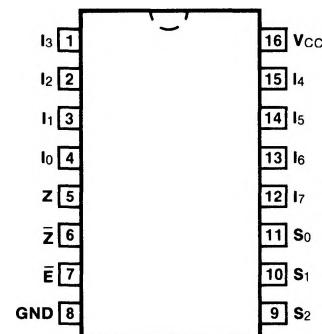
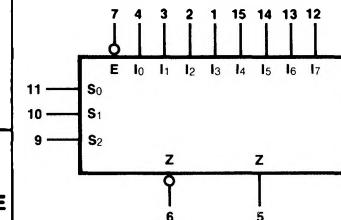


**54/74151A  
54S/74S151  
54LS/74LS151  
8-INPUT MULTIPLEXER**

**CONNECTION DIAGRAM  
PINOUT A**



**LOGIC SYMBOL**



Vcc = Pin 16  
GND = Pin 8

**ORDERING CODE:** See Section 9

<b>PKGS</b>	<b>PIN OUT</b>	<b>COMMERCIAL GRADE</b>	<b>MILITARY GRADE</b>	<b>PKG TYPE</b>
		Vcc = +5.0 V $\pm$ 5%, TA = 0°C to +70°C	Vcc = +5.0 V $\pm$ 10%, TA = -55°C to +125°C	
Plastic DIP (P)	A	74151APC, 74S151PC 74LS151PC		9B
Ceramic DIP (D)	A	74151ADC, 74S151DC 74LS151DC	54151ADM, 54S151DM 54LS151DM	6B
Flatpak (F)	A	74151AFC, 74S151FC 74LS151FC	54151AFM, 54S151FM 54LS151FM	4L

**INPUT LOADING/FAN-OUT:** See Section 3 for U.L. definitions

<b>PIN NAMES</b>	<b>DESCRIPTION</b>	<b>54/74 (U.L.) HIGH/LOW</b>	<b>54/74S (U.L.) HIGH/LOW</b>	<b>54/74LS (U.L.) HIGH/LOW</b>
I <sub>0</sub> — I <sub>7</sub>	Data Inputs	1.0/1.0	1.25/1.25	0.5/0.25
S <sub>0</sub> — S <sub>2</sub>	Select Inputs	1.0/1.0	1.25/1.25	0.5/0.25
E	Enable Input (Active LOW)	1.0/1.0	1.25/1.25	0.5/0.25
Z	Data Output	20/10	25/12.5	10/5.0 (2.5)
Z̄	Inverted Data Output	20/10	25/12.5	10/5.0 (2.5)

**FUNCTIONAL DESCRIPTION** — The '151 is a logical implementation of a single pole, 8-position switch with the switch position controlled by the state of three Select inputs,  $S_0$ ,  $S_1$ ,  $S_2$ . Both assertion and negation outputs are provided. The Enable input ( $\bar{E}$ ) is active LOW. When it is not activated, the negation output is HIGH and the assertion output is LOW regardless of all other inputs. The logic function provided at the output is:

$$Z = \bar{E} \cdot (I_0 \cdot \bar{S}_0 \cdot \bar{S}_1 \cdot \bar{S}_2 + I_1 \cdot S_0 \cdot \bar{S}_1 \cdot \bar{S}_2 + I_2 \cdot \bar{S}_0 \cdot S_1 \cdot \bar{S}_2 + I_3 \cdot S_0 \cdot S_1 \cdot \bar{S}_2 + \\ I_4 \cdot \bar{S}_0 \cdot \bar{S}_1 \cdot S_2 + I_5 \cdot S_0 \cdot \bar{S}_1 \cdot S_2 + I_6 \cdot \bar{S}_0 \cdot S_1 \cdot S_2 + I_7 \cdot S_0 \cdot S_1 \cdot S_2).$$

The '151 provides the ability, in one package, to select from eight sources of data or control information. By proper manipulation of the inputs, the '151 can provide any logic function of four variables and its negation.

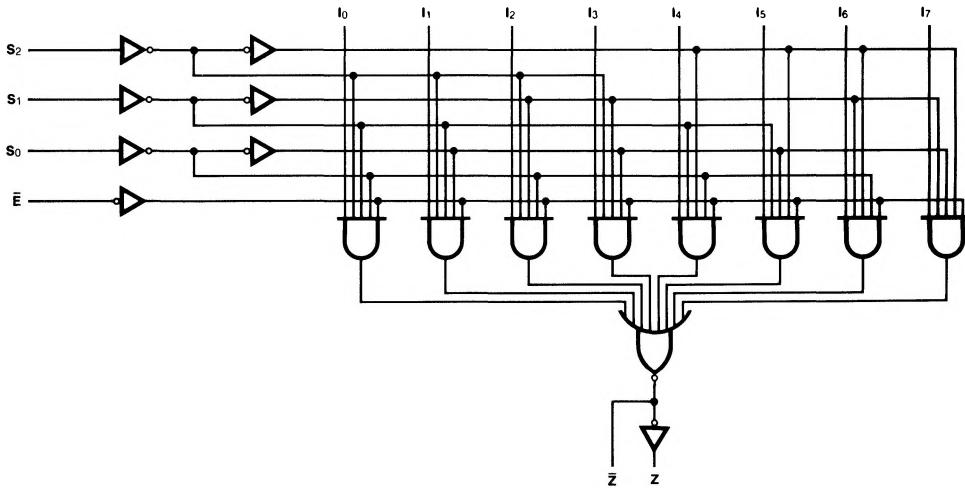
TRUTH TABLE

INPUTS				OUTPUTS	
$\bar{E}$	$S_2$	$S_1$	$S_0$	$\bar{Z}$	Z
H	X	X	X	H	L
L	L	L	L	$\bar{I}_0$	$I_0$
L	L	L	H	$\bar{I}_1$	$I_1$
L	L	H	L	$\bar{I}_2$	$I_2$
L	L	H	H	$\bar{I}_3$	$I_3$
L	H	L	L	$\bar{I}_4$	$I_4$
L	H	L	H	$\bar{I}_5$	$I_5$
L	H	H	L	$\bar{I}_6$	$I_6$
L	H	H	H	$\bar{I}_7$	$I_7$

H = HIGH Voltage Level

L = LOW Voltage Level

LOGIC DIAGRAM



**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE** (unless otherwise specified)

<b>SYMBOL</b>	<b>PARAMETER</b>	<b>54/74</b>		<b>54/74S</b>		<b>54/74LS</b>		<b>UNITS</b>	<b>CONDITIONS</b>	
		Min	Max	Min	Max	Min	Max			
I <sub>OS</sub>	Output Short Circuit Current	X <sub>M</sub>	-20 -18	-55 -55	-40 -40	-100 -100	-20 -20	-100 -100	mA	V <sub>CC</sub> = Max
		X <sub>C</sub>								
I <sub>CC</sub>	Power Supply Current			48		70		10	mA	V <sub>CC</sub> = Max

**AC CHARACTERISTICS:** V<sub>CC</sub> = +5.0 V, T<sub>A</sub> = +25°C (See Section 3 for waveforms and load configurations)

<b>SYMBOL</b>	<b>PARAMETER</b>	<b>54/74</b>		<b>54/74S</b>		<b>54/74LS</b>		<b>UNITS</b>	<b>CONDITIONS</b>		
		C <sub>L</sub> = 15 pF R <sub>L</sub> = 400 Ω		C <sub>L</sub> = 15 pF R <sub>L</sub> = 280 Ω		C <sub>L</sub> = 15 pF					
		Min	Max	Min	Max	Min	Max				
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay S <sub>n</sub> to Z̄	26 30		15 13.5		23 34		ns	Figs. 3-1, 3-20		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay S <sub>n</sub> to Z	38 38		18 18		48 30		ns	Figs. 3-1, 3-20		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Ē to Z̄	21 23		13 12		24 30		ns	Figs. 3-1, 3-5		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay Ē to Z	33 33		16.5 18		42 32		ns	Figs. 3-1, 3-4		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay I <sub>n</sub> to Z̄	14 14		7.0 7.0		21 20		ns	Figs. 3-1, 3-4		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay I <sub>n</sub> to Z	20 27		12 12		32 26		ns	Figs. 3-1, 3-5		