DESCRIPTION

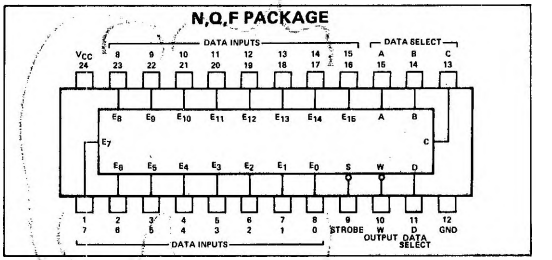
The 54/74150 is a one-of-sixteen data selector which performs parallel-to-serial data conversion. The unit incorporates an enable circuit for chip select. This allows multiplexing from N-lines to one-line.

The S54150/N74150 is provided with a strobe-input which, when taken to a logical 0, enables the function of these multiplexers.

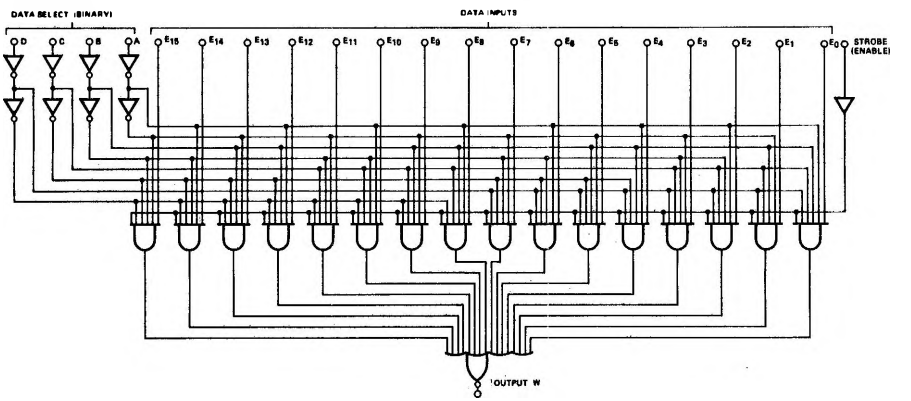
This data selector/multiplexer is fully compatible for use with other TTL or DTL circuit. Each input represents only one normalized Series 54/74 load, and full fan-out to 10 normalized Series 54/74 loads is available from each of the outputs in the logical 0 state. A fan-out to 20 normalized Series 54/74 loads is provided in the logical 1 state to facilitate connection of unused inputs to used inputs. Typical power dissipations are:

S54150/N74150 – 200 milliwatts.

PIN CONFIGURATIONS



LOGIC DIAGRAM



TRUTH TABLE

INPUTS																					OUTPUT
D	C	B	A	STROBE	e_0	E_1	E_2	E_3	E_4	E_5	E_6	E_7	E_8	E_9	E_{10}	E_{11}	E_{12}	E_{13}	E_{14}	E_{15}	W
X	X	X	X	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1
0	0	0	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
0	0	0	0	0	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1
0	0	0	1	0	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0
0	0	0	1	0	X	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1
0	0	1	0	0	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	X	0
0	0	1	0	0	X	X	1	X	X	X	X	X	X	X	X	X	X	X	X	X	1
0	0	1	1	0	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	X	0
0	0	1	1	0	X	X	X	1	X	X	X	X	X	X	X	X	X	X	X	X	1
0	1	0	0	0	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	X	0
0	1	0	0	0	X	X	X	X	1	X	X	X	X	X	X	X	X	X	X	X	1
0	1	0	1	0	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	X	0
0	1	0	1	0	X	X	X	X	X	1	X	X	X	X	X	X	X	X	X	X	1
0	1	1	0	0	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	X	0
0	1	1	0	0	X	X	X	X	X	X	1	X	X	X	X	X	X	X	X	X	1
0	1	1	1	0	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	X	0
0	1	1	1	0	X	X	X	X	X	X	X	1	X	X	X	X	X	X	X	X	1
1	0	0	0	0	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	X	0
1	0	0	0	0	X	X	X	X	X	X	X	X	1	X	X	X	X	X	X	X	1
1	0	0	1	0	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	X	0
1	0	0	1	0	X	X	X	X	X	X	X	X	X	1	X	X	X	X	X	X	1
1	0	1	0	0	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	X	0
1	0	1	0	0	X	X	X	X	X	X	X	X	X	X	1	X	X	X	X	X	1
1	0	1	1	0	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	X	0
1	0	1	1	0	X	X	X	X	X	X	X	X	X	X	X	1	X	X	X	X	1
1	1	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	X	0
1	1	0	0	0	X	X	X	X	X	X	X	X	X	X	X	X	1	X	X	X	1
1	1	0	1	0	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	X	0
1	1	0	1	0	X	X	X	X	X	X	X	X	X	X	X	X	X	1	X	X	1
1	1	1	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	X	0
1	1	1	0	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	X	1
1	1	1	1	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0	0
1	1	1	1	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1

RECOMMENDED OPERATING CONDITIONS

	MIN	NOM	MAX	UNIT
Supply Voltage V_{CC}: S54150 Circuits	4.5	5	5.5	V
N74150 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N: Logical 0			10	
Logical 1			20	

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} = MIN	2			V
$V_{in(0)}$	Input voltage required to ensure logical 0 at any input terminal	V_{CC} = MIN			0.8	V
$V_{out(1)}$	Logical 1 output voltage	V_{CC} = MIN, $V_{in(1)}$ = 2V, $V_{in(0)}$ = 0.8V, I_{load} = -800μA	2.4			V
$V_{out(0)}$	Logical 0 output voltage	V_{CC} = MIN, $V_{in(1)}$ = 2V, $V_{in(0)}$ = 0.8V, I_{sink} = 16mA			0.4	V
$I_{in(1)}$	Logical 1 level input (each input)	V_{CC} = MAX, V_{in} = 2.4V			40	μA
		V_{CC} = MAX, V_{in} = 5.5V			1	mA
$I_{in(0)}$	Logical 0 level input current (each input)	V_{CC} = MAX, V_{in} = 0.4V			-1.6	mA
I_{OS}	Short circuit output current†	V_{CC} = MAX, V_{OUT} = 0	-20		-55	mA
			-18		-55	mA
I_{CC}	Supply current	V_{CC} = MAX, V_{in} = 4.5V		40	68	mA

SWITCHING CHARACTERISTICS, V_{CC} = 5V, T_A = 25°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 = 400Ω		20	30	ns
t_{pd1}	A,B,orC(4levels)	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°C.

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