IN74LS157

Quad 2-Input Data Selector/Multiplexer

This monolitic data selector/multiplexer contains inverters and drivers to supply full on-chip data selection to the four output gates. A separate strobe input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. The LS157 has the same functions and pin connections as the LS257 but the latter is provided with 3-state outputs.

- Buffered Inputs and Outputs
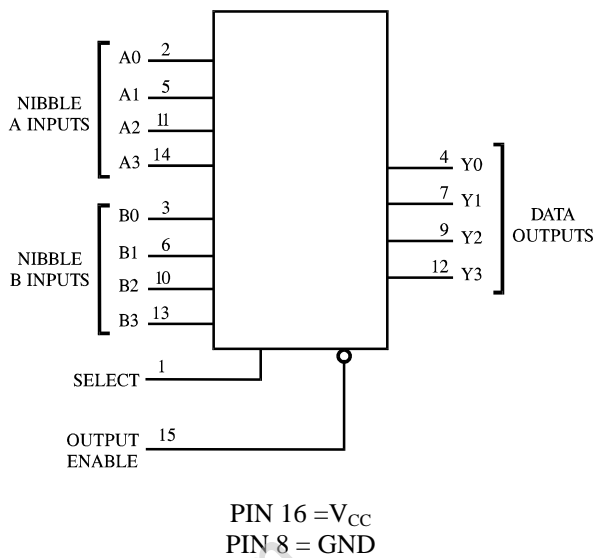- Common Strobe/Select input for all 4 circuits

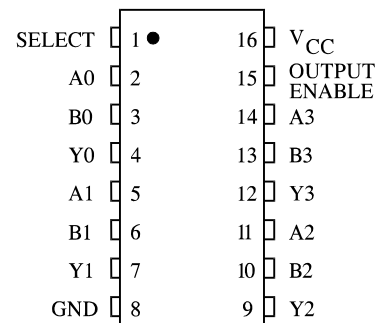N SUFFIX
PLASTIC

16

1

D SUFFIX
SOIC

16

1

ORDERING INFORMATION
IN74LS157N   Plastic
IN74LS157D   SOIC
$T_A = 0°$ to $70°$ C for all packages

LOGIC DIAGRAM

NIBBLE
A INPUTS

A0 2
A1 5
A2 11
A3 14

NIBBLE
B INPUTS

B0 3
B1 6
B2 10
B3 13

4 Y0
7 Y1
9 Y2
12 Y3

DATA
OUTPUTS

SELECT 1

OUTPUT ENABLE 15

PIN 16 = V_{CC}
PIN 8 = GND

PIN ASSIGNMENT

SELECT	1	16	V_{CC}
A0	2	15	OUTPUT ENABLE
B0	3	14	A3
Y0	4	13	B3
A1	5	12	Y3
B1	6	11	A2
Y1	7	10	B2
GND	8	9	Y2

FUNCTION TABLE

Inputs		Outputs
Output Enable	Select	Y0-Y3
H	X	L
L	L	A0-A3
L	H	B0-B3

X=don't care
A0-A3,B0-B3=the levels of the respective Data-Word Inputs

IK Semiconductor

MAXIMUM RATINGS*

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	7.0	V
V_{IN}	Input Voltage	7.0	V
V_{OUT}	Output Voltage	5.5	V
Tstg	Storage Temperature Range	-65 to +150	°C

*Maximum Ratings are those values beyond which damage to the device may occur.
Functional operation should be restricted to the Recommended Operating Conditions.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	4.75	5.25	V
V_{IH}	High Level Input Voltage	2.0		V
V_{IL}	Low Level Input Voltage		0.8	V
I_{OH}	High Level Output Current		-0.4	mA
I_{OL}	Low Level Output Current		8.0	mA
T_A	Ambient Temperature Range	0	+70	°C

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Test Conditions		Guaranteed Limit		Unit
				Min	Max	
V_{IK}	Input Clamp Voltage	V_{CC} = min, I_{IN} = -18 mA			-1.5	V
V_{OH}	High Level Output Voltage	V_{CC} = min, I_{OH} = -0.4 mA		2.7		V
V_{OL}	Low Level Output Voltage	V_{CC} = min, I_{OL} = 4 mA			0.4	V
		V_{CC} = min, I_{OL} = 8 mA			0.5	
I_{IH}	High Level Input Current	V_{CC} = max	for pins 1,15		40	μA
		V_{IN} = 2.7 V	A or B input		20	
		V_{CC} = max	for pins 1,15		0.2	mA
		V_{IN} = 7.0 V	A or B input		0.1	
I_{IL}	Low Level Input Current	V_{CC} = max	for pins 1,15		-0.8	mA
		V_{IN} = 0.4 V	A or B input		-0.4	
I_O	Output Short Circuit Current	V_{CC} = max, V_O = 0 V (Note 1)		-20	-100	mA
I_{CC}	Supply Current	V_{CC} = max (Note 2)			16	mA

Note 1: Not more than one output should be shorted at a time, and the duration should not exceed one second.
Note 2: I_{CC} is measured with all outputs open, and 4.5 V applied to all inputs.

IK Semiconductor

AC ELECTRICAL CHARACTERISTICS (T_A=25°C, V_{CC} = 5.0 V, C_L = 15 pF, R_L = 2 kΩ, t_r =15 ns, t_f = 6.0 ns)

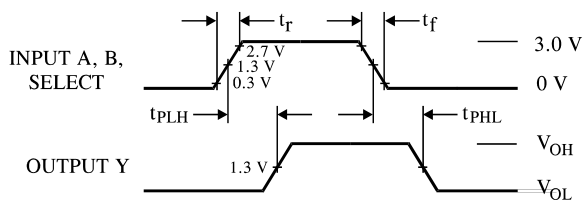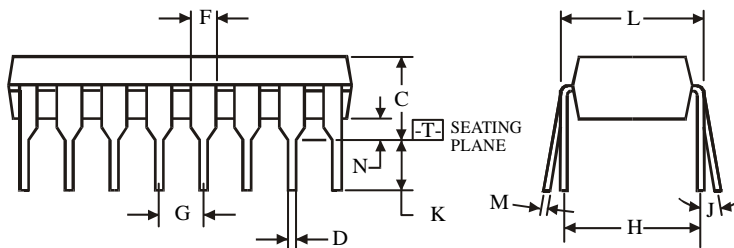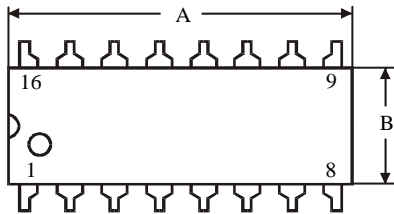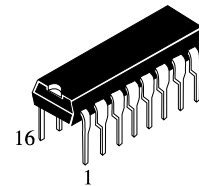| Symbol	Parameter	Min	Max	Unit
t_{PLH}	Propagation Delay, Input A or B to Output Y		14	ns
t_{PHL}	Propagation Delay, Input A or B to Output Y		14	ns
t_{PLH}	Propagation Delay, Select to Output Y		23	ns
t_{PHL}	Propagation Delay, Select to Output Y		27	ns
t_{PLH}	Propagation Delay, Output Enable to Output Y		20	ns
t_{PHL}	Propagation Delay, Output Enable to Output Y		21	ns

Figure 1. Switching Waveforms
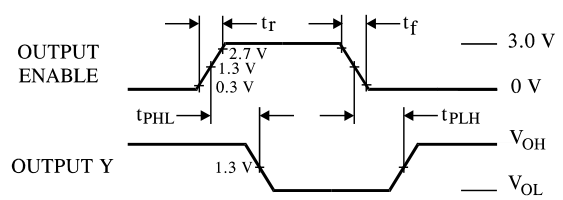
Figure 2. Switching Waveforms
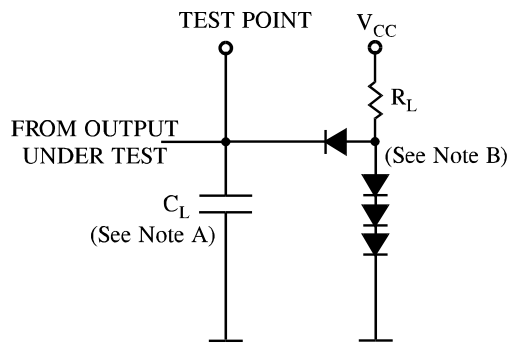
NOTES A. C_L includes probe and jig capacitance.
B. All diodes are 1N916 or 1N3064.

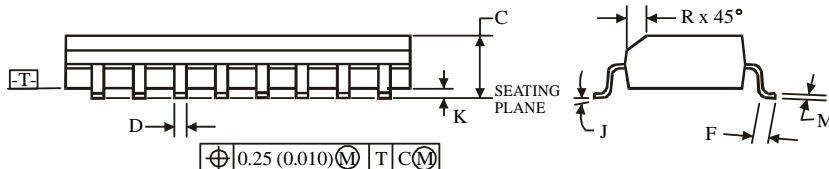**Figure 3. Test Circuit**
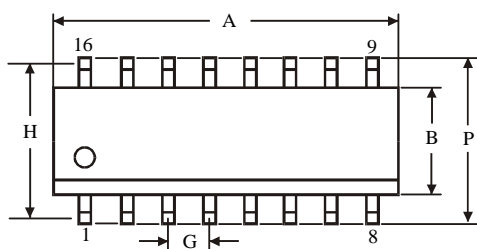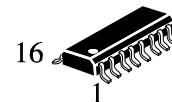
N SUFFIX PLASTIC DIP
(MS - 001BB)

	Dimension, mm	
Symbol	**MIN**	**MAX**
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

NOTES:

1. Dimensions "A", "B" do not include mold flash or protrusions.

   Maximum mold flash or protrusions 0.25 mm (0.010) per side.

D SUFFIX SOIC
(MS - 012AC)

	Dimension, mm	
Symbol	**MIN**	**MAX**
A	9.8	10
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.

2. Maximum mold flash or protrusion 0.15 mm (0.006) per side
   for A; for B – 0.25 mm (0.010) per side.

IK Semiconductor