

SN54S140, SN74S140 DUAL 4-INPUT POSITIVE-NAND 50-OHM LINE DRIVERS

SDLS210 – DECEMBER 1983 – REVISED MARCH 1988

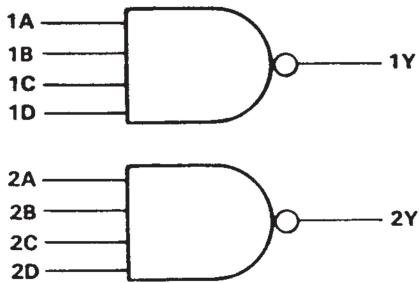
- Package Options Include Ceramic Chip Carriers and Flat Packages in Addition to Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

description

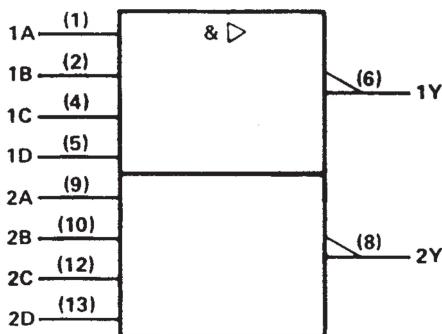
These devices contain two independent 4-input positive-NAND 50-ohm line drivers. They perform the Boolean function $Y = \overline{ABCD}$.

The SN54S140 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74S140 is characterized for operation from 0°C to 70°C .

logic diagram (each driver)



logic symbol†

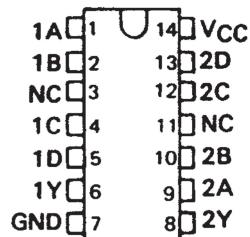


†This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.

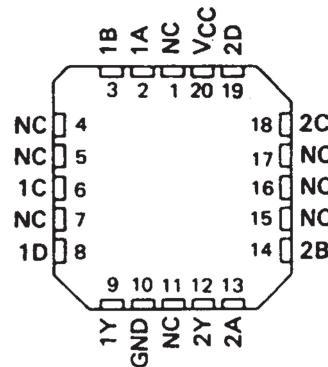
Pin numbers shown are for D, J, N, and W packages.

SN54S140 . . . J OR W PACKAGE
SN74S140 . . . D OR N PACKAGE

(TOP VIEW)



SN54S140 . . . FK PACKAGE
(TOP VIEW)

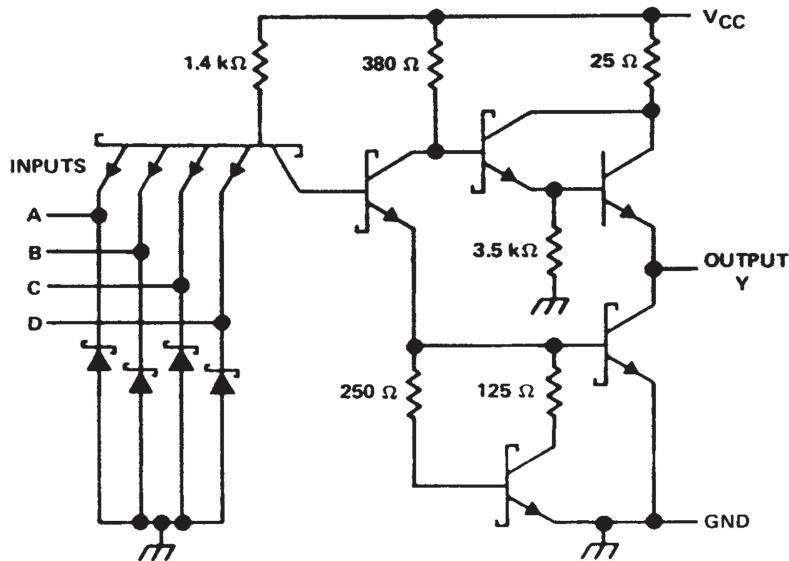


NC—No internal connection

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schematic (each driver)



Resistor values shown are nominal.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

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

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DUAL 4-INPUT POSITIVE-NAND 50-OHM LINE DRIVERS

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recommended operating conditions

	SN54S140			SN74S140			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC} Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V _{IH} High-level input voltage	2			2			V
V _{IL} Low-level input voltage				0.8			V
I _{OH} High-level output current				-40			mA
I _{OL} Low-level output current				60			mA
T _A Operating free-air temperature	-55			125	0	70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS ^t	SN54S140			SN74S140			UNIT
		MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	
V _{IK}	V _{CC} = MIN, I _I = -18 mA				-1.2		-1.2	V
V _{OH}	V _{CC} = MIN, V _{IL} = 0.8 V, I _{OH} = -3 mA	2.5	3.4		2.7	3.4		V
	V _{CC} = MIN, V _{IL} = 0.5 V, R _O = 50 Ω to GND		2		2			
V _{OL}	V _{CC} = MIN, V _{IH} = 2 V, I _{OL} = 60 mA				0.5		0.5	V
I _I	V _{CC} = MAX, V _I = 5.5 V				1		1	mA
I _{IH}	V _{CC} = MAX, V _{IH} = 2.7 V				0.1		0.1	mA
I _{IL}	V _{CC} = MAX, V _{IL} = 0.5 V				-4		-4	mA
I _{OS} [§]	V _{CC} = MAX	-50		-225	-50		-225	mA
I _{CCH}	V _{CC} = MAX, V _I = 0 V		10	18		10	18	mA
I _{CCL}	V _{CC} = MAX, V _I = 4.5 V		25	44		25	44	mA

^t 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 100 milliseconds.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t _{PLH}	Any	Y	R _L = 93 Ω, C _L = 50 pF		4	6.5	ns
t _{PHL}					4	6.5	ns
t _{PLH}			R _L = 93 Ω, C _L = 150 pF		6		ns
t _{PHL}					6		ns

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