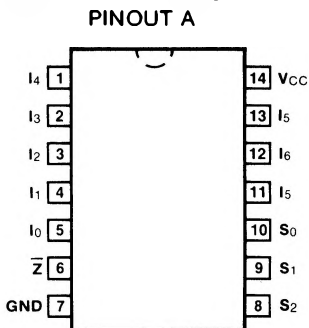


54/74152A 54LS/74LS152 8-INPUT MULTIPLEXER

CONNECTION DIAGRAM

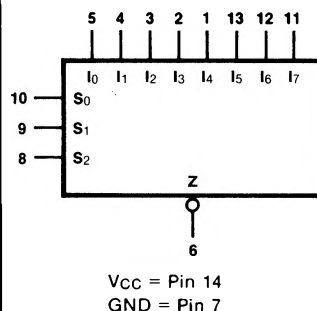


DESCRIPTION—The '152 is a high speed 8-input digital multiplexer. It provides, in one package, the ability to select one line of data from up to eight sources. The '152 can be used as a universal function generator to generate any logic function of four variables. It is supplied in Flatpak only; for Dual In-line Package applications use the 'LS151.

ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		$V_{CC} = +5.0\text{ V} \pm 5\%$, $T_A = 0^\circ\text{ C to } +70^\circ\text{ C}$	$V_{CC} = +5.0\text{ V} \pm 10\%$, $T_A = -55^\circ\text{ C to } +125^\circ\text{ C}$	
Flatpak (F)	A	74152AFC, 74LS152FC	54152AFM, 54LS152FM	31

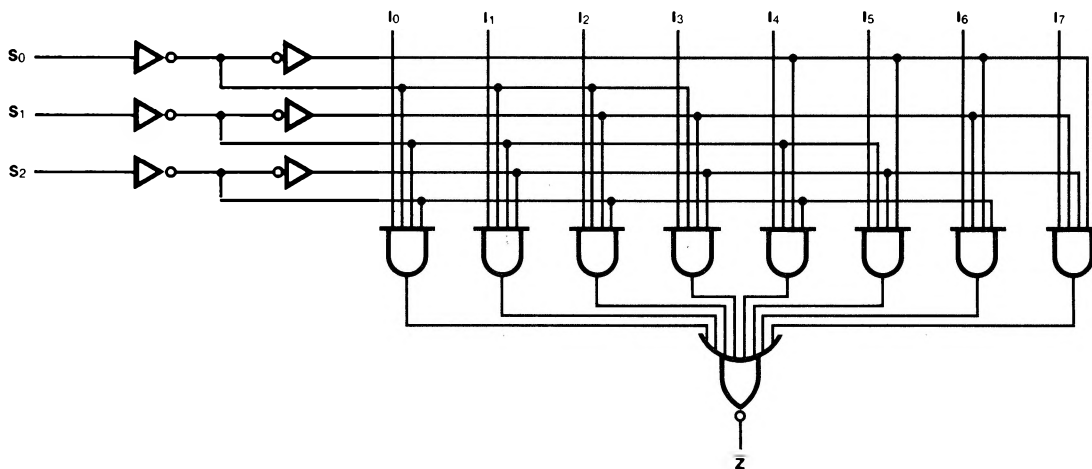
LOGIC SYMBOL



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

PIN NAMES	DESCRIPTION	54/74 (U.L.) HIGH/LOW	54/74LS (U.L.) HIGH/LOW
$I_0 - I_7$	Data Inputs	1.0/1.0	0.5/0.25
$S_0 - S_2$	Select Inputs	1.0/1.0	0.5/0.25
Z	Inverted Data Output	20/10	10/5.0 (2.5)

LOGIC DIAGRAM



FUNCTIONAL DESCRIPTION — The '152 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 . The logic function provided at the output is:

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

The '152 provides the ability, in one package, to select from eight sources of data or control information.

TRUTH TABLE

INPUTS			OUTPUT
S_2	S_1	S_0	\bar{Z}
L	L	L	\bar{I}_0
L	L	H	\bar{I}_1
L	H	L	\bar{I}_2
L	H	H	\bar{I}_3
H	L	L	\bar{I}_4
H	L	H	\bar{I}_5
H	H	L	\bar{I}_6
H	H	H	\bar{I}_7

H = HIGH Voltage Level
L = LOW Voltage Level

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

SYMBOL	PARAMETER	54/74		54/74LS		UNITS	CONDITIONS	
		Min	Max	Min	Max			
I_{OS}	Output Short Circuit Current	XM	-20	-55	-20	-100	mA	$V_{CC} = \text{Max}$
		XC	-18	-55	-20	-100		
I_{CC}	Power Supply Current	43		9.0		mA	$V_{CC} = \text{Max}$	

AC CHARACTERISTICS: $V_{CC} = +5.0V$, $T_A = +125^\circ C$ (See Section 3 for waveforms and load configurations)

SYMBOL	PARAMETER	54/74		54/74LS		UNITS	CONDITIONS
		$C_L = 15 \text{ pF}$ $R_L = 400 \Omega$		$C_L = 15 \text{ pF}$			
		Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay S_n to \bar{Z}	26 30		23 32		ns	Figs. 3-1, 3-20
t_{PLH} t_{PHL}	Propagation Delay I_n to \bar{Z}	14 14		21 20		ns	Figs. 3-1, 3-4