

NTE927D & NTE927SM Integrated Circuit Differential Video Amplifier

Description:

The NTE927D and NTE927SM are two-stage, differential input, differential output, wide-band video amplifiers. The use of internal series-shunt feedback gives wide band bandwidth with low phase distortion and high gain stability. Emitter-follower outputs provide a high current drive, low impedance capability. Its 120MHz bandwidth and selectable gains of 10, 100, and 400, without need for frequency compensation, make it a very useful circuit for memory element drivers, pulse amplifiers, and wide band gain stages.

Features:

- 120MHz Bandwidth
- 250k Ω Input Resistance
- No Frequency Compensation Required
- Selectable Gains of 10, 100 and 400
- High Common Mode Rejection Ratio at High Frequencies

Applications:

- Magnetic Tape Systems
- Disk File Memories
- Thin and Thick Film Memories
- Woven and Plated Wire Memories
- Wide Band Video Amplifiers

Absolute Maximum Ratings:

Differential Input Voltage	$\pm 5V$
Common Mode Input Voltage	$\pm 6V$
Supply Voltage, V_{CC}	$\pm 8V$
Output Current, I_O	10mA
Power Dissipation (Note 1), P_D	500mW
Junction Temperature, T_J	+100°C
Storage Temperature Range, T_{stg}	-65° to +150°C
Operating Temperature Range, T_{opr}	0° to +70°C
Lead Temperature (Soldering, 10sec), T_L	+260°C

Note 1. For operation at elevated temperatures, derate device based on a thermal resistance of +150°C/W junction to ambient or +45°C/W junction to case.

Electrical Characteristics: ($T_A = +25^{\circ}\text{C}$, unless otherwise specified, $V_S = \pm 6\text{V}$)

Parameter	Test Conditions	Min	Typ	Max	Unit
Differential Voltage Gain Gain 1 (Note 2) Gain 2 (Note 3) Gain 3 (Note 4)	$R_L = 2\text{k}\Omega$, $V_{OUT} = 3V_{p-p}$	250 80 8.0	400 100 10	600 120 12	
Bandwidth Gain 1 Gain 2 Gain 3		— — —	40 90 120	— — —	MHz
Rise Time Gain 1 Gain 2 Gain 3		— — —	10.5 4.5 2.5	— — —	ns
Propagation Delay Gain 1 Gain 2 Gain 3	$V_{OUT} = 1V_{p-p}$	— — —	7.5 6.0 3.6	— 10 —	ns
Input Resistance Gain 1 Gain 2 Gain 3		— 10 —	4.0 30 250	— — —	k Ω
Input Capacitance	Gain 2	—	2.0	—	pF
Input Offset Current		—	0.4	5.0	μA
Input Bias Current		—	9.0	30	μA
Input Noise Voltage	BW = 1kHz to 10MHz	—	12	—	μV_{rms}
Input Voltage Range		± 1.0	—	—	V
Common Mode Rejection Ratio Gain 2 Gain 2	$V_{CM} = \pm 1\text{V}$, $f \leq 100\text{kHz}$ $V_{CM} = \pm 1\text{V}$, $f = 5\text{MHz}$	60 —	86 60	— —	dB
Supply Voltage Rejection Ratio Gain 2	$\Delta V_S = \pm 0.5\text{V}$	50	70	—	dB
Output Offset Voltage Gain 1 Gain 2 and 3	$R_L = \infty$	— —	0.6 0.35	1.5 1.5	V
Output Common Mode Voltage	$R_L = \infty$	2.4	2.9	3.4	V
Output Voltage Swing	$R_L = 2\text{k}$	3.0	4.0	—	
Output Sink Current		2.5	3.6	—	mA
Output Resistance		—	20	—	Ω
Power Supply Current	$R_L = \infty$	—	18	24	mA

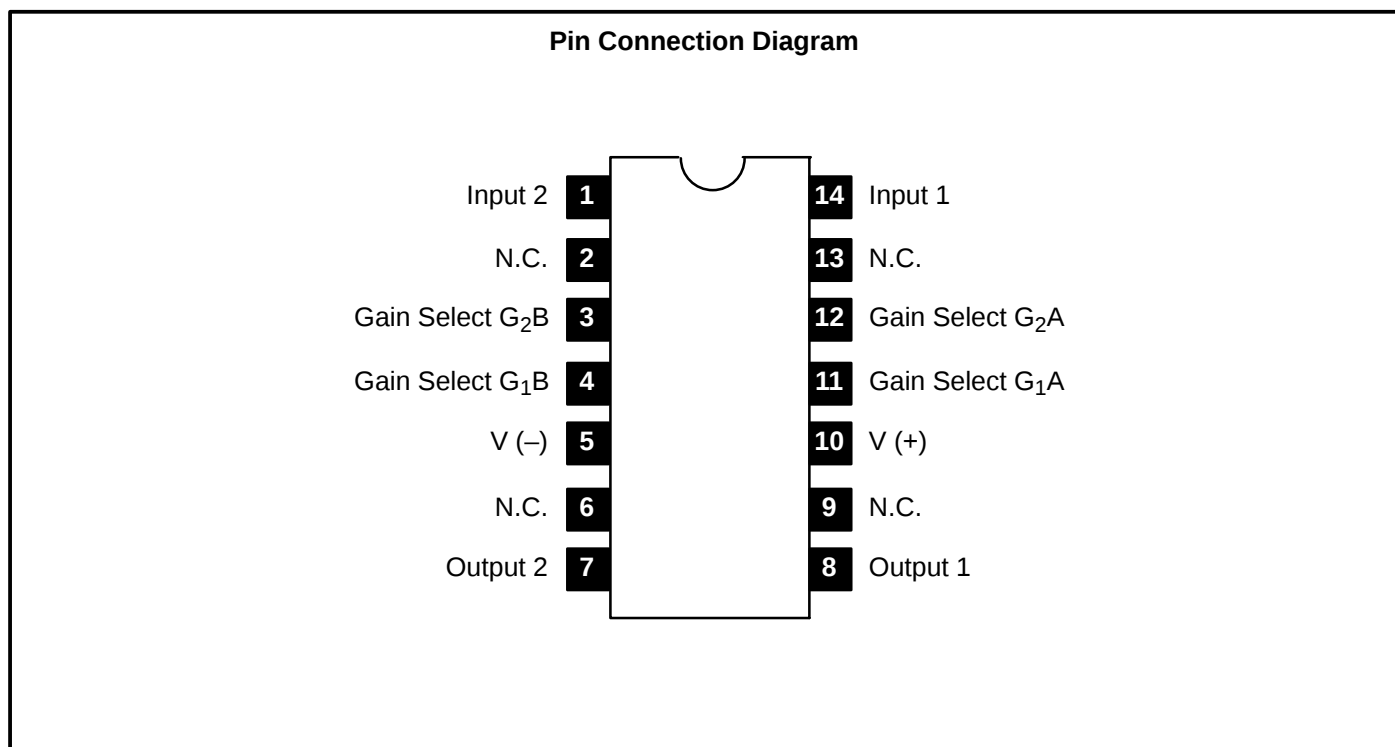
Electrical Characteristics: (The following specifications apply for $0^{\circ} < T_A < +70^{\circ}\text{C}$, $V_S = \pm 6\text{V}$)

Parameter	Test Conditions	Min	Typ	Max	Unit
Differential Voltage Gain Gain 1 Gain 2 Gain 3	$R_L = 2\text{k}\Omega$, $V_{\text{OUT}} = 3V_{\text{p-p}}$	250 80 8.0	— — —	600 120 12.0	
Input Resistance	Gain 2	8	—	—	$\text{k}\Omega$
Input Offset Current		—	—	6	μA
Input Bias Current		—	—	40	μA
Input Voltage Range		± 1.0	—	—	V
Common Mode Rejection Ratio Gain 2	$V_{\text{CM}} = \pm 1\text{V}$, $f \leq 100\text{kHz}$	50	—	—	dB
Supply Voltage Rejection Ratio Gain 2	$\Delta V_S = \pm 0.5\text{V}$	50	—	—	dB
Output Offset Voltage Gain 1 Gain 2 and 3	$R_L = \infty$	— —	— —	1.5 1.5	V
Output Voltage Swing	$R_L = 2\text{k}$	2.8	—	—	V_{pp}
Output Sink Current		2.5	—	—	mA
Power Supply Current	$R_L = \infty$	—	—	27	mA

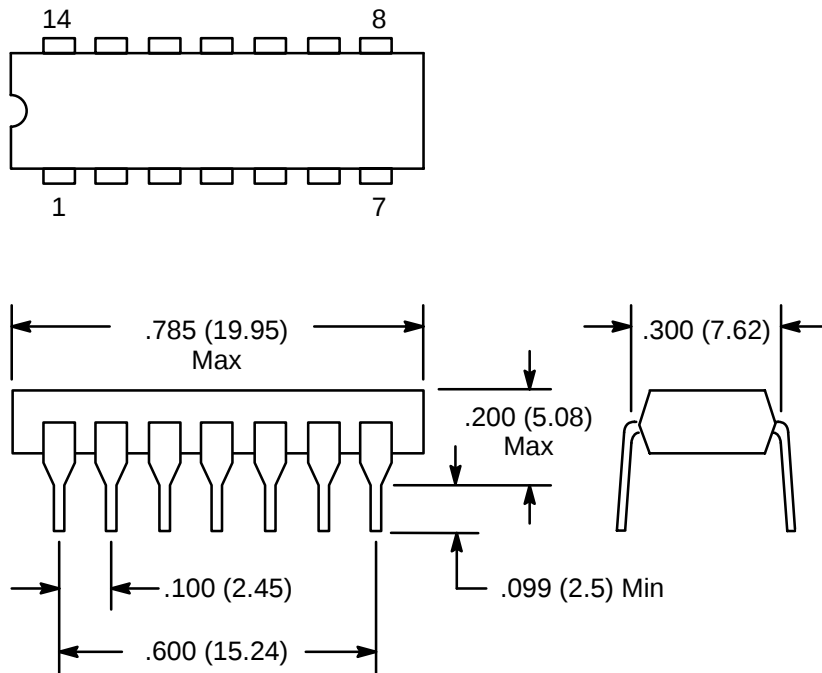
Note 2. Pins G1A and G1B connected together.

Note 3. Pins G2A and G2B connected together.

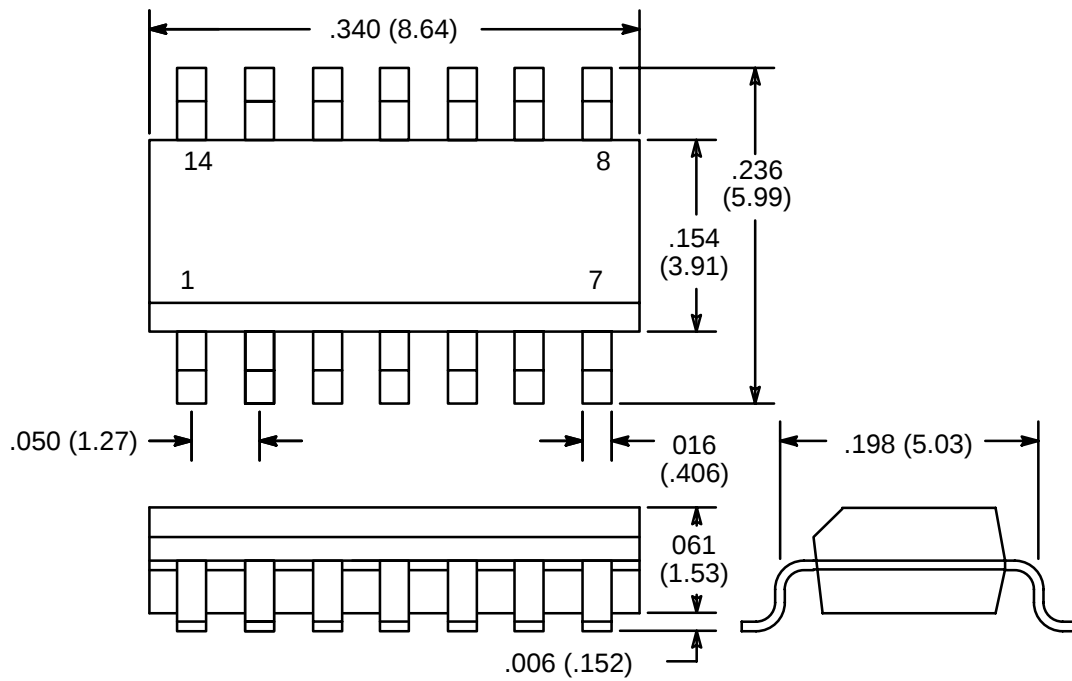
Note 4. Gain select pins open.



NTE927D



NTE927SM



NOTE: Pin1 on Beveled Edge