

## NTE902 Integrated Circuit Operational Transconductance Amplifier

**Description:**

The NTE902 has a differential input and a single-ended, push-pull, class A output. In addition there is a bias input for linear gain control, whose transconductance ( $g_m$ ) is directly proportional to the amplifier bias current ( $I_{ABC}$ ).

**Features:**

- Slew rate (unity gain, compensated): 50V/ $\mu$ s
- Flexible supply voltage range:  $\pm 2V$  to  $\pm 15V$
- Fully adjustable gain: 0 to  $g_m R_L$  limit

**Applications:**

- Sample and hold
- Multiplex
- Voltage follower
- Multiplier
- Comparator

**Absolute Maximum Ratings:** ( $T_A = +25^\circ C$  unless otherwise specified)

DC Supply Voltage (between V+ and V- Pins)	36V
Differential Input Voltage	$\pm 5V$
DC Input Voltage	V+ to V-
Input Signal Current	1mA
Amplifier Bias Current	2mA
Output Short-Circuit Duration (Note 1)	No limitation
Device Dissipation, $P_D$	125mW
Operating Temperature Range, $T_{op}$	$0^\circ$ to $+70^\circ C$
Storage Temperature Range, $T_{stg}$	$-65^\circ$ to $+150^\circ C$
Lead Temperature (During Soldering), $T_L$	
(At distance $1/16 \pm 1/32$ in. ( $1.59 \pm 0.79$ mm) from case for 10s max)	$+300^\circ C$

Note 1. Short circuit may be applied to GND or to either supply.

**Electrical Characteristics:** ( $V_+ = 15V$ ,  $V_- = -15V$ ,  $I_{ABC} = 500\mu A$ ,  $T_A = +25^\circ C$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	$V_{IO}$		–	0.4	5.0	mV
		$T_A = 0$ to $+70^\circ C$	–	–	6.0	
Input Offset Current	$I_{IO}$		–	0.12	0.6	$\mu A$
Input Bias Current	$I_I$		–	2	5	$\mu A$
		$T_A = 0$ to $+70^\circ C$	–	–	7	
Forward Transconductance (Large signal)	$g_m$		6700	9600	13000	$\mu mho$
		$T_A = 0$ to $+70^\circ C$	5400	–	–	
Peak Output Current	$ I_{OM} $	$R_L = 0$	350	500	650	$\mu A$
		$R_L = 0$ , $T_A = 0$ to $+70^\circ C$	300	–	–	
Peak Output Voltage: Positive Negative	$V_{+OM}$	$R_L = \infty$	12.0	13.5	–	V
	$V_{-OM}$		–12	–14.4	–	
Amplifier Supply Current	$I_A$		0.8	1	1.2	mA
Device Dissipation	$P_D$		24	30	36	mW
Input Offset Voltage Sensitivity: Positive Negative	$\Delta V_{IO}/\Delta V_+$		–	–	150	$\mu V/V$
	$\Delta V_{IO}/\Delta V_-$		–	–	150	
Common-Mode Rejection Ratio	CMRR		80	110	–	dB
Common-Mode Input Voltage Range	$V_{ICR}$		12 to –12	13.6 to –14.6	–	V
Input Resistance	$R_I$		10	26	–	k $\Omega$
Amplifier Bias Voltage	$V_{ABC}$		–	0.71	–	V
Slew Rate: Maximum (uncompensated) Unity gain (compensated)	SR		–	75	–	V/ $\mu s$
			–	50	–	
Open-Loop Bandwidth	$BW_{OL}$		–	2	–	MHz
Input Capacitance	$C_I$	$f = 1MHz$	–	3.6	–	pF
Output Capacitance	$C_O$	$f = 1MHz$	–	5.6	–	pF
Output Resistance	$R_O$		–	15	–	M $\Omega$
Input-to-Output Capacitance	$C_{I-O}$	$f = 1MHz$	–	0.024	–	pF

# Pin Connection Diagram

## Top View

