

SN74ALS29827, SN74ALS29828
10-BIT BUFFERS AND BUS DRIVERS
WITH 3-STATE OUTPUTS

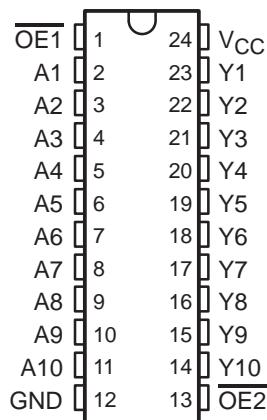
SDAS095B – JANUARY 1986 – REVISED JANUARY 1995

- Functionally Equivalent to AMD's AM29827 and AM29828
- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- pnp Inputs Reduce dc Loading
- Data Flow-Through Pinout (All Inputs on Opposite Side From Outputs)
- Power-Up High-Impedance State
- Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic (NT) 300-mil DIPs

description

These 10-bit buffers and bus drivers provide high-performance bus interface for wide data paths or buses carrying parity.

DW OR NT PACKAGE (TOP VIEW)

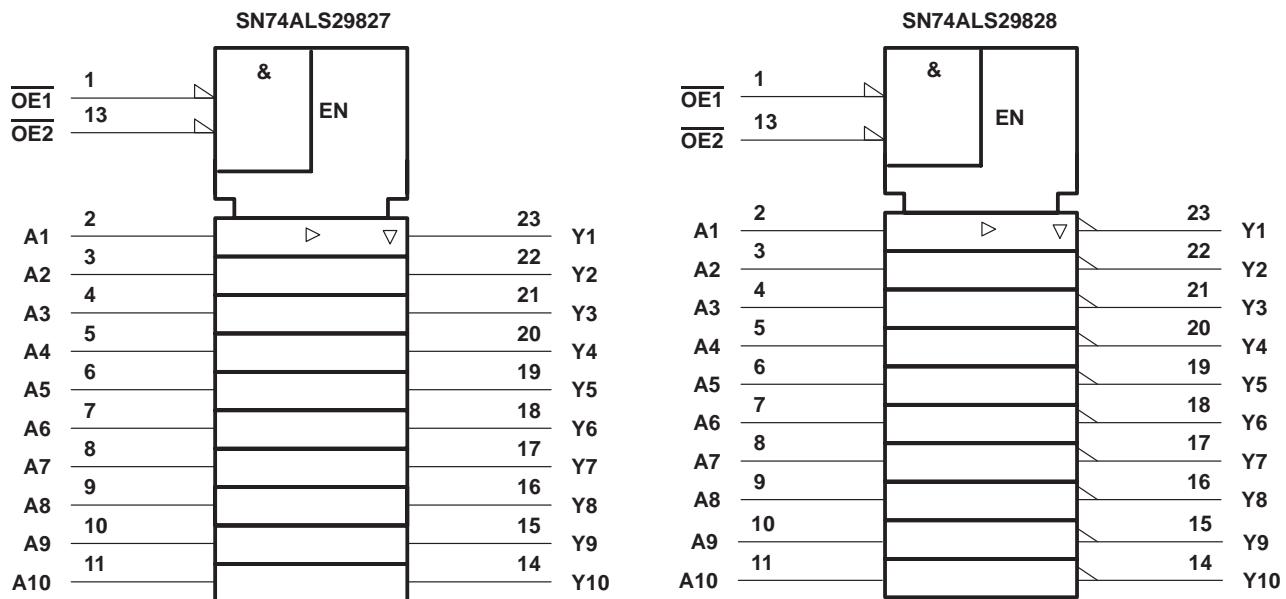


The 3-state control gate is a 2-input NOR such that if either output-enable ($\overline{OE1}$ or $\overline{OE2}$) input is high, all ten outputs are in the high-impedance state.

The SN74ALS29827 provides true data and the SN74ALS29828 provides inverted data at their respective outputs.

The SN74ALS29827 and SN74ALS29828 are characterized for operation from 0°C to 70°C.

logic symbols[†]

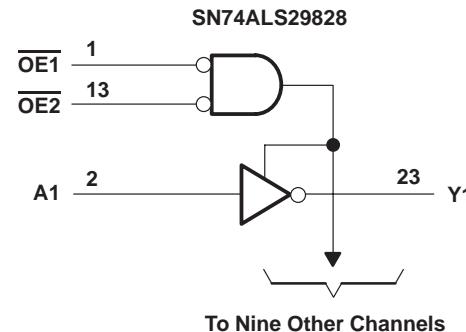
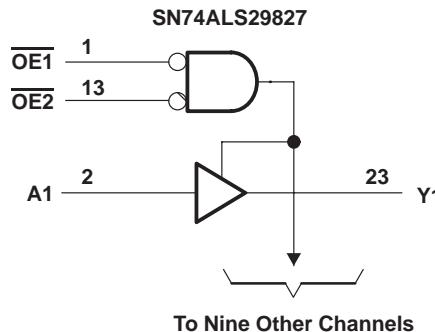


[†] These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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logic diagrams (positive logic)



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

Supply voltage, V_{CC}	7 V
Input voltage, V_I	5.5 V
Voltage applied to a disabled 3-state output	5.5 V
Operating free-air temperature range, T_A	0°C to 70°C
Storage temperature range	-65°C to 150°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.

recommended operating conditions

		SN74ALS29827 SN74ALS29828			UNIT
		MIN	NOM	MAX	
V_{CC}	Supply voltage	4.75	5	5.25	V
V_{IH}	High-level input voltage		2		V
V_{IL}	Low-level input voltage			0.8	V
I_{OH}	High-level output current			-24	mA
I_{OL}	Low-level output current			48	mA
T_A	Operating free-air temperature	0		70	°C

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

PARAMETER	TEST CONDITIONS	SN74ALS29827 SN74ALS29828		UNIT
		MIN	TYP†	
V_{IK}	$V_{CC} = 4.75 \text{ V}$, $I_I = -18 \text{ mA}$			-1.2
V_{OH}	$V_{CC} = 4.75 \text{ V}$	$I_{OH} = -15 \text{ mA}$	2.4	V
		$I_{OH} = -24 \text{ mA}$	2	
V_{OL}	$V_{CC} = 4.75 \text{ V}$, $I_{OL} = 48 \text{ mA}$	0.35	0.5	V
I_{OZH}	$V_{CC} = 5.25 \text{ V}$, $V_O = 2.4 \text{ V}$		20	μA
I_{OZL}	$V_{CC} = 5.25 \text{ V}$, $V_O = 0.4 \text{ V}$		-20	μA
I_I	$V_{CC} = 5.25 \text{ V}$, $V_I = 5.5 \text{ V}$		0.1	mA
I_{IH}	$V_{CC} = 5.25 \text{ V}$, $V_I = 2.7 \text{ V}$		20	μA
I_{IL}	$V_{CC} = 5.25 \text{ V}$, $V_I = 0.4 \text{ V}$		-0.1	mA
$I_{OS}^‡$	$V_{CC} = 5.25 \text{ V}$, $V_O = 0$	-75	-250	mA
I_{CC}	$V_{CC} = 5.25 \text{ V}$	25	40	mA

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

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

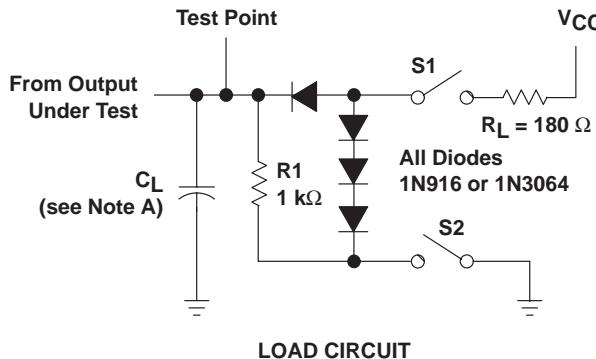
switching characteristics (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	$V_{CC} = 4.75 \text{ V to } 5.25 \text{ V}$				UNIT	
				SN74ALS29827		SN74ALS29828			
				MIN	MAX	MIN	MAX		
t_{PLH}	A	Y	$C_L = 300 \text{ pF}$	15		14		ns	
				15		14			
t_{PHL}	A	Y	$C_L = 50 \text{ pF}$	8		7		ns	
				8		7.5			
t_{PZH}	\overline{OE}	Y	$C_L = 300 \text{ pF}$	20		20		ns	
				23		23			
t_{PZL}	\overline{OE}	Y	$C_L = 50 \text{ pF}$	15		15		ns	
				15		15			
t_{PHZ}	\overline{OE}	Y	$C_L = 50 \text{ pF}$	17		17		ns	
				12		12			
t_{PLZ}	\overline{OE}	Y	$C_L = 5 \text{ pF}$	9		9		ns	
				9		9			

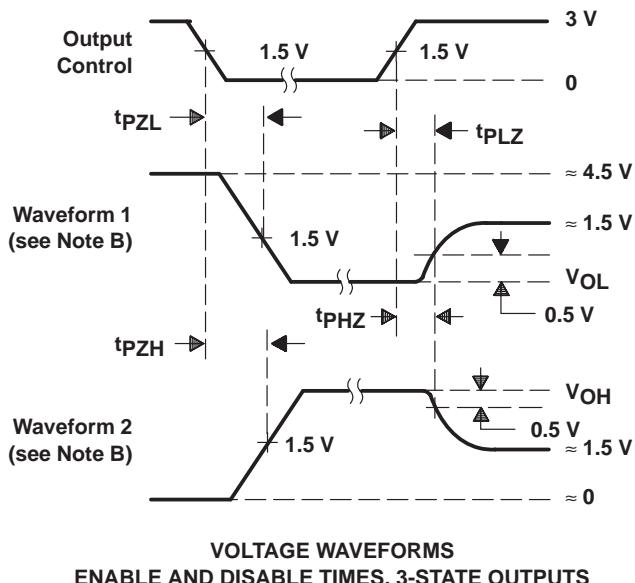
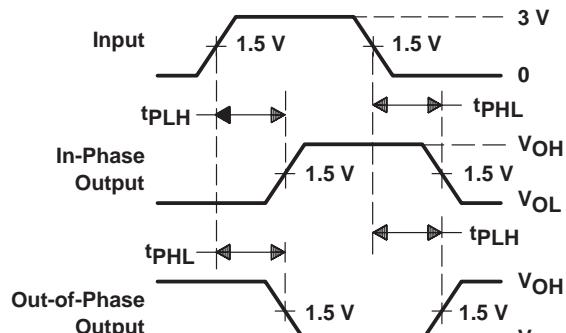
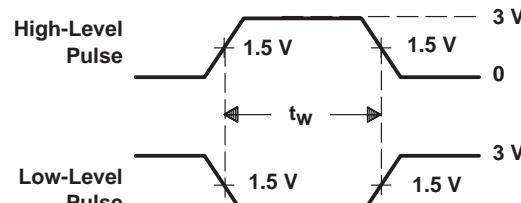
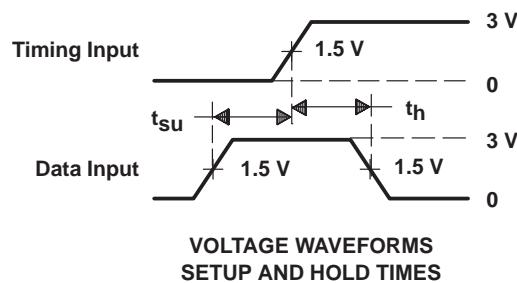
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PARAMETER MEASUREMENT INFORMATION



SWITCH POSITION TABLE		
TEST	S1	S2
tPLH	Closed	Closed
tPHL	Closed	Closed
tPZH	Open	Closed
tPZL	Closed	Open
tPHZ	Closed	Closed
tPLZ	Closed	Closed



NOTES: A. C_L includes probe and jig capacitance.

B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.

C. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_O = 50 \Omega$, $t_r \leq 2.5 \text{ ns}$, $t_f \leq 2.5 \text{ ns}$.

Figure 1. Load Circuit and Voltage Waveforms

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
SN74ALS29827DW	ACTIVE	SOIC	DW	24	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS29827	Samples
SN74ALS29827DWG4	ACTIVE	SOIC	DW	24	25	RoHS & Green	NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS29827	Samples

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

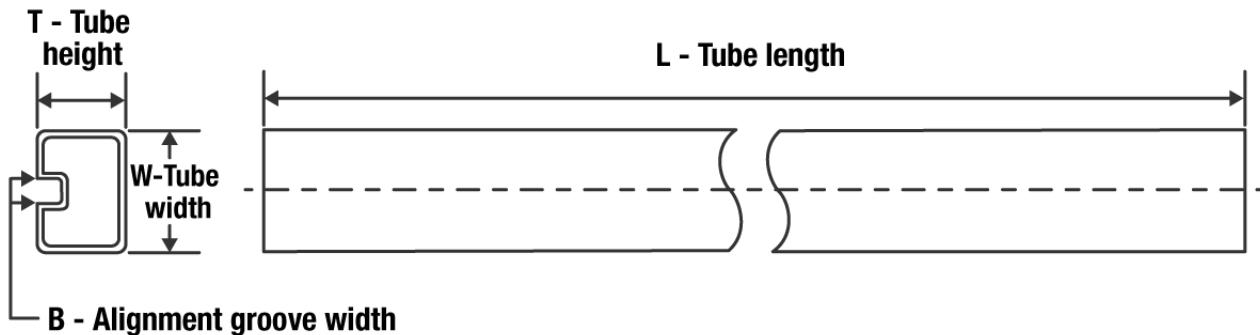
(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead finish/Ball material - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

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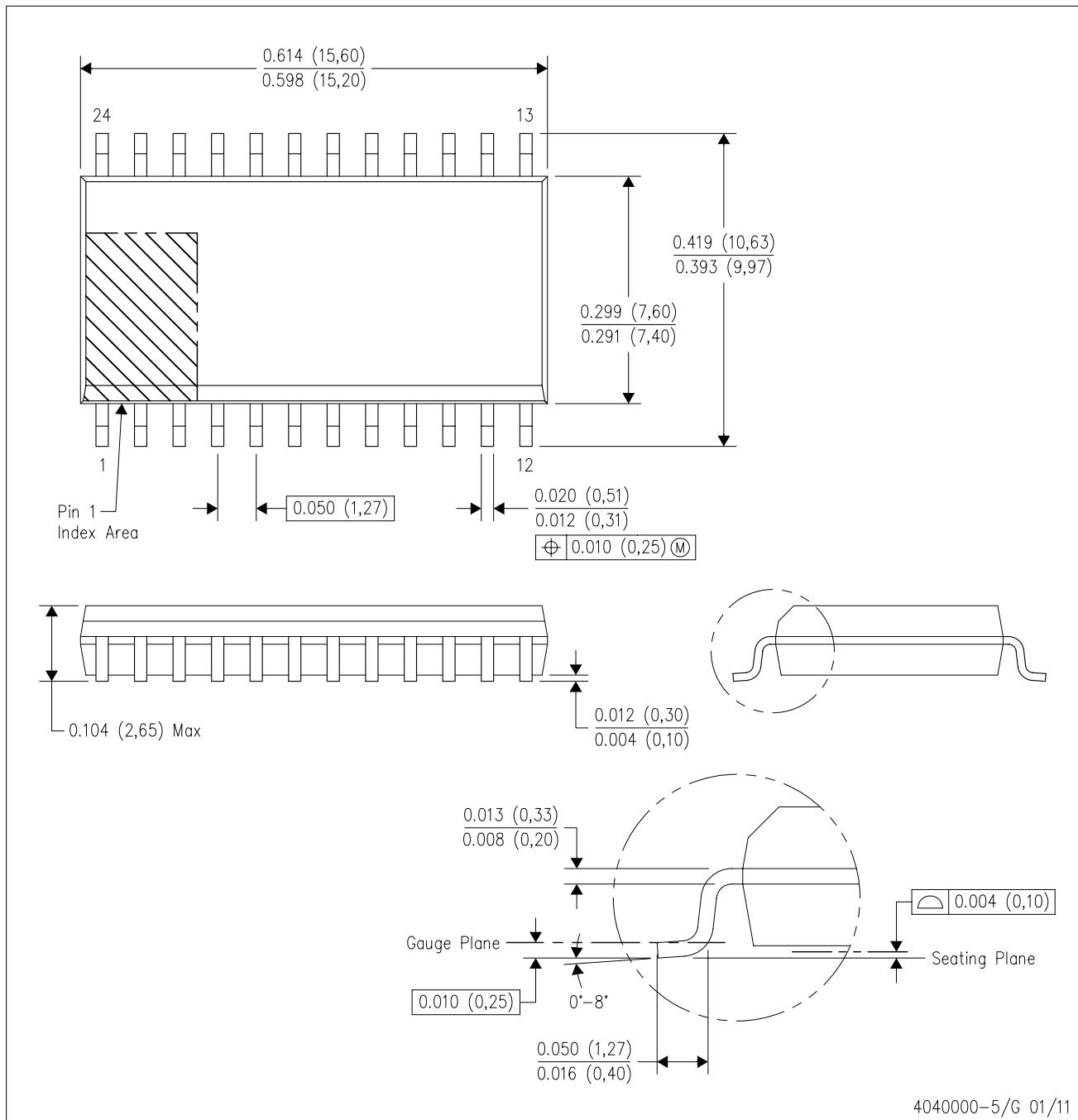
TUBE


*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μ m)	B (mm)
SN74ALS29827DW	DW	SOIC	24	25	506.98	12.7	4826	6.6
SN74ALS29827DWG4	DW	SOIC	24	25	506.98	12.7	4826	6.6

DW (R-PDSO-G24)

PLASTIC SMALL OUTLINE



NOTES:

- All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.
- This drawing is subject to change without notice.
- Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0.15).
- Falls within JEDEC MS-013 variation AD.

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