74AC11828

10-Bit Buffer/Bus Driver with 3-State Outputs

This device contains ten buffers/bus drivers that provide a high-performance 10-bit bus interface for wide data paths or buses carrying parity. The 3-state control gate is a 2-input NOR gate. If either $\overline{G1}$ or $\overline{G2}$ is high, all ten outputs are in the high-impedance state. The 74AC11828 provides inverted data and is characterized for operation from -40°C to 85°C.

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceeds the OCM data sheet.

Quality Overview

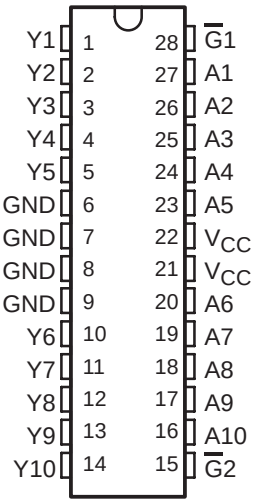
- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-38535
    - Class Q Military
    - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
    - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

- **3-State Outputs Drive Bus Lines or Buffer Memory Address Registers**
- **Flow-Through Architecture to Optimize PCB Layout**
- **Center-Pin V_{CC} and GND Configurations to Minimize High-Speed Switching Noise**
- **EPIC™ (Enhanced-Performance Implanted CMOS) 1-μm Process**
- **500-mA Typical Latchup Immunity at 125°C**
- **Package Options Include Plastic "Small Outline" Packages and Standard Plastic 300-mil DIPs**

DW OR NT PACKAGE
(TOP VIEW)



description

This device contains ten buffers/bus drivers that provide a high-performance 10-bit bus interface for wide data paths or buses carrying parity.

The 3-state control gate is a 2-input NOR gate. If either $\overline{G}1$ or $\overline{G}2$ is high, all ten outputs are in the high-impedance state.

The 74AC11828 provides inverted data.

The 74AC11828 is characterized for operation from −40°C to 85°C.

FUNCTION TABLE

INPUTS			OUTPUT
$\overline{G}1$	$\overline{G}2$	A	Y
L	L	H	L
L	L	L	H
X	H	X	Z
H	X	X	Z

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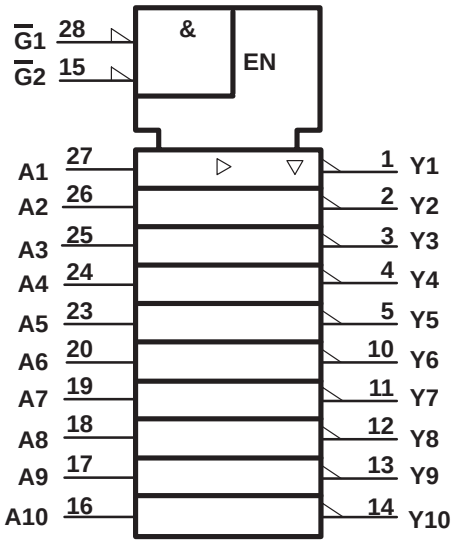
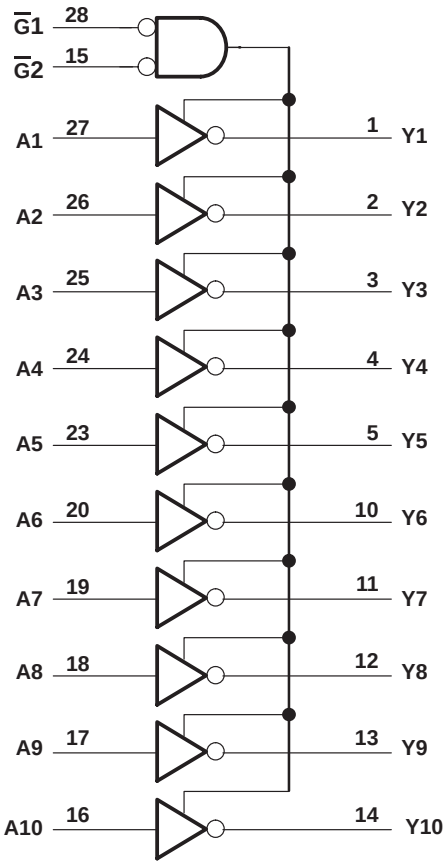
logic symbol†



logic diagram (positive logic)



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

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

Supply voltage range, V_{CC} . . . . . −0.5 V to 7 V
Input voltage range, V_I (see Note 1) . . . . . −0.5 V to V_{CC} + 0.5 V
Output voltage range, V_O (see Note 1) . . . . . −0.5 V to V_{CC} + 0.5 V
Input clamp current, I_{IK} ($V_I < 0$ or $V_I > V_{CC}$) . . . . . ± 20 mA
Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$) . . . . . ± 50 mA
Continuous output current, I_O ($V_O = 0$ to V_{CC}) . . . . . ± 50 mA
Continuous current through V_{CC} or GND pins . . . . . ± 250 mA
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.

NOTE 1: The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

recommended operating conditions

			MIN	NOM	MAX	UNIT
V_{CC}	Supply voltage		3	5	5.5	V
V_{IH}	High-level input voltage	V_{CC} = 3 V	2.1			V
		V_{CC} = 4.5 V	3.15			
		V_{CC} = 5.5 V	3.85			
V_{IL}	Low-level input voltage	V_{CC} = 3 V			0.9	V
		V_{CC} = 4.5 V			1.35	
		V_{CC} = 5.5 V			1.65	
V_I	Input voltage		0		V_{CC}	V
V_O	Output voltage		0		V_{CC}	V
I_{OH}	High-level output current	V_{CC} = 3 V			−4	mA
		V_{CC} = 4.5 V			−24	
		V_{CC} = 5.5 V			−24	
I_{OL}	Low-level output current	V_{CC} = 3 V			12	mA
		V_{CC} = 4.5 V			24	
		V_{CC} = 5.5 V			24	
$\Delta t/\Delta v$	Input transition rise or fall rate		0		10	ns/V
T_A	Operating free-air temperature		−40		85	°C

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

PARAMETER	TEST CONDITIONS	V_{CC}	T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
V_{OH}	I_{OH} = −50 µA	3 V	2.9			2.9		V
		4.5 V	4.4			4.4		
		5.5 V	5.4			5.4		
	I_{OH} = −4 mA	3 V	2.58			2.48		
	I_{OH} = −24 mA	4.5 V	3.94			3.8		
		5.5 V	4.94			4.8		
	I_{OH} = −75 mA†	5.5 V				3.85		
V_{OL}	I_{OL} = 50 µA	3 V			0.1		0.1	V
		4.5 V			0.1		0.1	
		5.5 V			0.1		0.1	
	I_{OL} = 12 mA	3 V			0.36		0.44	
	I_{OL} = 24 mA	4.5 V			0.36		0.44	
		5.5 V			0.36		0.44	
	I_{OL} = 75 mA†	5.5 V					1.65	
I_{OZ}	V_O = V_{CC} or GND	5.5 V			±0.5		±5	µA
I_I	V_I = V_{CC} or GND	5.5 V			±0.1		±1	µA
I_{CC}	V_I = V_{CC} or GND, I_O = 0	5.5 V			8		80	µA
C_i	V_I = V_{CC} or GND	5 V		4.5				pF
C_o	V_O = V_{CC} or GND	5 V		12				pF

† Not more than one output should be tested at a time, and the duration of the test should not exceed 10 ms.

switching characteristics over recommended operating free-air temperature range, V_{CC} = 3.3 V ± 0.3 V (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A	Y	5.4	9.8	12.7	5.4	14.3	ns
t_{PHL}			7.2	10.4	13.2	7.2	14.5	
t_{PZH}	$\overline{G}1$ or $\overline{G}2$	Y	6.5	10.8	14.4	6.5	16.3	ns
t_{PZL}			9.5	15	19.2	9.5	21.8	
t_{PHZ}	$\overline{G}1$ or $\overline{G}2$	Y	5.3	8.2	11	5.3	11.9	ns
t_{PLZ}			5.1	7.9	10.5	5.1	11.2	

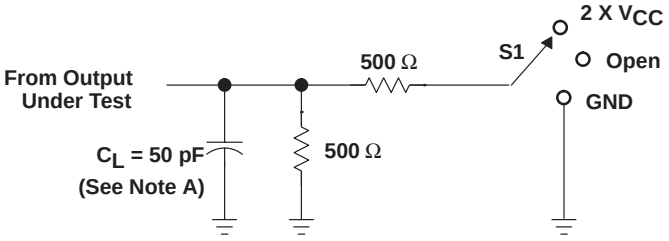
switching characteristics over recommended operating free-air temperature range, V_{CC} = 5 V ± 0.5 V (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	T_A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A	Y	2.4	5.2	7.9	2.4	9.5	ns
t_{PHL}			3.2	6.2	8.9	3.2	10.4	
t_{PZH}	$\overline{G}1$ or $\overline{G}2$	Y	3.1	6.4	8.8	3.1	10.7	ns
t_{PZL}			3.8	7.7	10.5	3.8	13.2	
t_{PHZ}	$\overline{G}1$ or $\overline{G}2$	Y	3.7	6.4	8.8	3.7	9.6	ns
t_{PLZ}			3.9	6.2	8.2	3.9	9.2	

operating characteristics, V_{CC} = 5 V, T_A = 25°C

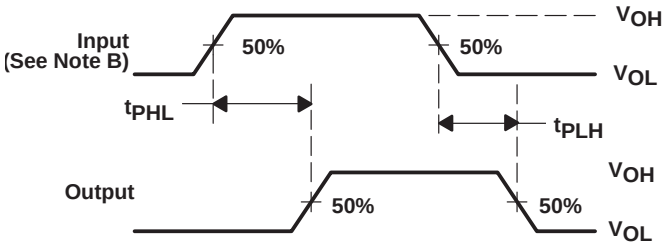
PARAMETER		TEST CONDITIONS	TYP	UNIT
C_{pd} Power dissipation capacitance	Outputs enabled	C_L = 50 pF, f = 1 MHz	37	pF
	Outputs disabled		11	

PARAMETER MEASUREMENT INFORMATION

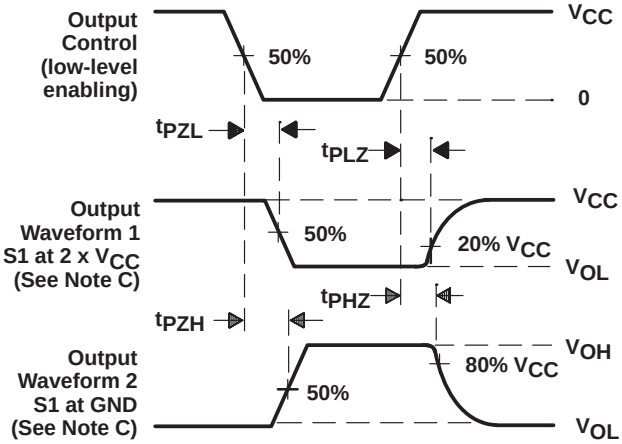


TEST	S1
t_{PLH}/t_{PHL}	Open
t_{PLZ}/t_{PZL}	2 x V_{CC}
t_{PHZ}/t_{PZH}	GND

LOAD CIRCUIT FOR OUTPUTS



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

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 the generators having the following characteristics: PRR ≤ 10 MHz, Z_O = 50 Ω, t_r ≤ 2.5 ns, t_f ≤ 2.5 ns.
D. The outputs are measured one at a time with one transition per measurement.

Figure 1. LOAD CIRCUIT AND VOLTAGE WAVEFORMS

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