

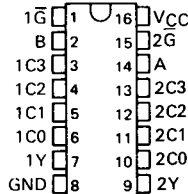
# SN54LS352, SN74LS352 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

OCTOBER 1976 — REVISED MARCH 1988

- Inverting Versions of SN54LS153, SN74LS153
- Schottky-Diode-Clamped Transistors
- Permits Multiplexing from N lines to 1 line
- Performs Parallel-to-Serial Conversion
- Typical Average Propagation Delay Times:  
Data Input to Output . . . 15 ns  
Strobe Input to Output . . . 19 ns  
Select Input to Output . . . 22 ns
- Fully Compatible with most TTL Circuits
- Low Power Dissipation . . . 31 mW Typical (Enabled)

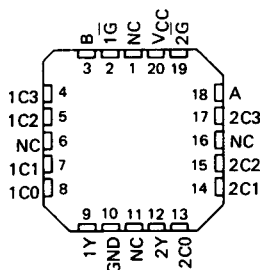
SN54LS352 . . . J OR W PACKAGE  
SN74LS352 . . . D OR N PACKAGE

(TOP VIEW)



SN54LS352 . . . FK PACKAGE

(TOP VIEW)



NC — No internal connection

## description

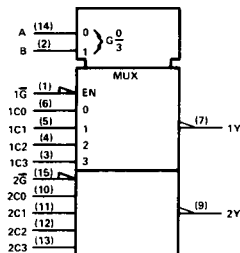
Each of these Schottky-clamped data selectors/multiplexers contains inverters and drivers to supply fully complementary, on-chip, binary decoding data selection to the AND-OR-invert gates. Separate strobe inputs are provided for each of the two four-line sections.

FUNCTION TABLE

SELECT INPUTS		DATA INPUTS				STROBE	OUTPUT
B	A	C0	C1	C2	C3	$\overline{G}$	Y
X	X	X	X	X	X	H	H
L	L	L	X	X	X	L	H
L	L	H	X	X	X	L	L
L	H	X	L	X	X	L	H
L	H	X	H	X	X	L	L
H	L	X	X	L	X	L	H
H	L	X	X	H	X	L	L
H	H	X	X	X	L	L	H
H	H	X	X	X	H	L	L

Select inputs A and B are common to both sections.  
H = high level, L = low level, X = irrelevant

## 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.

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

Supply voltage, $V_{CC}$ (see Note 1)	7 V
Input voltage	7 V
Operating free-air temperature range: SN54LS352	-55°C to 125°C
SN74LS352	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.

**TEXAS  
INSTRUMENTS**

POST OFFICE BOX 655012 • DALLAS, TEXAS 75265

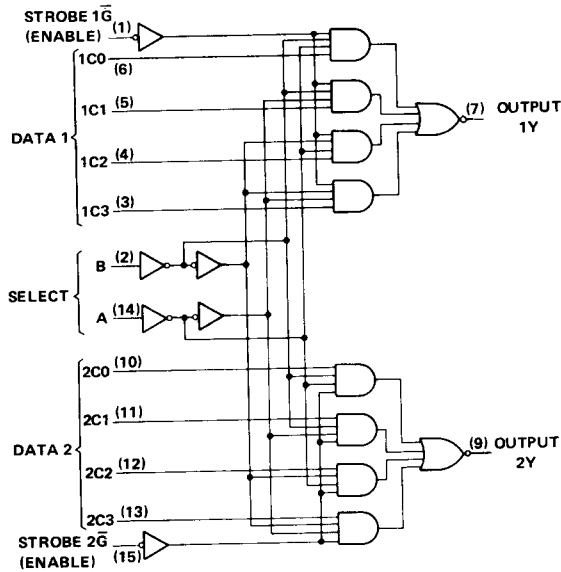
2-855

2

TTL Devices

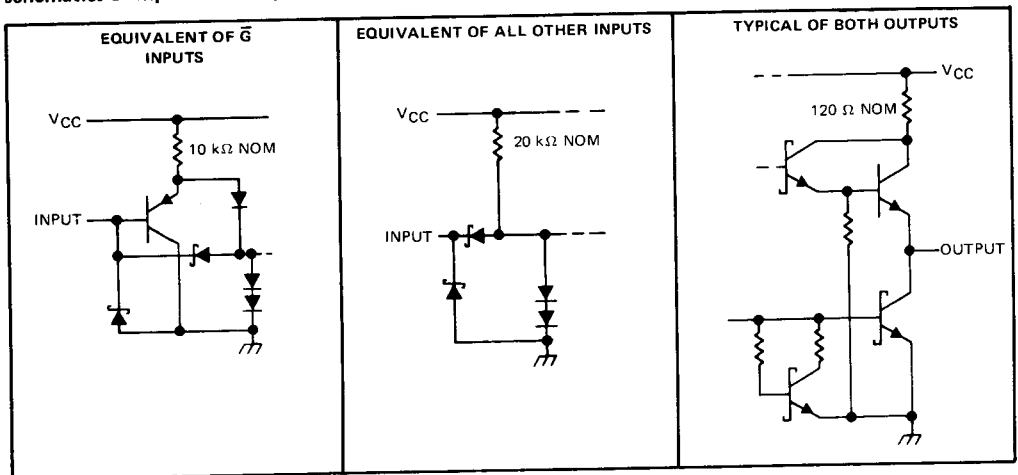
# SN54LS352, SN74LS352 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

logic diagram (positive logic)



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

schematics of inputs and outputs



# SN54LS352, SN74LS352 DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

## recommended operating conditions

	SN54LS352			SN74LS352			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			0.7			0.8	V
I <sub>OH</sub> High-level output current			-0.4			-0.4	mA
I <sub>OL</sub> Low-level output current			4			8	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†	SN54LS352		SN74LS352		UNIT		
		MIN	TYP‡	MAX	MIN		TYP‡	MAX
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> = -0.4 mA	2.5	3.4	2.7	3.4		V	
V <sub>OL</sub>	V <sub>CC</sub> = MIN, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = MAX			0.25	0.4	0.25	0.4	V
						0.35	0.5	
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>	$\bar{G}$			-0.2		-0.2	mA	
	All other			-0.4		-0.4	mA	
I <sub>OS</sub> §	V <sub>CC</sub> = MAX	-20		-100		-20	-100	mA
I <sub>CCL</sub>	V <sub>CC</sub> = MAX, See Note 2			6.2	10	6.2	10	mA

† 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 the short-circuit should not exceed one second.

NOTE 2: I<sub>CCL</sub> is measured with the outputs open and 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> = 2 kΩ, See Note 3	C <sub>L</sub> = 15 pF,	13	20		ns
t <sub>PHL</sub>	Data	Y			17	26		ns
t <sub>PLH</sub>	A or B	Y			19	29		ns
t <sub>PHL</sub>	A or B	Y			25	38		ns
t <sub>PLH</sub>	$\bar{G}$	Y			16	24		ns
t <sub>PHL</sub>	$\bar{G}$	Y			21	32		ns

† t<sub>PLH</sub> = propagation delay time, low-to-high-level output

t<sub>PHL</sub> = propagation delay time, high-to-low-level output

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

2  
TTL Devices