

4-LINE TO 16 LINE DECODER/DEMULTIPLEXER

S54154 N74154

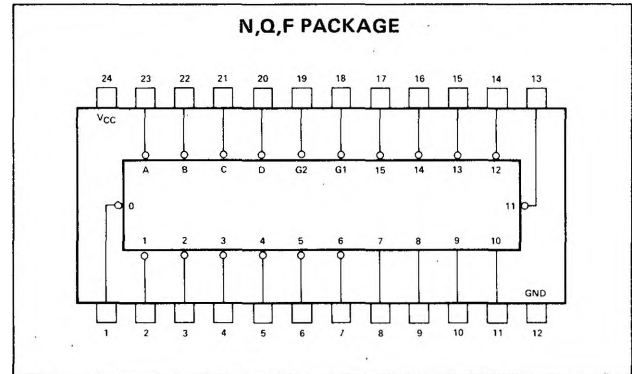
S54154-N,Q,F • N74154-N

DIGITAL 54/74 TTL SERIES

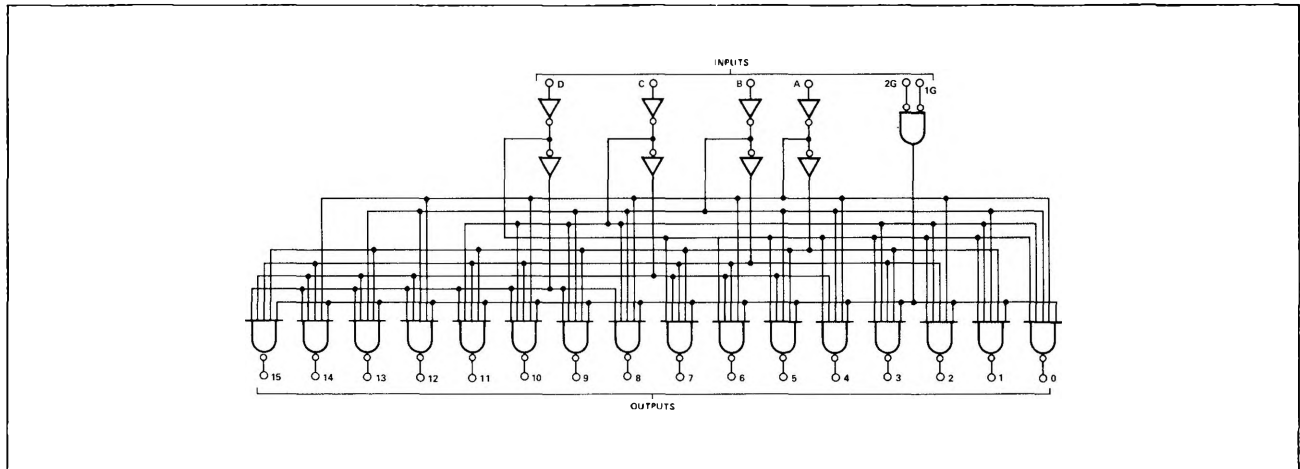
DESCRIPTION

The 54/74154 decodes 4 binary-coded inputs to one of 16 mutually exclusive outputs when each of the two strobe inputs are low. The demultiplexing function is achieved by using the 4 input lines for output addressing and data from one strobe input while the other strobe input is held low.

PIN CONFIGURATIONS



LOGIC DIAGRAM



TRUTH TABLE

INPUTS					OUTPUTS																	
G1	G2	D	C	B	A	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	H	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	L	L	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H
L	L	L	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H
L	L	L	H	L	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H
L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H
L	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H
L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H
L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H
L	L	L	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
H	L	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
H	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H = High, L = Low, X = Irrelevant

SIGNETICS DIGITAL 54/74 TTL SERIES - S54154 • N74154

RECOMMENDED OPERATING CONDITIONS

	S54154			N74154			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply Voltage V_{CC}	4.5	5	5.5	4.75	5	5.25	V
Normalized Fan-Out from each Output, N:			10			10	
Low logic level			20			20	
High logic level			20			20	
Operating Free-Air Temperature Range	-55	25	125	0	25	70	°C

ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER	TEST CONDITIONS*	MIN	TYP**	MAX	UNIT
V_{IH} High-level input voltage		2			V
V_{IL} Low-level input voltage				0.8	V
V_{OH} High-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2V,$ $V_{IL} = 0.8V, I_{OH} = -800 \mu A$	2.4			V
V_{OL} Low-level output voltage	$V_{CC} = \text{MIN}, V_{IH} = 2V,$ $V_{IL} = 0.8V, I_{OL} = 16mA$			0.4	V
I_{IH} High-level input current	$V_{CC} = \text{MAX}, V_I = 2.4V$			40	A
(each input)	$V_{CC} = \text{MAX}, V_I = 5.5V$			1	mA
I_{IL} Low-level input current	$V_{CC} = \text{MAX}, V_I = 0.4V$			-1.6	mA
(each input)					
I_{OS} Short-circuit output current†	$V_{CC} = \text{MAX}$				
	S54154	-20		-55	mA
	N74154	-18		-57	
I_{CC} Supply current	$V_{CC} = \text{MAX}$		34	49	mA
	S54154		34	56	
	N74154				

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH} Propagation delay time, low-to-high-level output, from A, B, C, or D inputs through 3 levels of logic			24	36	ns
t_{PHL} Propagation delay time, high-to-low-level output, from A, B, C, or D inputs through 3 levels of logic	$C_L = 15pF, R_L = 400\Omega$		22	33	ns
t_{PLH} Propagation delay time, low-to-high-level output, from either strobe input			20	30	ns
t_{PHL} Propagation delay time, high-to-low-level output, from either strobe input			18	27	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.