

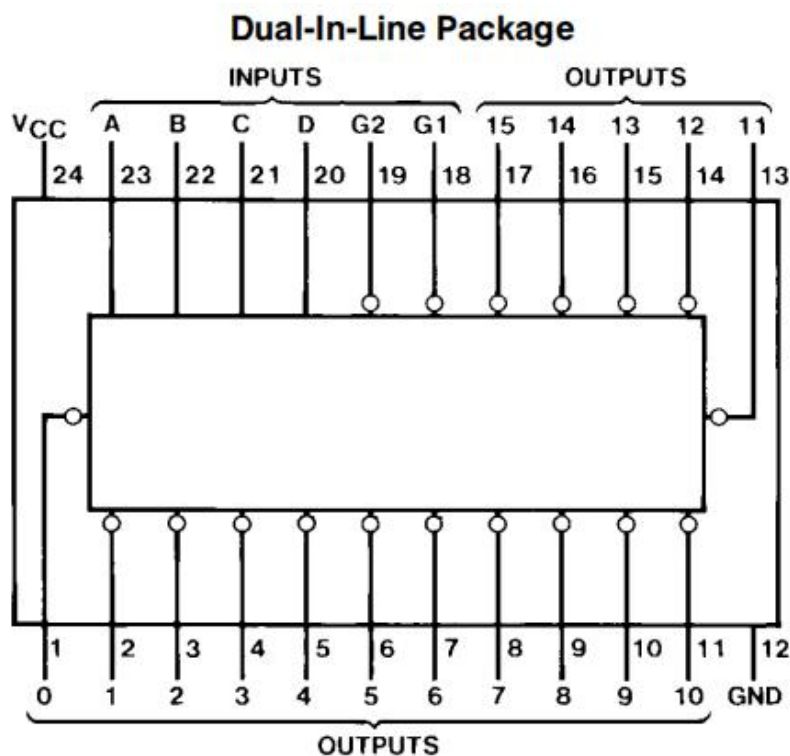
1. DESCRIPTION

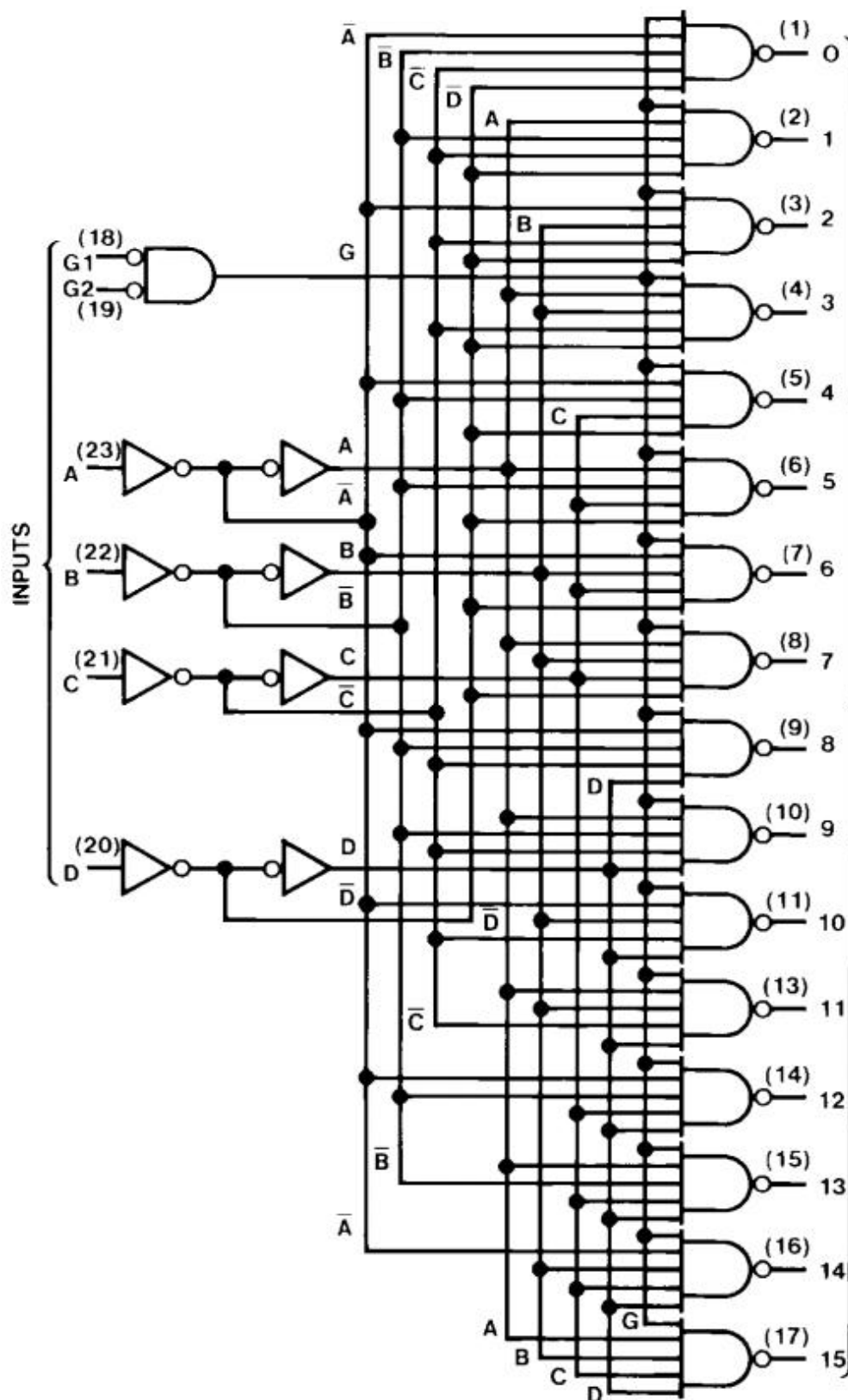
Each of these 4-line-to-16-line decoders utilizes TTL circuitry to decode four binary-coded inputs into one of sixteen mutually exclusive outputs when both the strobe inputs, G1 and G2, are low. The demultiplexing function is performed by using the 4 input lines to address the output line, passing data from one of the strobe inputs with the other strobe input low. When either strobe input is high, all outputs are high. These demultiplexers are ideally suited for implementing high-performance memory decoders. All inputs are buffered and input clamping diodes are provided to minimize transmission-line effects and thereby simplify system design.

2. FEATURES

- Decodes 4 binary-coded inputs into one of 16 mutually exclusive outputs
- Performs the demultiplexing function by distributing data from one input line to any one of 16 outputs
- Input clamping diodes simplify system design
- High fan-out, low-impedance, totem-pole outputs
- Typical propagation delay, 3 levels of logic 23 ns, Strobe 19 ns
- Typical power dissipation 45 mW

3. CONNECTION AND LOGIC DIAGRAMS





4. ABSOLUTE MAXIMUM RATINGS

Supply Voltage.....7V
 Input Voltage.....7V
 Operating Free Air Temperature Range
 XD74LS154.....0°C to +70°C
 Storage Temperature Range.....-65°C to +150°C

5. RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	XD74LS154			Units
		Min	Nom	Max	
V _{CC}	Supply Voltage	4.75	5	5.25	V
V _{IH}	High Level Input Voltage	2			V
V _{IL}	Low Level Input Voltage			0.8	V
I _{OH}	High Level Output Current			-0.4	mA
I _{OL}	Low Level Output Current			8	mA
T _A	Free Air Operating Temperature	0		70	°C

6. ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min	TYP (Note 1)	Max	Units
V _I	Input Clamp Voltage	V _{CC} = Min, I _I = -18mA			-1.5	V
V _{OH}	High Level Output Voltage	V _{CC} = Min, I _{OH} = Max V _{IL} = Max, V _{IH} = Min	2.7	3.4		V
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = Max V _{IL} = Max, V _{IH} = Min		0.35	0.5	V
		I _{OL} = 4 mA, V _{CC} = Min		0.25	0.4	
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, V _I = 7V			0.1	mA
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.7V			20	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.4V			-0.4	mA
I _{OS}	Short Circuit Output Current	V _{CC} = Max (Note 2)	-20		-100	mA
I _{CC}	Supply Current	V _{CC} = Max (Note 3)		9	14	mA

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C

Note 2: Not more than one output should be shorted at a time, and the duration should exceed one second.

Note 3: I_{CC} is measured with all outputs open and all inputs grounded.

7. SWITCHING CHARACTERISTICS

at $V_{CC} = 5V$ and $T_A = 25^\circ C$ (See Section 1 for Test Waveforms and Output Load)

Symbol	Parameter	From(Input) TO (Output)	R _L = 2kΩ				Units
			C _L =15 pF		C _L =50pF		
			Min	Max	Min	Max	
t _{PLH}	Propagation Delay Time Low to High Level Output	Data to Output		30		35	ns
t _{PLH}	Propagation Delay Time High to Low Level Output	Data to Output		30		35	ns
t _{PLH}	Propagation Delay Time Low to High Level Output	Strobe to Output		20		25	ns
t _{PLH}	Propagation Delay Time High to Low Level Output	Strobe to Output		25		35	ns

8. FUNCTION TABLE

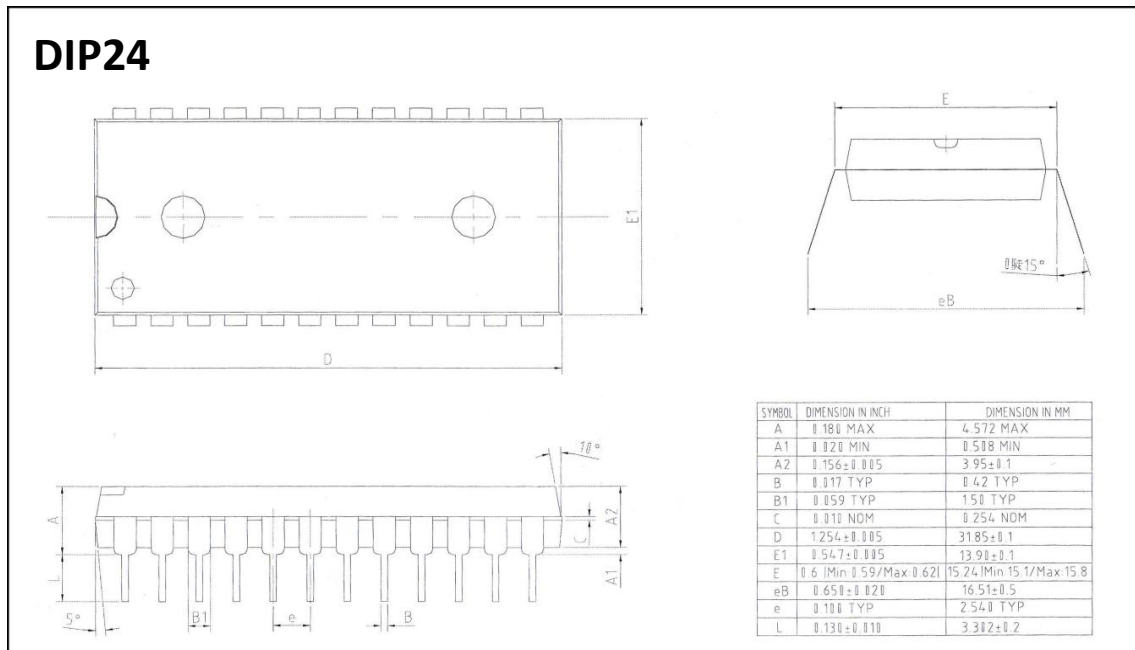
Inputs						Outputs															
G1	G2	D	C	B	A	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	H	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	H	L	L	H	H	H	H	L	H	H	H	H	H	H	H	H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

H = High Level, L = Low Level, X = Don't Care

9. ORDERING INFORMATION

Part Number	Device Marking	Package Type	Body size (mm)	Temperature (°C)	MSL	Transport Media	Package Quantity
XD74LS154	XD74LS154	DIP24	31.85*13.90	-0 to +70	MSL3	Tube 15	300

10. DIMENSIONAL DRAWINGS



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