SDLS203

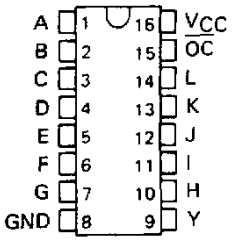
DECEMBER 1983 – REVISED MARCH 1988

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

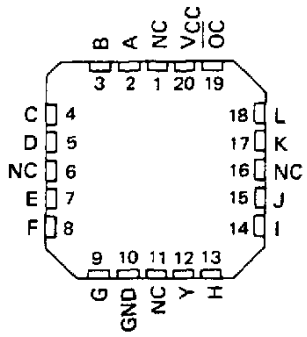
description

The 'S134 feature three-state outputs that, when enabled, have the low impedance characteristics of a TTL output with additional drive capability at high logic levels to permit driving heavily loaded lines without external pull-up resistors. When disabled, both output transistors are turned off presenting a high-impedance state to the bus so the output will act neither as a significant load nor as a driver. The 'S134 outputs are diabled when G is high.

SN54S134 . . . J OR W PACKAGE
SN74S134 . . . D OR N PACKAGE
(TOP VIEW)

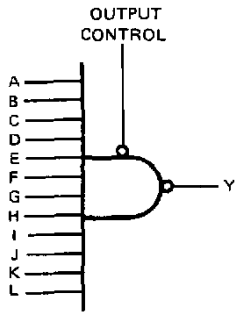


SN54S134 . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

logic diagram

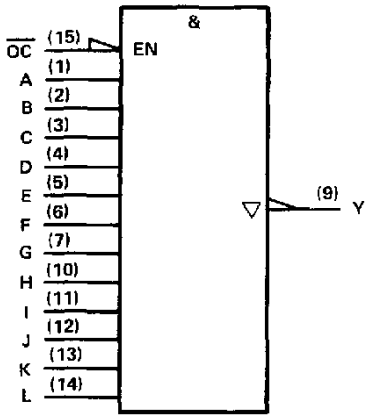


positive logic

$$Y = \overline{A \cdot B \cdot C \cdot D \cdot E \cdot F \cdot G \cdot H \cdot I \cdot J \cdot K \cdot L} \text{ or}$$
$$Y = \overline{A} + \overline{B} + \overline{C} + \overline{D} + \overline{E} + \overline{F} + \overline{G} + \overline{H} + \overline{I} + \overline{J} + \overline{K} + \overline{L}$$

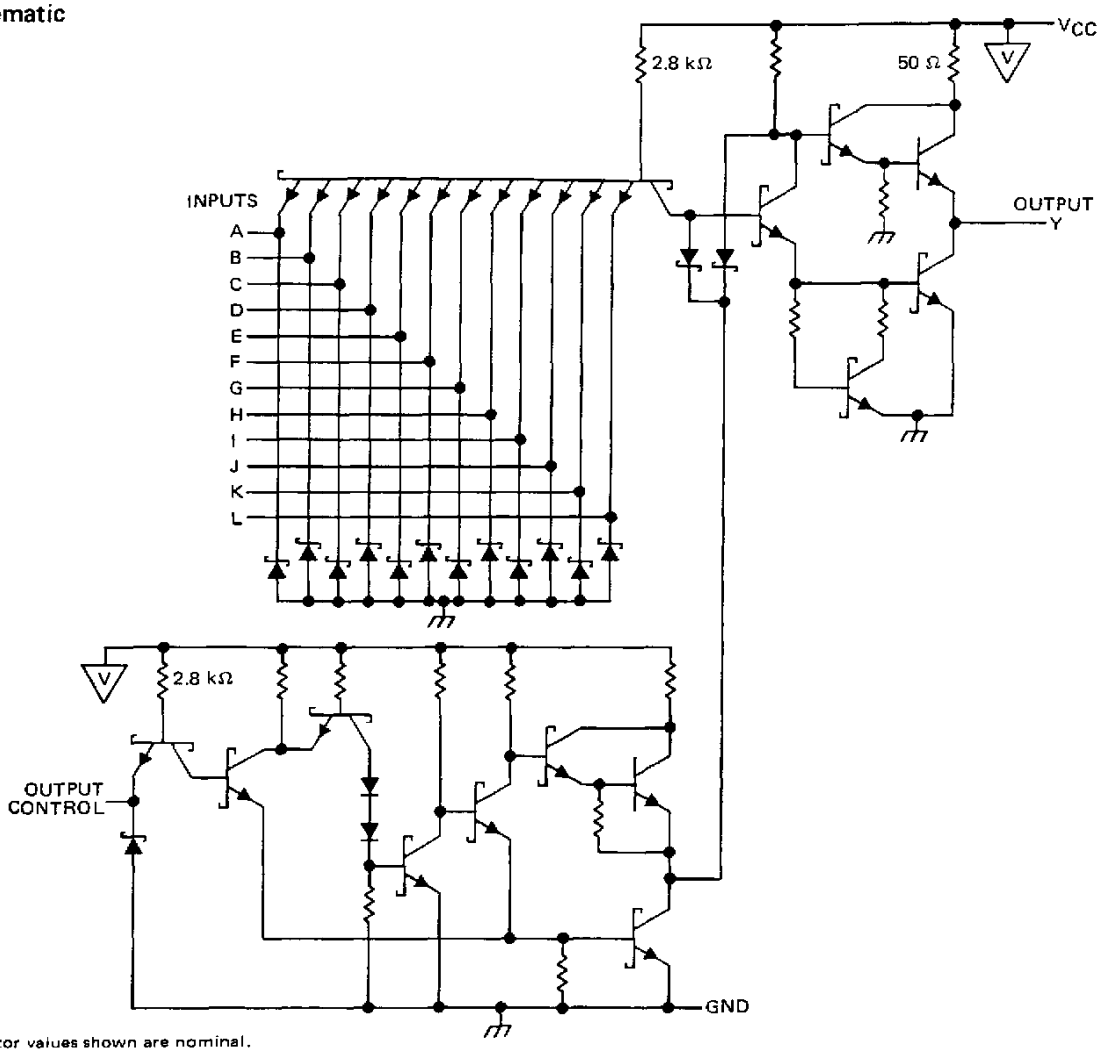
Output is off (disabled) when output control is high.

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.

schematic



Resistor values shown are nominal.

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

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage . . . . . 5.5 V
Voltage applied to a disabled 3-state output . . . . . 5.5 V
Operating free-air temperature range: SN54' . . . . . −55°C to 125°C
SN74' . . . . . 0°C to 70°C
Storage temperature range . . . . . −65°C to 150°C

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

recommended operating conditions

		SN54S134			SN74S134			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			0.8	V
I_{OH}	High-level output current			−2			−6.5	mA
I_{OL}	Low-level output current			20			20	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†			SN54S134			SN74S134			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	V_{IH} = 2 V	I_{OH} = −2 mA	2.4	3.4					V
			I_{OH} = −6.5 mA				2.4	3.2		
V_{OL}	V_{CC} = MIN, I_{OL} = 20 mA	V_{IH} = 2 V,	V_{IL} = 0.8 V,			0.5			0.5	V
I_{OZ}	V_{CC} = MAX, V_{IL} = 0.8 V	V_{IH} = 2 V,	V_O = 2.4 V			50			50	μA
			V_O = 0.5 V			−50			−50	
I_I	V_{CC} = MAX,	V_I = 5.5 V				1			1	mA
I_{IH}	V_{CC} = MAX,	V_I = 2.7 V				50			50	μA
I_{IL}	V_{CC} = MAX,	V_I = 0.5 V				−2			−2	mA
I_{OS}§	V_{CC} = MAX			−40		−100	−40		−100	mA
I_{CC}	V_{CC} = MAX		Outputs high		7	13		7	13	mA
			Outputs low		9	16		9	16	
			Outputs disabled		14	25		14	25	

† 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 duration of the short circuit should not exceed one second.

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

PARAMETER	TEST CONDITIONS		SN54S134			SN74S134			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	R_L = 280 Ω,	C_L = 15 pF		4	6		4	6	ns
t_{PLH}	R_L = 280 Ω,	C_L = 50 pF		5.5			5.5		ns
t_{PHL}	R_L = 280 Ω,	C_L = 15 pF		5	7.5		5	7.5	ns
t_{PHL}	R_L = 280 Ω,	C_L = 50 pF		7			7		ns
t_{PZH}	R_L = 280 Ω,	C_L = 50 pF		13	19.5		13	19.5	ns
t_{PZL}				14	21		14	21	ns
t_{PHZ}	R_L = 280 Ω,	C_L = 5 pF		5.5	8.5		5.5	8.5	ns
t_{PLZ}				9	14		9	14	ns

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

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