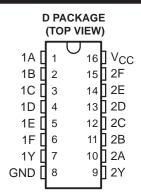
- Meets IBM 360 Input Interface Specifications
- Permits Digital Data Transmission Over Coaxial Cable, Strip Line, or Twisted Pair
- TTL Compatible With 5-V Supply
- 3.11-V Output at I<sub>OH</sub> = 59.3 mA
- Uncommitted Emitter-Follower Output Structure for Party-Line Operation
- IMPACT™ Low-Power Schottky Technology
- Improved Replacement for the SN75123 and Signetics 8T13
- Glitchless Power-Up/Power-Down Protection
- Short-Circuit Protection
- AND-OR Logic Configuration
- High Speed . . . Maximum Propagation Delay Time of 14 ns at C<sub>L</sub> = 15 pF

### description

The SN75ALS123 dual line driver is specifically designed to meet the input interface specifications for the IBM System 360. 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. The uncommitted output 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 SN75ALS123 employs the IMPACT™ process to achieve fast switching speeds, low power dissipation, and reduced input current requirements.

The SN75ALS123 is characterized for operation from 0°C to 70°C.



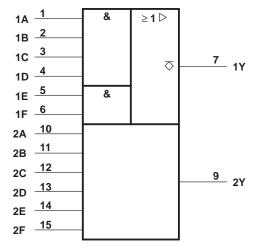
### NOT RECOMMENDED FOR NEW DESIGN

### **FUNCTION TABLE**

INPUTS						OUTPUT
Α	В	С	D	Е	F	Y
Н	Н	Н	Н	Χ	Χ	Н
X	X	Χ	Χ	Н	Н	н
All other input combinations						L

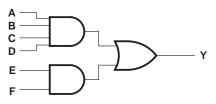
H = high level L = low level X = irrelevant

### logic symbol†



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

### logic diagram, each driver (positive logic)

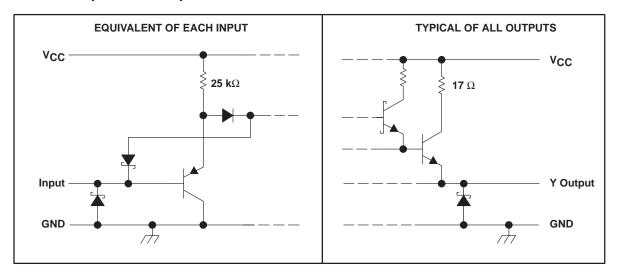


Copyright © 1993, Texas Instruments Incorporated

IMPACT is a trademark of Texas Instruments Incorporated.



### schematics of inputs and outputs



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

Supply voltage, V <sub>CC</sub> (see Note 1)	7 V
Input voltage	5.5 V
Output voltage	6 V
Continuous total dissipation at (or below) 25°C free air temperature (see Note 2)	950 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 10 seconds	260°C

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

2. For operation above 25°C free-air temperature, derate to 608 mW at 70°C at the rate of 7.6 mW/°C.

### recommended operating conditions

	MIN	NOM	MAX	UNIT
Supply voltage, V <sub>CC</sub>	4.75	5	5.25	V
High-level input voltage, V <sub>IH</sub>	2			V
Low-level input voltage, V <sub>IL</sub>			0.8	V
High-level output current, IOH			-100	mA
Operating free-air temperature range, T <sub>A</sub>			70	°C

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

	PARAMETER		TEST CONDITIONS	5	MIN	TYP†	MAX	UNIT
VIK	Input clamp voltage	V <sub>CC</sub> = 5 V,	I <sub>I</sub> = -12 mA				- 1.5	V
V <sub>(BR)I</sub>	Input breakdown voltage	$V_{CC} = 5 V$ ,	I <sub>I</sub> = 10 mA		5.5			V
	High-level output voltage	V <sub>CC</sub> = 5 V, See Note 3	V <sub>IH</sub> = 2 V,	$I_{OH} = -59.3 \text{ mA},$	2.9			,
Vон		V <sub>C</sub> C = 5 V, T <sub>A</sub> = 25°C,	V <sub>IH</sub> = 2 V, See Note 3	$I_{OH} = -59.3 \text{ mA},$	3.11	3.3		V
VOL	Low-level output voltage	V <sub>IL</sub> = 0.8 V,	$I_{OL} = -240 \mu\text{A}$	See Note 3			0.15	V
ЮН	High-level output current	V <sub>CC</sub> = 5 V, T <sub>A</sub> = 25°C,	V <sub>IH</sub> = 4.5 V, See Note 3	V <sub>OH</sub> = 2 V,	- 100	- 200	- 250	mA
IO(off)	Off-state output current	$V_{CC} = 0$ ,	VO = 3 V				40	μΑ
ΙΗ	High-level input current	V <sub>I</sub> = 4.5 V					40	μΑ
I <sub>IL</sub>	Low-level input current	V <sub>I</sub> = 0.4 V					- 250	μΑ
los	Short-circuit output current	V <sub>CC</sub> = 5 V				- 5	- 30	mA
ІССН	Supply current, outputs high	$V_{CC} = 5.25 \text{ V},$	All inputs at 2 V,	No load		9	14	mA
ICCL	Supply current, outputs low	$V_{CC} = 5.25 \text{ V},$	All inputs at 0.8 V,	No load		13	30	mA

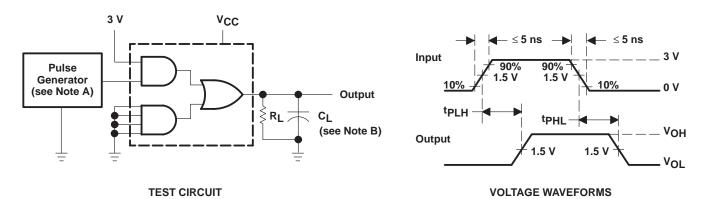
NOTE 3: The output voltage and current limits are ensured for any appropriate combination of high and low inputs specified by the function table for the desired output.

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

	PARAMETER	TEST CONDITIONS			MIN	TYP†	MAX	UNIT
<sup>t</sup> PLH	Propagation delay time, low-to-high-level output	D 500	0 45 -5	Coo Figure 4		4	14	ns
<sup>t</sup> PHL	Propagation delay time, high-to-low-level output	$R_L = 50 \Omega$ ,	$C_L = 15 pF$ ,	See Figure 1		5	14	ns
<sup>t</sup> PLH	Propagation delay time, low-to-high-level output	Rι = 50 Ω.	C <sub>I</sub> = 100 pF,	See Figure 1		8	20	ns
tPHL	Propagation delay time, high-to-low-level output	R  = 30.22,	OL = 100 pr,	See Figure 1		8	20	ns

<sup>&</sup>lt;sup>†</sup> All typical values are at  $V_{CC} = 5 \text{ V}$  and  $T_A = 25^{\circ}\text{C}$ .

### PARAMETER MEASUREMENT INFORMATION



**Figure 1. Test Circuit and Voltage Waveforms** 

NOTES: A. The pulse generator has the following characteristics:  $Z_0$  = 50  $\Omega$ ,  $t_W$  = 200 ns, duty cycle = 50%.

B. C<sub>I</sub> includes probe and jig capacitance.

### **TYPICAL CHARACTERISTICS**

# OUTPUT CURRENT vs OUTPUT VOLTAGE

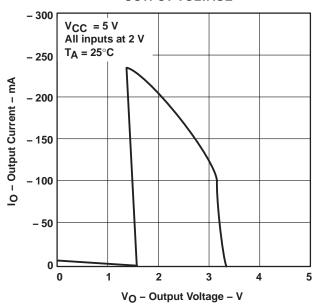


Figure 2

#### **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 TI 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. Information of third parties may be subject to additional restrictions

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.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

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

#### **Products Amplifiers** amplifier.ti.com Data Converters dataconverter.ti.com DSP dsp.ti.com Clocks and Timers www.ti.com/clocks Interface interface.ti.com Logic logic.ti.com Power Mgmt power.ti.com Microcontrollers microcontroller.ti.com www.ti-rfid.com RF/IF and ZigBee® Solutions www.ti.com/lprf

Applications	
Audio	www.ti.com/audio
Automotive	www.ti.com/automotive
Broadband	www.ti.com/broadband
Digital Control	www.ti.com/digitalcontrol
Medical	www.ti.com/medical
Military	www.ti.com/military
Optical Networking	www.ti.com/opticalnetwork
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 © 2008, Texas Instruments Incorporated