ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

NTE930
Linear Integrated Circuit
BiMOS Operational Amp

DISCONTINUED

Description:

The NTE930 is an integrated circuit operational amplifier in an 8–Lead Metal Can type package that combines the advantages of both COS/MOS and bipolar transistors on a monolithic chip.

Gate–protected P–channel MOS/FET (PMOS) transistors are used in the input circuit to provide very–high–input impedance, very–low–input current and exceptional speed performance. The use of PMOS field–effect transistors in the input stage results in common–mode input–voltage capability down to 0.5V below the negative–supply terminal, an important attribute in single–supply applications.

A complementary–symmetry MOS (COS/MOS) transistor pair, capable of swinging the output voltage to within 10mV of either supply–voltage terminal (at very high values of load impedance), is employed as the output circuit.

The NTE930 operates at supply voltages ranging from 5 to 16 volts, or ±2.5 to ±8 volts when using split supplies. They can be phase compensated with a single external capacitor, and have terminals for adjustment of offset voltage for applications requiring offset–null capability. Terminal provision are also made to permit strobing of the output stage.

Features:

- Wide BW: 15MHz typ (unity–gain crossover)
- High SR: 10V/μs typ (unity–gain follower)
- High Output Current (I_O): 20mA typ
- Compensations with single external capacitor

Applications:

- Ground–Referenced Single–Supply Amplifiers
- Fast Smaple–Hold Amplifiers
- Long–Duration Timers/Monostables
- High–Input–Impedance Comparators (ideal interface with digital COS/MOS)
- High–Input–Impedance Wideband Amplifiers
- Voltage Followers (for single–supply D/A converter)
- Voltage Regulators (permits control of output voltage down to zero volts)
- Peak Detectors
- Single–Supply Full–Wave Precision Rectifiers
- Photo–Diode Sensor Amplifiers

Absolute Maximum Ratings:

DC Supply Voltage (Between V+ & V− Terminals) 16V
Differential Mode Input Voltage . . . . . ±8V
Common Mode DC Input Voltage . . . . . (V^+ +8V) to (V^- −0.5V)
Input Terminal Current 1mA
Device Dissipation (without Heat Sink, up to +55°C) 630mW
Derate Linearly Above +55°C . . . . . 6.67mW/°C
Device Dissipation (with Heat Sink, up to +90°C) 1W
Derate Linearly Above +90°C . . . . . 1.67mW/°C
Operating Temperature Range, T_{opr} . . . . . −55° to +125°C
Storage Temperature Range, T_{stg} . . . . . −65° to +150°C
Output Short Circuit Duration (Note 1) . . . . . Indefinite
Lead Temperature (During Soldering, 1/16" ±1/32" from Case for 10sec Max), T_L . . . . . +265°C

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

Electrical Characteristics: (T_A = +25°C, V^+ = 15V, V^- = 0V unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Offset Voltage	$\|V_{IO}\|$	$V^{\pm}$ = ±7.5V	–	8	15	mV
		V^+ = 5V	–	8	–	mV
Input Offset Current	$\|I_{IO}\|$	$V^{\pm}$ = ±7.5V	–	0.5	30	pA
		V^+ = 5V	–	0.1	–	pA
Input Current	I_I	$V^{\pm}$ = ±7.5V	–	5	50	pA
		V^+ = 5V	–	2	–	pA
Large−Signal Voltage Gain	A_{OL}	V_O = 10V_{P-P}, R_L = 2kΩ	50k	320k	–	V/V
			94	110	–	dB
		V^+ = 5V, V_O = 4V_{P-P}, R_L = 5kΩ	–	100k	–	V/V
			–	100	–	dB
Common−Mode Rejection Ratio	CMRR		70	90	–	dB
		V^+ = 5V	–	80	–	dB
Common−Mode Input Voltage Range	V_{ICR}		0	−0.5 to 12	10	V
		V^+ = 5V	–	0 to 2.8	–	V
Power−Supply Rejection Ratio	$\Delta V_{IO}/\Delta V^{\pm}$	$V^{\pm}$ = ±7.5V	–	32	320	μV/V
		V^+ = 5V	–	200	–	μV/V
Maximum Output Voltage	V_{OM}+	R_L = 2kΩ	12.0	13.3	–	V
		R_L = ∞	14.99	15.0	–	V
	V_{OM}−	R_L = 2kΩ	–	0.002	0.01	V
		R_L = ∞	–	0	0.01	V
Maximum Output Current, Source	I_{OM}+	V_O = 0V	12	22	45	mA
Maximum Output Current, Sink	I_{OM-}	V_O = 15V	12	20	45	mA
Supply Current	I^+	V_O = 0V, R_L = ∞	–	2	3	mA
		V_O = 2.5V, R_L = ∞	–	500	–	μA
		V_O = 5V, R_L = ∞	–	300	–	μA
		V_O = 7.5V, R_L = ∞	–	10	–	mA
Input Offset Voltage Temp. Drift	$\Delta V_{IO}/\Delta T$		–	10	–	μV/°C

Pin Connection Diagram
(Top View)