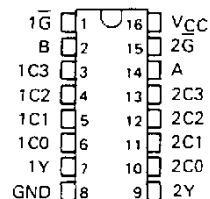


## SDLS147

SEPTEMBER 1972 – REVISED MARCH 1988

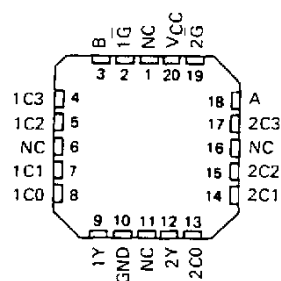
- SN54LS253, SN54S253 . . . J OR W PACKAGE  
SN74LS253, SN74S253 . . . D OR N PACKAGE

(TOP VIEW)



**SN54LS253, SN54S253 . . . FK PACKAGE**

(TOP VIEW)



NC-No internal connection

The three-state outputs can interface with and drive data lines of bus-organized systems. With all but one of the common outputs disabled (at a high-impedance state) the low-impedance of the single enabled output will drive the bus line to a high or low logic level.

### FUNCTION TABLE

SELECT INPUTS		DATA INPUTS				OUTPUT CONTROL	OUTPUT
B	A	C0	C1	C2	C3	G	Y
X	X	X	X	X	X	H	Z
X	L	L	X	X	X	L	L
L	L	H	X	X	X	L	H
L	H	X	L	X	X	L	L
L	H	X	H	X	X	L	H
H	L	X	X	L	X	L	L
H	L	X	X	H	X	L	H
H	H	X	X	X	L	L	L
H	H	X	X	X	H	L	H

Address inputs A and B are common to both sections.

H = high level, L = low level, X = irrelevant, Z = high impedance (off)

Supply voltage, $V_{CC}$ (see Note 1)	7 V
Input voltage: 'LS253	7 V
'S253	5.5 V
Off-state output voltage	5.5 V
Operating free-air temperature range: SN54LS253, SN54S253	– 55°C to 125°C
SN74LS253, SN74S253	0°C to 70°C
Storage temperature range	– 65°C to 150°C

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

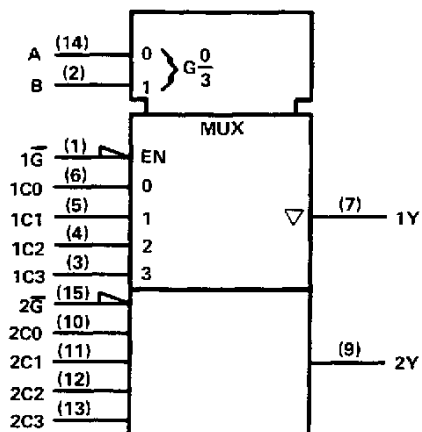
**PRODUCTION DATA** documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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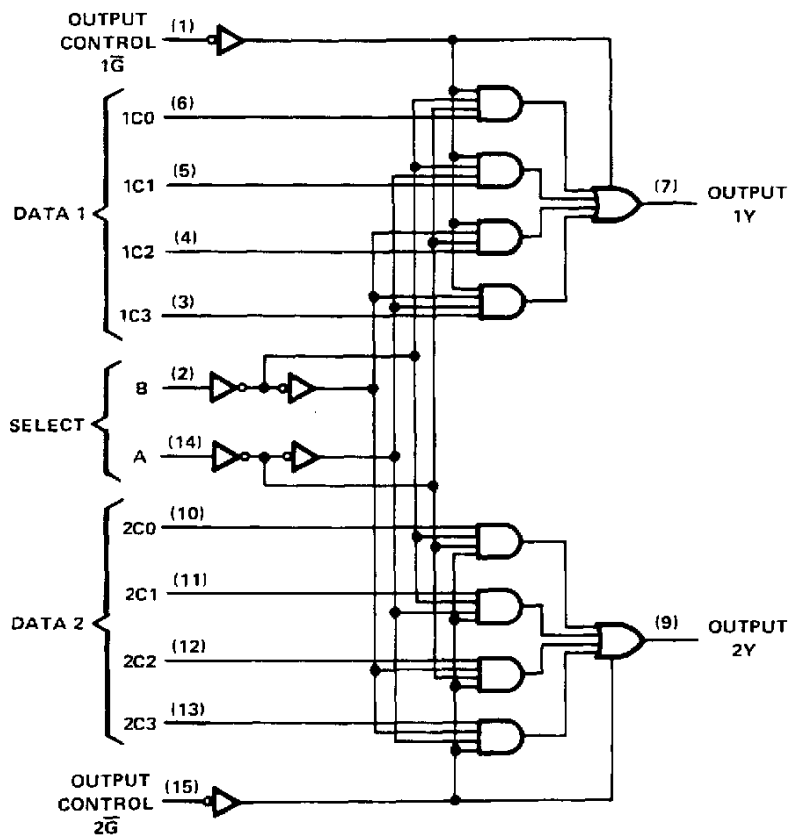
**SN54LS253, SN54S253, SN74LS253, SN74S253**  
**DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**  
**WITH 3-STATE OUTPUTS**

logic symbol†



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

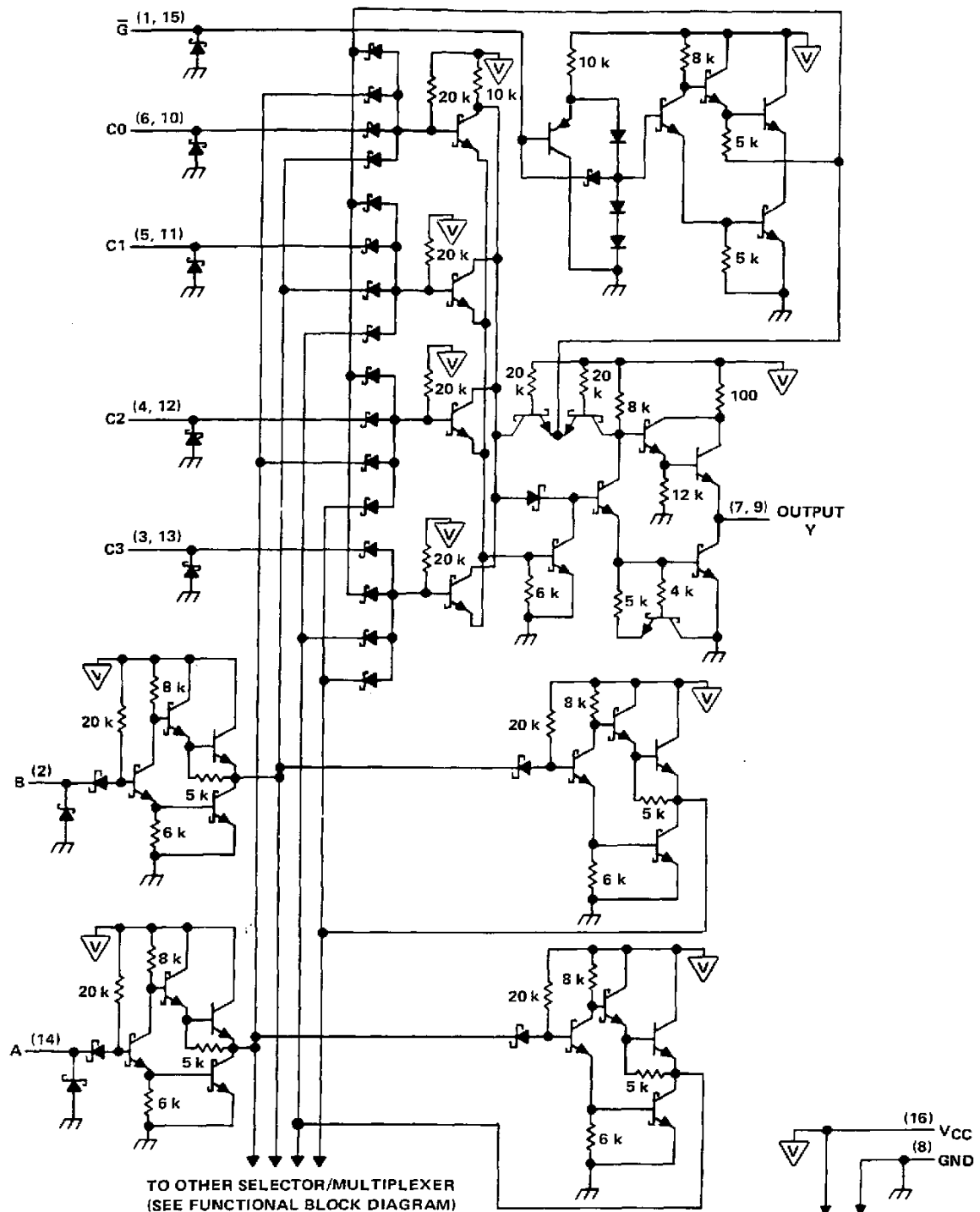
logic diagram (positive logic)



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

**SN54LS253, SN74LS253,  
DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS  
WITH 3-STATE OUTPUTS**

schematic (each selector/multiplexer, and the common select section)



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

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INSTRUMENTS**

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**SN54LS253, SN74LS253**  
**DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS**  
**WITH 3-STATE OUTPUTS**

recommended operating conditions

		SN54LS253			SN74LS253			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			0.7			0.8	V
$I_{OH}$	High-level output current			-1			-2.6	mA
$I_{OL}$	Low-level output current			4			8	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†				SN54LS253		SN74LS253		UNIT	
					MIN	TYP ‡	MAX	MIN		TYP ‡
V <sub>IK</sub>	V <sub>CC</sub> = MIN,	I <sub>I</sub> = - 18 mA			- 1.5		- 1.5		V	
V <sub>OH</sub>	V <sub>CC</sub> = MIN,	V <sub>IH</sub> = 2 V,	V <sub>IL</sub> = MAX,	I <sub>OH</sub> = MAX	2.4	3.4	2.4	3.1	V	
V <sub>OL</sub>	V <sub>CC</sub> = MIN,	V <sub>IH</sub> = 2 V,	V <sub>IL</sub> = MAX	I <sub>OL</sub> = 4 mA	0.25		0.4	0.25	0.4	V
				I <sub>OL</sub> = 8 mA			0.25	0.5		
I <sub>OZ</sub>	V <sub>CC</sub> = MAX,	V <sub>IH</sub> = 2 V	V <sub>O</sub> = 2.7 V		20		20		μA	
			V <sub>O</sub> = 0.4 V		- 20		- 20			
I <sub>I</sub>	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 7 V			0.1		0.1		mA	
I <sub>IH</sub>	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 2.7 V			20		20		μA	
I <sub>IL</sub>	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 0.4 V	$\overline{\text{G}}$		- 0.2		- 0.2		mA	
			All other		- 0.4		- 0.4			
I <sub>OS</sub> §	V <sub>CC</sub> = MAX				- 30	- 130	- 30	- 130	mA	
I <sub>CC</sub>	V <sub>CC</sub> = MAX,	See Note 2	Condition A		7	12	7	12	mA	
			Condition B		8.5	14	8.5	14		

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

‡ All typical values are at  $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$ .

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

NOTE 2:  $I_{CC}$  is measured with the outputs open under the following conditions:

A. All inputs grounded.

B. Output control at 4.5 V, all inputs grounded.

switching characteristics,  $V_{CC} = 5 \text{ V}, T_A = 25^\circ\text{C}$

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t <sub>PLH</sub>	Data	Y	C <sub>L</sub> = 15 pF,      R <sub>L</sub> = 2 kΩ, See Note 3	17	25		ns
t <sub>PHL</sub>				13	20		
t <sub>PLH</sub>	Select	Y		30	45		ns
t <sub>PHL</sub>				21	32		
t <sub>PZH</sub>	Output Control	Y	C <sub>L</sub> = 5 pF,      R <sub>L</sub> = 2 kΩ, See Note 3	15	28		ns
t <sub>PZL</sub>				15	23		
t <sub>PHZ</sub>	Output Control	Y		27	41		ns
t <sub>PLZ</sub>				18	27		

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.



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# SN54S253, SN74S253

## DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

### WITH 3-STATE OUTPUTS

#### recommended operating conditions

	SN54S253			SN74S253			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub> Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V <sub>IH</sub> High-level input voltage	2			2			V
V <sub>IL</sub> Low-level input voltage			0.8			0.8	V
I <sub>OH</sub> High-level output current			-2			-6.5	mA
I <sub>OL</sub> Low-level output current			20			20	mA
T <sub>A</sub> Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS†				MIN	TYP‡	MAX	UNIT
V <sub>IK</sub>	V <sub>CC</sub> = MIN,	I <sub>I</sub> = -18 mA					-1.2	V
V <sub>OH</sub>	V <sub>CC</sub> = MIN,	V <sub>IH</sub> = 2 V,	V <sub>IL</sub> = 0.8 V,	I <sub>OH</sub> = MAX	Series 54S 2.5	3.4		V
					Series 74S 2.7	3.4		
V <sub>OL</sub>	V <sub>CC</sub> = MIN,	V <sub>IH</sub> = 2 V,	V <sub>IL</sub> = 0.8 V,	I <sub>OL</sub> = 20 mA			0.5	V
I <sub>OZ</sub>	V <sub>CC</sub> = MAX,	V <sub>IH</sub> = 2 V		V <sub>O</sub> = 2.4 V			50	μA
				V <sub>O</sub> = 0.5 V			-50	
I <sub>I</sub>	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 5.5 V					1	mA
I <sub>IH</sub>	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 2.7 V					50	μA
I <sub>IL</sub>	V <sub>CC</sub> = MAX,	V <sub>I</sub> = 0.5 V		$\bar{G}$ = 0.8 V,			-2	mA
				$\bar{G}$ = 2 V			-0.25	
I <sub>OS</sub> §	V <sub>CC</sub> = MAX				-40		-100	mA
I <sub>CC</sub>	V <sub>CC</sub> = MAX,	See Note 2		Condition A		45	70	mA
				Condition B		65	85	

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

‡ All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

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

NOTE 2: I<sub>CC</sub> is measured with the outputs open under the following conditions:

A. All inputs grounded.

B. Output control at 4.5 V, all inputs grounded.

#### switching characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS		MIN	TYP	MAX	UNIT		
t <sub>PLH</sub>	Data	Y	R <sub>L</sub> = 280 Ω, See Note 3	C <sub>L</sub> = 15 pF		6	9	ns		
t <sub>PHL</sub>						6	9			
t <sub>PLH</sub>	Select	Y				11.5	18	ns		
t <sub>PHL</sub>						12	18			
t <sub>PZH</sub>	Output	Y				11	16.5	ns		
t <sub>PZL</sub>	Control					12	18			
t <sub>PHZ</sub>	Output	Y			R <sub>L</sub> = 280 Ω, See Note 3	C <sub>L</sub> = 5 pF		6.5	9.5	ns
t <sub>PLZ</sub>	Control							10	15	

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

  
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