



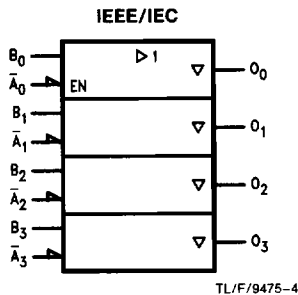
54F/74F125 Quad Buffer (TRI-STATE®)

Features

- High impedance base inputs for reduced loading

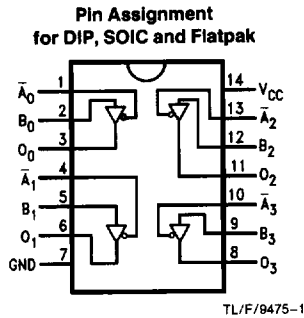
Ordering Code: See Section 5

Logic Symbol

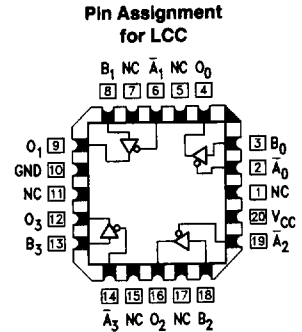


TL/F/9475-4

Connection Diagrams



TL/F/9475-1



TL/F/9475-2

Unit Loading/Fan Out: See Section 2 for U.L. Definitions

Pin Names	Description	54F/74F	
		U.L. HIGH/LOW	Input I_{IH}/I_{IL} Output I_{OH}/I_{OL}
\bar{A}_n, B_n	Inputs	1.0/0.033	20 μ A / -20 μ A
O_n	Outputs	600/106.6 (80)	-12 mA / 64 mA (48 mA)

Function Table

Inputs		Output
\bar{A}_n	B_n	O
L	L	L
L	H	H
H	X	Z

H = High Voltage Level
L = LOW Voltage Level
Z = High Impedance
X = Immaterial

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Storage Temperature	-65°C to +150°C
Ambient Temperature under Bias	-55°C to +125°C
Junction Temperature under Bias	-55°C to +175°C
V _{CC} Pin Potential to Ground Pin	-0.5V to +7.0V
Input Voltage (Note 2)	-0.5V to +7.0V
Input Current (Note 2)	-30 mA to +5.0 mA
Voltage Applied to Output in HIGH State (with V _{CC} = 0V)	
Standard Output	-0.5V to V _{CC}
TRI-STATE Output	-0.5V to +5.5V

Current Applied to Output in LOW State (Max) twice the rated I_{OL} (mA)

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

Free Air Ambient Temperature	
Military	-55°C to +125°C
Commercial	0°C to +70°C
Supply Voltage	
Military	+4.5V to +5.5V
Commercial	+4.5V to +5.5V

DC Electrical Characteristics

Symbol	Parameter	54F/74F			Units	V _{CC}	Conditions
		Min	Typ	Max			
V _{IH}	Input HIGH Voltage	2.0			V		Recognized as a HIGH Signal
V _{IL}	Input LOW Voltage			0.8	V		Recognized as a LOW Signal
V _{CD}	Input Clamp Diode Voltage			-1.2	V	Min	I _{IN} = -18 mA
V _{OH}	Output HIGH Voltage	54F 10% V _{CC} 54F 10% V _{CC} 74F 10% V _{CC} 74F 10% V _{CC} 74F 5% V _{CC} 74F 5% V _{CC}	2.4 2.0 2.4 2.0 2.7 2.0		V	Min	I _{OH} = -3 mA I _{OH} = -12 mA I _{OH} = -3 mA I _{OH} = -12 mA I _{OH} = -3 mA I _{OH} = -15 mA
V _{OL}	Output LOW Voltage	54F 10% V _{CC} 74F 10% V _{CC}		0.55 0.55	V	Min	I _{OL} = 48 mA I _{OL} = 64 mA
I _{IH}	Input HIGH Current			20	μA	Max	V _{IN} = 2.7V
I _{BVI}	Input HIGH Current Breakdown Test			100	μA	0.0V	V _{IN} = 7.0V
I _{IL}	Input LOW Current			-20.0	μA	Max	V _{IN} = 0.5V
I _{OZH}	Output Leakage Current			50	μA	Max	V _{OUT} = 2.7V
I _{OZL}	Output Leakage Current			-50	μA	Max	V _{OUT} = 0.5V
I _{OS}	Output Short-Circuit Current	-100		-225	mA	Max	V _{OUT} = 0V
I _{CEX}	Output HIGH Leakage Current			250	μA	Max	V _{OUT} = V _{CC}
I _{ZZ}	Buss Drainage Test			500	μA	0.0V	V _{OUT} = 5.25V
I _{CCH}	Power Supply Current		18.5	24.0	mA	Max	V _O = HIGH
I _{CCL}	Power Supply Current		31.7	40.0	mA	Max	V _O = LOW
I _{CCZ}	Power Supply Current		27.6	35.0	mA	Max	V _O = HIGH Z

AC Electrical Characteristics: See Section 2 for Waveforms and Load Configurations

Symbol	Parameter	74F			54F		74F		Units	Fig. No.
		T _A = +25°C V _{CC} = +5.0V C _L = 50 pF			T _A , V _{CC} = MII C _L = 50 pF		T _A , V _{CC} = Com C _L = 50 pF			
		Min	Typ	Max	Min	Max	Min	Max		
t _{PLH} t _{PHL}	Propagation Delay	2.0	4.0	6.0			2.0	6.5	ns	2-3
t _{PZH} t _{PZL}	Output Enable Time	3.5	4.7	7.5			3.0	8.5	ns	2-5
t _{PHZ} t _{PLZ}	Output Disable Time	1.5	3.9	5.5			1.5	6.0	ns	2-5