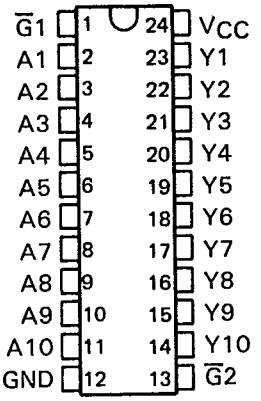
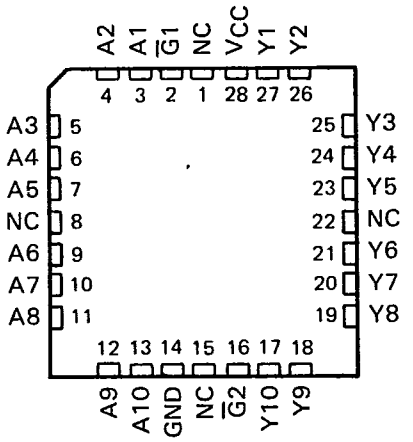
D2912, JANUARY 1986—REVISED FEBRUARY 1987

- **Functionally Equivalent to AM29827 and AM29828**
- **3-State Outputs Drive Bus Lines or Buffer Memory Address Registers**
- **P-N-P Inputs Reduce D-C Loading**
- **Data Flow-Thru Pinout (All Inputs on Opposite Side from Outputs)**
- **Power-Up High-Impedance State**
- **Package Options Include Plastic "Small Outline" Packages, Plastic Chip Carriers, and Standard Plastic DIPs**
- **Dependable Texas Instruments Quality and Reliability**

DW OR NT PACKAGE
(TOP VIEW)



FN PACKAGE
(TOP VIEW)



description

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

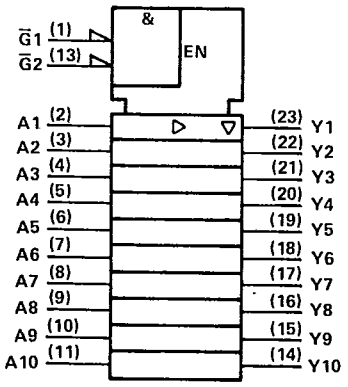
The three-state control gate is a 2-input NOR such that if either $\overline{G1}$ or $\overline{G2}$ is high, all ten outputs are in the high-impedance state.

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

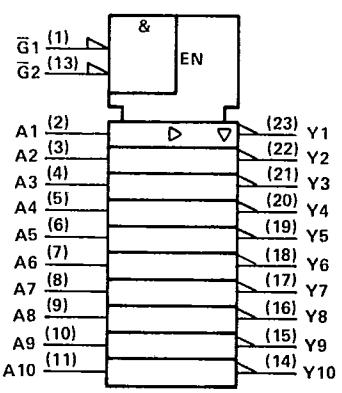
The SN74' family is characterized for operation from 0°C to 70°C.

logic symbols†

'ALS29827



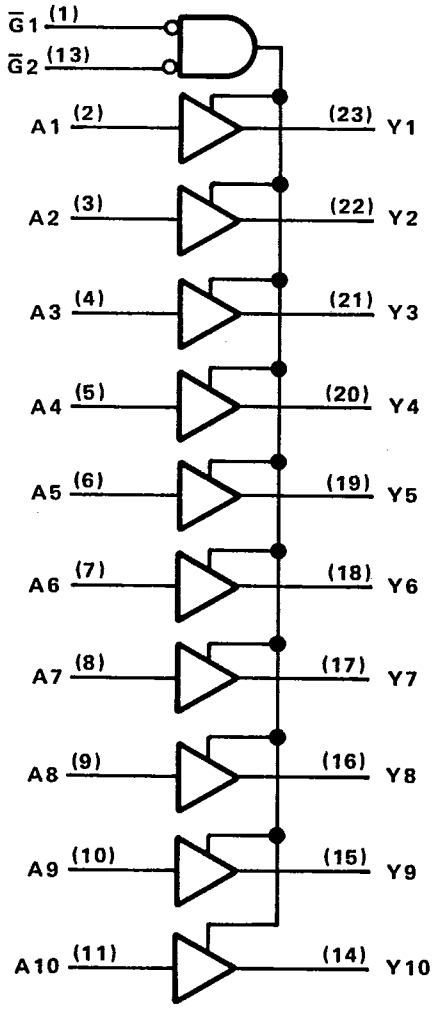
'ALS29828



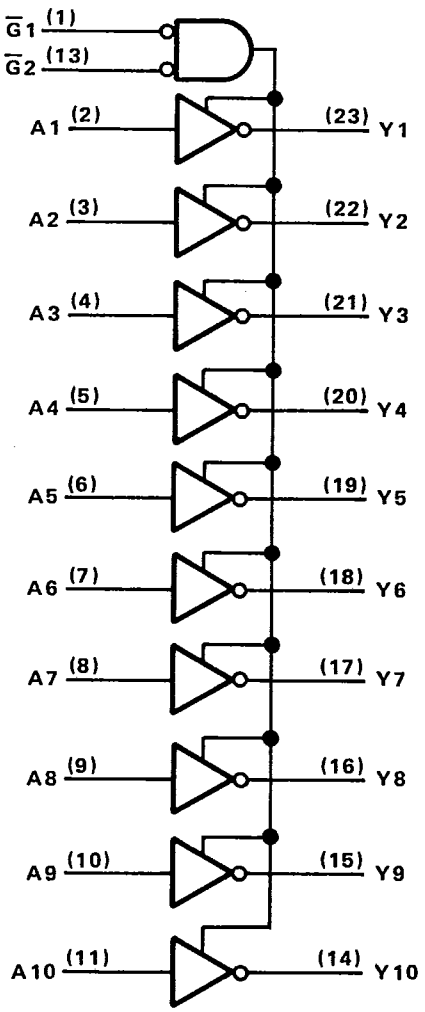
†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagrams (positive logic)

'ALS29827



'ALS29828



Pin numbers shown are DW and NT packages.

TEXAS INSTRUMENTS
POST OFFICE BOX 655012 • DALLAS, TEXAS 75265

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

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

recommended operating conditions

		MIN	NOM	MAX	UNIT
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	MIN	TYP†	MAX	UNIT
V_{IK}		V_{CC} = 4.75 V, I_I = −18 mA			−1.2	V
V_{OH}		V_{CC} = 4.75 V, I_{OH} = −15 mA	2.4			V
		V_{CC} = 4.75 V, I_{OH} = −24 mA	2			
V_{OL}		V_{CC} = 4.75 V, I_{OL} = 48 mA		0.35	0.5	V
I_{OZH}		V_{CC} = 5.25 V, V_O = 2.4 V			20	μA
I_{OZL}		V_{CC} = 5.25 V, V_O = 0.4 V			−20	μA
I_I		V_{CC} = 5.25 V, V_I = 5.5 V			0.1	mA
I_{IH}		V_{CC} = 5.25 V, V_I = 2.7 V			20	μA
I_{IL}		V_{CC} = 5.25 V, V_I = 0.4 V			−0.1	mA
I_{OS}‡		V_{CC} = 5.25 V, V_O = 0 V	−75		−250	mA
I_{CC}	'ALS29827	V_{CC} = 5.25 V		25	40	mA
	'ALS29828	V_{CC} = 5.25 V		25	40	

† All typical values are at V_{CC} = 5 V, T_A = 25°C.
‡ Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

SN74ALS29827 switching characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS See Figure 1	V_{CC} = 5 V, T_A = 25°C			V_{CC} = 4.75 V to 5.25 V, T_A = 0°C to 70°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{PLH}	A	Y	C_L = 300 pF		8	11		15	ns
t_{PHL}					10.8	13.2		15	
t_{PLH}			C_L = 50 pF		4.8	6		8	
t_{PHL}					5.2	6.2		8	
t_{PZH}	$\overline{G}$	Y	C_L = 300 pF		11	17		20	ns
t_{PZL}					18	21		23	
t_{PZH}			C_L = 50 pF		6.5	12		15	
t_{PZL}					9.5	12		15	
t_{PHZ}	$\overline{G}$	Y	C_L = 50 pF		11.2	16		17	ns
t_{PLZ}					4.5	9		12	
t_{PHZ}			C_L = 5 pF		3.5	8		9	
t_{PLZ}					3.5	8		9	

SN74ALS29828 switching characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS See Figure 1	V_{CC} = 5 V, T_A = 25°C			V_{CC} = 4.75 V to 5.25 V, T_A = 0°C to 70°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
t_{PLH}	A	Y	C_L = 300 pF		7.3	10		14	ns
t_{PHL}					8.5	12.9		14	
t_{PLH}			C_L = 50 pF		4	5.2		7	
t_{PHL}					3	5.9		7.5	
t_{PZH}	$\overline{G}$	Y	C_L = 300 pF		13	17		20	ns
t_{PZL}					16	21		23	
t_{PZH}			C_L = 50 pF		6.5	12		15	
t_{PZL}					9.5	12		15	
t_{PHZ}	$\overline{G}$	Y	C_L = 50 pF		10	16		17	ns
t_{PLZ}					4	9		12	
t_{PHZ}			C_L = 5 pF		4.5	8		9	
t_{PLZ}					4.5	8		9	

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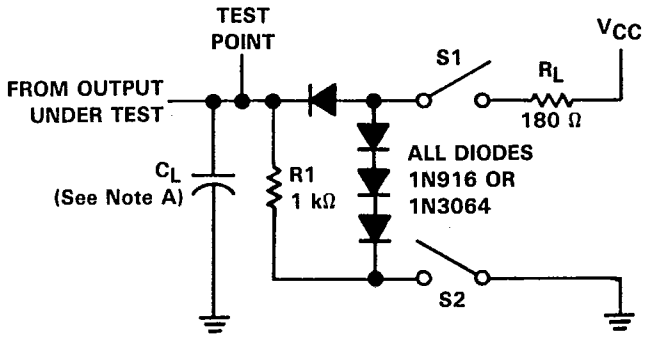
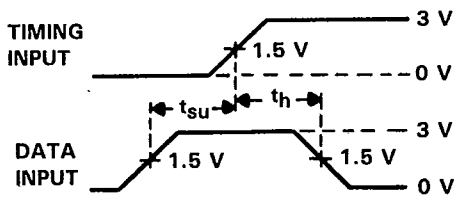
PARAMETER MEASUREMENT INFORMATION



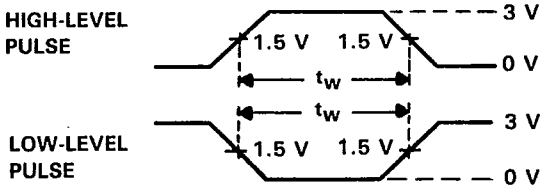
LOAD CIRCUIT

SWITCH POSITION TABLE

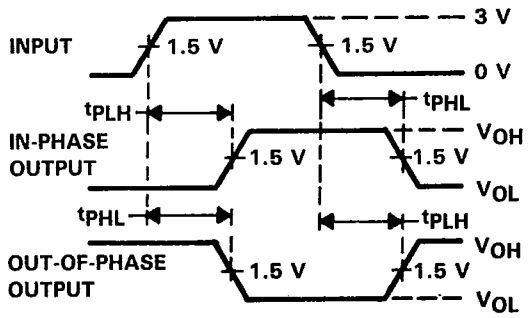
TEST	S1	S2
t_{PLH}	Closed	Closed
t_{PHL}	Closed	Closed
t_{PZH}	Open	Closed
t_{PZL}	Closed	Open
t_{PHZ}	Closed	Closed
t_{PLZ}	Closed	Closed



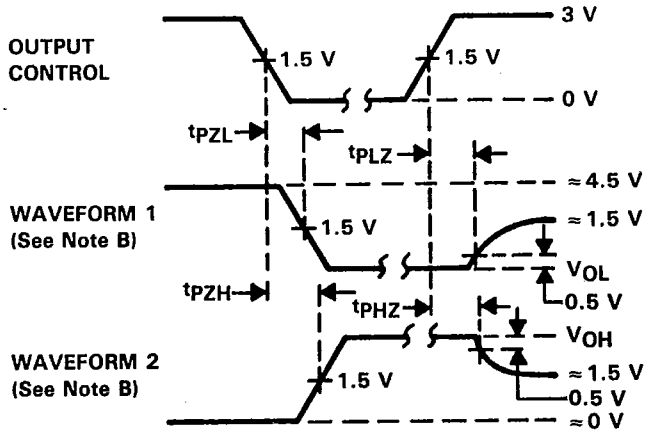
VOLTAGE WAVEFORMS
SETUP AND HOLD TIMES



VOLTAGE WAVEFORMS
PULSE DURATIONS



VOLTAGE WAVEFORMS
PROPAGATION DELAY TIMES



VOLTAGE WAVEFORMS
ENABLE AND DISABLE TIMES, THREE-STATE OUTPUTS

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 ≤ 10 MHz, Z_O = 50 Ω, t_r ≤ 2.5 ns, t_f ≤ 2.5 ns.

FIGURE 1