

8-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER

S54151 N74151

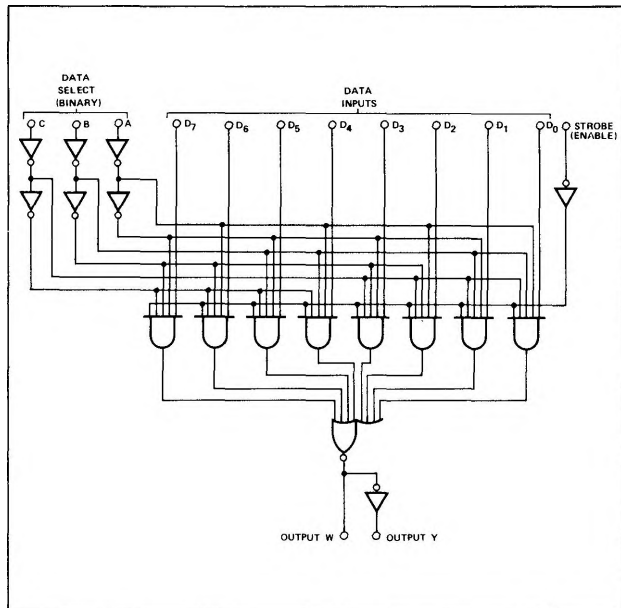
S54151—B,F,W • N74151—B,F

DIGITAL 54/74 TTL SERIES

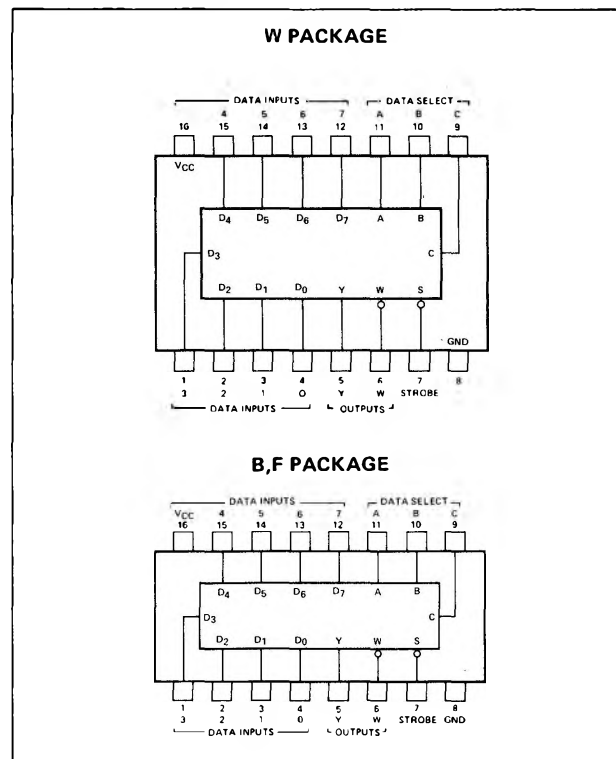
DESCRIPTION

The 54/74151 is a one-of-eight data selector which performs parallel-to-serial data conversion. The unit incorporates an enable circuit for chip select. This allows multiplexing from N-lines to one-line. Both true and complement outputs are available.

LOGIC DIAGRAM



PIN CONFIGURATIONS



TRUTH TABLE

INPUTS													OUTPUTS	
C	B	A	STROBE	D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇		Y	W
X	X	X	1	X	X	X	X	X	X	X	X		0	1
0	0	0	0	0	X	X	X	X	X	X	X		0	1
0	0	0	0	1	X	X	X	X	X	X	X		1	0
0	0	1	0	X	0	X	X	X	X	X	X		0	1
0	0	1	0	X	1	X	X	X	X	X	X		1	0
0	1	0	0	X	X	0	X	X	X	X	X		0	1
0	1	0	0	X	X	1	X	X	X	X	X		1	0
0	1	1	0	X	X	X	0	X	X	X	X		0	1
0	1	1	0	X	X	X	1	X	X	X	X		1	0
1	0	0	0	X	X	X	X	0	X	X	X		0	1
1	0	0	0	X	X	X	X	1	X	X	X		1	0
1	0	1	0	X	X	X	X	X	0	X	X		0	1
1	0	1	0	X	X	X	X	X	1	X	X		1	0
1	1	0	0	X	X	X	X	X	X	0	X		0	1
1	1	0	0	X	X	X	X	X	X	1	X		1	0
1	1	1	0	X	X	X	X	X	X	X	0		0	1
1	1	1	0	X	X	X	X	X	X	X	1		1	0

When used to indicate an input, X = irrelevant.

RECOMMENDED OPERATING CONDITIONS

	MIN	NOM	MAX	UNIT
Supply Voltage V _{CC} : S54151 Circuits	4.5	5	5.5	V
N74151 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N: Logical 0			10	
Logical 1			20	

SIGNETICS DIGITAL 54/74 TTL SERIES - S54151 • N74151
ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER	TEST CONDITIONS *	MIN	TYP**	MAX	UNIT
$V_{in(1)}$ Input voltage required to ensure logical 1 at any input terminal	$V_{CC} = \text{MIN}$	2			V
$V_{in(0)}$ Input voltage required to ensure logical 0 at any input terminal	$V_{CC} = \text{MIN}$			0.8	V
$V_{out(1)}$ Logical 1 output voltage	$V_{CC} = \text{MIN}, V_{in(1)} = 2V, V_{in(0)} = 0.8V,$ $I_{load} = -800 \mu A$	2.4			V
$V_{out(0)}$ Logical 0 output voltage	$V_{CC} = \text{MIN}, V_{in(1)} = 2V, V_{in(0)} = 0.8V,$ $I_{sink} = 16mA$			0.4	V
$I_{in(1)}$ Logical 1 level input current (each input)	$V_{CC} = \text{MAX}, V_{in} = 2.4V$ $V_{CC} = \text{MAX}, V_{in} = 5.5V$			40 1	μA mA
$I_{in(0)}$ Logical 0 level input current (each input)	$V_{CC} = \text{MAX}, V_{in} = 0.4V$			-1.6	mA
I_{OS} Short circuit output current†	$V_{CC} = \text{MAX},$ $V_{out} = 0$	-20 -18		-55 -55	mA mA
I_{CC} Supply current	$V_{CC} = \text{MAX}, V_{in} = 4.5V$		29	48	mA

SWITCHING CHARACTERISTICS, $V_{CC} = 5V, T_A = 25^\circ C, N = 10$

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{pd0}	A,B,orC(4 levels)	Y	$C_L = 15pF, R_L = 400\Omega$		20	30	ns
t_{pd1}	A,B,orC(4 levels)	Y			35	52	ns
t_{pd0}	A,B,C,orD(3 levels)	W			22	33	ns
t_{pd1}	A,B,C,orD(3 levels)	W			23	35	ns
t_{pd0}	STROBE	Y			19	30	ns
t_{pd1}	STROBE	Y			35	52	ns
t_{pd0}	STROBE	W			21	30	ns
t_{pd1}	STROBE	W			15.5	24	ns
t_{pd0}	D ₀ thru D ₇	Y			16	24	ns
t_{pd1}	D ₀ thru D ₇	Y			19	29	ns
t_{pd0}	E ₀ thru E ₁₅	W			8.5	14	ns
t_{pd1}	E ₀ thru E ₁₅	W			13	20	ns

* For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable circuit type.

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

† Not more than one output should be shorted at a time.