

NTE922, NTE922M & NTE922SM

Integrated Circuit

Voltage Comparator

Description:

The NTE922, NTE922M, and NTE922SM are voltage comparators that have input currents nearly a thousand times lower than devices like the NTE910 or NTE910D. They are also designed to operate over a wide range of supply voltages: from standard $\pm 15\text{V}$ OP amp supplies down to the single 5V supply used for IC logic. Their output is compatible with RTL, DTL, and TTL as well as MOS circuits. Further, they can drive lamps or relays, switching voltages up to 50V at currents as high as 50mA.

Both the input and the output of these devices can be isolated from system ground, and the output can drive loads referred to GND, the positive supply or the negative supply. Offset balancing and strobe capability are provided and outputs can be wire OR'ed. Although slower than the NTE910 and NTE910D (200ns response time vs 40ns) the devices are also much less prone to spurious oscillations.

Features:

- Operates from Single 5V Supply
- Input Current: 150nA max Over Temperature
- Offset Current: 20nA max Over Temperature
- Differential Input Voltage Range: $\pm 30\text{V}$
- Power Consumption: 135mW at $\pm 15\text{V}$
- Available in 3 Different Case Styles:
 - 8-Lead Metal Can: NTE922
 - 8-Lead Mini DIP: NTE922M
 - SIOC-8 (Surface Mount): NTE922SM

Absolute Maximum Ratings:

Total Supply Voltage (V_{84})	36V
Output to Negative Supply Voltage (V_{74})	40V
GND to Negative Supply Voltage (V_{14})	30V
Differential Input Voltage	$\pm 30\text{V}$
Input Voltage (Note 1)	$\pm 15\text{V}$
Power Dissipation (Note 2)	500mW
Output Short Circuit Duration	10sec
Operating Temperature Range	0° to +70°C
Storage Temperature Range	-65° to +150°C
Lead Temperature (During Soldering, 10sec)	+200°C
Voltage at Strobe Pin	V+ -5V

Note 1. This rating applied for $\pm 15\text{V}$ supplies. The positive input voltage limit is 30V above the negative supply. The negative input voltage limit is equal to the negative supply voltage or 30V below the positive supply, whichever is less.

Note 2. The maximum junction temperature is 110°C, For operating at elevated temperature, the NTE922 must be derated based on a thermal resistance of 150°C/W, junction-to-ambient, or 45°C/W, junction-to-case. The thermal resistance of the NTE922N and the NTE922SM is 100°C, junction-to-ambient.

Electrical Characteristics: (Note 3)

Parameter	Test Conditions	Min	Typ	Max	Units
Input Offset Voltage	$R_S \leq 50\text{k Ohm}$, Note 4	-	-	10	mV

		$T_A = +25^{\circ}\text{C}$	-	2.0	7.5	mV
Input Offset Current	Note 4		-	-	70	nA
		$T_A = +25^{\circ}\text{C}$	-	6.0	50	nA
Input Bias Current			-	-	300	nA
		$T_A = +25^{\circ}\text{C}$	-	100	250	nA
Input Voltage Range			-14.5	13.8, -14.7	13.0	V
Voltage Gain	$T_A = +25^{\circ}\text{C}$		40	200	-	V / mV
Response Time	$T_A = +25^{\circ}\text{C}$, Note 5		-	200	-	ns
Saturation Voltage	$V_+ \geq 4.5\text{V}$, $V_- = 0$, $V_{IN} \leq -10\text{mV}$, $I_{SINK} \leq 8\text{mA}$		-	0.23	0.4	V
	$V_{IN} \leq -10\text{mV}$, $I_{OUT} = 50\text{mA}$, $T_A = +25^{\circ}\text{C}$		-	0.75	1.5	V
Strobe ON Current	$T_A = +25^{\circ}\text{C}$		1.5	3.0	-	mA
Output Leakage Current	$V_{IN} \geq 10\text{mV}$, $V_{OUT} = 35\text{V}$, $I_{STROBE} = 3\text{mA}$, $V_- = V_{GRND} = -5\text{V}$, $T_A = +25^{\circ}\text{C}$		-	0.2	59	nA
Positive Supply Current	$T_A = +25^{\circ}\text{C}$		-	5.1	7.5	mA
Negative Supply Current	$T_A = +25^{\circ}\text{C}$		-	4.1	5.0	mA

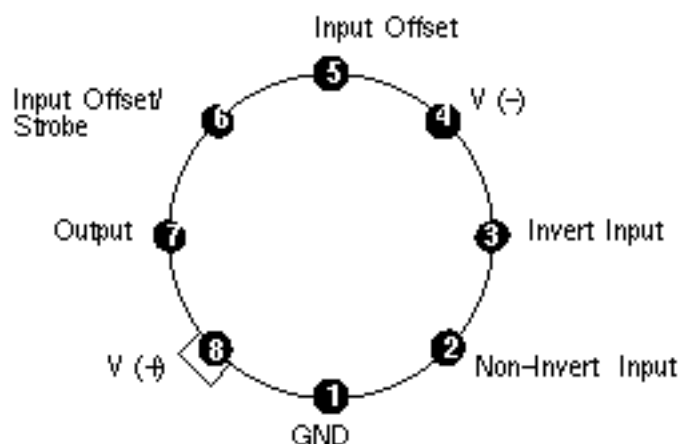
Note 3. These specifications apply for $V_S = \pm 15\text{V}$ and the ground pin at GND, and $0^{\circ} < T_A < +70^{\circ}\text{C}$, unless otherwise specified. The offset voltage, offset current and bias current specifications apply for any supply voltage from a single 5V supply up to $\pm 15\text{V}$ supplies.

Note 4. The offset voltages and offset currents given are the maximum values required to drive the output within a volt of either supply with 1mA load. Thus, these parameters define an error band and take into account the worst-case effects of voltage gain and input impedance.

Note 5. Do not short the strobe pin to GND: it should be current driven at 3 to 5mA.

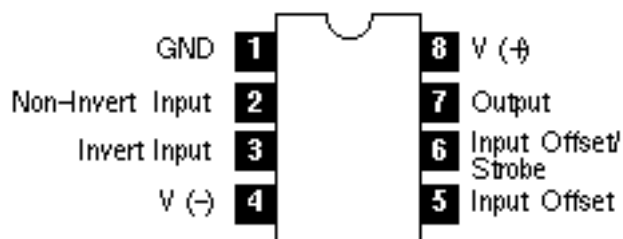
NTE922

(Top View)



NTE922M

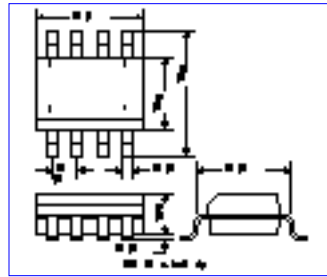
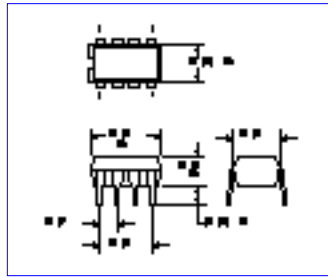
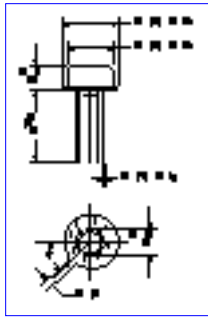
NTE922SM



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