Line Drivers/Receivers

LM75124 triple line receivers

general description

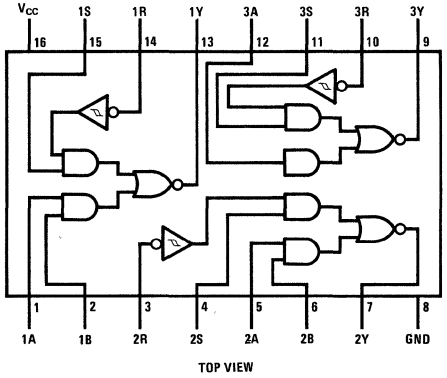
The LM75124 is designed to meet the input/output interface specifications for IBM System 360. It has built-in hysteresis on one input on each of the three receivers to provide large noise margin. The other inputs on each receiver are in a standard TTL configuration. The LM75124 is compatible with standard TTL logic and supply voltage levels.

features

- Built-in input threshold hysteresis
- High speed . . typ propagation delay time 20 ns
- Independent channel strobes
- Input gating increases application flexibility
- Single 5.0V supply operation
- Plug-in replacement for the SN75124 and the 8T24

connection diagram and truth table

Dual-In-Line Package



TOP VIEW

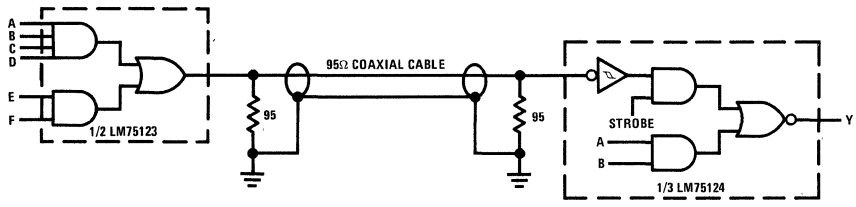
INPUTS				OUTPUT
A	B†	R	S	Y
H	H	X	X	L
X	X	L	H	L
L	X	H	X	H
L	X	X	L	H
X	L	H	X	H
X	L	X	L	H

H = high level, L = low level, X = irrelevant
†B input and last two lines of the truth table are applicable to receivers 1 and 2 only

Order Number LM75124J
See Package 17

Order Number LM75124N
See Package 23

typical application



absolute maximum ratings

(Notes 1 and 2)

Supply Voltage, V_{CC}	7.0V
Input Voltage	
R Input with V_{CC} Applied	7.0V
R Input with V_{CC} not Applied	6.0V
A, B, or S Input	5.5V
Output Voltage	7.0V
Output Current	±100 mA
Continuous Total Power Dissipation at (or below) 25°C Free-Air Temperature (Note 5)	800 mW
Operating Temperature Range	0°C to +75°C
Storage Temperature Range	−65°C to +150°C
Lead Temperature (Soldering, 10 seconds)	300°C

operating conditions

	MIN	MAX	UNITS
Supply Voltage, V_{CC}	4.75	5.25	V
High Level Output Current, I_{OH}		−800	μA
Low Level Output Current, I_{OL}		16	mA
Operating Temperature, T_A	0	+75	°C

electrical characteristics (Note 3)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
High Level Input Voltage (V_{IH})					
A, B, or S		2.0			V
R		1.7			V
Low Level Input Voltage (V_{IL})					
A, B, or S				0.8	V
R				0.7	V
Hysteresis ($V_{T+} - V_{T-}$)	(Note 7)				
R	V_{CC} = 5.0V, T_A = 25°C	0.2	0.4		V
Input Clamp Voltage (V_I)					
A, B, or S	V_{CC} = 5.0V, I_I = −12 mA			−1.5	V
Input Breakdown Voltage ($V_{(BR)I}$)					
A, B, or S	V_{CC} = 5.0V, I_I = 10 mA	5.5			V
High Level Output Voltage (V_{OH})	$V_{IH} = V_{IH\,MIN}$, $V_{IL} = V_{IL\,MAX}$, I_{OH} = −800μA (Note 4)	2.6			V
Low Level Output Voltage (V_{OL})	$V_{IH} = V_{IN\,MIN}$, $V_{IL} = V_{IL\,MAX}$, I_{OL} = 16 mA (Note 4)			0.4	V
Input Current at Maximum Input Voltage (I_I) R	V_I = 7.0V			5.0	mA
	V_I = 6.0V, V_{CC} = 0			5.0	mA
High Level Input Current (I_{IH})					
A, B, or S	V_I = 4.5V			40	μA
R	V_I = 3.11V			170	μA
Low Level Input Current (I_{IL})					
A, B, or S	V_I = 0.4V	−0.1		−1.6	mA
Short Circuit Output Current (I_{OS})	V_{CC} = 5.0V, T_A = 25°C, (Note 6)	−50		−100	mA
Supply Current (I_{CC})	V_{CC} = 5.25V			72	mA

switching characteristics V_{CC} = 5.0V, T_A = 25°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Propagation Delay Time, Low to High Level Output from R Input (t_{PLH})	(See AC Test Circuit and Switching Time Waveforms)		20	30	ns
Propagation Delay Time, High to Low Level Output from R Input (t_{PHL})			20	30	ns

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2: All currents into device pins are shown as positive, currents out of device pins shown as negative, all voltage values are referenced with respect to network ground terminal, unless otherwise noted. All values shown as max or min on absolute value basis.

Note 3: Min/max limits apply across the guaranteed operating temperature range of 0°C to +75°C for LM75124, unless otherwise specified. Typicals are for V_{CC} = 5.0V, T_A = 25°C. Positive current is defined as current into the referenced pin.

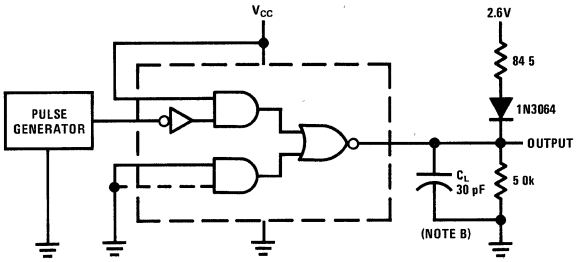
Note 4: The output voltage and current limits are guaranteed for any appropriate combination of high and low inputs specified by the truth table for the desired output.

Note 5: For operating at elevated temperatures, the cavity DIP package (J) must be derated based on a thermal resistance of +85°C/W, junction to ambient. The molded DIP package (N) must be derated based on a thermal resistance of +150°C/W, junction to ambient.

Note 6: Note more than one output should be shorted at a time.

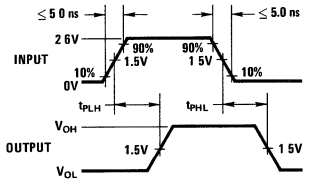
Note 7: Hysteresis is the difference between the positive going input threshold voltage, V_{T+}, and the negative going input threshold voltage, V_{T-}.

ac test circuit and switching time waveforms



NOTE A. THE PULSE GENERATOR HAS THE FOLLOWING CHARACTERISTICS: $Z_{OUT} \approx 50\Omega$, t_W = 200 ns, DUTY CYCLE = 50%.

NOTE B C_L INCLUDES PROBE AND JIG CAPACITANCE.



typical performance characteristics