

1. DESCRIPTION

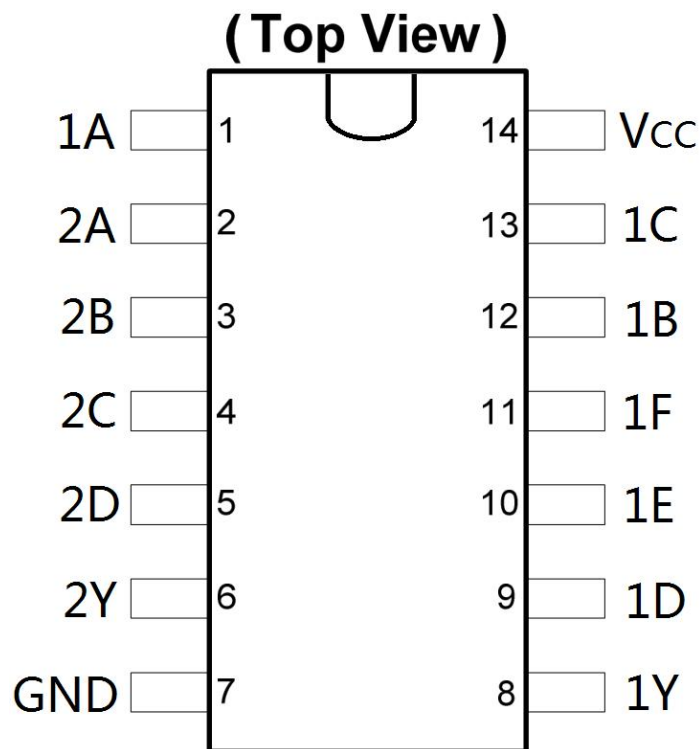
The 'LS51 contains one 2-wide 3-input and one 2-wide 2-input AND-OR-INVERT gates. They perform the Boolean functions $1Y = \overline{(1A \cdot 1B \cdot 1C) + (1D \cdot 1E \cdot 1F)}$ and $2Y = \overline{(2A \cdot 2B) + (2C \cdot 2D)}$.

The XD74LS51 is characterized for operation from 0°C to 70°C.

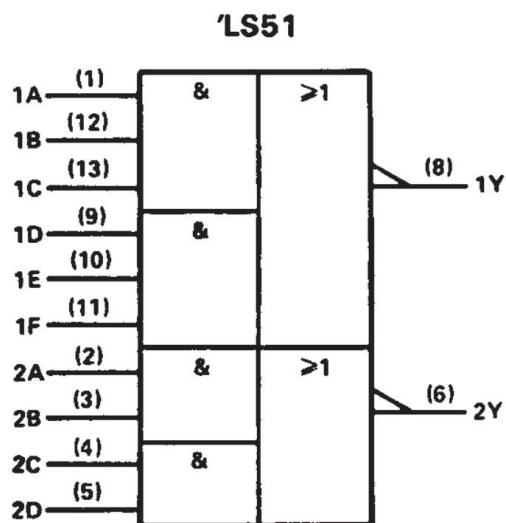
2. FEATURES

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPs
- Dependable XINLUDA Instruments Quality and Reliability

3. PIN CONFIGURATIONS



4. LOGIC SYMBOL

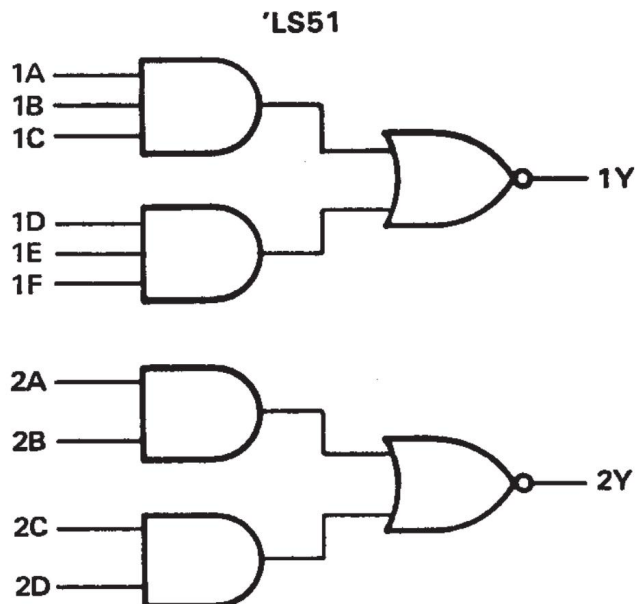


positive logic:

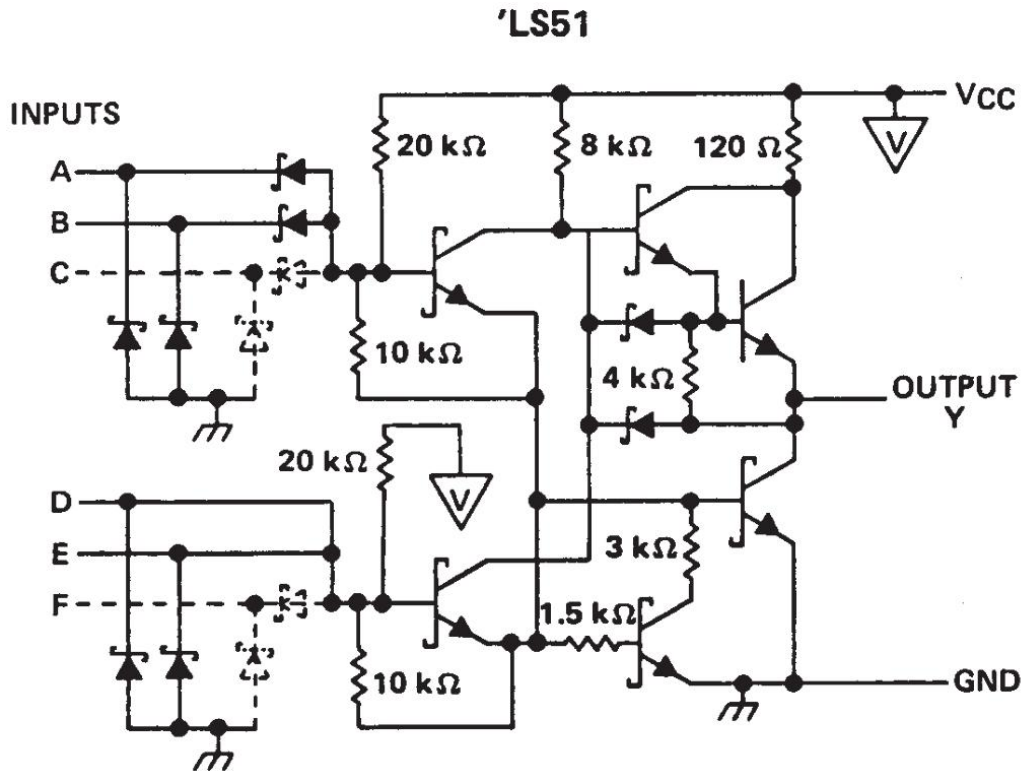
$$1Y = \overline{(1A \cdot 1B \cdot 1C) + (1D \cdot 1E \cdot 1F)}$$

$$2Y = \overline{(2A \cdot 2B) + (2C \cdot 2D)}$$

5. LOGIC DIAGRAM



6. SCHEMATICS (each gate)



7. ABSOLUTE MAXIMUM RATINGS OVER OPERATING FREE-AIR TEMPERATURE RANGE (UNLESS OTHERWISE NOTES)

Supply voltage, V_{CC} (see Note 1).....	7V
Input voltage, V_I : 74LS51.....	7V
Operating free-air temperature range: DIP package.....	0°C to 70°C
Storage temperature range, T_{stg}	-65°C to 150°C

NOTE 1 : Voltage values are with respect to network ground terminals.

8. RECOMMENDED OPERATING CONDITIONS

		XD74LS51			UNIT
		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	Operating free-air temperature	0		70	°C

9. ELECTRICAL CHARACTERISTICS OVER RECOMMENDED OPERATING FREE-AIR RANGE (UNLESS OTHERWISE NOTED)

PARAMETER	TEST CONDITIONS [†]	XD74LS51			UNIT
		MIN	TYP [‡]	MAX	
V _{IK}	V _{CC} = MIN, I _I = -18 mA			-1.5	V
V _{OH}	V _{CC} = MIN, V _{IL} = MAX, I _{OH} = -0.4 mA	2.7	3.4		V
V _{OL}	V _{CC} = MIN, V _{IH} = 2 V, I _{OL} = 4 mA		0.25	0.4	V
	I _{OL} = 8 mA		0.35	0.5	
I _I	V _{CC} = MAX, V _I = 7 V			0.1	mA
I _{IH}	V _{CC} = MAX, V _I = 2.7 V			20	μA
I _{IL}	V _{CC} = MAX, V _I = 0.4 V			-0.4	mA
I _{OS} [§]	V _{CC} = MAX	-20		-100	mA
I _{CCH}	V _{CC} = MAX, V _I = 4.5 V		0.8	1.6	mA
I _{CCL}	V _{CC} = MAX, V _I = 0 V		1.4	2.8	mA

[†] For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

[‡] All typical values are at V_{CC} = 5 V, T_A = 25°C.

[§] Not more than one output should be shorted at a time, and the duration of the short-circuit should not exceed one second.

10. SWITCHING CHARACTERISTICS, V_{CC} = 5 V, T_A = 25°C (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	XD74LS51			UNIT
				MIN	TYP	MAX	
t _{PLH}	Any	Y	R _L = 2 kΩ, CL = 15 pF		12	20	ns
t _{PHL}					12.5	20	ns

NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

11. ORDERING INFORMATION

Ordering Information

Part Number	Device Marking	Package Type	Body size (mm)	Temperature (°C)	MSL	Transport Media	Package Quantity
XD74LS51	XD74LS51	DIP14	19.05 * 6.35	-0 to 70	MSL3	Tube 25	1000

12. DIMENSIONAL DRAWINGS

