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# NTE910 & NTE910D
# Integrated Circuits
# High–Speed Differential Comparator

**Description:**

The NTE910 (8–Lead Metal Can) and NTE910D (14–Lead DIP) are differential voltage comparators intended for applications requiring high accuracy and faast response times. The device is useful as a variable threshold Schmitt trigger, a pulse–height discriminator, a voltage comparator in high–speed A/D converters, a memory sense amplifier or a high noise immunity line receiver. The output of the comparator is compatible with all intergrated logic forms.

**Features:**

- 5mV Maximum Offset Voltage
- 5μA Maximum Offset Current
- 1000 Minimum Voltage Gain
- 20μV/°C Maximum Offset Voltage Drift

**Absolute Maximum Ratings:**

Positive Supply Voltage . . . . . ±14V
Negative Supply Voltage . . . . . –7V
Peak Output Current . . . . . 10mA
Differential Input Voltage . . . . . ±5V
Input Voltage . . . . . ±7V
Power Dissipation ($T_A \leq +70°C$)
  NTE910 . . . . . 500mW
    Derate Linearly Above +70°C . . . . . 6.3mW/°C
  NTE910D . . . . . 670mW
    Derate Linearly Above +70°C . . . . . 8.3mW/°C
Storage Temperature Range
  NTE910 . . . . . –65° to +150°C
  NTE910D . . . . . –55° to +125°C
Operating Temperature Range . . . . . 0° to +70°C
Lead Temperature (During Soldering)
  NTE910 (60sec) . . . . . +300°C
  NTE910D (10sec) . . . . . +260°C

**Electrical Characteristics:** ($T_A$ = +25°C, V+ = 12V, V− = −6V unless otherwise specified)

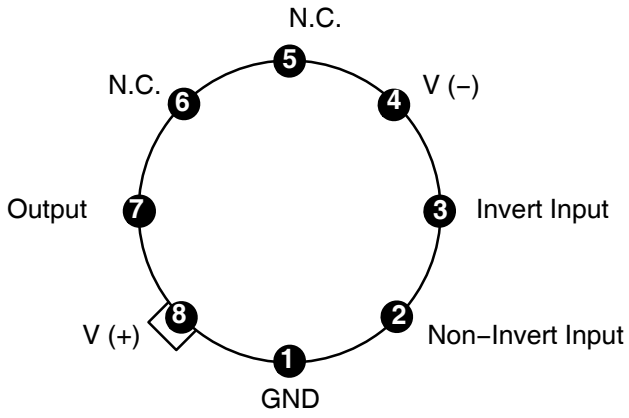
| Parameter | Test Conditions (Note 1) | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Input Offset Voltage | $R_A \le 200\Omega$ | | – | 1.6 | 5.0 | mV |
| | | $T_A$ = 0° to +70°C | – | – | 6.5 | mV |
| Input Offset Current | | | – | 1.8 | 5.0 | μA |
| | | $T_A$ = 0° to +70°C | – | – | 7.5 | μA |
| Input Bias Current | | | – | 16 | 25 | μA |
| | $T_A$ = 0°C | | – | 25 | 40 | μA |
| Voltage Gain | | | 1000 | 1500 | – | |
| | $T_A$ = 0° to +70°C | | 800 | – | – | |
| Output Resistance | | | – | 200 | – | Ω |
| Output Sink Current | $\Delta V_{IN} \ge 5mV$, $V_{OUT}$ = 0 | | 1.6 | 2.5 | – | mA |
| | | $T_A$ = 0° to +70°C | 0.5 | – | – | mA |
| Response Time | Note 2 | | – | 40 | – | ns |
| Average Temperature Coefficient of Input Offset Voltage | $R_S = 50\Omega$, $T_A$ = 0° to +70°C | | – | 5.0 | 20 | μV/°C |
| Average Temperature Coefficient of Input Offset Current | $T_A$ = +25° to +70°C | | – | 15 | 50 | nA/°C |
| | $T_A$ = +25° to 0°C | | – | 24 | 100 | nA/°C |
| Input Voltage Range | V = −7V, $T_A$ = 0° to +70°C | | ±5 | – | – | V |
| Common Mode Rejection Ratio | $R_A \le 200\Omega$, $T_A$ = 0° to +70°C | | 70 | 98 | – | dB |
| Output HIGH Voltage | $\Delta V_{IN} \ge 5mV$, $0 \le I_{OUT} \le 5mA$, $T_A$ = 0° to +70°C | | 2.5 | 3.2 | 4.0 | V |
| Output LOW Voltage | $\Delta V_{IN} \ge 5mV$, $T_A$ = 0° to +70°C | | −1.0 | −0.5 | 0 | V |
| Output Sink Current | $\Delta V_{IN} \ge 5mV$, $V_{OUT}$ = 0, $T_A$ = 0° to +70°C | | 0.5 | – | – | mA |
| Positive Supply Current | $V_{OUT} \le 0$, $T_A$ = 0° to +70°C | | – | 5.2 | 9.0 | mA |
| Negative Supply Current | $V_{OUT}$ = GND, Inverting Input = 5mV, $T_A$ = 0° to +70°C | | – | 4.6 | 7.0 | mA |
| Power Consumption | $V_{OUT}$ = GND, Inverting Input = 10mV, $T_A$ = 0° to +70°C | | – | 90 | 150 | mW |

Note 1. The input offset voltage and input offset current are specified for a logic threshold voltage as follows: 1.5V at 0°C, 1.4V at +25°C, and 1.2V at +70°C.

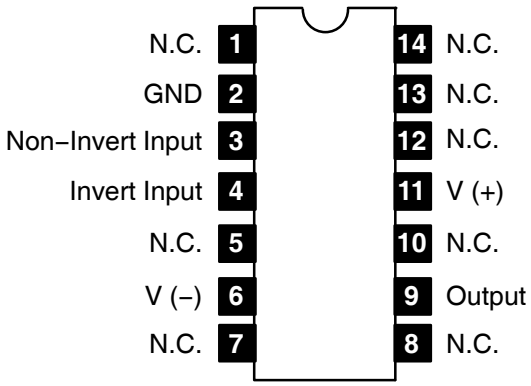
Note 2. The response time specified is for a 100mV input step with 5mV overdrive.

**Pin Connection Diagram**

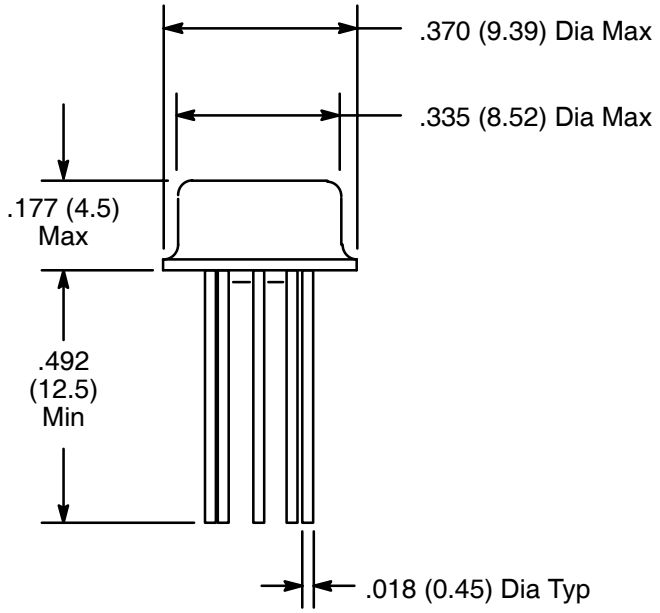
**NTE910**
(Top View)

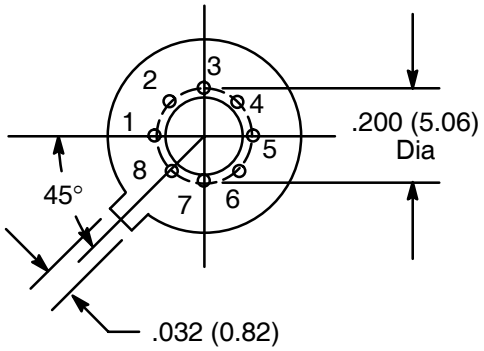



**NTE910D**



**NTE910**




**NTE910D**