



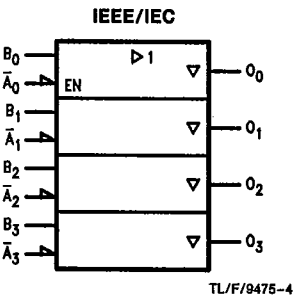
T-43-15

54F/74F125
Quad Buffer (TRI-STATE®)

- Features
- High impedance base inputs for reduced loading

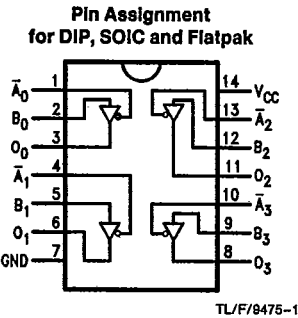
Ordering Code: See Section 5

Logic Symbol

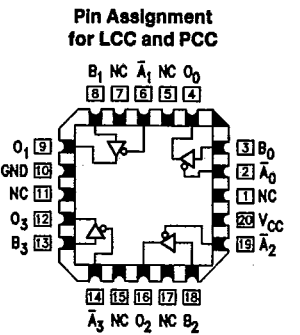


TL/F/9475-4

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}
$\bar{A}_n, B_n$ O_n	Inputs Outputs	1.0/0.033 600/106.6 (80)	20 μ A/ -20 μ A -12 mA/64 mA (48 mA)

Function Table

Inputs		Output
C	$\bar{A}$	O
L	L	L
L	H	H
H	X	Z

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

T-43-15

125

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, 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}	2.4		V	Min	I _{OH} = -3 mA
		54F 10% V _{CC}	2.0				I _{OH} = -12 mA
		74F 10% V _{CC}	2.4				I _{OH} = -3 mA
		74F 10% V _{CC}	2.0				I _{OH} = -12 mA
		74F 5% V _{CC}	2.7				I _{OH} = -3 mA
		74F 5% V _{CC}	2.0				I _{OH} = -15 mA
V _{OL}	Output LOW Voltage	54F 10% V _{CC}		0.55	V	Min	I _{OL} = 48 mA
		74F 10% V _{CC}		0.55			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	Max	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} = V _{CC}
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

T-43-15

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} = Mil 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 3.0	4.0 4.6	6.0 7.5			2.0 3.0	6.5 8.0	ns	2-3
t _{PZH} t _{PZL}	Output Enable Time	3.5 3.5	4.7 5.3	7.5 8.0			3.0 3.5	8.5 9.0	ns	2-5
t _{PHZ} t _{PLZ}	Output Disable Time	1.5 1.5	3.9 4.0	5.5 6.0			1.5 1.5	6.0 6.5	ns	2-5

125