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NTE925

Integrated Circuit

Instrumentation Operational Amplifier

Description:

The NTE925 is an operational amplifier in an 8-Lead Metal Can featuring superior performance in applications where low noise, low drift, and accurate closed loop gain are required. With high common mode rejection and offset null capability, this device is especially suited for low level instrumentation applications over a wide supply voltage range.

Features:

- High Open Loop Gain: 3,000.00
- Low Input Voltage Drift: $0.6\mu\text{V}/^{\circ}\text{C}$
- High Common Mode Rejection: 120dB
- Low Input Noise Current: $0.15\text{pA}/\sqrt{\text{Hz}}$
- Low Input Offset Current: 2nA
- High Input Voltage Range: $\pm 14\text{V}$
- Wide Power Supply Range: $\pm 3\text{V}$ to $\pm 22\text{V}$
- Offset Null Capability
- Output Short Circuit Protection

Absolute Maximum Ratings:

Supply Voltage	$\pm 22\text{V}$
Internal Power Dissipation	500mW
Derate Above $T_A = +75^{\circ}\text{C}$	$+150^{\circ}\text{C}/\text{W}$
Differential Input Voltage	$\pm 5\text{V}$
Input Voltage (Note 1)	$\pm 22\text{V}$
Maximum Junction Temperature, T_J	$+150^{\circ}\text{C}$
Operating Temperature Range, T_A	0° to $+70^{\circ}\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^{\circ}\text{C}$
Lead Temperature (During soldering, 10 sec), T_L	$+260^{\circ}\text{C}$

Note 1. For supply voltages less than $\pm 22\text{V}$, the absolute maximum input voltage is equal to the supply voltage.

Electrical Characteristics: ($V_S = \pm 15V$, $T_A = +25^\circ C$, Note 1 unless otherwise specified)

Parameter	Test Conditions		Min	Typ	Max	Unit
Input Offset Voltage Without External Trim	$R_S \leq 10k\Omega$		–	0.5	2.5	mV
		$T_A = 0^\circ \text{ to } +70^\circ C$	–	–	3.5	mV
Average Input Offset Voltage Drift Without External Trim	$R_S = 50\Omega$, $T_A = 0^\circ \text{ to } +70^\circ C$		–	2.0	–	$\mu V/^\circ C$
With External Trim			–	0.6	–	$\mu V/^\circ C$
Input Offset Current			–	2.0	35	nA
	$T_A = +70^\circ C$		–	1.2	35	nA
	$T_A = 0^\circ C$		–	4.0	50	nA
Average Input Offset Current Drift	$T_A = 0^\circ \text{ to } +70^\circ C$		–	10	–	$pA/^\circ C$
Input Bias Current			–	42	125	nA
	$T_A = +70^\circ C$		–	–	125	nA
	$T_A = 0^\circ C$		–	–	250	nA
Input Noise Voltage	$f_o = 10Hz$		–	15	–	$nV/\sqrt{Hz}$
	$f_o = 100Hz$		–	9	–	$nV/\sqrt{Hz}$
	$f_o = 1kHz$		–	8	–	$nV/\sqrt{Hz}$
Input Noise Current	$f_o = 10Hz$		–	1.0	–	$pA/\sqrt{Hz}$
	$f_o = 100Hz$		–	0.3	–	$pA/\sqrt{Hz}$
	$f_o = 1kHz$		–	0.15	–	$pA/\sqrt{Hz}$
Input Resistance			–	15	–	$M\Omega$
Input Voltage Range			± 13.5	± 14.0	–	V
Large Signal Voltage Gain	$R_L \geq 2k\Omega$	$V_{OUT} = \pm 10V$	250	3000	–	V/mV
		$T_A = +70^\circ C$	125000	–	–	V/V
		$T_A = 0^\circ C$	125000	–	–	V/V
Common Mode Rejection Ratio	$R_S \leq 10k\Omega$		94	120	–	dB
		$T_A = 0^\circ \text{ to } +70^\circ C$	–	115	–	dB
Power Supply Rejection Ratio	$R_S \leq 10k\Omega$		–	2.0	35	$\mu V/V$
		$T_A = 0^\circ \text{ to } +70^\circ C$	–	20	–	$\mu V/V$
Output Voltage Swing	$R_L \geq 10k\Omega$		± 12.0	± 13.5	–	V
	$R_L \geq 2k\Omega$		± 10.0	± 13.5	–	V
		$T_A = 0^\circ \text{ to } +70^\circ C$	± 10.0	–	–	V
Power Consumption			–	80	150	mW

Note 1. For supply voltages less than $\pm 22V$, the absolute maximum input voltage is equal to the supply voltage.

Pin Connection Diagram
(Top View)

