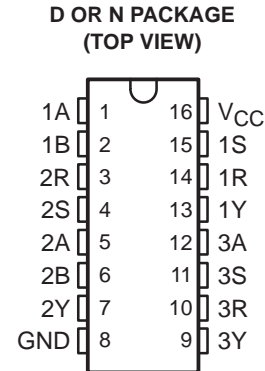


SN75124 TRIPLE LINE RECEIVER

SLLS058B – SEPTEMBER 1973 – REVISED MAY 1995

- Meets or Exceeds the Requirements of IBM™ System 360 Input/Output Interface Specification
- Operates From Single 5-V Supply
- TTL Compatible
- Built-In Input Threshold Hysteresis
- High Speed . . . Typical Propagation Delay Time = 20 ns
- Independent Channel Strobes
- Input Gating Increases Application Flexibility
- Designed for Use With Dual Line Driver SN75123
- Designed to Be Interchangeable With Signetics N8T24



description

The SN75124 triple line receiver is 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 SN75124 has receiver inputs with built-in hysteresis to provide increased noise margin for single-ended systems. An open line affects the receiver input as does a low-level input voltage, and the receiver input can withstand a level of -0.15 V with power on or off. The other inputs are in TTL configuration. The S input must be high to enable the receiver input. Two of the line receivers have A and B inputs that, if both are high, hold the output low. The third receiver has only an A input that, if high, holds the output low.

See the SN751730 for new IBM 360/370 interface designs.

The SN75124 is characterized for operation from 0°C to 70°C .

FUNCTION TABLE

INPUTS				OUTPUT Y
A	B†	R	S	
H	H	X	X	L
X	X	L	H	L
L	X	H	X	H
L	X	X	L	H
X	L	H	X	H
X	L	X	L	H

† B input and last two lines of the function table are applicable to receivers 1 and 2 only.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

IBM is a trademark of International Business Machines Corp.

PRODUCTION DATA information is 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**

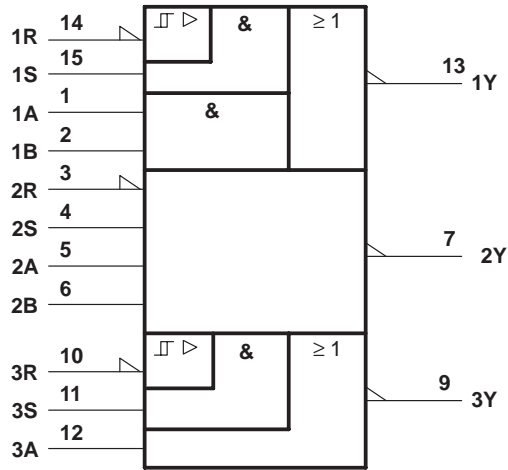
POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 1995, Texas Instruments Incorporated

SN75124 TRIPLE LINE RECEIVER

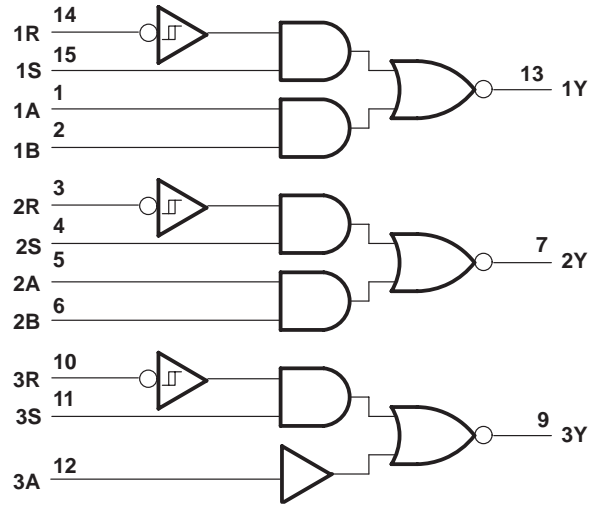
SLLS058B – SEPTEMBER 1973 – REVISED MAY 1995

logic symbol†

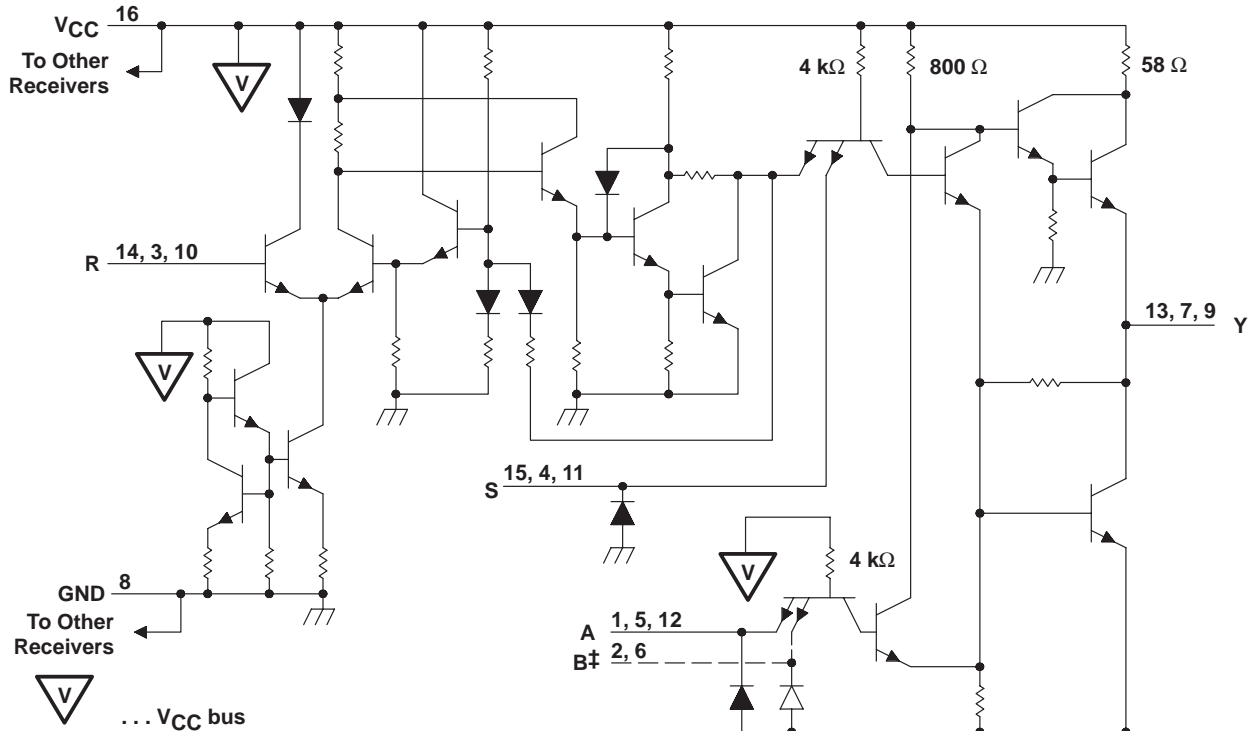


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagram (positive logic)



schematic (each receiver)



‡ B input is provided on receivers 1 and 2 only.
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 : R input with V_{CC} applied	7 V
R input with V_{CC} not applied	6 V
A, B, or S input	5.5 V
Output voltage, V_O	7 V
Output current, I_O	± 100 mA
Continuous total dissipation	See Dissipation Rating Table
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.

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

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	DERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING
D	950 mW	7.6 mW/ $^\circ\text{C}$	608 mW
N	1150 mW	9.2 mW/ $^\circ\text{C}$	736 mW

recommended operating conditions

		MIN	NOM	MAX	UNIT
Supply voltage, V_{CC}		4.75	5	5.25	V
High-level input voltage, V_{IH}	A, B, or S	2			V
	R	1.7			
Low-level input voltage, V_{IL}	A, B, or S	0.8			V
	R	0.7			
High-level output current, I_{OH}		-800			μA
Low-level output current, I_{OL}		16			mA
Operating free-air temperature, T_A		0	70		$^\circ\text{C}$

SN75124 TRIPLE LINE RECEIVER

SLLS058B – SEPTEMBER 1973 – REVISED MAY 1995

electrical characteristics over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted)

PARAMETER			TEST CONDITIONS		MIN	TYP	MAX	UNIT
V_{hys}	Hysteresis voltage ($V_{IT+} - V_{IT-}$)	R	$V_{CC} = 5\text{ V}$,	$T_A = 25^\circ\text{C}$	0.2	0.5		V
V_{IK}	Input clamp voltage	A, B, or S	$V_{CC} = 5\text{ V}$,	$I_I = 12\text{ mA}$			-1.5	V
$V_{I(BR)}$	Input breakdown voltage	A, B, or S	$V_{CC} = 5\text{ V}$,	$I_I = 10\text{ mA}$	5.5			V
V_{OH}	High-level output voltage		$V_{IH} = V_{IHmin}$, $I_{OH} = -800\ \mu\text{A}$,	$V_{IL} = V_{ILmax}$, See Note 2	2.6			V
V_{OL}	Low-level output voltage		$V_{IH} = V_{IHmin}$, $I_{OL} = 16\text{ mA}$,	$V_{IL} = V_{ILmax}$, See Note 2			0.4	V
I_I	Input current at maximum input voltage	R	$V_I = 7\text{ V}$				5	mA
			$V_I = 6\text{ V}$,	$V_{CC} = 0$			5	
I_{IH}	High-level input current	A, B, or S	$V_I = 4.5\text{ V}$				40	μA
		R	$V_I = 3.11\text{ V}$				170	
I_{IL}	Low-level input current	A, B, or S	$V_I = 0.4\text{ V}$,	$V_{IR} = 0.8\text{ V}$	-0.1		-1.6	mA
I_{OS}	Short-circuit output current†				-50		-100	mA
I_{CC}	Supply current		All inputs = 0.8 V				72	mA
			All inputs = 2 V				100	

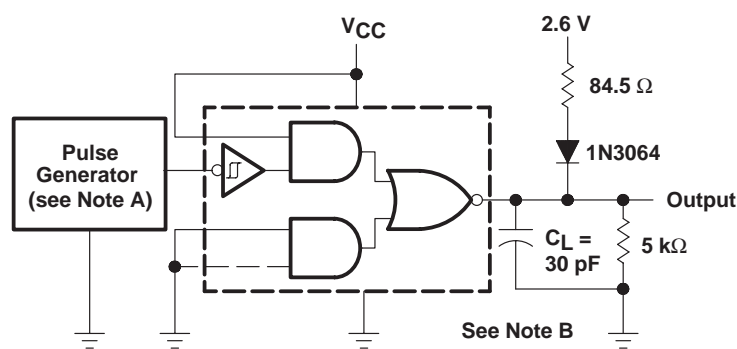
† Not more than one output should be shorted at a time, and duration of the short circuit should not exceed one second.

NOTE 2: The output voltage and current limits are characterized for any appropriate combination of high and low inputs specified by the function table for the desired output.

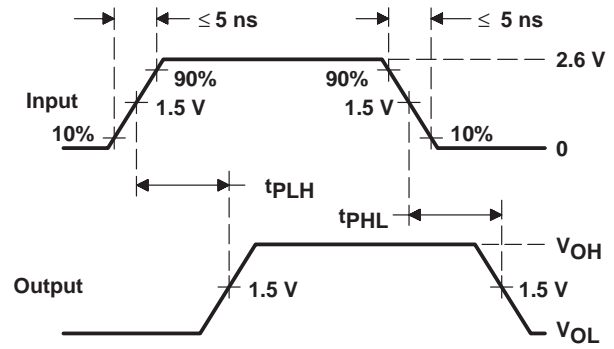
switching characteristics, $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output from R input	See Figure 1		20	30	ns
t_{PHL}	Propagation delay time, high-to-low-level output from R input			20	30	

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT

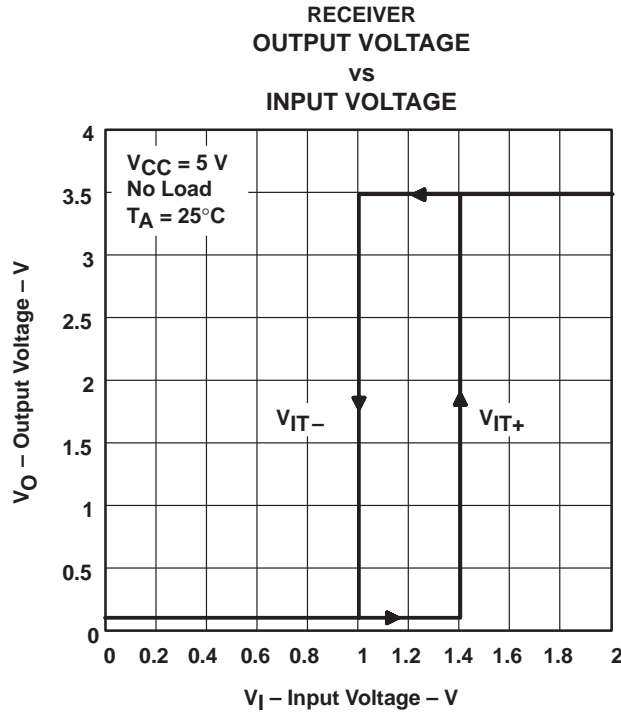


VOLTAGE WAVEFORMS

- NOTES: A. The pulse generator has the following characteristics: $Z_O \approx 50\ \Omega$, $PRR \leq 5\text{ MHz}$, duty cycle = 50%.
B. C_L includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS



APPLICATION INFORMATION

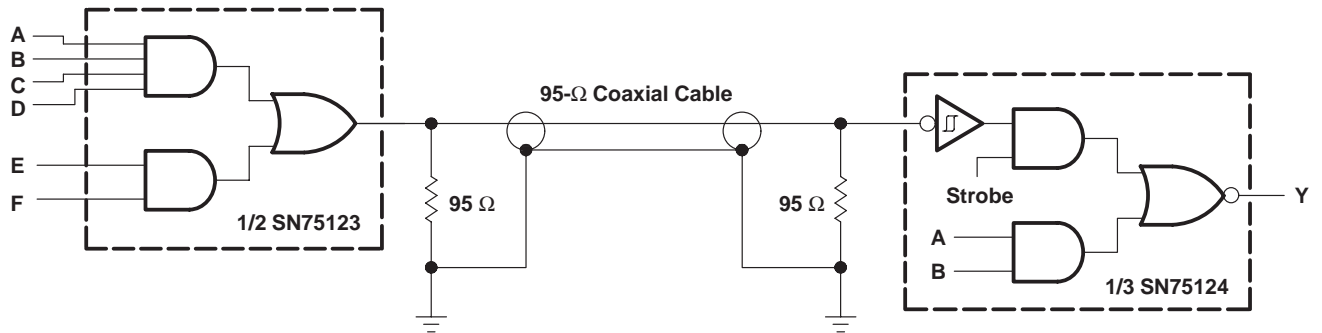


Figure 3. Unbalanced Line Communication Using SN75123 and SN75124

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.