



MM54C157/MM74C157 Quad 2-Input Multiplexers

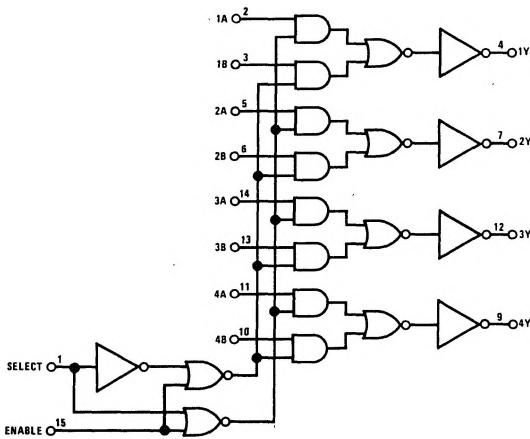
General Description

These multiplexers are monolithic complementary MOS (CMOS) integrated circuits constructed with N- and P-channel enhancement transistors. They consist of four 2-input multiplexers with common select and enable inputs. When the enable input is at logical "0" the four outputs assume the values as selected from the inputs. When the enable input is at logical "1", the outputs assume logical "0". Select decoding is done internally resulting in a single select input only.

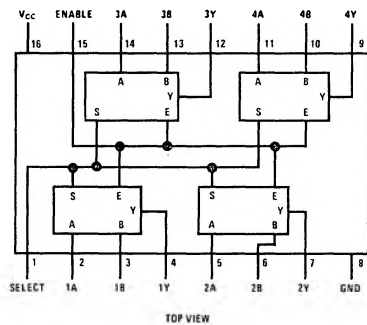
Features

- Supply voltage range 3V to 15V
- High noise immunity 0.45 V_{CC} (typ.)
- Low power 50 nW (typ.)
- Tenth power TTL compatible drive 2 LPTTL loads

Logic Diagram

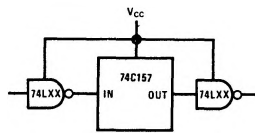


Connection Diagram



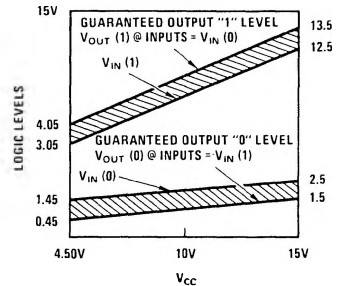
Truth Table

ENABLE	SELECT	A	B	OUTPUT Y
1	X	X	X	0
0	0	0	X	0
0	0	1	X	1
0	1	X	0	0
0	1	X	1	1



74L Compatibility

Guaranteed Noise Margin as a Function of V_{CC}



Absolute Maximum Ratings (Note 1)

Voltage at Any Pin	-0.3V to $V_{CC}+0.3V$	Maximum V_{CC} Voltage	18V
Operating Temperature Range		Package Dissipation	500mW
MM54C157	-55°C to +125°C	Operating V_{CC} Range	3V to 15V
MM74C157	-40°C to +85°C	Lead Temperature (Soldering, 10 sec.)	300°C
Storage Temperature Range	-65°C to +150°C		

DC Electrical Characteristics Max./min. limits apply across temperature range, unless otherwise noted.

Parameter	Conditions	Min.	Typ.	Max.	Units
CMOS to CMOS					
$V_{IN(1)}$	Logical "1" Input Voltage $V_{CC} = 5.0V$ $V_{CC} = 10V$	3.5 8			V V
$V_{IN(0)}$	Logical "0" Input Voltage $V_{CC} = 5.0V$ $V_{CC} = 10V$			1.5 2	V V
$V_{OUT(1)}$	Logical "1" Output Voltage $V_{CC} = 5.0V$ $V_{CC} = 10V$	4.5 9.0			V V
$V_{OUT(0)}$	Logical "0" Output Voltage $V_{CC} = 5.0V$ $V_{CC} = 10V$			0.5 1.0	V V
$I_{IN(1)}$	Logical "1" Input Current $V_{CC} = 15V$		0.005	1.0	μA
$I_{IN(0)}$	Logical "0" Input Current $V_{CC} = 15V$	-1.0	-0.005		μA
I_{CC}	Supply Current $V_{CC} = 15V$		0.05	60	μA

CMOS to Tenth Power Interface

$V_{IN(1)}$	Logical "1" Input Voltage 54C $V_{CC} = 4.5V$ 74C $V_{CC} = 4.75V$	$V_{CC} - 1.5$ $V_{CC} - 1.5$			V
$V_{IN(0)}$	Logical "0" Input Voltage 54C $V_{CC} = 4.5V$ 74C $V_{CC} = 4.75V$			0.8 0.8	V V
$V_{OUT(1)}$	Logical "1" Output Voltage 54C $V_{CC} = 4.5V, I_O = -360\mu A$ 74C $V_{CC} = 4.75V, I_O = -360\mu A$	2.4 2.4			V V
$V_{OUT(0)}$	Logical "0" Output Voltage 54C $V_{CC} = 4.5V, I_O = 360\mu A$ 74C $V_{CC} = 4.75V, I_O = 360\mu A$			0.4 0.4	V V

Output Drive (See 54C/74C Family Characteristics Data Sheet) (Short Circuit Current)

I_{SOURCE}	Output Source Current $V_{CC} = 5.0V, V_{IN(0)} = 0V$ $T_A = 25^\circ C, V_{OUT} = 0V$	-1.75			mA
I_{SOURCE}	Output Source Current $V_{CC} = 10V, V_{IN(0)} = 0V$ $T_A = 25^\circ C, V_{OUT} = 0V$	-8.0			mA
I_{SINK}	Output Sink Current $V_{CC} = 5.0V, V_{IN(1)} = 5.0V$ $T_A = 25^\circ C, V_{OUT} = V_{CC}$	1.75			mA
I_{SINK}	Output Sink Current $V_{CC} = 10V, V_{IN(1)} = 10V$ $T_A = 25^\circ C, V_{OUT} = V_{CC}$	8.0			mA

AC Electrical Characteristics $T_A = 25^\circ C, C_L = 50pF$, unless otherwise specified.

Parameter	Conditions	Min.	Typ.	Max.	Units
t_{pd0}, t_{pd1}	Propagation Delay from Data to Output $V_{CC} = 5.0V$ $V_{CC} = 10V$		150 70	250 110	ns ns
t_{pd0}, t_{pd1}	Propagation Delay from Select to Output $V_{CC} = 5.0V$ $V_{CC} = 10V$		180 80	300 130	ns ns
t_{pd0}, t_{pd1}	Propagation Delay from Enable to Output $V_{CC} = 5.0V$ $V_{CC} = 10V$		180 80	300 130	ns ns
C_{IN}	Input Capacitance (Note 2)		5		pF
C_{PD}	Power Dissipation Capacitance (Note 3)		20		pF

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2: Capacitance is guaranteed by periodic testing.

Note 3: C_{PD} determines the no load AC power consumption of any CMOS device. For complete explanation see 54C/74C Family Characteristics application note AN-90.