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Status	Product Specification
FAST Products	

FAST 74F37

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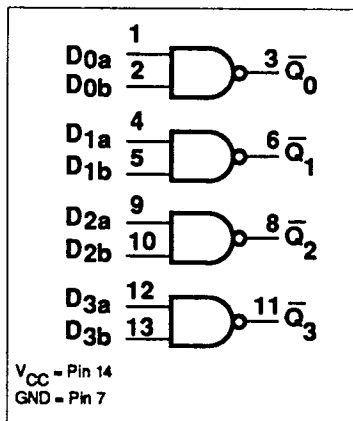
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FUNCTION TABLE

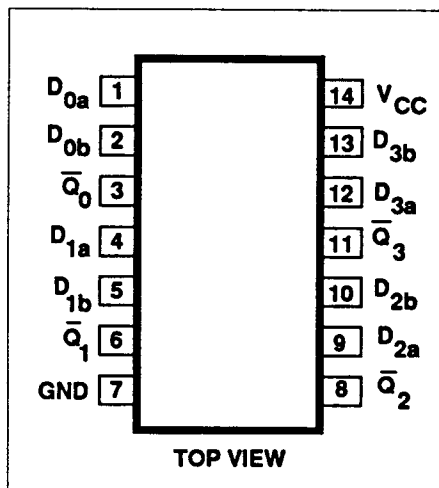
INPUTS		OUTPUT
D _{na}	D _{nb}	$\bar{Q}_n$
L	L	H
L	H	H
H	L	H
H	H	L

H = High voltage level
L = Low voltage level

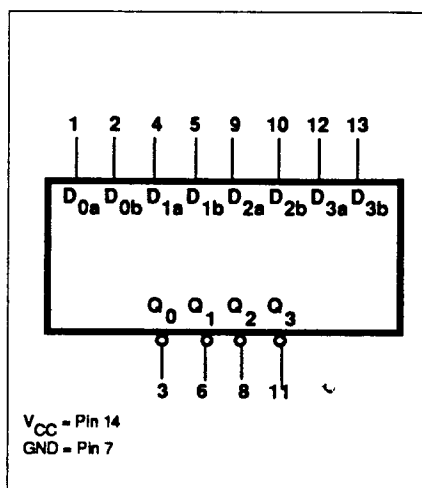
LOGIC DIAGRAM



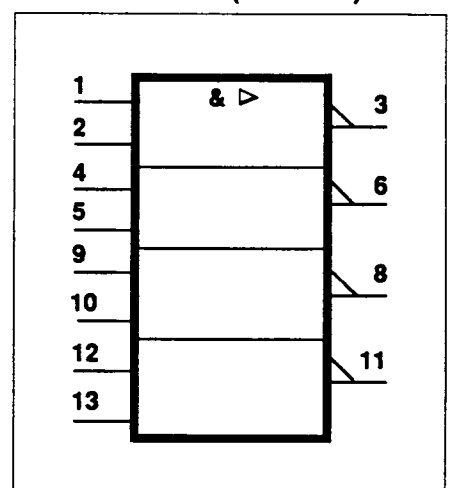
PIN CONFIGURATION



LOGIC SYMBOL



LOGIC SYMBOL (IEEE/IEC)



TYPE	TYPICAL PROPAGATION DELAY	TYPICAL SUPPLY CURRENT (TOTAL)
74F37	3.5 ns	13 mA

ORDERING INFORMATION

PACKAGES	COMMERCIAL RANGE V _{CC} = 5V±10%; T _A = 0°C to +70°C
14-Pin Plastic DIP	N74F37N
14-Pin Plastic SO	N74F37D

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	1.0/2.0	20µA/1.2mA
$\bar{Q}_n$	Data output	750/106.6	15mA/64mA

NOTE:

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

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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	128	mA
T_A	Operating free-air temperature range	0 to +70	°C
T_{STG}	Storage temperature	-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_H	High-level input voltage	2.0			V
V_L	Low-level input voltage			0.8	V
I_{IK}	Input clamp current			-18	mA
I_{OH}	High-level output current			-15	mA
I_{OL}	Low-level output current			64	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 V _{IH} = MIN	I _{OH} = -1mA	±10%V _{CC}	2.5			V	
					±5%V _{CC}	2.7	3.4		V	
				I _{OH} = -15mA	±10%V _{CC}	2.0			V	
					±5%V _{CC}	2.0			V	
V _{OL}	Low-level output voltage		V _{CC} = MIN V _{IL} = MAX V _{IH} = MIN	I _{OL} = MAX	±10%V _{CC}			0.55	V	
					±5%V _{CC}		0.42	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 _L					20	μA	
I _{IL}	Low-level input current		V _{CC} = MAX, V _I = 0.5V					-1.2	mA	
I _{OS}	Short circuit output current		V _{CC} = MAX			-100		-225	mA	
I _{CC}	Supply current (total)	I _{CCH}	V _{CC} = MAX			V _{IN} = GND		3.0	6.0	mA
		I _{CCL}				V _{IN} = 4.5V		23	33	mA

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
- All typical values are at $V_{CC} = 5\text{V}$, $T_A = 25^\circ\text{C}$.
- Not more than one output should be shorted at a time. For testing I_{OS} , the use of high-speed test apparatus and/or sample-and-hold techniques are preferable in order to minimize internal heating and more accurately reflect operational values. Otherwise, prolonged shorting of a High output may raise the chip temperature well above normal and thereby cause invalid readings in other parameter tests. In any sequence of parameter tests, I_{OS} tests should be performed last.

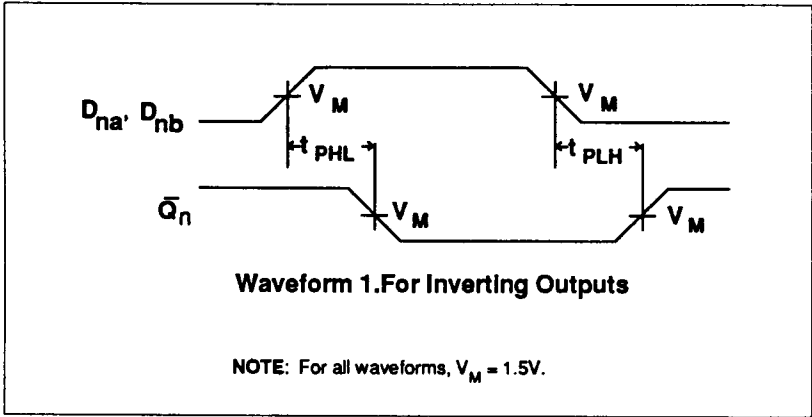
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AC ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITION	LIMITS					UNIT
			$T_A = +25^{\circ}\text{C}$ $V_{CC} = 5\text{V}$ $C_L = 50\text{pF}$ $R_L = 500\Omega$			$T_A = 0^{\circ}\text{C to } +70^{\circ}\text{C}$ $V_{CC} = 5\text{V} \pm 10\%$ $C_L = 50\text{pF}$ $R_L = 500\Omega$		
			Min	Typ	Max	Min	Max	
			Min	Typ	Max	Min	Max	
t_{PLH} t_{PHL}	Propagation delay D_{na}, D_{nb} to $\overline{Q}_n$	Waveform 1	2.5 1.5	3.5 2.5	5.5 4.5	2.0 1.5	6.5 5.0	ns

AC WAVEFORMS



TEST CIRCUIT AND WAVEFORMS

