



T-43-15

366•368

54F/74F366•54F/74F368 Hex Inverter Buffer with TRI-STATE® Outputs

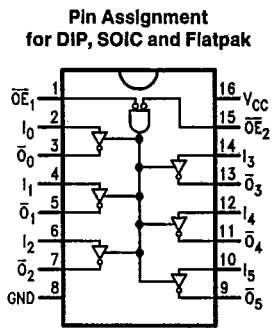
Features

- TRI-STATE buffer outputs sink 64 mA
- High-speed
- Bus-oriented
- High Impedance npn base inputs for reduced loading

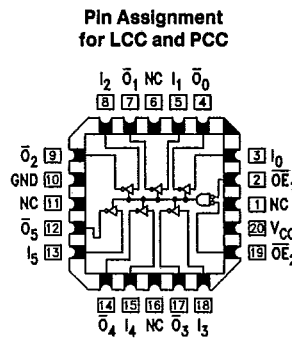
Ordering Code: See Section 5

Connection Diagrams

'F366

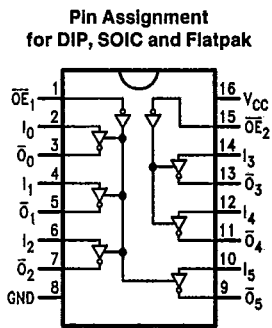


TL/F/9521-2

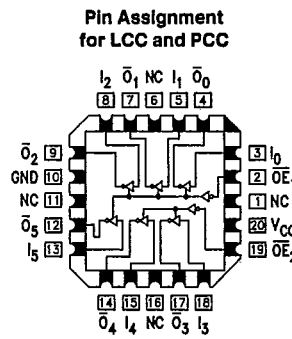


TL/F/9521-1

'F368



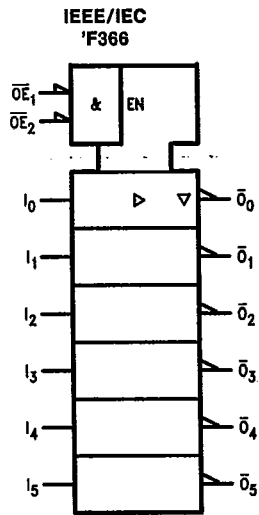
TL/F/9521-4



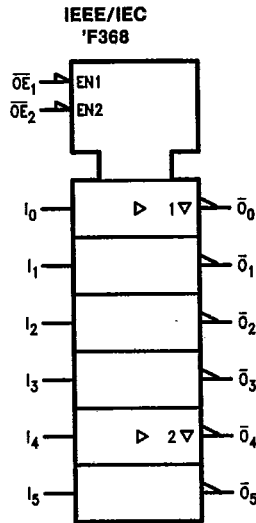
TL/F/9521-3

4

Logic Symbols



TL/F/9521-5



TL/F/9521-6

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}
$\overline{OE}_1, \overline{OE}_2$	Output Enable Input (Active LOW)	1.0/0.033	20 μA / -20 μA
I_n	Input	1.0/0.033	20 μA / -20 μA
O_n, \overline{O}_n	Outputs	600/106.6 (80)	-12 mA/64 mA (48 mA)

Function Tables

'F366

Inputs			Output
\overline{OE}_1	\overline{OE}_2	I	\overline{O}
L	L	L	H
L	L	H	L
X	H	X	Z
H	X	X	Z

'F368

Inputs		Output
\overline{OE}	I	\overline{O}
L	L	H
L	H	L
H	X	Z

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

T-43-15

366-368

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} 74F 10% V _{CC} 74F 5% V _{CC}	2.0 2.0 2.0		V	Min	I _{OH} = -12 mA I _{OH} = -12 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	Max	V _{IN} = 7.0V
I _{IL}	Input LOW Current			-20	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}	Bus Drainage Test			500	μA	0.0V	V _{OUT} = V _{CC}
I _{CCH}	Power Supply Current		20	25	mA	Max	V _O = HIGH
I _{CCL}	Power Supply Current		49	62	mA	Max	V _O = LOW
I _{CGZ}	Power Supply Current		35	48	mA	Max	V _O = HIGH Z

T-43-15

366-368

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	2.5	4.0	6.5			2.0	7.5	ns	2-3
		1.0	1.8	5.0			1.0	5.5		
t _{PZH} t _{PZL}	Enable Time ('F366)	2.5	4.2	9.5			2.5	10.0	ns	2-5
		2.5	4.2	9.0			2.5	9.5		
t _{PZH} t _{PZL}	Enable Time ('F368)	2.5	4.2	7.5			2.0	8.5	ns	2-5
		3.0	5.6	8.5			3.0	9.0		
t _{PHZ} t _{PLZ}	Disable Time	2.0	3.3	6.5			2.0	7.0	ns	2-5
		2.0	4.1	6.5			2.0	7.0		