



**ELECTRONICS, INC.**  
 44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## NTE1171 Integrated Circuit Operational Amplifier

**Description:**

The NTE1171 is a general purpose operational amplifier in an 8-Lead Metal Can type package. Advanced processing techniques make possible an order of magnitude reduction in input currents, and a redesign of the biasing circuitry reduces the temperature drift of the input current.

This amplifier offers many features which make its application nearly foolproof: overload protection on the input, no latch-up when the common mode range is exceeded, freedom from oscillations and compensations with a single 30pF capacitor. It has advantages over internally compensated amplifiers in that the frequency compensation can be tailored to the particular application. For example, in low frequency circuits it can be overcompensated for increased stability margin. Or the compensation can be optimized to give more than a factor of ten improvement in high frequency performance for most applications.

**Feature:**

- Low Input Offset Current: 20na Maximum Over Temperature Range
- External Frequency Compensation for Flexibility
- Class AB Output Provides Excellent Linearity
- Output Short-Circuit Protection
- Guaranteed Drift Characteristics

**Absolute Maximum Ratings:**

Power Supply Voltage, $V_{CC}, V_{EE}$ .....	$\pm 18V$
Input Differential Voltage, $V_{ID}$ .....	$\pm 30V$
Input Common-Mode Range (Note 1), $V_{ICR}$ .....	$\pm 15V$
Output Short-Circuit Duration, $t_S$ .....	Continuous
Power Dissipation (Package Limitation, $T_A = +25^\circ C$ ), $P_D$ .....	500mW
Derate Above $T_A = +75^\circ C$ .....	6.8mW/ $^\circ C$
Operating Ambient Temperature Range, $T_A$ .....	$0^\circ$ to $+70^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ to $+150^\circ C$

Note 1. For supply voltages less than  $\pm 15V$ , the absolute maximum input voltage is equal to the supply voltage.

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ ,  $V_{CC} = \pm 5\text{V}$  to  $\pm 15\text{V}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	$V_{IO}$	$R_S \leq 50\text{k}\Omega$	–	2.0	7.5	mV
Input Offset Current	$I_{IO}$		–	3.0	50	nA
Input Bias Current	$I_{IB}$		–	70	250	nA
Input Resistance	$r_i$		0.5	2.0	–	$\text{M}\Omega$
Supply Current	$I_{CC}, I_{EE}$	$V_{CC}/V_{EE} = \pm 15\text{V}$	–	1.8	3.0	mA
Large Signal Voltage Gain	$A_V$	$V_{CC}/V_{EE} = \pm 15\text{V}$ , $V_O = \pm 10\text{V}$ , $R_L > 2\text{k}\Omega$	25	160	–	V/mV

**Note:** The following specifications apply over the operating temperature range.

Input Offset Voltage	$V_{IO}$	$R_S \leq 50\text{k}\Omega$	–	–	10	mV
Input Offset Current	$I_{IO}$		–	–	70	nA
Average Temperature Coefficient of Input Offset Voltage	$\Delta V_{IO}/\Delta T$	$T_A(\text{min}) \leq T_A \leq T_A(\text{max})$	–	6.0	30	$\mu\text{V}/^\circ\text{C}$
Average Temperature Coefficient of Input Offset Current	$\Delta I_{IO}/\Delta T$	$+25^\circ\text{C} \leq T_A \leq T_A(\text{max})$	–	0.01	0.3	nA/ $^\circ\text{C}$
		$T_A(\text{min}) \leq T_A \leq +25^\circ\text{C}$	–	0.02	0.6	nA/ $^\circ\text{C}$
Input Bias Current	$I_{IB}$		–	–	300	nA
Large Signal Voltage Gain	$A_V$	$V_{CC}/V_{EE} = \pm 15\text{V}$ , $V_O = \pm 10\text{V}$ , $R_L > 2\text{k}\Omega$	15	–	–	V/mV
Input Voltage Range	$V_I$	$V_{CC}/V_{EE} = \pm 15\text{V}$	$\pm 12$	–	–	V
Common-Mode Rejection Ratio	CMRR	$R_S \leq 50\text{k}\Omega$	70	90	–	dB
Supply Voltage Rejection Ratio	PSRR	$R_S \leq 50\text{k}\Omega$	70	96	–	dB
Output Voltage Swing	$V_O$	$V_{CC}/V_{EE} = \pm 15\text{V}$ , $R_L = 10\text{k}\Omega$	$\pm 12$	$\pm 14$	–	V
		$V_{CC}/V_{EE} = \pm 15\text{V}$ , $R_L = 2\text{k}\Omega$	$\pm 10$	$\pm 13$	–	V

**Pin Connection Diagram  
(Top View)**



