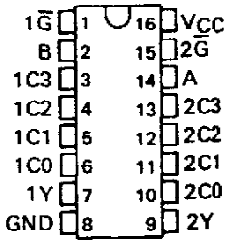
SN54LS352, SN74LS352
DUAL 4-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS

SDLS162

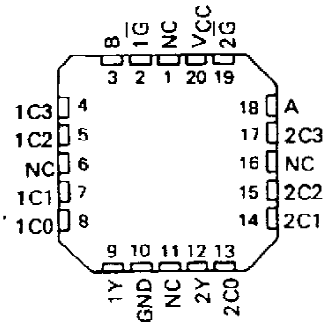
OCTOBER 1976 – REVISED MARCH 1988

- **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

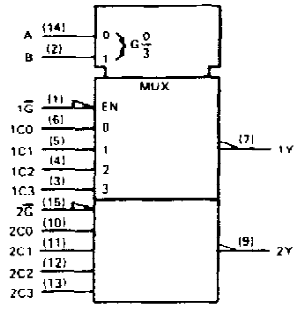
Each of these Schottky-clamped data selectors/-multiplexers contains inverters and drivers to supply fully complementary, on-chip, binary decoding data selection to the AND-OR-invert gates. Separate strobe inputs are provided for each of the two four-line sections.

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†



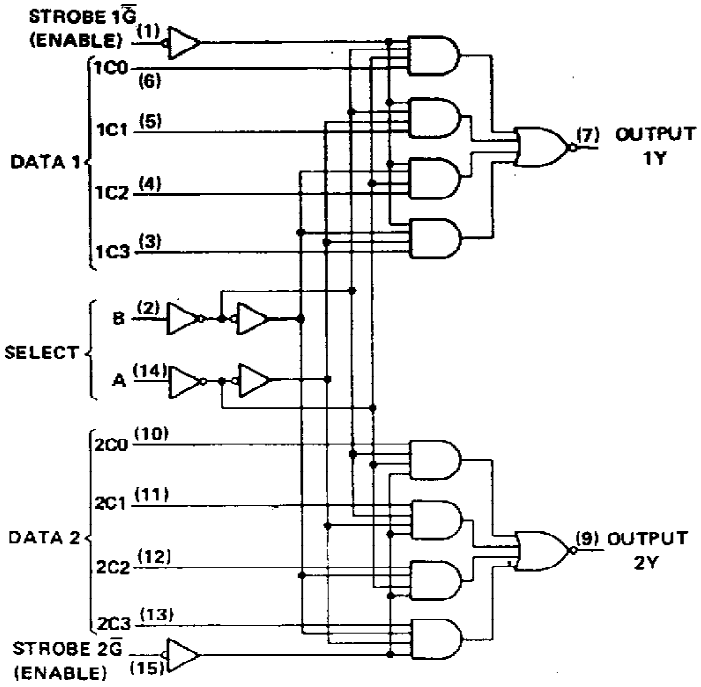
†This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, N, and W packages.

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

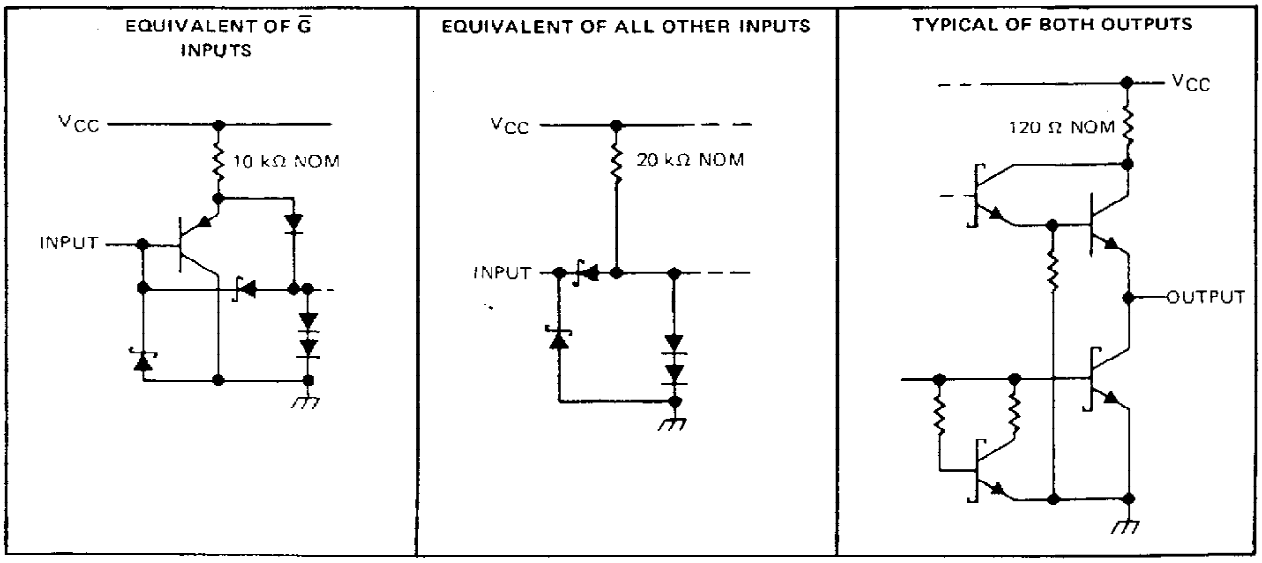
NOTE 1: Voltage values are with respect to network ground terminal.

logic diagram (positive logic)



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

schematics of inputs and outputs



recommended operating conditions

		SN54LS352			SN74LS352			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			−0.4			−0.4	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†		SN54LS352			SN74LS352			UNIT
				MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}		V_{CC} = MIN, I_I = −18 mA				−1.5			−1.5	V
V_{OH}		V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = MAX, I_{OH} = −0.4 mA		2.5	3.4		2.7	3.4		V
V_{OL}		V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = MAX	I_{OL} = 4 mA		0.25	0.4		0.25	0.4	V
			I_{OL} = 8 mA					0.35	0.5	
I_I		V_{CC} = MAX, V_I = 7 V				0.1			0.1	mA
I_{IH}		V_{CC} = MAX, V_I = 2.7 V				20			20	μA
I_{IL}	$\overline{G}$	V_{CC} = MAX, V_I = 0.4 V				−0.2			−0.2	mA
	All other					−0.4			−0.4	
I_{OS}§		V_{CC} = MAX		−20		−100	−20		−100	mA
I_{CCL}		V_{CC} = 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_{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.
NOTE 2: I_{CCL} is measured with the outputs open and all inputs grounded.

switching characteristics, V_{CC} = 5 V, T_A = 25°C

PARAMETER¶	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Data	Y	R_L = 2 kΩ, C_L = 15 pF, See Note 3		13	20	ns
t_{PHL}	Data	Y			17	26	ns
t_{PLH}	A or B	Y			19	29	ns
t_{PHL}	A or B	Y			25	38	ns
t_{PLH}	$\overline{G}$	Y			16	24	ns
t_{PHL}	$\overline{G}$	Y			21	32	ns

¶ t_{PLH} = propagation delay time, low-to-high-level output
t_{PHL} = propagation delay time, high-to-low-level output
NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

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