Signetics

FAST 74F808, 74F1808 AND DRIVERS

FAST Products

74F808-Hex 2-Input AND Driver
74F1808-Hex 2-Input AND Driver
Preliminary Specification

FEATURES

- **High capacitive drive capability**
- **Choice of configuration**
  Corner V_{CC} and GND-- 'F808
  Center V_{CC} and GND-- 'F1808
- **Typical propagation delay of 2.6ns**

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F808	2.6ns	11mA
74F1808	2.6ns	11mA

ORDERING INFORMATION

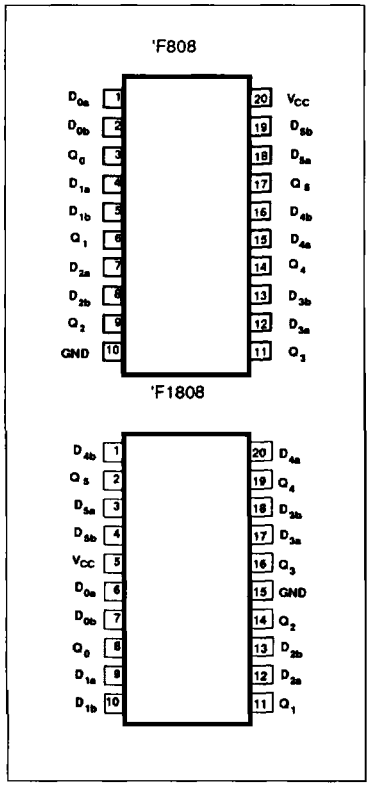
PACKAGES	COMMERCIAL RANGE V_{CC} = 5V±10%; T_A = 0°C to +70°C
20-Pin Plastic DIP	N74F808N, N74F1808N
20-Pin Plastic SOL	N74F808D, N74F1808D

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

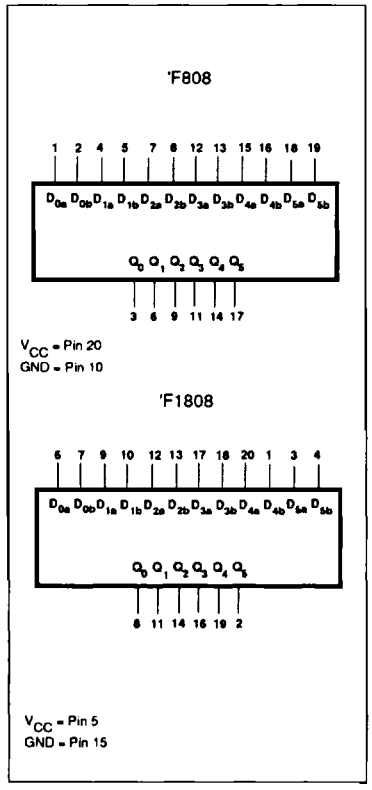
PINS	DESCRIPTION	74F(U.L.) HIGH/LOW	LOAD VALUE HIGH/LOW
D_{na} - D_{nb}	Data inputs	1.0/0.033	20µA/20µA
Q_0 - Q_5	Data outputs	2400/80	48mA/48mA

NOTE:
One (1.0) FAST Unit Load is defined as: 20µA in the High state and 0.6mA in the Low state.

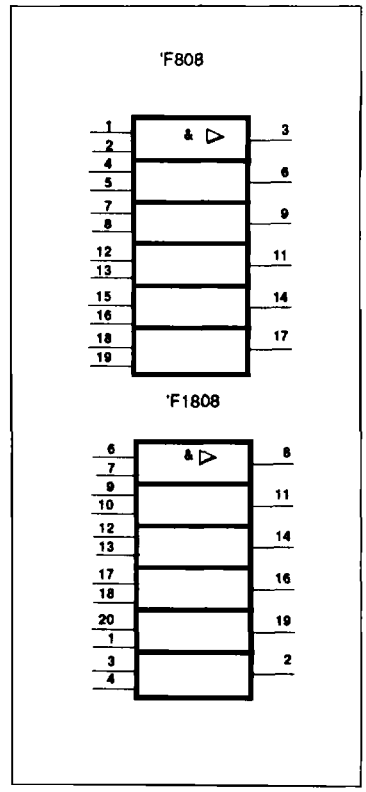
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL(IEEE/IEC)



FUNCTION TABLE

INPUTS		OUTPUT
D_{na}	D_{nb}	Q_n
L	X	L
X	L	L
H	H	H

H = High voltage level
L = Low voltage level
X = Don't care

ABSOLUTE MAXIMUM RATINGS

(Operation beyond the limits 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_A	Operating free-air temperature range	0 to +70	°C
T_{STG}	Storage temperature	-65 to +150	°C

RECOMMENDED OPERATION 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			-48	mA
I_{OL}	Low-level output current			48	mA
T_A	Operating free-air temperature range	0		70	°C

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

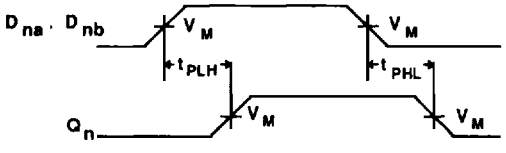
SYMBOL	PARAMETER		TEST CONDITIONS[1]		LIMITS			UNIT
					Min	Typ[2]	Max	
V_{OH}	High-level output voltage		V_{CC} = MIN, V_{IL} = MAX	±10%V_{CC}	2.0			V
			V_{IH} = MIN, I_{OH} = MAX	±5%V_{CC}	2.0			V
V_{OL}	Low-level output voltage		V_{CC} = MIN, V_{IL} = MAX	±10%V_{CC}		0.38	0.55	V
			V_{IH} = MIN, 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 maximun 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_{OS}	Short circuit output current[3]		V_{CC} =MAX, V_O= 2.25V		-60		-160	mA
I_{CC}	Supply current (total)	I_{CCH}	V_{CC} =MAX	V_{IN} =GND		6.5	11	mA
		I_{CCL}		V_{IN} =4.5V		19	32	mA

NOTES:
1. For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
2. All typical values are at V_{CC} = 5V, T_A = 25°C.
3. 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_A = +25°C, V_{CC} = 5V, C_L = 50pF, R_L = 500Ω			T_A = 0°C to +70°C, V_{CC} = 5V ±10%, C_L = 50pF, R_L = 500Ω		
			Min	Typ	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation delay D_{na}, D_{nb} to Q_n	Waveform 1	1.0 1.0	2.5 2.4	4.5 4.5	1.0 1.0	5.0 5.0	ns

AC WAVEFORMS

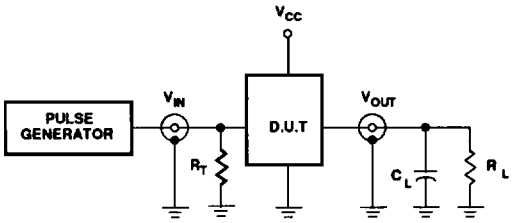


Waveform 1.

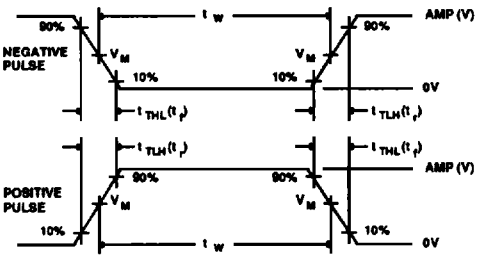
Propagation Delay for Input to Output

NOTE: For all waveforms, V_M = 1.5V.

TEST CIRCUIT AND WAVEFORMS



Test Circuit For Totem-Pole Outputs



$V_M = 1.5V$

Input Pulse Definition

DEFINITIONS

R_L = Load resistor; see AC CHARACTERISTICS for value.

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

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

FAMILY	INPUT PULSE REQUIREMENTS				
	Amplitude	Rep. Rate	t_W	t_{TLH}	t_{THL}
74F	3.0V	1MHz	500ns	2.5ns	2.5ns