mV, R_g = 600Ω, Note 1		–	57	–	dB
		V_{in} = 1mV, R_g = 0, Note 1		–	73	–	dB
Channel Separation	CS	f = 1kHz		–	60	–	dB
Crosstalk (Differential Input)	CT	f = 1kHz, Note 3		–	80	–	dB
Supply Voltage Rejection	SVR	f = 1kHz, R_g = 600Ω, Note 2		–	120	–	dB
Supply Voltage Rejection of Reference Voltage (Pin4)	SVR	f = 1kHz, R_g = 600Ω, Note 2		–	100	–	dB
Reference Voltage (Pin 4)	V_{ref}			–	55	–	mV
Reference Voltage Output Resistance (Pin4)	R_{ref}			–	100	–	Ω
Voltage Temperature Coefficient	$\frac{\Delta V_{ref}}{\Delta T}$			–	10	–	μV/°C

Note 1. The weighting filter used for the noise measurement has a curve A frequency response.

Note 2. Referred to the input

Note 3. Between a disabled input and an input ON.

Electrical Characteristics: (V_S = 30V unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Amplifier No. 1							
Gain (Pin6 to Pin5)	G_V			29	30	30.5	dB
Distortion	d	V_O = 300mV	f = 1kHz	–	0.05	–	%
			f = 10kHz	–	0.05	–	%
Total Input Noise	e_n	R_g = 600Ω, Note 1		–	0.4	–	μV
Output Impedance (Pin5)	Z_O	f = 1kHz		–	100	–	Ω
Output Current (Pin5)	I_O			–	1	–	mA
DC Output Voltage (Pin5)	V_5	V_S = 10V		1.3	2	2.7	V

Note 1. The weighting filter used for the noise measurement has a curve A frequency response.

Electrical Characteristics (Cont'd): (V_S = 30V unless otherwise specified)

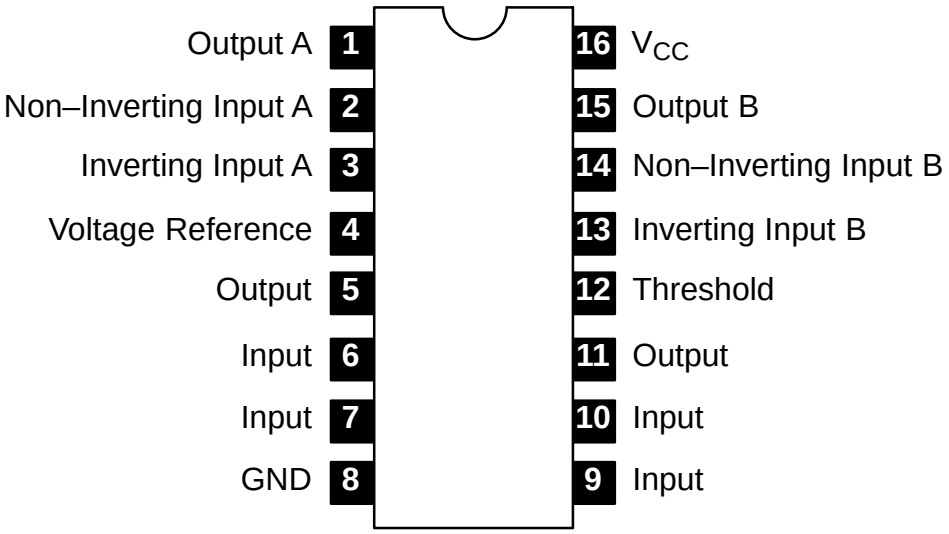
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Amplifier No. 2						
Open Loop Voltage Gain (Pin2 to Pin1)	G_V		–	100	–	dB
Input Bias Current	I_B		–	0.2	–	µA
Input Offset Voltage	V_{OS}		–	2	–	mV
Input Offset Current	I_{os}		–	0.05	–	µA
Small Signal Bandwidth	BW	G_V = 30dB	–	150	–	kHz
Total Input Noise	e_n	R_g = 600Ω, Note 1	–	2	–	µV
Input Impedance	R_I	f = 1kHz (Open Loop)	150	500	–	kΩ

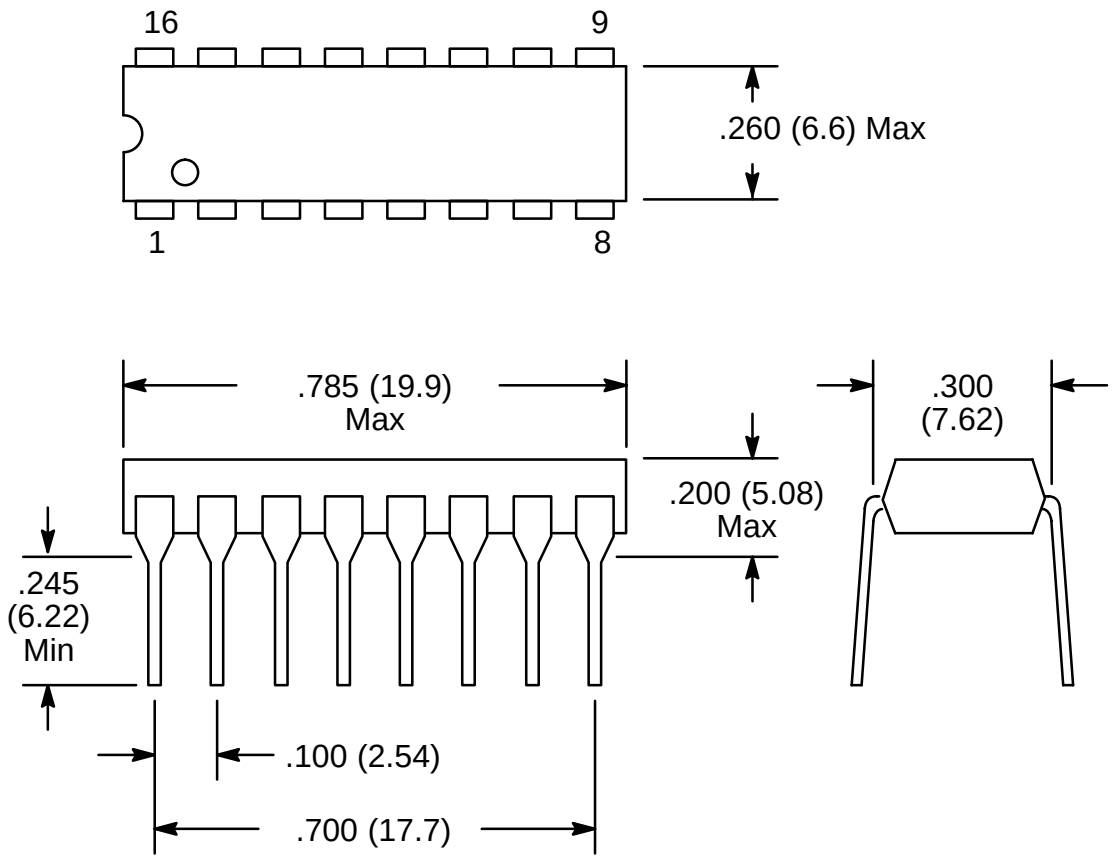
Note 1. The weighting filter used for the noise measurement has a curve A frequency response.

Autoreverse:

P_{in}	V_{12} < 2V	V_{12} > 4.5V
6 – 10	OFF	ON
7 – 9	ON	OFF

Pin Connection Diagram




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