

DM54LS450/DM74LS450 16:1 Multiplexer

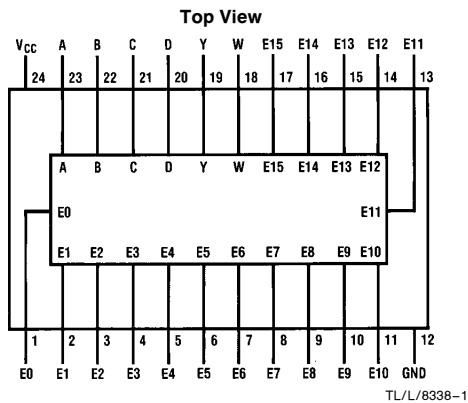
General Description

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.

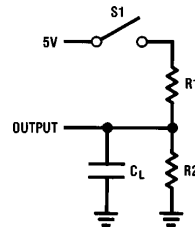
Features/Benefits

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

Connection Diagram



Standard Test Load



TL/L/8338-2

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

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 $+150^{\circ}$ 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	$^{\circ}$ 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	μ A	
I_I	Maximum Input Current	$V_{CC} = \text{MAX}$ $V_I = 5.5 \text{ V}$			1	mA	
V_{OL}	Low-Level Output Voltage	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$			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.

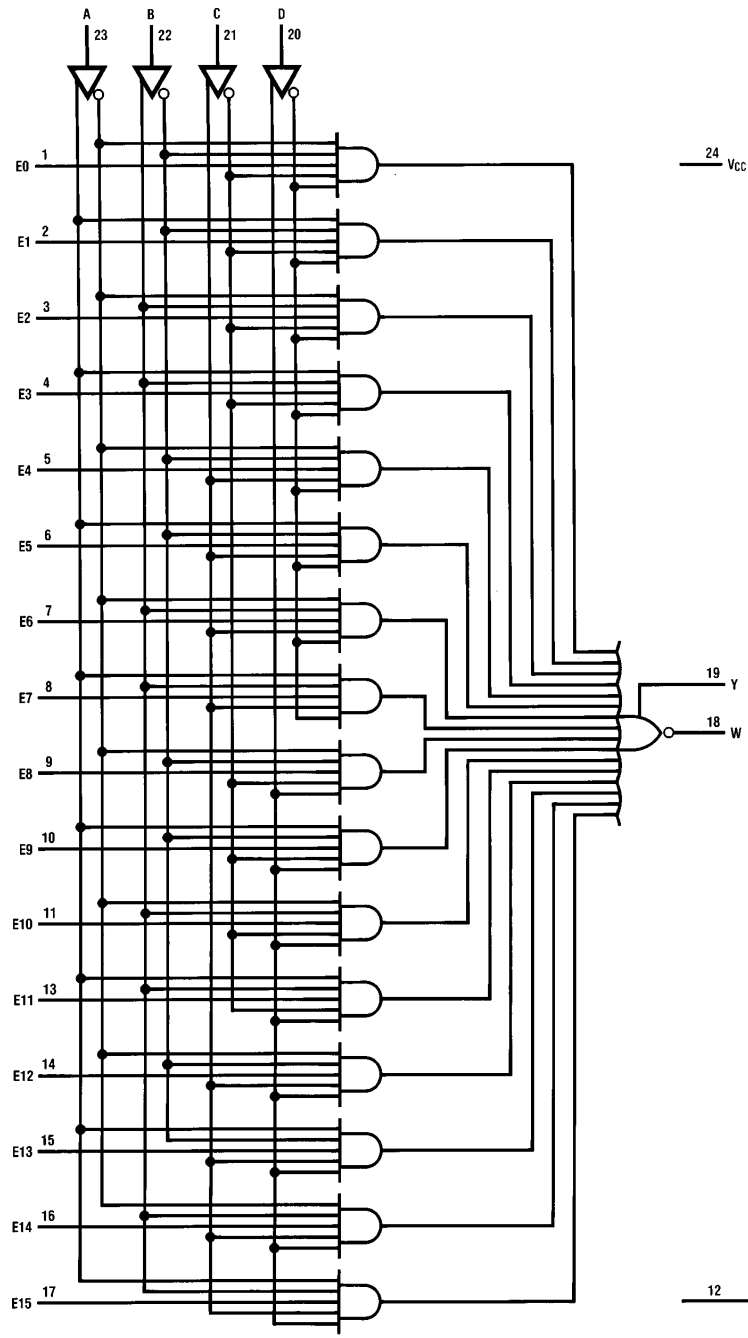
†All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ}$ C.

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

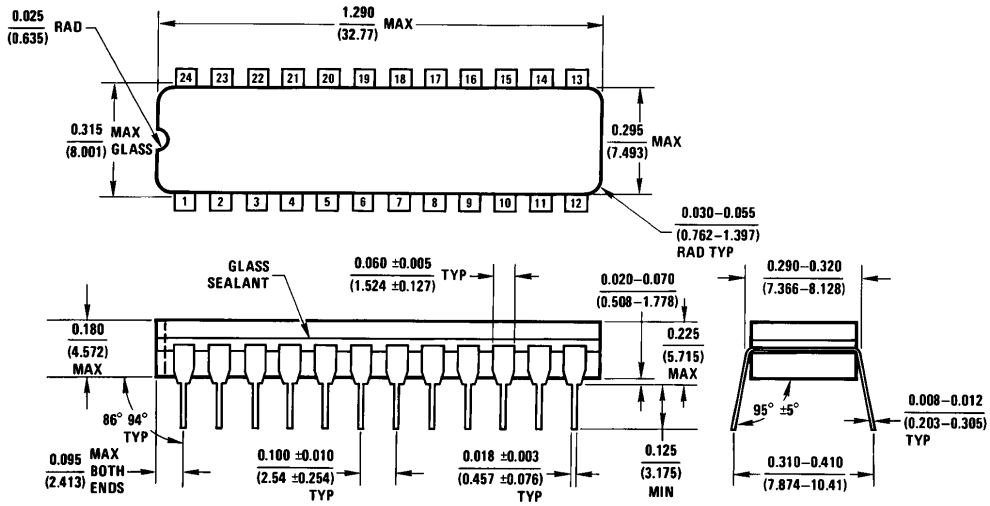
16:1 Mux



TL/L/8338-3

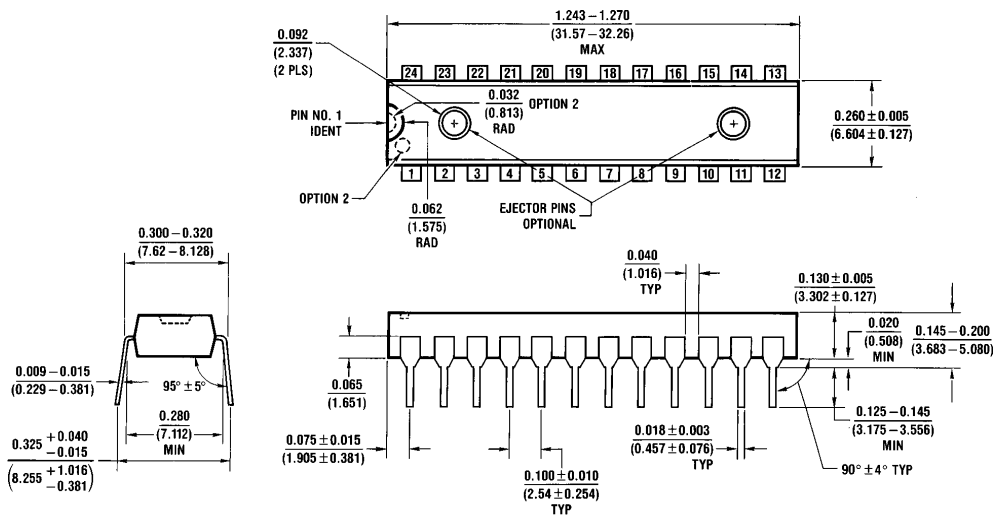


Physical Dimensions inches (millimeters)



J24F (REV 6)

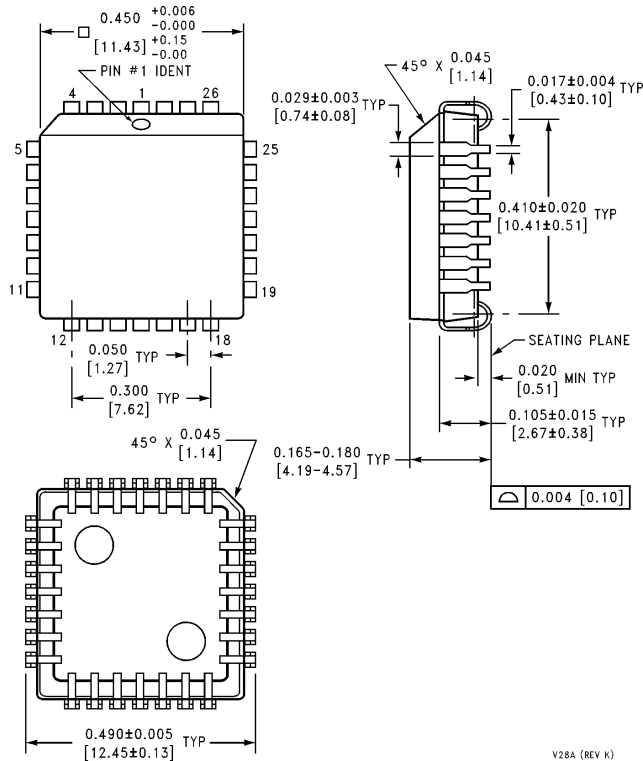
24-Pin Narrow Ceramic Dual-In-Line Package (J)
Order Number DM54LS450J or DM74LS450J
NS Package Number J24F



N24C (REV F)

24-Pin Narrow Plastic Dual-In-Line Package (N)
Order Number DM74LS450N
NS Package Number N24C

Physical Dimensions inches (millimeters) (Continued)



28-Lead Plastic Chip Carrier (V)
Order Number DM74LS450V
NS Package Number V28A

V28A (REV K)

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