Hex 2-input AND drivers

74F808/74F1808

FEATURES

- High capacitive drive capability
- Choice of configuration
  Corner V_{CC} and GND – 74F808
  Center V_{CC} and GND – 74F1808
- Typical propagation delay of 4.0ns
- Superior ground noise characteristics (implemented using ouput edge rate control)
- Increased source and sink current (64mA)

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F808	4.0ns	24mA
74F1808	4.0ns	24mA

ORDERING INFORMATION

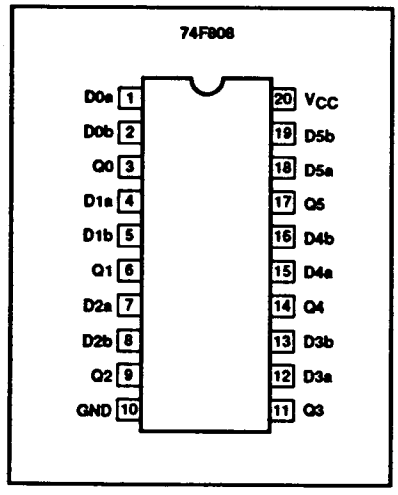
DESCRIPTION	ORDER CODE
	COMMERCIAL RANGE V_{CC} = 5V ±10%, T_{amb} = 0°C to +70°C
20–pin plastic DIP	N74F808N, N74F1808N
20–pin plastic SOL	N74F808D, N74F1808D

INPUT AND OUTPUT LOADING AND FAN OUT TABLE

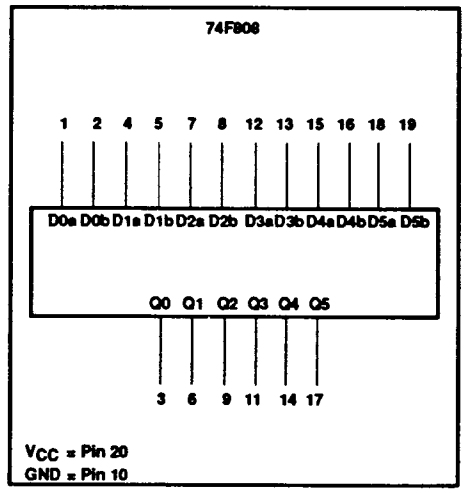
PINS	DESCRIPTION	74F (U.L.) HIGH/LOW	LOAD VALUE HIGH/LOW
Dna – Dnb	Data inputs	1.0/0.033	20µA/20µA
Q0 – Q5	Data outputs	3200/106.7	64mA/64mA

NOTE: One (1.0) FAST unit load is defined as: 20µA in the high state and 0.6mA in the low state.

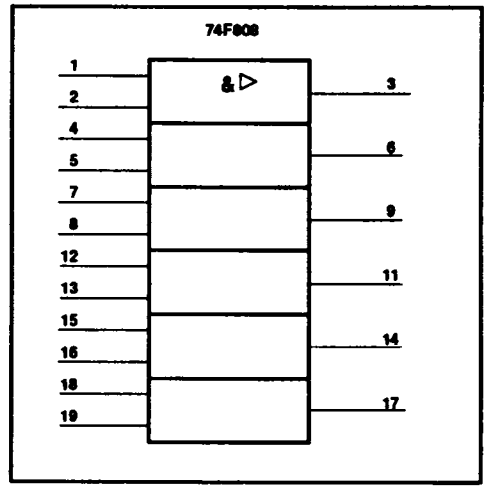
PIN CONFIGURATION



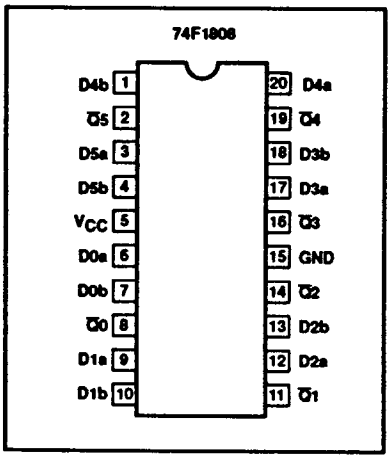
LOGIC SYMBOL



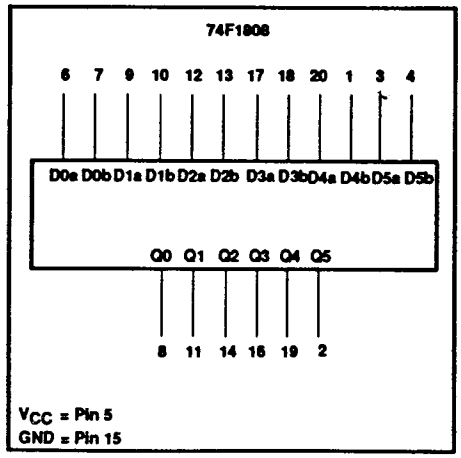
IEC/IEEE SYMBOL



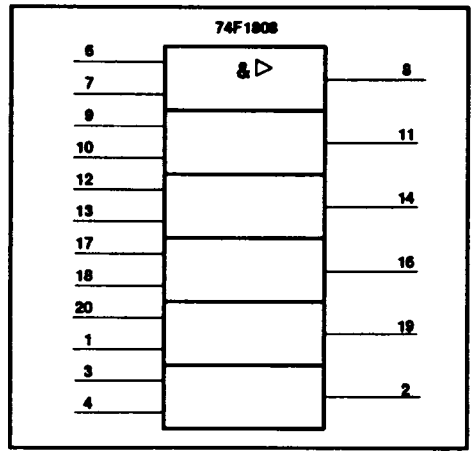
PIN CONFIGURATION



LOGIC SYMBOL

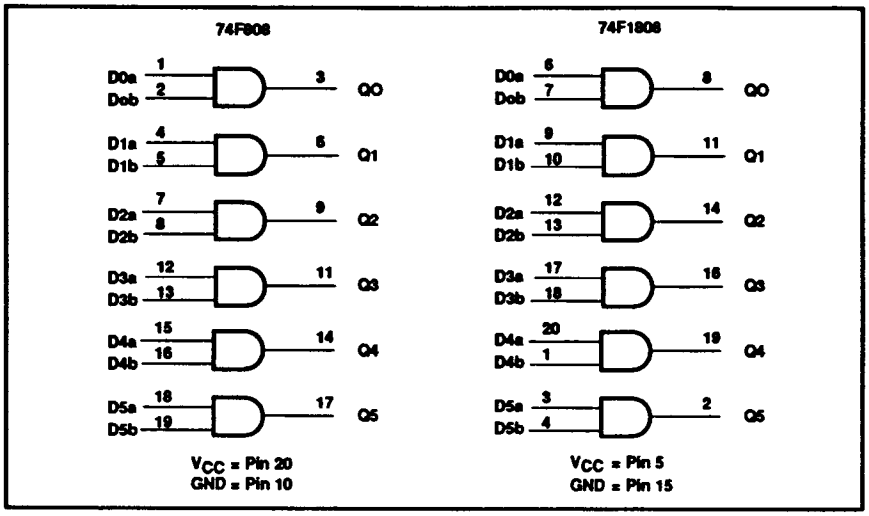


IEC/IEEE SYMBOL



Hex 2-input AND drivers | 74F808/74F1808

LOGIC DIAGRAM



FUNCTION TABLE

INPUTS		OUTPUT
Da	Db	Q
H	H	H
L	X	L
X	L	L

NOTES:
1. H = High voltage level
2. L = Low voltage level
3. X = Don't care

ABSOLUTE MAXIMUM RATINGS

(Operation beyond the limit set forth in this table may impair the useful life of the device. Unless otherwise noted these limits are over the operating free air temperature range.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	–0.5 to +7.0	V
V_{IN}	Input voltage	–0.5 to +7.0	V
I_{IN}	Input current	–30 to +5	mA
V_{OUT}	Voltage applied to output in high output state	–0.5 to V_{CC}	V
I_{OUT}	Current applied to output in low output state	96	mA
T_{amb}	Operating free–air temperature range	0 to +70	°C
T_{stg}	Storage temperature range	–65 to +150	°C

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5.0	5.5	V
V_{IH}	High–level input voltage	2.0			V
V_{IL}	Low–level input voltage			0.8	V
I_{IK}	Input clamp current			–18	mA
I_{OH}	High–level output current			–64	mA
I_{OL}	Low–level output current			64	mA
T_{amb}	Operating free air temperature range	0		+70	°C

DC ELECTRICAL CHARACTERISTICS

(Over recommended operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER		TEST CONDITIONS[1]		LIMITS			UNIT
					MIN	TYP[2]	MAX	
V_{OH}	High-level output voltage		V_{CC} = MIN, V_{IL} = MAX	±10%V_{CC}	2.0			V
			V_{IH} = MIN, I_{OH} = MAX	±5%V_{CC}	2.0			V
V_{OL}	Low-level output voltage		V_{CC} = MIN, V_{IL} = MAX	±10%V_{CC}		0.38	0.55	V
			V_{IH} = MIN, I_{OL} = MAX	±5%V_{CC}		0.38	0.55	V
V_{IK}	Input clamp voltage		V_{CC} = MIN, I_I = I_{IK}			-0.73	-1.2	V
I_I	Input current at maximum input voltage		V_{CC} = MAX, V_I = 7.0V				100	µA
I_{IH}	High–level input current		V_{CC} = MAX, V_I = 2.7V				20	µA
I_{IL}	Low–level input current		V_{CC} = MAX, V_I = 0.5V				-20	µA
I_O	Output current[3]		V_{CC} = MAX		-60		-180	mA
I_{CC}	Supply current (total)	I_{CCH}	V_{CC} = MAX	V_{IN} = GND		19	27	mA
		I_{CCL}		V_{IN} = 4.5V		30	42	mA

NOTES:

3. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
4. All typical values are at V_{CC} = 5V, T_{amb} = 25°C.
5. The output conditions have been chosen to produce a current that closely approximates one half of the true short–circuit output current, I_{OS}.

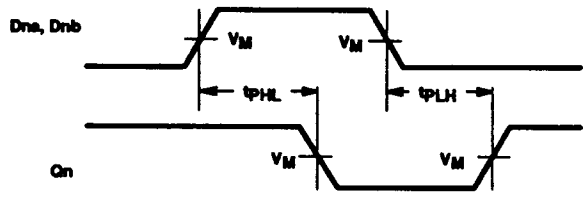
AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITION	LIMITS					UNIT
			T_{amb} = +25°C, V_{CC} = +5.0V, C_L = 50pF, R_L = 500Ω			T_{amb} = 0°C to +70°C, V_{CC} = +5.0V ± 10%, C_L = 50pF, R_L = 500Ω		
			MIN	TYP	MAX	MIN	MAX	
t_{PLH} t_{PHL}	Propagation delay Dna, Dnb to Qn	Waveform 1	2.0 2.0	4.5 3.5	6.3 6.0	2.0 1.5	6.8 6.5	ns
$t_{sk(o)}$	Output skew[1,2]	Waveform 2			2.5		3.0	ns

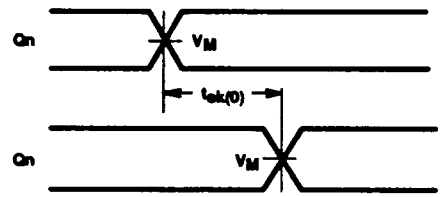
NOTES:

1. [t_{PN} actual – t_{PM} actual] for any output compared to any other output where N and M are either LH or HL.
2. Skew times are valid only under same test conditions (temperature, V_{CC}, loading, etc.,).

AC WAVEFORMS



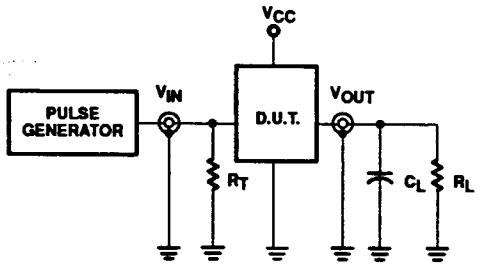
Waveform 1. Propagation delay for inverting outputs



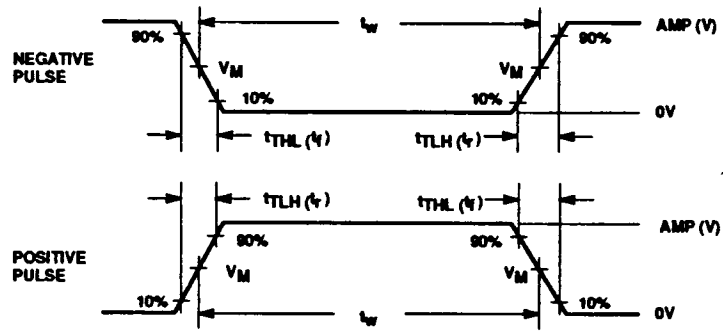
Waveform 2. Output skew

NOTE: For all waveforms, V_M = 1.5V.

TEST CIRCUIT AND WAVEFORMS



Test circuit for totem-pole outputs



DEFINITIONS:

R_L = Load resistor; see AC electrical characteristics for value.

C_L = Load capacitance includes jig and probe capacitance; see AC electrical characteristics for value.

R_T = Termination resistance should be equal to Z_{OUT} of pulse generators.

Input pulse definition

family	INPUT PULSE REQUIREMENTS					
	amplitude	V_M	rep. rate	t_W	t_{TLH}	t_{THL}
74F	3.0V	1.5V	1MHz	500ns	2.5ns	2.5ns