

DM54LS450/DM74LS450 16:1 Multiplexer

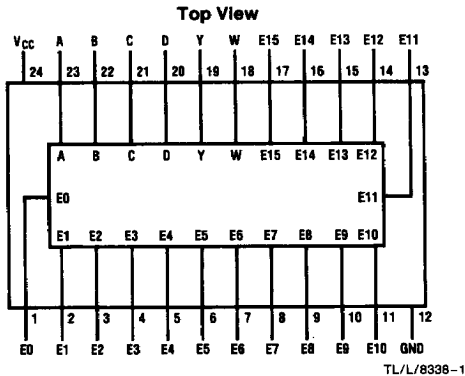
General Description

The 16:1 Mux selects one of sixteen inputs, E0 through E15, specified by four binary select inputs, A, B, C, and D. The true data is output on Y and the inverted data on W. Propagation delays are the same for both inputs and addresses and are specified for 50 pF loading. Outputs conform to the standard 8 mA LS totem pole drive standard.

Features/Benefits

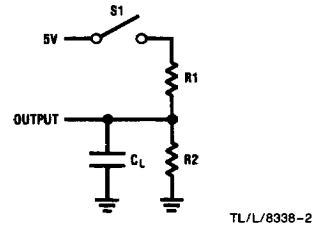
- 24-pin SKINNYDIP saves space
- Similar to 74150 (Fat DIP)
- Low current PNP inputs reduce loading

Connection Diagram



Order Number DM54LS450J, DM74LS450J,
DM74LS450N or DM74LS450V
See NS Package Number J24F, N24C or V28A

Standard Test Load



Function Table

Input Select				Output	
D	C	B	A	W	Y
L	L	L	L	$\overline{E0}$	E0
L	L	L	H	$\overline{E1}$	E1
L	L	H	L	$\overline{E2}$	E2
L	L	H	H	$\overline{E3}$	E3
L	H	L	L	$\overline{E4}$	E4
L	H	L	H	$\overline{E5}$	E5
L	H	H	L	$\overline{E6}$	E6
L	H	H	H	$\overline{E7}$	E7
H	L	L	L	$\overline{E8}$	E8
H	L	L	H	$\overline{E9}$	E9
H	L	H	L	$\overline{E10}$	E10
H	L	H	H	$\overline{E11}$	E11
H	H	L	L	$\overline{E12}$	E12
H	H	L	H	$\overline{E13}$	E13
H	H	H	L	$\overline{E14}$	E14
H	H	H	H	$\overline{E15}$	E15

Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage V_{CC}

7V

Input Voltage

5.5V

Off-State Output Voltage

5.5V

Storage Temperature

-65° to +150°C

Operating Conditions

Symbol	Parameter	Military			Commercial			Units
		Min	Nom	Max	Min	Nom	Max	
V_{CC}	Supply Voltage	4.5	5	5.5	4.75	5	5.25	V
T_A	Operating Free-Air Temperature	-55		125*	0		75	°C

*Case temperature

Electrical Characteristics Over Operating Conditions

Symbol	Parameter	Test Conditions		Min	Typ†	Max	Units
V_{IL}	Low-Level Input Voltage					0.8	V
V_{IH}	High-Level Input Voltage			2			V
V_{IC}	Input Clamp Voltage	$V_{CC} = \text{MIN}$	$I_I = -18 \text{ mA}$			-1.5	V
I_{IL}	Low-Level Input Current	$V_{CC} = \text{MAX}$	$V_I = 0.4 \text{ V}$			-0.25	mA
I_{IH}	High-Level Input Current	$V_{CC} = \text{MAX}$	$V_I = 2.4 \text{ V}$			25	μA
I_I	Maximum Input Current	$V_{CC} = \text{MAX}$	$V_I = 5.5 \text{ V}$			1	mA
V_{OL}	Low-Level Output Voltage	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$	$I_{OL} = 8 \text{ mA}$			0.5	V
V_{OH}	High-Level Output Voltage	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$	MIL $I_{OH} = -2 \text{ mA}$	2.4			V
			COM $I_{OH} = -3.2 \text{ mA}$				
I_{OS}	Output Short-Circuit Current*	$V_{CC} = 5.0 \text{ V}$	$V_O = 0 \text{ V}$	-30		-130	mA
I_{CC}	Supply Current	$V_{CC} = \text{MAX}$			60	100	mA

*No more than one output should be shorted at a time and duration of the short-circuit should not exceed one second.

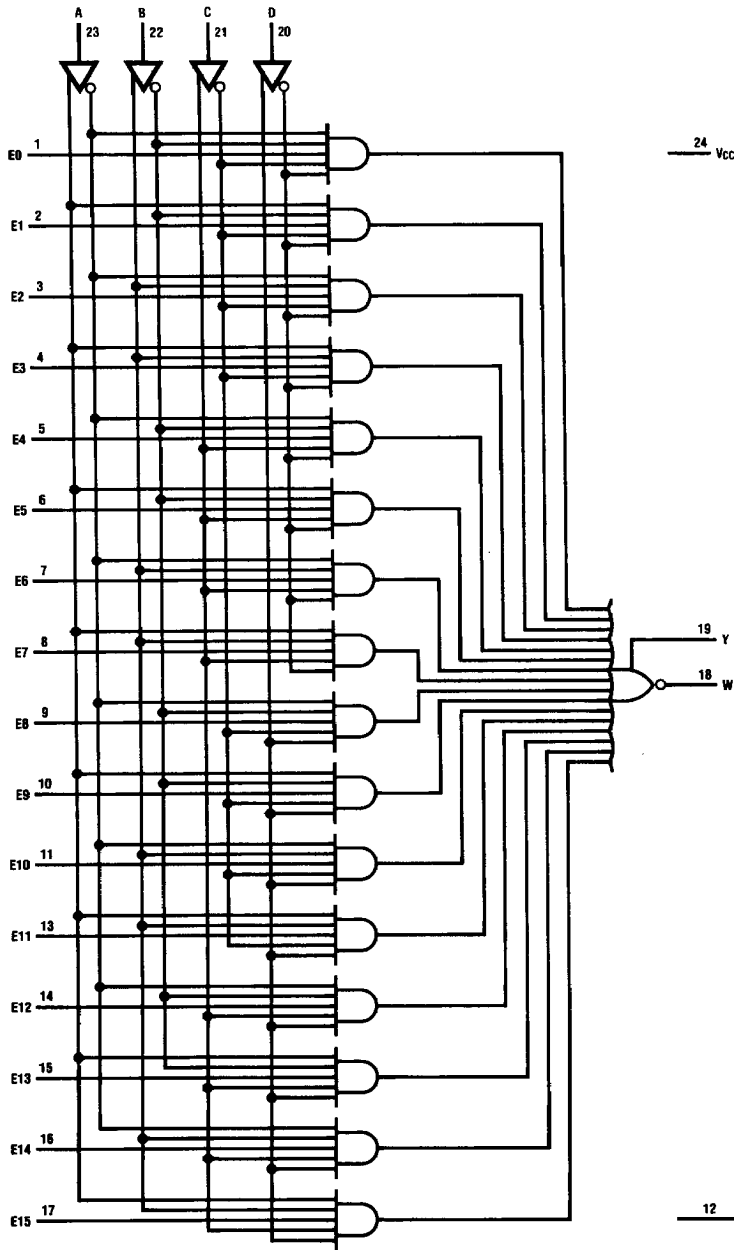
†All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^\circ \text{C}$.

Switching Characteristics Over Operating Conditions

Symbol	Parameter	Test Conditions (See Test Load)	Military			Commercial			Units
			Min	Typ	Max	Min	Typ	Max	
t_{PD}	Any Input to Y or W	$C_L = 50 \text{ pF}$ $R_1 = 560 \Omega$ $R_2 = 1.1 \text{ k}\Omega$		25	45		25	40	ns

Logic Diagram

16:1 Mux



TL/L/8338-3