



DM54LS451/DM74LS451 Dual 8:1 Multiplexer

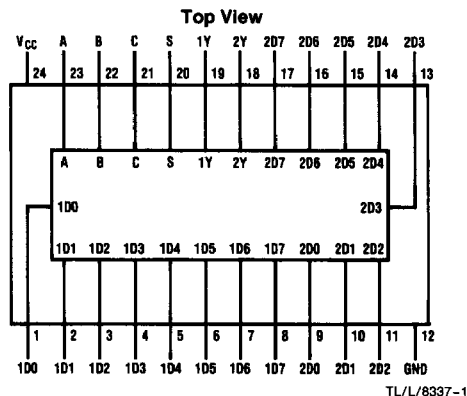
General Description

The Dual 8:1 Mux selects one of eight inputs, D0 through D7, specified by three binary select inputs, A, B, and C. The true data is output on Y when strobed by S. Propagation delays are the same for inputs, addresses and strobes and are specified for 50 pF loading. Outputs conform to the standard 8 mA LS totem pole drive standard.

Features/Benefits

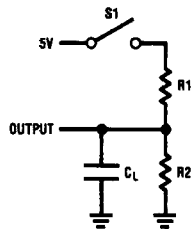
- 24-pin SKINNYDIP saves space
- Twice the density of 74LS151
- Low current PNP inputs reduce loading

Connection Diagram



Order Number DM54LS451J, DM74LS451J,
DM74LS451N or DM74LS451V
See NS Package Number J24F, N24C or V28A

Standard Test Load



TL/L/8337-2

Function Table

Inputs				Outputs
Select			Strobe	Y
C	B	A	S	
X	X	X	H	H
L	L	L	L	D0
L	L	H	L	D1
L	H	L	L	D2
L	H	H	L	D3
H	L	L	L	D4
H	L	H	L	D5
H	H	L	L	D6
H	H	H	L	D7

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°C to $+150^{\circ}\text{C}$

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	$^{\circ}\text{C}$

*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 $I_{OH} = 2 \text{ mA}$ COM $I_{OH} = -3.2 \text{ mA}$	2.4			V
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

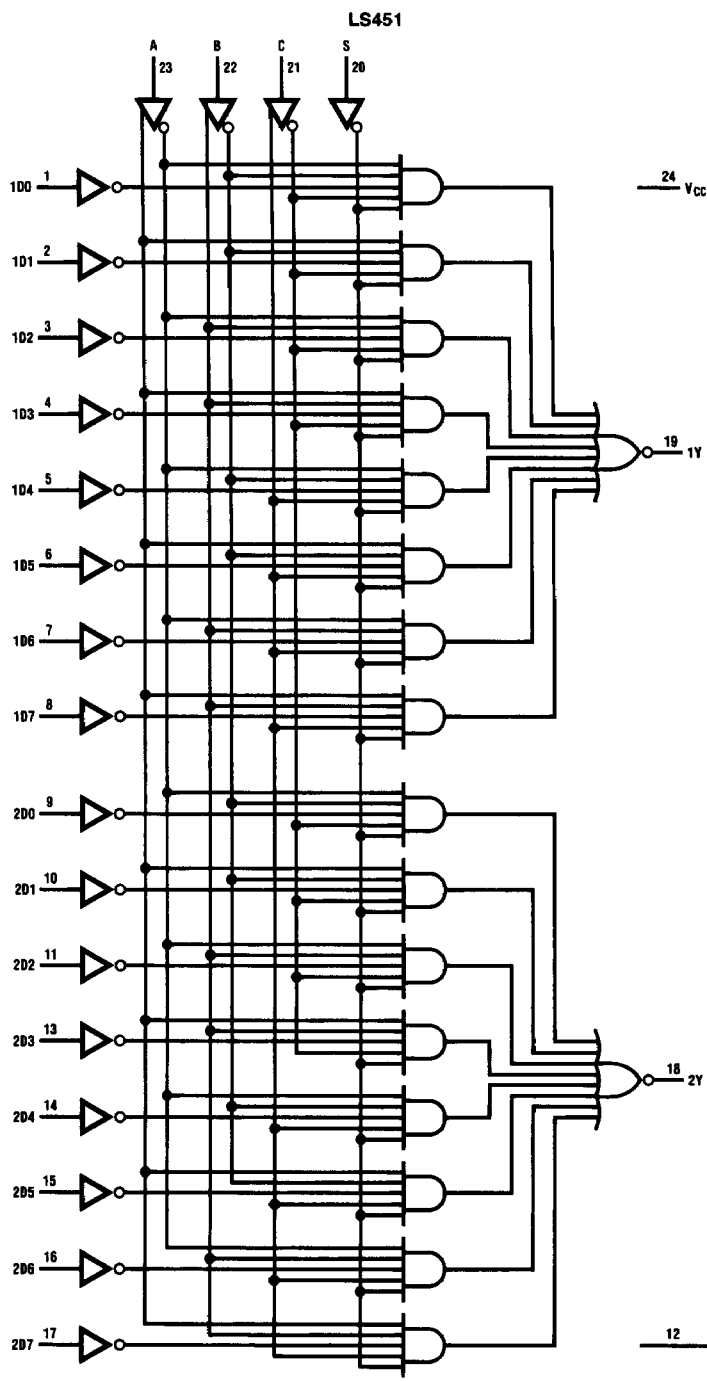
*No more than one output should be shorted at a time and duration of the short-circuit should not exceed one second.

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

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	$C_L = 50 \text{ pF}$ $R_1 = 560 \Omega$ $R_2 = 1.1 \Omega$		25	45		25	40	ns

Logic Diagram



TL/L/8337-3