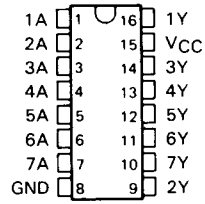
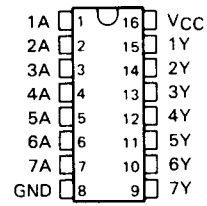
D2239, APRIL 1987—REVISED AUGUST 1989

- Meets IBM 360/370 I/O Specification
- Input Resistance . . . 7 kΩ to 20 kΩ
- Output Compatible with TTL
- IMPACT™ Low-Power Schottky Technology
- Operates from Single 5-V Supply
- High Speed . . . Low Propagation Delay
- Ratio Specification for Propagation Delay Time, Low-to-High/High-to-Low
- Glitch-Free Power-Up and Power-Down
- Seven Channels in One 16-Pin Package
- Standard V_{CC} and Ground Positioning on SN75ALS127

SN75ALS125 . . . D, J, OR N PACKAGE
(TOP VIEW)



SN75ALS127 . . . D, J, OR N PACKAGE
(TOP VIEW)



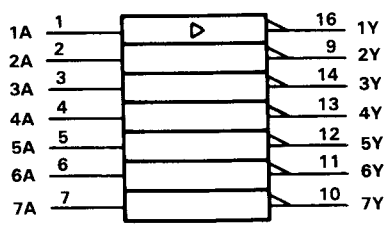
description

The SN75ALS125 and SN75ALS127 are monolithic seven-channel line receivers designed to satisfy the requirements of the IBM System 360/370 input/output interface specifications. Employing the IMPACT™ process allows low supply-current requirements while maintaining fast switching speeds and high-current TTL outputs.

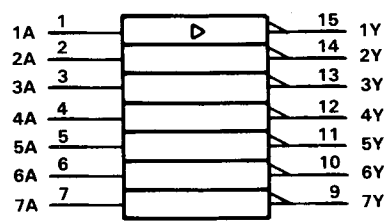
The SN75ALS125 and SN75ALS127 are characterized for operation from 0°C to 70°C.

logic symbols†

SN75ALS125



SN75ALS127



†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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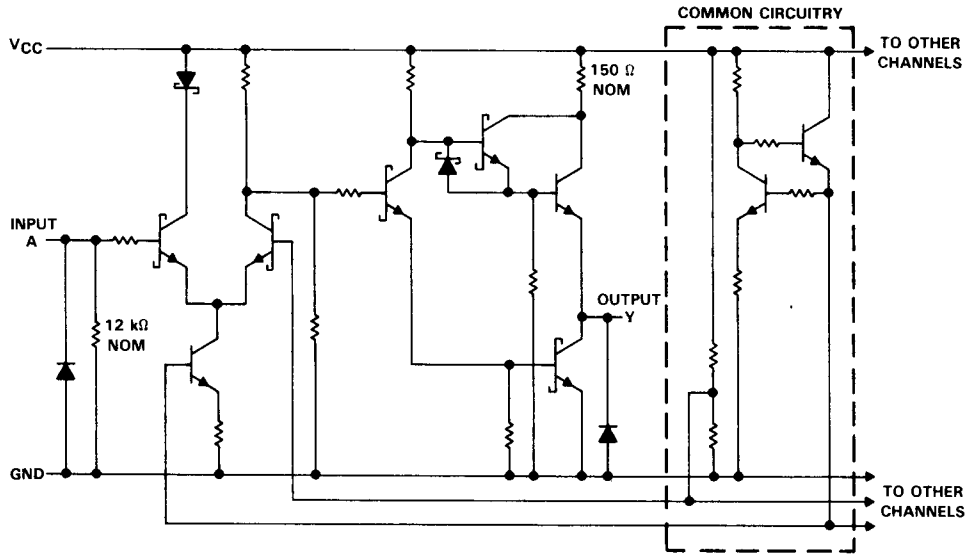
schematic (each receiver)



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage range . . . . . −0.15 V to 7 V
Continuous total dissipation at (or below) 25 °C free-air temperature (see Note 2):
D package . . . . . 950 mW
J package . . . . . 1025 mW
N package . . . . . 1150 mW
Operating free-air temperature range . . . . . 0 °C to 70 °C
Storage temperature range . . . . . −65 °C to 150 °C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds: J package . . . . . 300 °C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds: D or N package . . . . . 260 °C

NOTES: 1. All voltage values 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, the J package to 656 mW/°C at 70 °C at the rate of 8.2 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}	4.5	5	5.5	V
High-level input voltage, V_{IH}	1.7			V
Low-level input voltage, V_{IL}			0.7	V
High-level output current, I_{OH}			−0.4	V
Low-level output current, I_{OL}			16	mA
Operating free-air temperature, T_A	0		70	°C

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

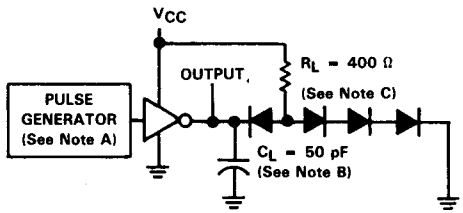
PARAMETER		TEST CONDITIONS	MIN	TYP†	MAX	UNIT
V_{OH}	High-level output voltage	V_{CC} = 4.5 V, V_{IL} = 0.7 V, I_{OH} = −0.4 mA	2.4	3.1		V
V_{OL}	Low-level output voltage	V_{CC} = 4.5 V, V_{IH} = 1.7 V, I_{OL} = 16 mA		0.4	0.5	V
I_{IH}	High-level input current	V_{CC} = 5.5 V, V_I = 3.11 V		0.3	0.42	mA
I_{IL}	Low-level input current	V_{CC} = 5.5 V, V_I = 0.15 V			30	μA
I_{OS}	Short-circuit output current‡	V_{CC} = 5.5 V, V_O = 0	−18		−60	mA
r_i	Input resistance	V_{CC} = 4.5 V, 0, or open, ΔV_I = 0.15 V to 4.15 V	7		20	kΩ
I_{CC}	Supply current	V_{CC} = 5.5 V, I_{OH} = −0.4 mA, All inputs at 0.7 V		15	25	mA
		V_{CC} = 5.5 V, I_{OL} = 16 mA, All inputs at 4 V		28	47	mA

switching characteristics over recommended operating temperature range (unless otherwise noted), V_{CC} = 5 V

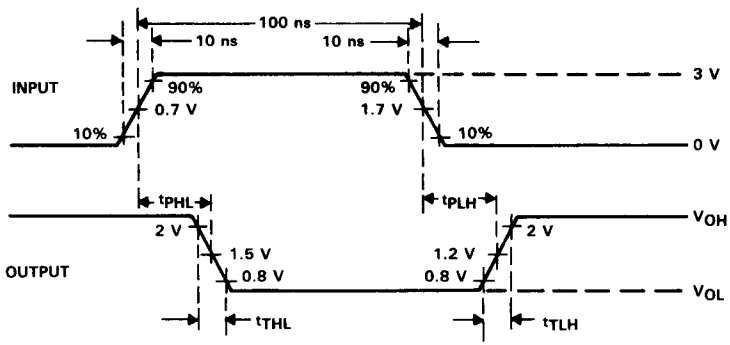
PARAMETER		TEST CONDITIONS	MIN	TYP†	MAX	UNIT
t_{PLH}	Propagation delay time, low-to-high-level output	R_L = 400 Ω, C_L = 50 pF, See Figure 1	7	14	25	ns
t_{PHL}	Propagation delay time, high-to-low-level output		10	18	30	ns
$\frac{t_{PLH}}{t_{PHL}}$	Ratio of propagation delay times		0.5	0.8	1.3	
t_{TLH}	Transition time, low-to-high-level output		1	7	12	ns
t_{THL}	Transition time, high-to-low-level output		1	3	12	ns

† All typical values are at V_{CC} = 5 V, T_A = 25°C.
‡ Not more than one output should be shorted at a time.

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

NOTES: A. The pulse generator has the following characteristics: $Z_{out} \approx 50\ \Omega$, PRR $\leq$ 5 MHz.
B. C_L includes probe and jig capacitance.
C. All diodes are 1N3064 or equivalent.

FIGURE 1