

54/74152A

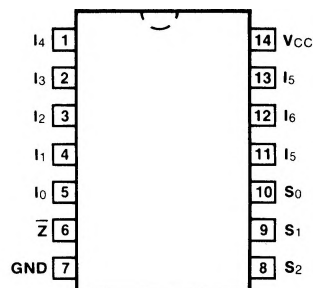
54LS/74LS152

8-INPUT MULTIPLEXER

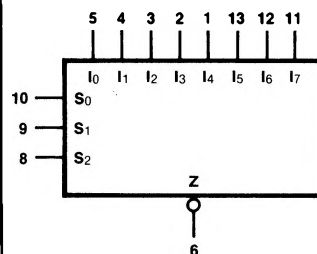
DESCRIPTION — The '152 is a high speed 8-input digital multiplexer. It provides, in one package, the ability to select one line of data from up to eight sources. The '152 can be used as a universal function generator to generate any logic function of four variables. It is supplied in Flatpak only; for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

CONNECTION DIAGRAM

PINOUT A



LOGIC SYMBOL



VCC = Pin 14
GND = Pin 7

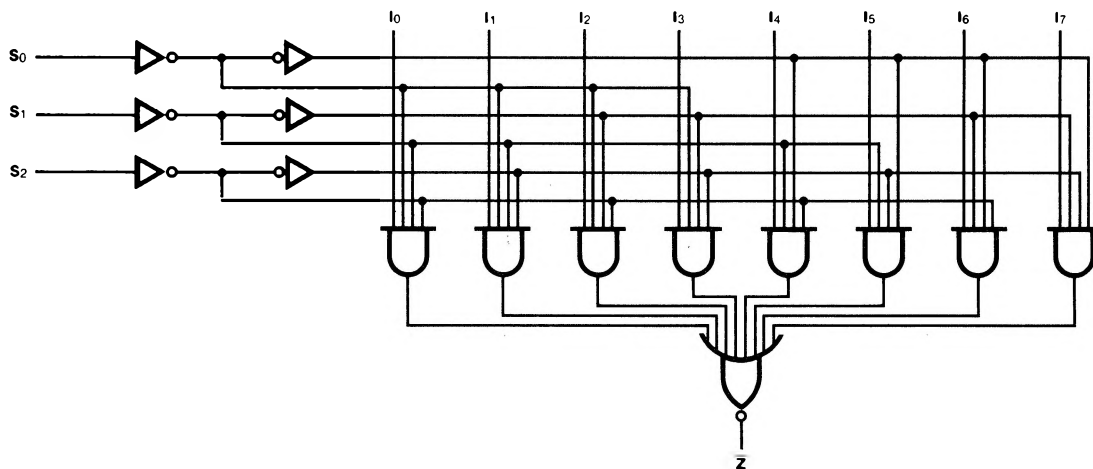
ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		VCC = +5.0 V $\pm$ 5%, TA = 0°C to +70°C	VCC = +5.0 V $\pm$ 10%, TA = -55°C to +125°C	
Flatpak (F)	A	74152AFC, 74LS152FC	54152AFM, 54LS152FM	31

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, S₀, S₁, S₂. The logic function provided at the output is:

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

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

TRUTH TABLE

INPUTS			OUTPUT $\bar{Z}$
S ₂	S ₁	S ₀	
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	X _M	-20	-55	-20	-100	mA	V _{CC} = Max
		X _C	-18	-55	-20	-100		
I _{CC}	Power Supply Current		43		9.0		mA	V _{CC} = Max

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

SYMBOL	PARAMETER	54/74		54/74LS		UNITS	CONDITIONS
		C _L = 15 pF R _L = 400 Ω		C _L = 15 pF			
		Min	Max	Min	Max		
t _{PLH} t _{PHL}	Propagation Delay S _n to Z̄	26 30		23 32		ns	Figs. 3-1, 3-20
t _{PLH} t _{PHL}	Propagation Delay I _n to Z̄	14 14		21 20		ns	Figs. 3-1, 3-4