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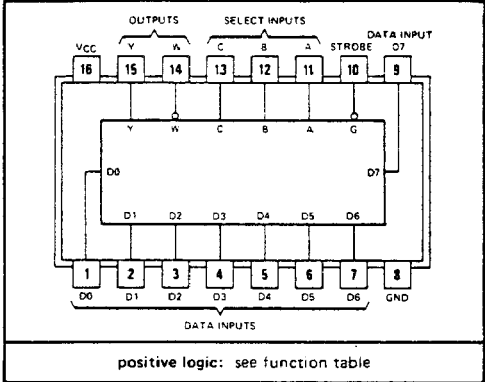
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**TYPES SN29312, SN39312
DATA SELECTORS/MULTIPLEXERS**

BULLETIN NO. DL-S 7211857, DECEMBER 1972

- Direct Replacement for Fairchild 9312
- For New Designs, SN74151A and SN54151A Are Recommended
- Selects One-of-Eight Data Sources
- Performs Parallel to Serial Conversion
- Permits Multiplexing from N lines to One Line
- Typical Propagation Delay Times:
Select to Y Output . . . 22 ns
Data Input to Y Output . . . 12 ns

SN29312 . . . J OR N DUAL-IN-LINE PACKAGE
SN39312 . . . J DUAL-IN-LINE PACKAGE
(TOP VIEW)



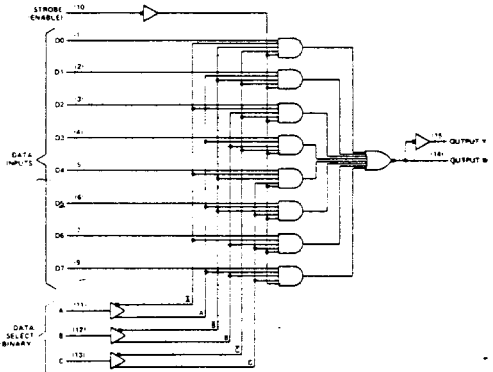
positive logic: see function table

description

Each of these monolithic, data selectors/multiplexers contain inverter/drivers to supply full complementary, on-chip, binary decoding data selection to the AND-OR-INVERT gate. Each SN29312/SN39312 has complementary outputs and a strobe. When the strobe is low, the function is enabled. A high level at the strobe forces the W output high, and the Y output low.

These improved data selectors/multiplexers feature select decoding gates which have symmetrical delay times through their complementary paths. This virtually eliminates transients from occurring at the outputs when the select inputs are changed with the outputs enabled (i.e., strobe low).

functional block diagram

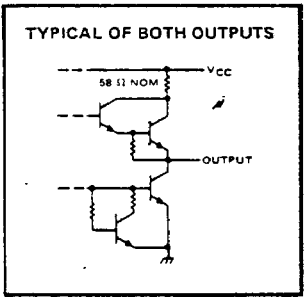
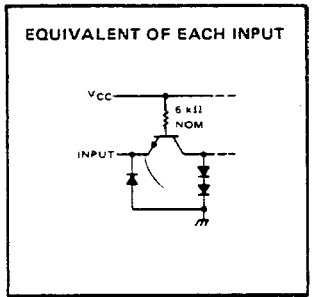


FUNCTION TABLE

INPUTS				OUTPUTS	
SELECT			STROBE	Y	W
C	B	A	G		
X	X	X	H	L	H
L	L	L	L	D0	D0
L	L	L	L	D1	D1
L	L	L	L	D2	D2
L	L	L	L	D3	D3
L	H	L	L	D4	D4
L	H	L	L	D5	D5
L	H	L	L	D6	D6
L	H	L	L	D7	D7
H	H	H	L	D7	D7

H = high level, L = low level, X = irrelevant
D0, D1 . . . , D7 = the level of the respective D input

schematics of inputs and outputs



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
Operating free-air temperature range: SN29312	0°C to 75°C
SN39312	-55°C to 125°C
Storage temperature range	-65°C to 150°C

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

TYPES SN29312, SN39312 DATA SELECTORS/MULTIPLEXERS

recommended operating conditions

	SN29312			SN39312			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.75	5	5.25	4.5	5	5.5	V
High-level output current, I_{OH}			-800			-800	μ A
Low-level output current, I_{OL}			16			16	mA
Operating free-air temperature, T_A	-0		75	-55		125	$^{\circ}$ C

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

PARAMETER	TEST CONDITIONS [†]	MIN	TYP [‡]	MAX	UNIT
V_{IH} High-level input voltage			2		V
V_{IL} Low-level input voltage				0.8	V
V_I input clamp voltage	$V_{CC} = \text{MIN}$, $I_I = -12 \text{ mA}$			-1.5	V
V_{OH} High-level output voltage	$V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OH} = -800 \mu\text{A}$	2.4	3.4		V
V_{OL} Low-level output voltage	$V_{CC} = \text{MIN}$, $V_{IH} = 2 \text{ V}$, $V_{IL} = 0.8 \text{ V}$, $I_{OL} = 16 \text{ mA}$		0.2	0.4	V
I_I Input current at maximum input voltage	$V_{CC} = \text{MAX}$, $V_I = 5.5 \text{ V}$			1	mA
I_{IH} High-level input current	$V_{CC} = \text{MAX}$, $V_I = 2.4 \text{ V}$			40	μ A
I_{IL} Low-level input current	$V_{CC} = \text{MAX}$, $V_I = 0.4 \text{ V}$			-1.6	mA
I_{OS} Short-circuit output current [§]	$V_{CC} = \text{MAX}$	-30		-100	mA
I_{CC} Supply current	$V_{CC} = \text{MAX}$, See Note 2		30	47	mA

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

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

[§]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_{CC} is measured with the strobe and data select inputs at 4.5 V, all other inputs and outputs open.

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_{PLH}	Strobe	Y	$C_L = 15 \text{ pF}$, $R_L = 400 \Omega$, See Note 3		19	28	ns
t_{PHL}					17	25	
t_{PLH}	Strobe	W			10	15	ns
t_{PHL}					14	21	
t_{PLH}	Any D	Y			12	18	ns
t_{PHL}					13	20	
t_{PLH}	Any D	W			7	12	ns
t_{PHL}					7	12	
t_{PLH}	Any Select	Y			20	30	ns
t_{PHL}					23	35	
t_{PLH}	Any Select	W		18	28	ns	
t_{PHL}				16	25		

[¶] t_{PLH} \equiv propagation delay time, low-to-high-level output

t_{PHL} \equiv propagation delay time, high-to-low-level output

NOTE 3: Load circuit and voltage waveforms are shown on page 148.

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