

- Meet or Exceed the Requirements of IBM™ System 360 Input/Output Interface Specification
- Operate From Single 5-V Supply
- TTL Compatible
- 3.11-V Output at $I_{OH} = -59.3$ mA
- Uncommitted Emitter-Follower Output Structure for Party-Line Operation
- Short-Circuit Protection
- AND-OR Logic Configuration
- Designed for Use With Triple Line Receiver SN75124
- Designed to Be Interchangeable With Signetics N8T13 and N8T23

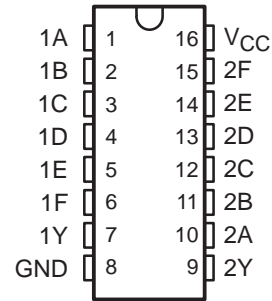
description

The N8T13, N8T23, and SN75123 are dual line drivers specifically designed to meet the input/output interface specifications for IBM System 360. It is also compatible with standard-TTL logic and supply-voltage levels.

The N8T13, N8T23, and SN75123 low-impedance emitter-follower outputs drive terminated lines such as coaxial cable or twisted pair. Having the outputs uncommitted allows wired-OR logic to be performed in party-line applications. Output short-circuit protection is provided by an internal clamping network that turns on when the output voltage drops below approximately 1.5 V. All the inputs are in conventional TTL configuration, and the gating can be used during power-up and power-down sequences to ensure that no noise is introduced to the line.

The N8T13, N8T23, and SN75123 are characterized for operation from 0°C to 70°C.

D OR N PACKAGE
(TOP VIEW)

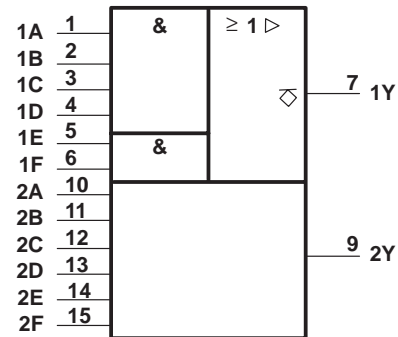


FUNCTION TABLE

INPUTS						OUTPUT
A	B	C	D	E	F	Y
H	H	H	H	X	X	H
X	X	X	X	H	H	H
All other input combinations						L

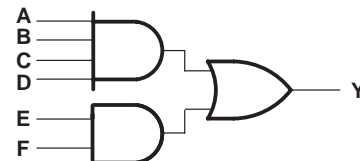
H = high level, L = low level, X = irrelevant

logic symbol†



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

logic diagram (positive logic)



THE SN751730 IS RECOMMENDED
FOR NEW IBM 360/370 INTERFACE DESIGNS.

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 **TEXAS
INSTRUMENTS**

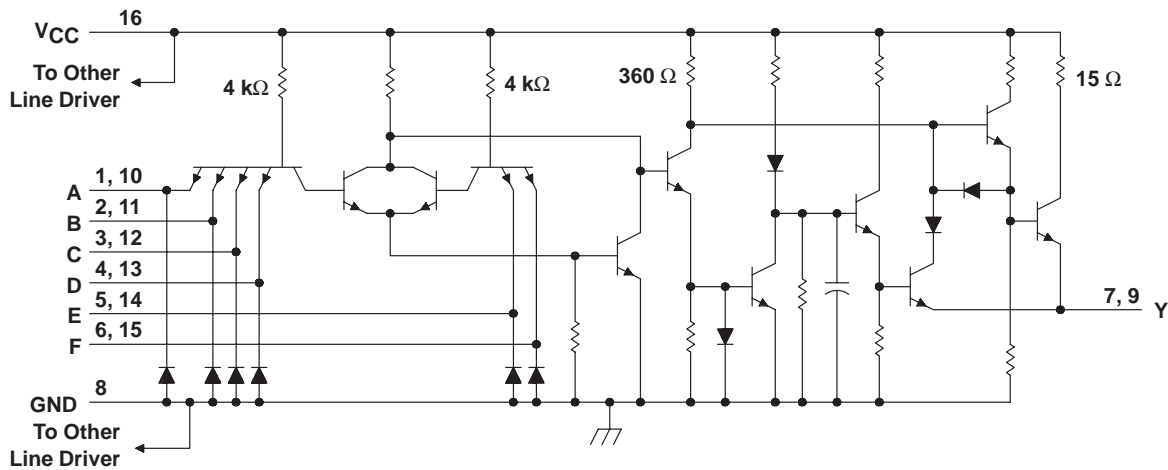
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N8T13, N8T23, SN75123
DUAL LINE DRIVERS

SLLS086B – SEPTEMBER 1973 – REVISED MAY 1995

schematic (each driver)



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, V_I	5.5 V
Output voltage, V_O	7 V
Continuous total dissipation at (or below) 25°C free-air temperature (see Note 2): D package	950 mW
N package	1150 mW
Operating free-air temperature range, T_A	0°C to 70°C
Storage temperature range, T_{stg}	–65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES: 1. All voltage values, except differential input voltage, are with respect to network ground terminal.
2. For operation above 25°C free-air temperature, derate the D package to 608 mW at 70°C at the rate of 7.6 mW/°C and the N package to 736 mW at 70°C at the rate of 9.2 mW/°C.

recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}	4.75	5	5.25	V
High-level input voltage, V_{IH}	2			V
Low-level input voltage, V_{IL}			0.8	V
High-level output current, I_{OH}			–100	mA
Operating free-air temperature, T_A	0		70	°C

electrical characteristics, $V_{CC} = 4.75 \text{ V to } 5.25 \text{ V}$, $T_A = 0^\circ\text{C to } 70^\circ\text{C}$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS	MIN	MAX	UNIT
V_{IK} Input clamp voltage	$V_{CC} = 5 \text{ V}$, $I_I = -12 \text{ mA}$		-1.5	V
$V_{I(BR)}$ Input breakdown voltage	$V_{CC} = 5 \text{ V}$, $I_I = 10 \text{ mA}$	5.5		V
V_{OH} High-level output voltage	$V_{CC} = 5 \text{ V}$, $I_{OH} = -59.3 \text{ mA}$, See Note 3	$T_A = 25^\circ\text{C}$	3.11	V
		$T_A = 0^\circ\text{C to } 70^\circ\text{C}$	2.9	
V_{OL} Low-level output voltage	$V_{IL} = 0.8 \text{ V}$, $I_{OL} = -240 \mu\text{A}$, See Note 3		0.15	V
I_{OH} High-level output current	$V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$, $V_{IH} = 4.5 \text{ V}$, See Note 3	$V_{OH} = 2 \text{ V}$	-100 -250	mA
$I_{O(off)}$ Off-state output current	$V_{CC} = 0$, $V_O = 3 \text{ V}$		40	μA
I_{IH} High-level input current	$V_I = 4.5 \text{ V}$		40	μA
I_{IL} Low-level input current	$V_I = 0.4 \text{ V}$	-0.1	-1.6	mA
I_{OS} Short-circuit output current†	$V_{CC} = 5 \text{ V}$, $T_A = 25^\circ\text{C}$		-30	mA
I_{CCH} Supply current, outputs high	$V_{CC} = 5.25 \text{ V}$, All inputs at 2 V, Outputs open		28	mA
I_{CCL} Supply current, outputs low	$V_{CC} = 5.25 \text{ V}$, All inputs at 0.8 V, Outputs open		60	mA

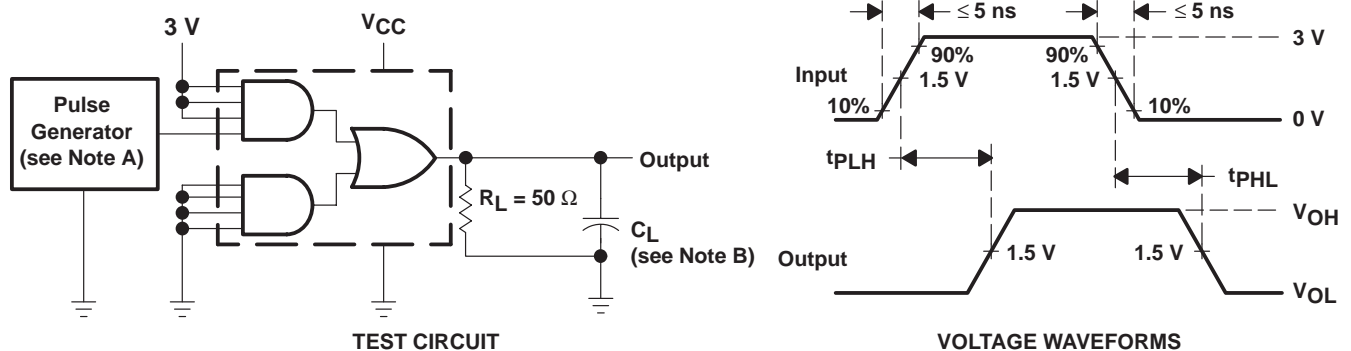
† Not more than one output should be shorted at a time.

NOTE 3: The output voltage and current limits are valid for any appropriate combination of high and low inputs specified by the function table for the desired output.

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH} Propagation delay time, low- to high-level output	$R_L = 50 \Omega$, $C_L = 15 \text{ pF}$, See Figure 1		12	20	ns
t_{PHL} Propagation delay time, high- to low-level output			12	20	
t_{PLH} Propagation delay time, low- to high-level output	$R_L = 50 \Omega$, $C_L = 100 \text{ pF}$, See Figure 1		20	35	ns
t_{PHL} Propagation delay time, high- to low-level output			15	25	

PARAMETER MEASUREMENT INFORMATION



NOTES: A. The pulse generator has the following characteristics: $Z_O = 50 \Omega$; $t_W = 200 \text{ ns}$, duty cycle = 50%.
B. C_L Includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

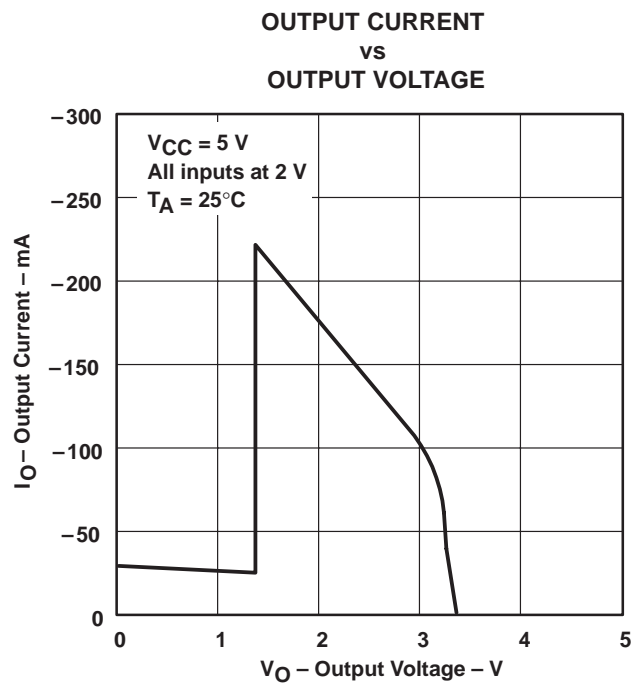


Figure 2

APPLICATION INFORMATION

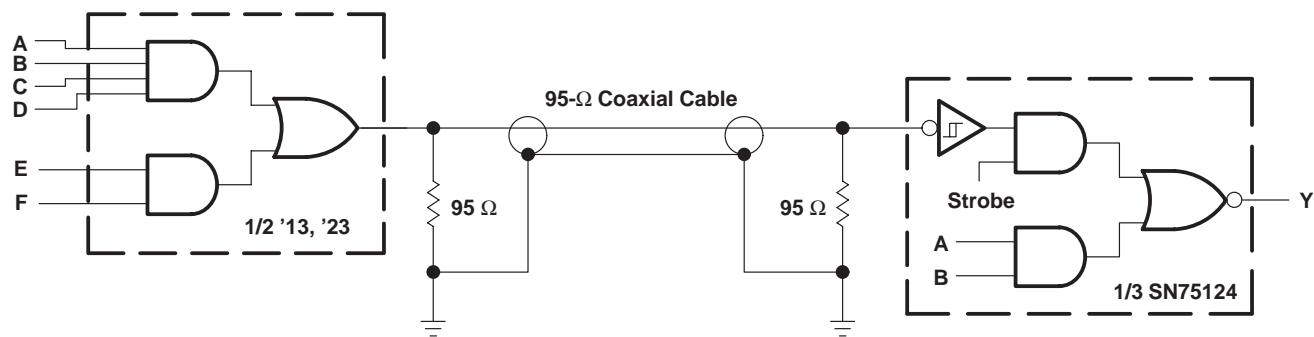


Figure 3. Unbalanced Line Communication Using '13, '23, and '124

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