

- Permits Digital Data Transmission Over Coaxial Cable, Strip Line, or Twisted Pair
- Operates With 50-Ω to 500-Ω Transmission Lines
- TTL Compatible With 5-V Supply
- 2.4-V Output at $I_{OH} = -75$ mA
- Uncommitted Emitter-Follower Output Structure for Party-Line Operation
- IMPACT™ Low-Power Schottky Technology
- Improved Replacement for the SN75121 and Signetics 8T13
- Glitchless Power Up/Power Down
- Short-Circuit Protection
- AND-OR Logic Configuration
- High Speed . . . Maximum Propagation Delay Time of 14 ns at $C_L = 15$ pF

description

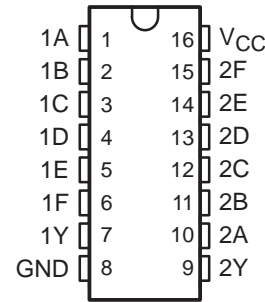
The SN75ALS121 dual line driver is designed for digital data transmission over lines having impedances from 50 to 500 Ω. It is compatible with standard TTL logic and supply voltage levels.

The low-impedance emitter-follower outputs drive terminated lines such as coaxial cable, strip line, 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 inputs are in conventional TTL configuration. Gating can be used during power-up and power-down sequences to ensure that no noise is introduced on the line.

The SN75ALS121 employs the IMPACT™ process to achieve fast switching speeds, low power dissipation, and reduced input current requirements.

The SN75ALS121 is characterized for operation from 0°C to 70°C.

D OR N PACKAGE (TOP VIEW)



NOT RECOMMENDED FOR NEW DESIGN

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

IMPACT is a trademark of Texas Instruments Incorporated.

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.



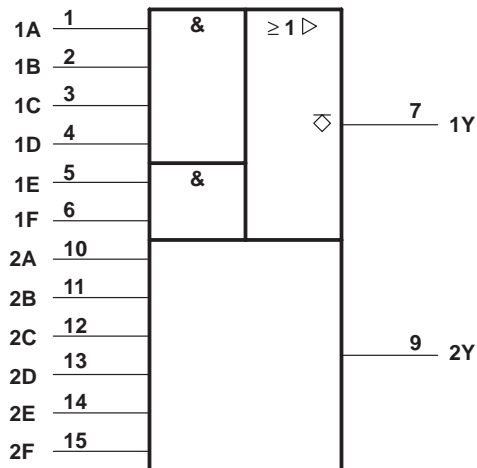
POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 1989, Texas Instruments Incorporated

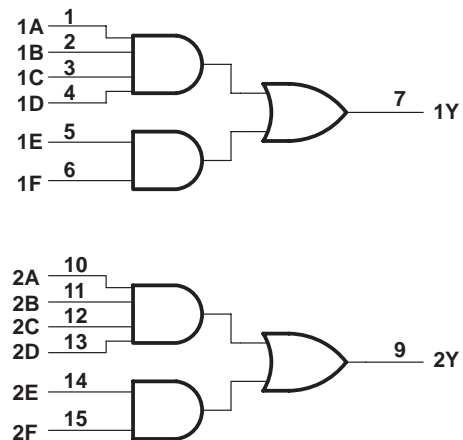
SN75ALS121 DUAL LINE DRIVER

SLLS030A – D1334, SEPTEMBER 1987 – REVISED AUGUST 1989

logic symbol†

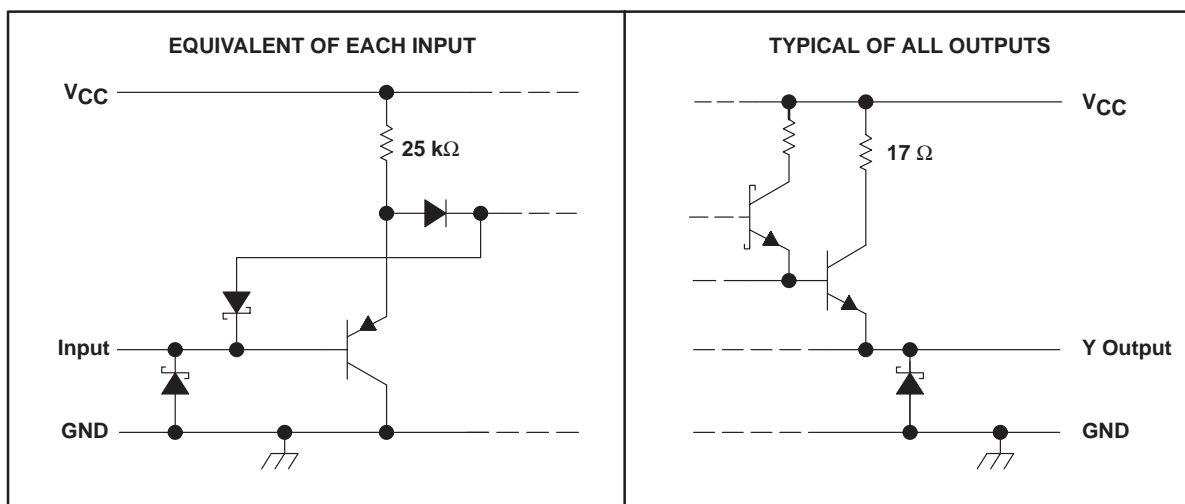


logic diagram (positive logic)



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

schematics of inputs and outputs



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

Supply voltage, V_{CC} (see Note 1)	6 V
Input voltage	6 V
Output voltage	6 V
Continuous total dissipation at (or below) 25°C free air temperature	See Dissipation Rating Table
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 10 seconds	260°C

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

DISSIPATION RATING TABLE

PACKAGE	$T_A \leq 25^\circ\text{C}$ POWER RATING	OPERATING FACTOR ABOVE $T_A = 25^\circ\text{C}$	$T_A = 70^\circ\text{C}$ POWER RATING
D	950 mW	7.6 mW/°C	608 mW
N	1150 mW	9.2 mW/°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}	2			V
Low-level input voltage, V_{IL}			0.8	V
High-level output current, I_{OH}			– 75	mA
Operating free-air temperature range, T_A	0		70	°C

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

PARAMETER	TEST CONDITIONS	MIN	TYP†	MAX	UNIT
V_{IK} Input clamp voltage	$V_{CC} = 5\text{ V}$, $I_I = -12\text{ mA}$			– 1.5	V
$V_{(BR)I}$ Input breakdown voltage	$V_{CC} = 5\text{ V}$, $I_I = 10\text{ mA}$	5.5			V
V_{OH} High-level output voltage	$V_{IH} = 2\text{ V}$, $I_{OH} = -75\text{ mA}$, See Note 2	2.4	3.2		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 2, $V_{OH} = 2\text{ V}$	– 100	– 200	– 250	mA
I_{OL} Low-level output current	$V_{IL} = 0.8\text{ V}$, $V_{OL} = 0.4\text{ V}$, See Note 2			– 800	μA
$I_{O(off)}$ Off-state output current	$V_{CC} = 3\text{ V}$, $V_O = 3\text{ V}$			500	μA
I_{IH} High-level input current	$V_I = 4.5\text{ V}$			40	μA
I_{IL} Low-level input current	$V_I = 0.4\text{ V}$			– 250	μA
I_{OS} Short-circuit output current	$V_{CC} = 5\text{ V}$		– 5	– 30	mA
I_{CCH} Supply current, outputs high	$V_{CC} = 5.25\text{ V}$, All inputs at 2 V, No load		9	14	mA
I_{CCL} Supply current, outputs low	$V_{CC} = 5.25\text{ V}$, All inputs at 0.8 V, No load		13	30	mA

† All typical values are at $V_{CC} = 5\text{ V}$ and $T_A = 25^\circ\text{C}$.

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

SN75ALS121

DUAL LINE DRIVER

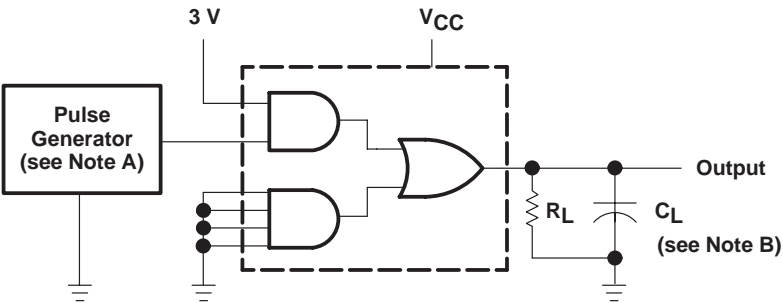
SLLS030A – D1334, SEPTEMBER 1987 – REVISED AUGUST 1989

switching characteristics over recommended ranges of supply voltage and operating free-air temperature

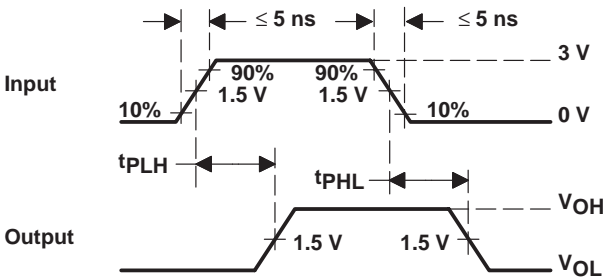
PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t _{PLH} Propagation delay time, low-to-high-level output	R _L = 37 Ω, C _L = 15 pF, See Figure 1		6	14	ns
t _{PHL} Propagation delay time, high-to-low-level output			4	14	ns
t _{PLH} Propagation delay time, low-to-high-level output	R _L = 37 Ω, C _L = 1000 pF, See Figure 1		18	30	ns
t _{PHL} Propagation delay time, high-to-low-level output			29	50	ns

† All typical values are at V_{CC} = 5 V and T_A = 25°C.

PARAMETER MEASUREMENT INFORMATION



TEST CIRCUIT



VOLTAGE WAVEFORMS

NOTES: A. The pulse generator has the following characteristics: Z_O = 50 Ω, t_w = 200 ns, duty cycle = 50%.
 B. C_L includes probe and jig capacitance.

Figure 1. Test Circuit and Voltage Waveforms

TYPICAL CHARACTERISTICS

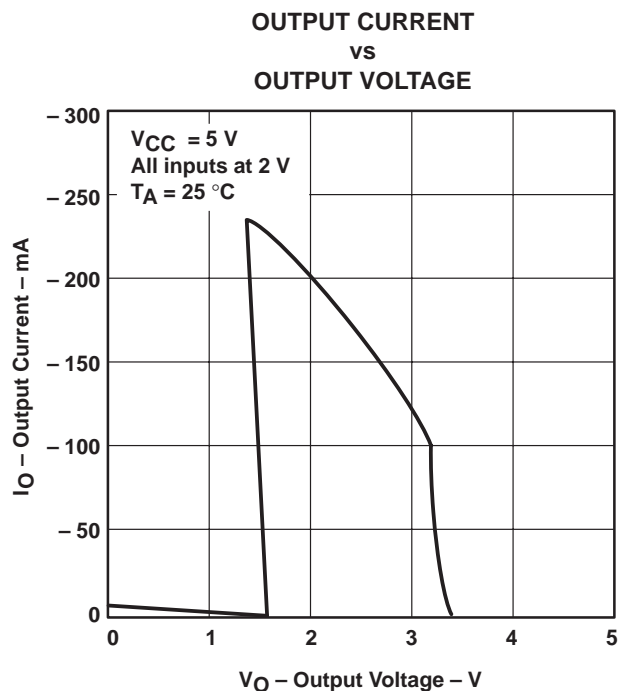


Figure 2

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN75ALS121N	OBSOLETE	PDIP	N	16		TBD	Call TI	Call TI

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

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

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		Applications	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DSP	dsp.ti.com	Broadband	www.ti.com/broadband
Interface	interface.ti.com	Digital Control	www.ti.com/digitalcontrol
Logic	logic.ti.com	Military	www.ti.com/military
Power Mgmt	power.ti.com	Optical Networking	www.ti.com/opticalnetwork
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
		Telephony	www.ti.com/telephony
		Video & Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments
Post Office Box 655303 Dallas, Texas 75265

Copyright © 2005, Texas Instruments Incorporated