

54F/74F365

Hex Buffer/Driver with TRI-STATE® Outputs

General Description

The 'F365 is a hex buffer and line driver designed to be employed as a memory and address driver, clock driver and bus-oriented transmitter/receiver.

Features

- TRI-STATE buffer outputs
- Outputs sink 64 mA
- Bus-oriented

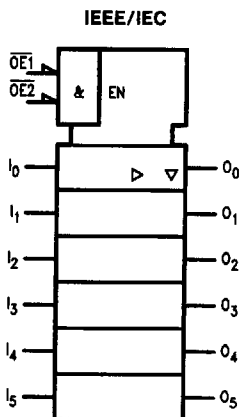
Ordering Code: See Section 11

Commercial	Military	Package Number	Package Description
74F365PC		N16E	16-Lead (0.300" Wide) Molded Dual-In-Line
	54F365DM (Note 2)	J16A	16-Lead Ceramic Dual-In-Line
74F365SC (Note 1)		M16A	16-Lead (0.150" Wide) Molded Small Outline, JEDEC
	54F365FM (Note 2)	W16A	16-Lead Cerpack
	54F365LM (Note 2)	E20A	20-Lead Ceramic Leadless Chip Carrier, Type C

Note 1: Devices also available in 13" reel. Use suffix = SCX.

Note 2: Military grade device with environmental and burn-in processing. Use suffix = DMQB, FMQB and LMQB.

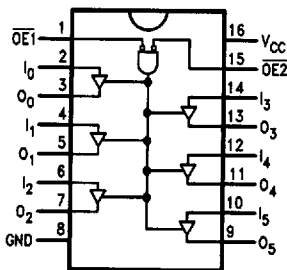
Logic Symbol



TL/F/9522-4

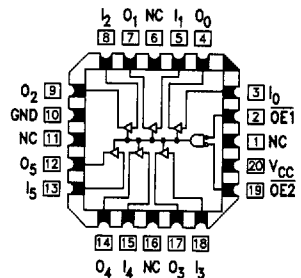
Connection Diagrams

Pin Assignment
for DIP, SOIC and Flatpak



TL/F/9522-1

Pin Assignment
for LCC



TL/F/9522-2

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}
$\overline{OE}_1, \overline{OE}_2$	Output Enable Input (Active LOW)	1.0/0.033	20 μ A/20 μ A
I_n	Inputs	1.0/0.033	20 μ A/20 μ A
O_n	Outputs	600/108.6 (80)	-12 mA/64 mA (48 mA)

Function Table

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

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

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
Plastic	-55°C to +150°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)	-0.5V to V _{CC}
Standard Output	-0.5V to +5.5V
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}	2.4 2.0 2.4 2.0 2.7		V	Min	I _{OH} = -3 mA I _{OH} = -12 mA I _{OH} = -3 mA I _{OH} = -15 mA I _{OH} = -3 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	0.0	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} = 5.25V
I _{CCH}	Power Supply Current		25	35	mA	Max	V _O = HIGH
I _{CCL}	Power Supply Current		44	62	mA	Max	V _O = LOW
I _{CCZ}	Power Supply Current		35	48	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.
		$T_A = +25^{\circ}\text{C}$ $V_{CC} = +5.0\text{V}$ $C_L = 50\text{ pF}$			$T_A, V_{CC} = \text{Mil}$ $C_L = 50\text{ pF}$		$T_A, V_{CC} = \text{Com}$ $C_L = 50\text{ pF}$			
		Min	Typ	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay I_n to O_n	2.5 2.5	4.6 4.9	6.5 7.0	2.0 2.0	7.0 7.0	2.0 2.0	7.0 7.5	ns	2-3
t_{PZH} t_{PZL}	Enable Time	2.5 2.5	5.1 5.7	9.5 9.0	2.0 2.0	8.5 8.5	2.5 2.5	10.0 9.5	ns	2-5
t_{PHZ} t_{PLZ}	Disable Time	2.0 2.0	3.6 4.4	6.5 6.5	1.5 1.5	6.5 9.0	2.0 2.0	7.0 7.0	ns	2-5