



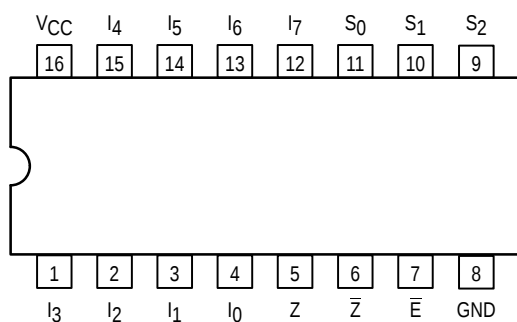
8-INPUT MULTIPLEXER

The MC54/74F151 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 F151 can be used as a universal function generator to generate any logic function of four variables. Both asserted and negated outputs are provided.

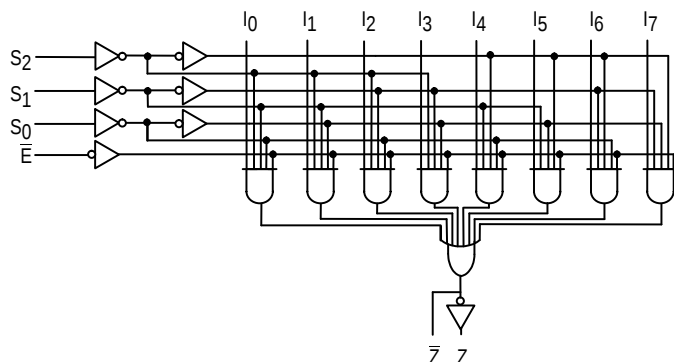
The F151 is a logic implementation of a single pole, 8-position switch with the switch position controlled by the state of three Select inputs, S_0 , S_1 , S_2 . The Enable input ($\bar{E}$) is active LOW. The logic function provided at the output is:

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

CONNECTION DIAGRAM DIP (TOP VIEW)



LOGIC DIAGRAM



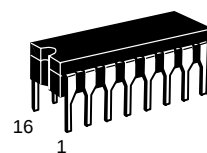
FUNCTION TABLE

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

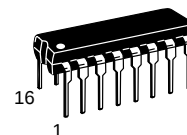
H = HIGH Voltage Level; L = LOW Voltage Level; X = Don't Care

MC54/74F151

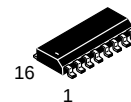
8-INPUT MULTIPLEXER FAST™ SHOTTKY TTL



J SUFFIX
CERAMIC
CASE 620-09



N SUFFIX
PLASTIC
CASE 648-08

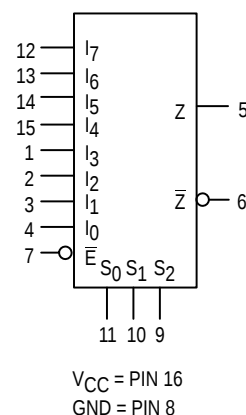


D SUFFIX
SOIC
CASE 751B-03

ORDERING INFORMATION

MC54FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXD	SOIC

LOGIC SYMBOL



MC54/74F151

GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V _{CC}	Supply Voltage	54, 74	4.5	5.0	5.5	V
T _A	Operating Ambient Temperature Range	54	−55	25	125	°C
		74	0	25	70	
I _{OH}	Output Current — High	54, 74			−1.0	mA
I _{OL}	Output Current — Low	54, 74			20	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	Limits			Unit	Test Conditions	
		Min	Typ	Max			
V _{IH}	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage	
V _{IL}	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage	
V _{IK}	Input Clamp Diode Voltage			−1.2	V	I _{IN} = −18 mA	V _{CC} = MIN
V _{OH}	Output HIGH Voltage	54, 74	2.5	3.4	V	I _{OH} = −1.0 mA	V _{CC} = 4.50 V
		74	2.7	3.4	V	I _{OH} = −1.0 mA	V _{CC} = 4.75 V
V _{OL}	Output LOW Voltage		0.35	0.5	V	I _{OL} = 20 mA	V _{CC} = MIN
I _{IH}	Input HIGH Current			20	μA	V _{CC} = MAX, V _{IN} = 2.7 V	
				100	μA	V _{CC} = MAX, V _{IN} = 7.0 V	
I _{IL}	Input LOW Current			−0.6	mA	V _{CC} = MAX, V _{IN} = 0.5 V	
I _{OS}	Output Short Circuit Current (Note 2)	−60		−150	mA	V _{CC} = MAX, V _{OUT} = 0 V	
I _{CC}	Power Supply Current		13.5	21	mA	V _{CC} = MAX, V _{IN} = 4.5 V	

NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating ranges.
- Not more than one output should be shorted at a time, nor for more than 1 second.

AC CHARACTERISTICS

Symbol	Parameter	54/74F		54F		74F		Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF		T _A = −55°C to +125°C V _{CC} = 5.0 V ±10% C _L = 50 pF		T _A = 0°C to 70°C V _{CC} = 5.0 V ±10% C _L = 50 pF		
		Min	Max	Min	Max	Min	Max	
t _{PLH}	Propagation Delay	4.0	8.0	3.5	10	3.5	9.0	ns
t _{PHL}	S _N to $\bar{Z}$	3.2	6.1	3.0	8.0	3.2	7.0	
t _{PLH}	Propagation Delay	4.5	13	3.0	17.5	4.0	14	ns
t _{PHL}	S _N to Z	4.5	9.0	4.0	11.5	4.0	10.5	
t _{PLH}	Propagation Delay	3.0	6.1	2.5	7.5	2.5	7.0	ns
t _{PHL}	$\bar{E}$ to $\bar{Z}$	3.0	8.5	2.5	10.5	2.5	10	
t _{PLH}	Propagation Delay	5.0	9.5	3.0	14.5	4.0	11	ns
t _{PHL}	$\bar{E}$ to Z	3.5	7.0	3.0	9.5	3.5	8.0	
t _{PLH}	Propagation Delay	2.5	5.7	2.5	7.5	2.5	6.5	ns
t _{PHL}	I _N to $\bar{Z}$	1.5	4.0	1.5	6.0	1.5	5.0	
t _{PLH}	Propagation Delay	3.0	9.5	2.5	11.5	2.5	11	ns
t _{PHL}	I _N to Z	3.0	6.5	3.0	8.0	3.0	7.5	