Signetics

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Status	Product Specification
FAST Products	

FAST 74F86
Gate
Quad 2-Input Exclusive-OR Gate

FEATURE

- **Industrial temperature range available (-40°C to +85°C)**

TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F86	4.3 ns	16.5 mA

FUNCTION TABLE

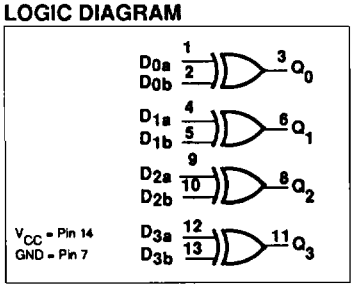
INPUTS		OUTPUT
D_{na}	D_{nb}	Q_n
L	L	L
L	H	H
H	L	H
H	H	L

H = High voltage level
L = Low voltage level

ORDERING INFORMATION

PACKAGES	COMMERCIAL RANGE V_{CC} = 5V±10% T_A = 0°C to +70°C	INDUSTRIAL RANGE V_{CC} = 5V±10% T_A = -40°C to +85°C
14-Pin Plastic DIP	N74F86N	I74F86N
14-Pin Plastic SO	N74F86D	I74F86D

LOGIC DIAGRAM

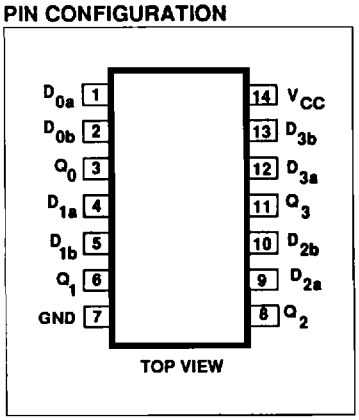


INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

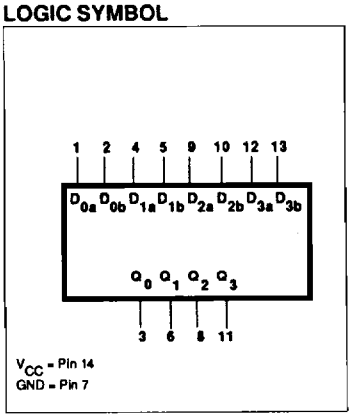
PINS	DESCRIPTION	74F(U.L.) HIGH/LOW	LOAD VALUE HIGH/LOW
D_{na}, D_{nb}	Data inputs	1.0/1.0	20µA/0.6mA
Q_n	Data output	50/33	1.0mA/20mA

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

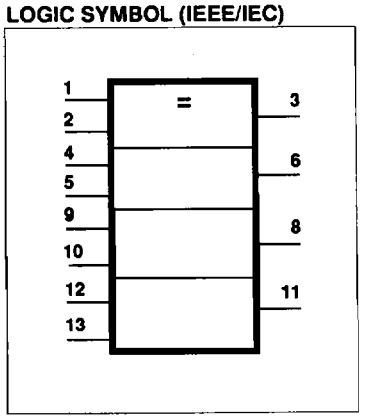
PIN CONFIGURATION



LOGIC SYMBOL



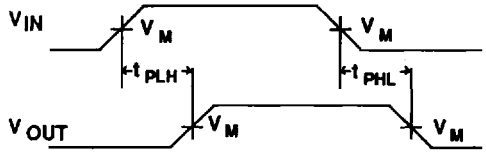
LOGIC SYMBOL (IEEE/IEC)



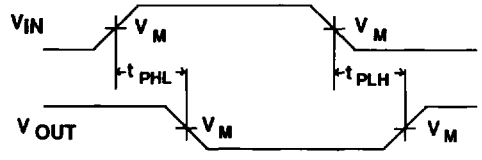
AC ELECTRICAL CHARACTERISTICS

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		T_A = -40°C to +85°C V_{CC} = 5V ±10% C_L = 50pF R_L = 500Ω		
			Min	Typ	Max	Min	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation delay D_{na} or D_{nb} to Q_n (Other input Low)	Waveform 1	3.0 3.0	4.0 4.2	5.5 5.5	3.0 3.0	6.5 6.5	3.0 2.5	7.0 8.0	ns
t_{PLH} t_{PHL}	Propagation delay D_{na} or D_{nb} to Q_n (Other input High)	Waveform 2	3.5 3.0	5.3 4.7	7.0 6.5	3.5 3.0	8.0 7.5	3.5 3.0	10.0 8.0	ns

AC WAVEFORMS



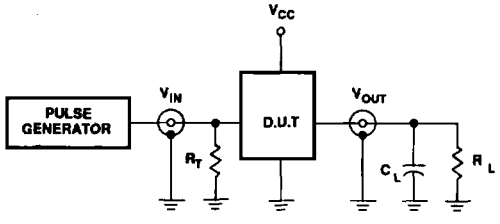
Waveform 1.
For Non-Inverting Outputs



Waveform 2
For Inverting Outputs

NOTE: For all waveforms, V_M = 1.5V.

TEST CIRCUIT AND WAVEFORMS



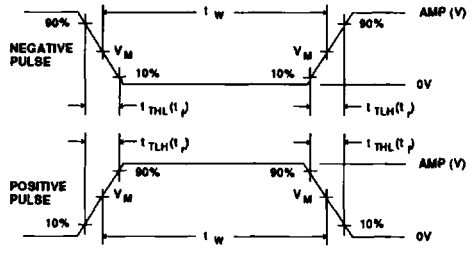
Test Circuit For Totem-Pole Outputs

DEFINITIONS

R_L = Load resistor; see AC 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.



V_M = 1.5V

Input Pulse Definition

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