Dual 8:1 Mux
SN54/74LS451

74LS451

Features/Benefits

- 24-pin SKINNYDIP® saves space
- Twice the density of SN5/741S151
- Low-current PNP inputs reduce loading

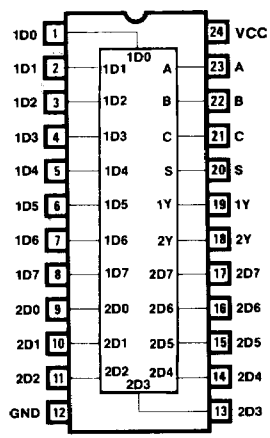
Ordering Information

PART NUMBER	PACKAGE		TEMPERATURE
SN54LS451	JS, W	28L	Mil
SN74LS451	NS, JS		Com

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.

Logic Symbol



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

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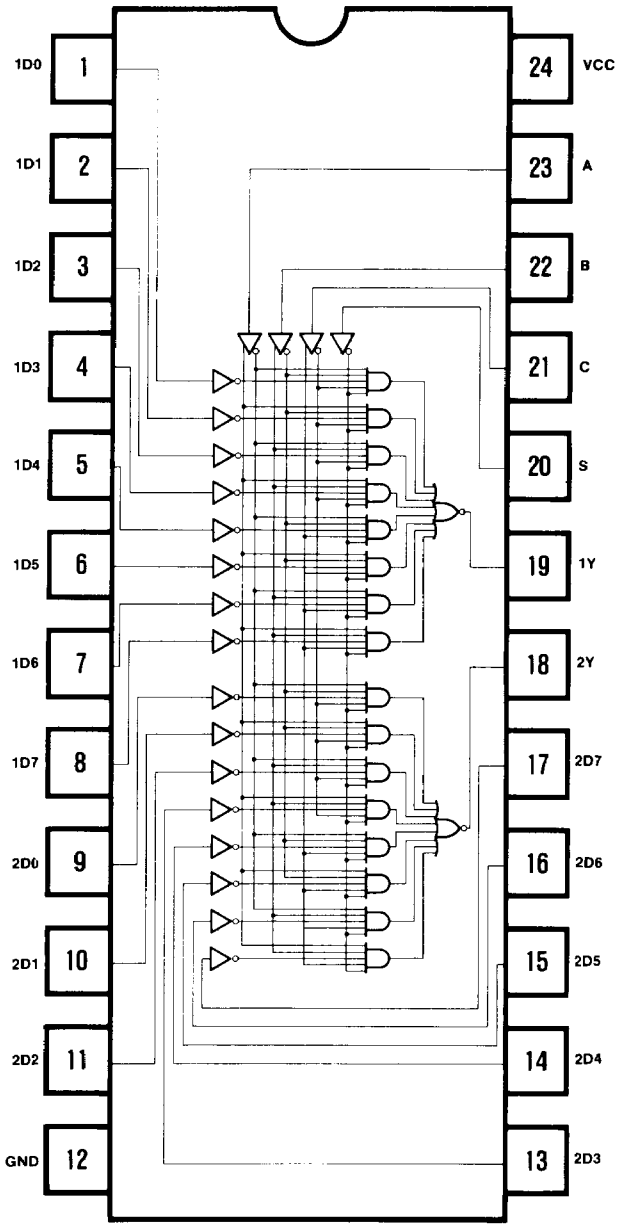
Logic Diagram

Dual 8:1 Mux



Absolute Maximum Ratings

Supply voltage V_{CC} ..... 7.0 V
Input voltage ..... 5.5 V
Off-state output voltage ..... 5.5 V
Storage temperature ..... −65° to +150°C

Operating Conditions

SYMBOL	PARAMETER	MILITARY			COMMERCIAL			UNIT
		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	UNIT
V_{IL}	Low-level input voltage						0.8	V
V_{IH}	High-level input voltage				2			V
V_{IC}	Input clamp voltage	V_{CC} = MIN		I_I = −18mA			−1.5	V
I_{IL}	Low-level input current	V_{CC} = MAX		V_I = 0.4V			0.25	mA
I_{IH}	High-level input current	V_{CC} = MAX		V_I = 2.4V			25	μA
I_I	Maximum input current	V_{CC} = MAX		V_I = 5.5V			1	mA
V_{OL}	Low-level output voltage	V_{CC} = MIN V_{IL} = 0.8V V_{IH} = 2V		I_{OL} = 8mA			0.5	V
V_{OH}	High-level output voltage	V_{CC} = MIN V_{IL} = 0.8V V_{IH} = 2V	Mil	I_{OH} = −2mA	2.4			V
			Com	I_{OH} = −3.2mA				
I_{OS}	Output short-circuit current*	V_{CC} = 5.0V		V_O = 0V	−30		−130	mA
I_{CC}	Supply current	V_{CC} = MAX				60	100	mA

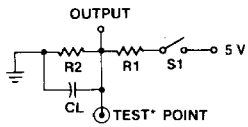
* No more than one output should be shorted at a time and duration of the short-circuit should not exceed one second.

† All typicals values are at V_{CC} = 5 V, T_A = 25°C.

Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITIONS (See Test Load)	MILITARY			COMMERCIAL			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t_{PD}	Any input to Y	C_L = 50 pF R_1 = 560Ω R_2 = 1.1kΩ		25	45		25	40	ns

Test Load



* The "Test Point" is driven by the outputs under test and observed by instrumentation

Notes: 1. t_{PD} is tested with switch S_1 closed. C_L = 50 pF and measured at 1.5 V output level.
2. t_{PZX} is measured at the 1.5 V output level with C_L = 50 pF. S_1 is open for high impedance to "1" test, and closed for high impedance to "0" test.
3. t_{PXZ} is tested with C_L = 5 pF. S_1 is open for "1" to high impedance test, measured at V_{OH} −0.5 V output level; S_1 is closed for "0" to high impedance test measured at V_{OL} +0.5 V output level.

Application

4-Bit Wide 8:1 Bus Multiplexer