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NTE9946 & NTE9949
Integrated Circuit
DTL, Quad, 2–Input NAND Gate

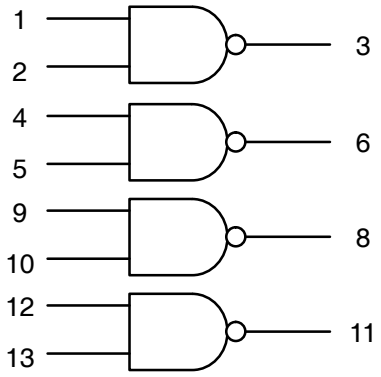
Description:

The NTE9946 and NTE9949 are DTL integrated circuits in a 14–Lead DIP type package consisting of four 2–input NAND gate circuits. These devices can be used as dual 2–input non–inverting gates or as two bistable circuits when two dual 2–input gates are cross–coupled.

Features:

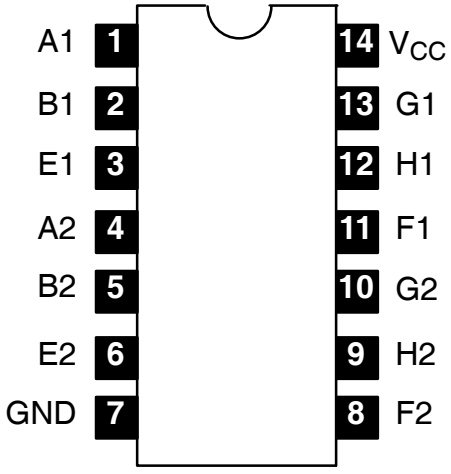
- Pull–Up Resistor:
  NTE9946 – 6kΩ
  NTE9949 – 2kΩ

Logic Diagram

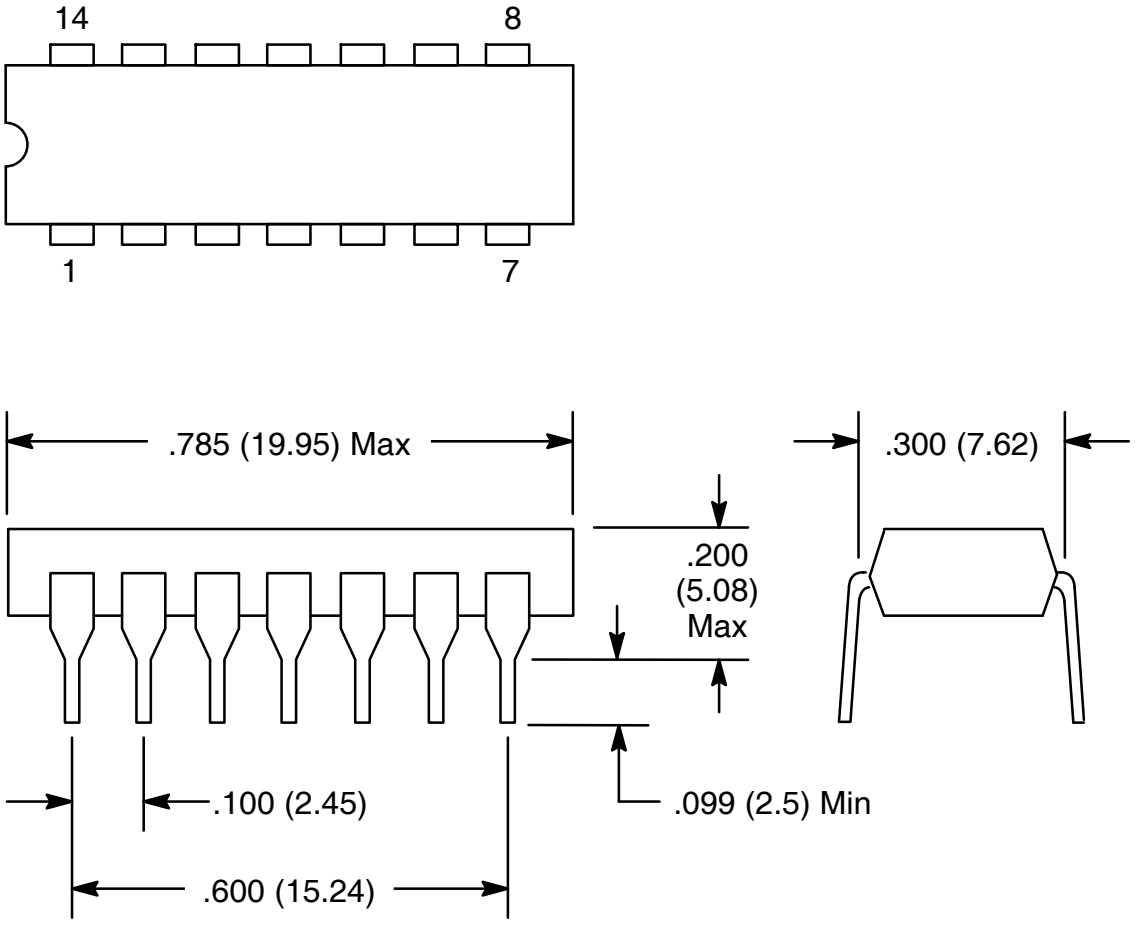


Positive Logic: $3 = \overline{1 \bullet 2}$
Negative Logic: $3 = \overline{1 + 2}$
Input Loading Factor: 1
Output Loading Factor:
NTE9946 = 8
NTE9949 = 7
Total Power Dissipation:
Inputs Low = 24mW
Inputs High:
NTE9946 = 52mW
NTE9949 = 84mW
50% Duty Cycle:
NTE9946 = 38mW
NTE9949 = 54mW
Propagation Delay Time:
NTE9946 = 30ns Typ
NTE9949 = 25ns Typ

Pin Connection Diagram



Note 1. **NTE9946** is a **discontinued** device and **no longer available**.


14
8
1
7
.785 (19.95) Max
.300 (7.62)
.200
(5.08)
Max
.100 (2.45)
.099 (2.5) Min
.600 (15.24)

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

					Test Current/Voltage Values at T_A = +25°C											
					mA				Volts								
					I_{OL}		I_{OH}		V_{IL}	V_{IH}	V_F	V_R	V_{CEX}	V_{CC}	V_{CCL}	V_{CCH}	V_{max}
					9946	9949	9946	9949									
					12.0	11.0	–0.12	–0.5	1.10	1.90	0.45	4.00	5.00	5.00	5.00	5.00	8.00
					Test Current/Voltage Applied to Pins Listed Below												
Parameter	**Symbol**	**Min**	**Max**	**Unit**	I_{OL}		I_{OH}		V_{IL}	V_{IH}	V_F	V_R	V_{CEX}	V_{CC}	V_{CCL}	V_{CCH}	V_{max}	**GND**
Output Voltage	V_{OL}	–	0.45	V	3		–		–	1,2	–	–	–	–	14	–	–	7
	V_{OH}	2.60	–	V	–		3		1	–	–	–	–	–	14	–	–	7
		2.60	–	V	–		3		2	–	–	–	–	–	14	–	–	7
Short−Circuit Current NTE9946	I_{SC}	–	–1.30	mA	–		–		–	–	–	–	–	–	–	14	–	1, 3, 7
NTE9949		–	–3.90	mA	–		–		–	–	–	–	–	–	–	14	–	1, 3, 7
Reverse Current	I_R	–	5.0	μA	–		–		–	–	–	1	–	–	–	14	–	2,7
		–	5.0	μA	–		–		–	–	–	2	–	–	–	14	–	1,7
Output Leakage Current	I_{CEX}	–	100	μA	–		–		–	–	–	–	3, 14	–	–	–	–	1, 7
Forward Current	I_F	–	–1.40	mA	–		–		–	–	1	2	–	–	–	14	–	7
		–	–1.40	mA	–		–		–	–	2	1	–	–	–	14	–	7
Power Drain Current (Total Device) NTE9946	I_{PDH}	–	16	mA	–		–		–	–	–	–	–	14	–	–	–	7
	I_{max}	–	16	mA	–		–		–	–	–	–	–	–	–	–	14	1, 4, 7, 9, 12
NTE9949	I_{PDH}	–	26.2	mA	–		–		–	–	–	–	–	14	–	–	–	7
	I_{max}	–	16	mA	–		–		–	–	–	–	–	–	–	–	14	1, 4, 7, 9, 12
Switching Times					Pulse In		Pulse Out											
NTE9946	t_{pd+}	25	80	ns	1		3		–	–	–	–	–	14	–	–	–	7
	$t_{pd−}$	10	30	ns	1		3		–	–	–	–	–	14	–	–	–	7
NTE9949	t_{pd+}	15	60	ns	1		3		–	–	–	–	–	14	–	–	–	7
	$t_{pd−}$	10	30	ns	1		3		–	–	–	–	–	14	–	–	–	7

Note 1. Pins not listed are left open.