

## NTE997 Integrated Circuit Quad Operational Amplifier

**Description:**

The NTE997 is a monolithic quad operational amplifier in a 14-Lead DIP type package consisting of four independent high gain, internally compensated operational amplifiers. The specifically designed low noise input transistors allow the NTE997 to be used in low noise signal processing applications such as audio preamplifiers and signal conditioners. The simplified output stage completely eliminates crossover distortion under any load conditions, has large source and sink capacity, and is short-circuit protected. A novel current source stabilizes output parameters over a wide power supply voltage range.

**Features:**

- Unity Gain Bandwidth: 3MHz
- Continuous Short Circuit Protection
- No Frequency Compensation Required
- No Latch-Up
- Large Common Mode and Differential Voltage Ranges
- Parameter Tracking Over Temperature Range
- Gain and Phase Match Between Amplifiers

**Absolute Maximum Ratings:**

Supply Voltage .....	±18V
Differential Input Voltage (Note 1) .....	±30V
Input Voltage (Note 1) .....	±15V
Internal Power Dissipation (T <sub>A</sub> = +70°C) .....	670mW
Derate Above 70°C .....	8.3mW/°C
Output Short Circuit Duration (Note 2) .....	Indefinite
Operating Temperature Range .....	-55° to +125°C
Storage Temperature Range .....	-55° to +125°C
Lead Temperature (During Soldering, 10sec) .....	+260°C

Note 1. For supply voltage less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

Note 2. Short-circuit may be to GND, one amplifier only. I<sub>SC</sub> = 45mA (Typical).

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_S = \pm 15\text{V}$  unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	$R_S \leq 10\text{k}\Omega$	–	0.5	5.0	mV
	$R_S \leq 10\text{k}\Omega$ , $-55^\circ \leq T_A \leq +125^\circ\text{C}$	–	–	6.0	mV
Input Offset Current		–	5	200	nA
	$-55^\circ \leq T_A \leq +125^\circ\text{C}$	–	–	500	nA
Input Bias Current		–	40	500	nA
	$-55^\circ \leq T_A \leq +125^\circ\text{C}$	–	–	1500	nA
Input Resistance		0.3	5.0	–	$\text{M}\Omega$
Large Signal Voltage Gain	$R_L \geq 2\text{k}\Omega$ , $V_{\text{OUT}} = \pm 10\text{V}$	50k	300k	–	
	$R_L \geq 2\text{k}\Omega$ , $V_{\text{OUT}} = \pm 10\text{V}$ , $-55^\circ \leq T_A \leq +125^\circ\text{C}$	25k	–	–	
Output Voltage Swing	$R_L \geq 10\text{k}\Omega$	$\pm 12$	$\pm 14$	–	V
	$R_L \geq 2\text{k}\Omega$	$\pm 10$	$\pm 13$	–	V
	$R_L \geq 2\text{k}\Omega$ , $-55^\circ \leq T_A \leq +125^\circ\text{C}$	$\pm 12$	–	–	V
Input Voltage Range		$\pm 12$	$\pm 14$	–	V
Common Mode Rejection Ratio	$R_S \leq 10\text{k}\Omega$	70	90	–	dB
Supply Voltage Rejection Ratio	$R_S \leq 10\text{k}\Omega$	–	30	150	$\mu\text{V}/\text{V}$
Power Consumption		–	210	340	mW
	$T_A = -55^\circ\text{C}$	–	240	400	mW
	$T_A = +125^\circ\text{C}$	–	180	300	mW
Transient Response (Unity Gain) Overshoot	$V_{\text{IN}} = 20\text{mV}$ , $R_L = 2\text{k}\Omega$ , $C_L \leq 100\text{pF}$	–	5.0	–	%
Unity Gain Bandwidth		2.0	3.0	–	MHz
Slew Rate (Unity Gain)	$R_L \geq 2\text{k}\Omega$	–	1.5	–	$\text{V}/\mu\text{s}$
Channel Separation (Open Loop)	$f = 10\text{kHz}$ , $R_S = 1\text{k}\Omega$ , Gain = 100	–	105	–	dB

**Pin Connection Diagram**



