SN74LS157

Quad 2-Input Multiplexer

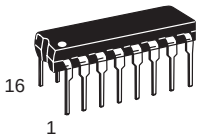
The LSTTL/MSI SN74LS157 is a high speed Quad 2-Input Multiplexer. Four bits of data from two sources can be selected using the common Select and Enable inputs. The four buffered outputs present the selected data in the true (non-inverted) form. The LS157 can also be used to generate any four of the 16 different functions of two variables. The LS157 is fabricated with the Schottky barrier diode process for high speed and is completely compatible with all ON Semiconductor TTL families.

- Schottky Process for High Speed
- Multifunction Capability
- Non-Inverting Outputs
- Input Clamp Diodes Limit High Speed Termination Effects
- Special Circuitry Ensures Glitch Free Multiplexing
- ESD > 3500 Volts

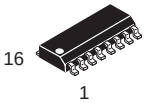
GUARANTEED OPERATING RANGES

Symbol	Parameter	Min	Typ	Max	Unit
V_{CC}	Supply Voltage	4.75	5.0	5.25	V
T_A	Operating Ambient Temperature Range	0	25	70	°C
I_{OH}	Output Current – High			–0.4	mA
I_{OL}	Output Current – Low			8.0	mA

LOW POWER SCHOTTKY



PLASTIC
N SUFFIX
CASE 648

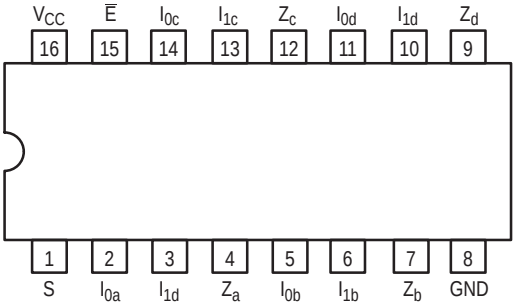


SOIC
D SUFFIX
CASE 751B

ORDERING INFORMATION

Device	Package	Shipping
SN74LS157N	16 Pin DIP	2000 Units/Box
SN74LS157D	16 Pin	2500/Tape & Reel

CONNECTION DIAGRAM DIP (TOP VIEW)

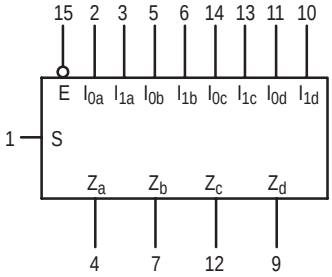


NOTE:
The Flatpak version has the same pinouts (Connection Diagram) as the Dual In-Line Package.

PIN NAMES		LOADING (Note a) HIGH	LOW
S	Common Select Input	1.0 U.L.	0.5 U.L.
$\overline{E}$	Enable (Active LOW) Input	1.0 U.L.	0.5 U.L.
$I_{0a} – I_{0d}$	Data Inputs from Source 0	0.5 U.L.	0.25 U.L.
$I_{1a} – I_{1d}$	Data Inputs from Source 1	0.5 U.L.	0.25 U.L.
$Z_a – Z_d$	Multiplexer Outputs	10 U.L.	5 U.L.

NOTES:
a) 1 TTL Unit Load (U.L.) = 40 μA HIGH/1.6 mA LOW.

LOGIC SYMBOL



V_{CC} = PIN 16
GND = PIN 8

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	Limits Min	Limits Typ	Limits Max	Unit	Test Conditions	
V_{IH}	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage for All Inputs	
V_{IL}	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage for All Inputs	
V_{IK}	Input Clamp Diode Voltage		−0.65	−1.5	V	V_{CC} = MIN, I_{IN} = −18 mA	
V_{OH}	Output HIGH Voltage	2.7	3.5		V	V_{CC} = MIN, I_{OH} = MAX, V_{IN} = V_{IH} or V_{IL} per Truth Table	
V_{OL}	Output LOW Voltage		0.25	0.4	V	I_{OL} = 4.0 mA	V_{CC} = V_{CC} MIN, V_{IN} = V_{IL} or V_{IH} per Truth Table
			0.35	0.5	V	I_{OL} = 8.0 mA	
I_{IH}	Input HIGH Current I_0, I_1 $\overline{E}$, S			 20 40	µA	V_{CC} = MAX, V_{IN} = 2.7 V	
	 I_0, I_1 $\overline{E}$, S			 0.1 0.2	mA	V_{CC} = MAX, V_{IN} = 7.0 V	
I_{IL}	Input LOW Current I_0, I_1 $\overline{E}$, S			 −0.4 −0.8	mA	V_{CC} = MAX, V_{IN} = 0.4 V	
I_{OS}	Short Circuit Current (Note 1)	−20		−100	mA	V_{CC} = MAX	
I_{CC}	Power Supply Current			16	mA	V_{CC} = MAX	

Note 1: Not more than one output should be shorted at a time, nor for more than 1 second.

AC CHARACTERISTICS (T_A = 25°C)

Symbol	Parameter	Limits Min	Limits Typ	Limits Max	Unit	Test Conditions	
t_{PLH} t_{PHL}	Propagation Delay Data to Output		9.0 9.0	14 14	ns	Figure 2	V_{CC} = 5.0 V C_L = 15 pF
t_{PLH} t_{PHL}	Propagation Delay Enable to Output		13 14	20 21	ns	Figure 1	
t_{PLH} t_{PHL}	Propagation Delay Select to Output		15 18	23 27	ns	Figure 2	

AC WAVEFORMS

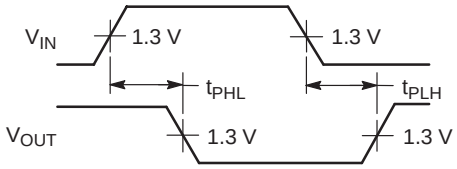


Figure 1.

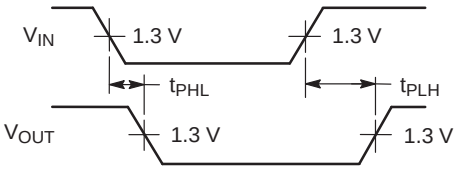


Figure 2.