

# DM54LS453/DM74LS453

## Quad 4:1 Multiplexer

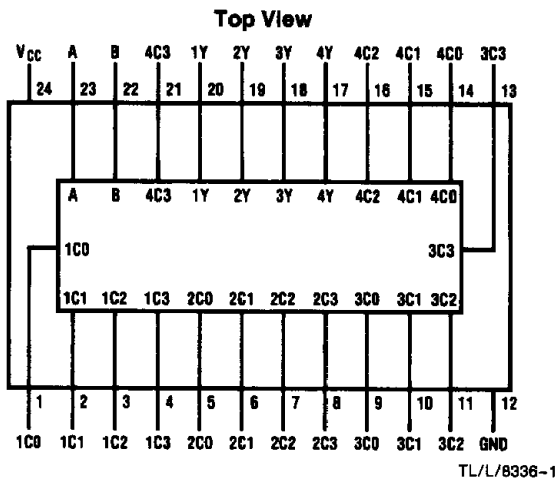
### General Description

The quad 4:1 Mux selects one of four inputs, C0 through C3, specified by two binary select inputs, A and B. The true data is output on Y. Propagation delays are the same for inputs and addresses and are specified for 50 pF loading. Outputs conform to the standard 8 mA LS totem pole drive standard.

### Features/Benefits

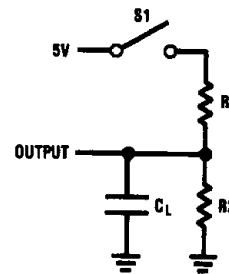
- 24-pin SKINNYDIP saves space
- Twice the density of 74LS153
- Low current PNP inputs reduce loading

### Connection Diagram



Order Number **DM54LS453J**,  
**DM74LS453J** or **DM74LS453N**  
See NS Package Number **J24F** or **N24C**

### Standard Test Load



TL/L/8336-2

### Function Table

INPUT SELECT		OUTPUTS Y
B	A	
L	L	C0
L	H	C1
H	L	C2
H	H	C3

## 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  
Storage Temperature

5.5V  
-66° to +150°C

## Operating Conditions

Symbol	Parameter	Military			Commercial			Units
		Min	Typ	Max	Min	Typ	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	$V_{CC} = \text{MIN}$ $V_{IL} = 0.8 \text{ V}$ $V_{IH} = 2 \text{ V}$			0.5	V
$V_{OH}$	High-Level Output Voltage	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.

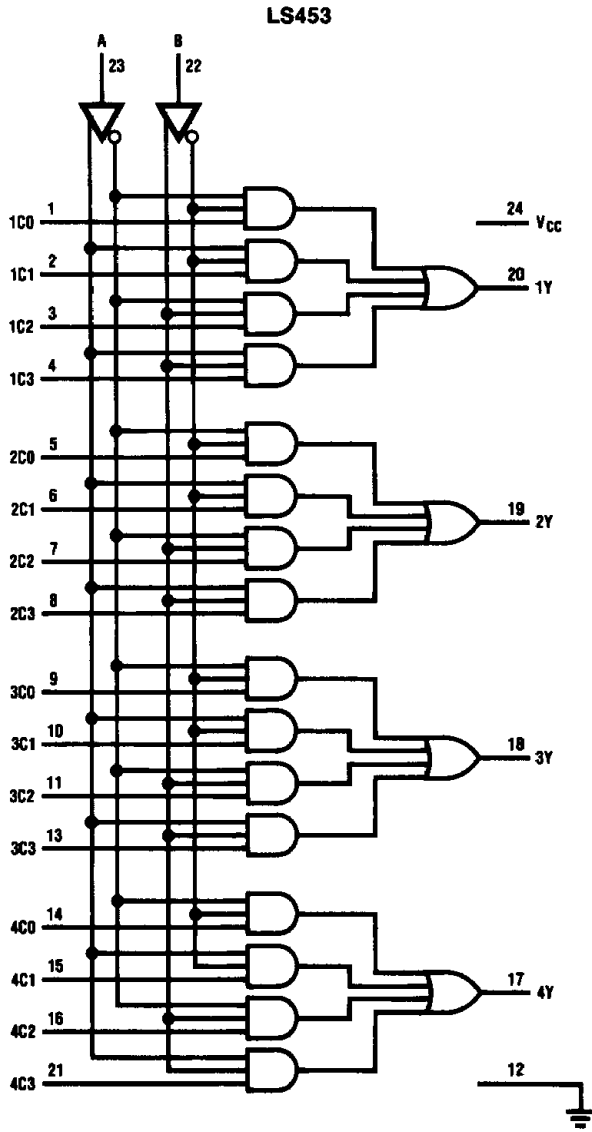
†All typical values are at  $V_{CC} = 5 \text{ V}$ ,  $T_A = 25^\circ \text{C}$

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

# Logic Diagram

LS453



TL/L/8336-3