

54AC11257FK, 74AC11257

Quadruple 2-Line to 1-Line Data Selectors/Multiplexers with 3-State Outputs

These devices are designed to multiplex signals from 4-bit data sources to 4 output data lines in bus-organized systems. The 3-state outputs will not load the data lines when the output control pin (\bar{G}) is at a high logic level.

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 re-creations are done with the approval of the Original Component Manufacturer (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-35835
 - 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 OCM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

FOR REFERENCE ONLY

54AC11257, 74AC11257 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/ MULTIPLEXERS WITH 3-STATE OUTPUTS

TI0114—D3259, MARCH 1989—REVISED MARCH 1990

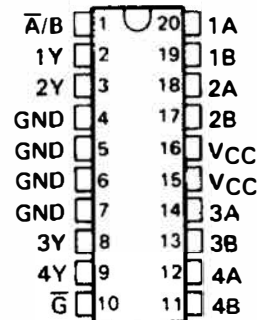
- 3-State Outputs Interface Directly with System Bus
- Flow-Through Architecture to Optimize PCB Layout
- Center-Pin V_{CC} and GND Configurations to Minimize High-Speed Switching Noise
- EPIC™ (Enhanced-Performance Implanted CMOS) 1-μm Process
- 500-mA Typical Latch-Up Immunity at 125°C
- Provides Bus Interface from Multiple Sources in High-Performance Systems
- Package Options Include Plastic “Small Outline” Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

description

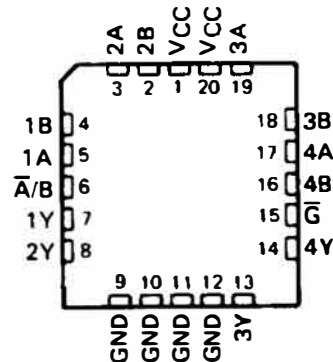
These devices are designed to multiplex signals from 4-bit data sources to 4 output data lines in bus-organized systems. The 3-state outputs will not load the data lines when the output control pin (\bar{G}) is at a high logic level.

The 54AC11257 is characterized for operation over the full military temperature range of -55°C to 125°C. The 74AC11257 is characterized for operation from -40°C to 85°C.

54AC11257 ... J PACKAGE
74AC11257 ... D OR N PACKAGE
(TOP VIEW)



54AC11257 ... FK PACKAGE
(TOP VIEW)



FUNCTION TABLE

OUTPUT CONTROL \bar{G}	INPUTS			OUTPUT Y
	SELECT \bar{A}/\bar{B}	DATA		
		A	B	
H	X	X	X	Z
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

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TEXAS
INSTRUMENTS

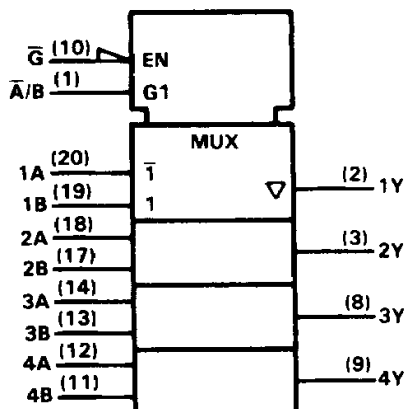
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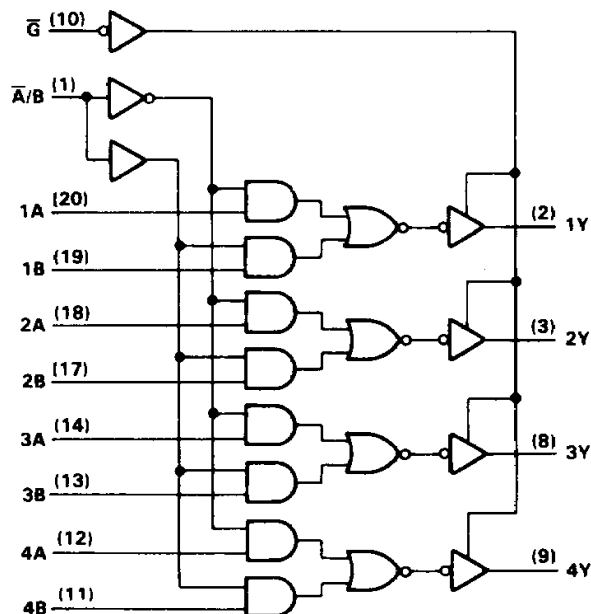
logic symbol†



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

Pin numbers shown are for J, D, or N packages.

logic diagram (positive logic)



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	± 100 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.

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MULTIPLEXERS WITH 3-STATE OUTPUTS**

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recommended operating conditions

		54AC11257			74AC11257			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	3	5	5.5	3	5	5.5	V
V _{IH}	High-level input voltage	V _{CC} = 3 V		2.1	2.1		V	
		V _{CC} = 4.5 V		3.15	3.15			
		V _{CC} = 5.5 V		3.85	3.85			
V _{IL}	Low-level input voltage	V _{CC} = 3 V			0.9	0.9	V	
		V _{CC} = 4.5 V			1.35	1.35		
		V _{CC} = 5.5 V			1.65	1.65		
V _I	Input voltage	0	V _{CC}		0	V _{CC}		V
V _O	Output voltage	0	V _{CC}		0	V _{CC}		V
I _{OH}	High-level output current	V _{CC} = 3 V			-4	-4	mA	
		V _{CC} = 4.5 V			-24	-24		
		V _{CC} = 5.5 V			-24	-24		
I _{OL}	Low-level output current	V _{CC} = 3 V			12	12	mA	
		V _{CC} = 4.5 V			24	24		
		V _{CC} = 5.5 V			24	24		
Δt/Δv	Input transition rise or fall rate	0	10		0	10		ns/V
T _A	Operating free-air temperature	-55	125		-40	85		°C

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

PARAMETER	TEST CONDITIONS	V _{CC}	T _A = 25°C			54AC11257		74AC11257		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
V _{OH}	I _{OH} = -50 μA	3 V	2.9			2.9		2.9	V	
		4.5 V	4.4			4.4		4.4		
		5.5 V	5.4			5.4		5.4		
	I _{OH} = -4 mA	3 V	2.58			2.4		2.48		
		4.5 V	3.94			3.7		3.8		
	I _{OH} = -24 mA	5.5 V	4.94			4.7		4.8		
		5.5 V				3.85				
V _{OL}	I _{OL} = 50 μA	3 V			0.1		0.1	0.1	V	
		4.5 V			0.1		0.1	0.1		
		5.5 V			0.1		0.1	0.1		
	I _{OL} = 12 mA	3 V			0.36		0.5	0.44		
		4.5 V			0.36		0.5	0.44		
	I _{OL} = 24 mA	5.5 V			0.36		0.5	0.44		
		5.5 V					1.65			
I _{OZ}	V _O = V _{CC} or GND	5.5 V			±0.5		±10	±5	μA	
I _I	V _I = V _{CC} or GND	5.5 V			±0.1		±1	±1	μA	
I _{CC}	V _I = V _{CC} or GND, I _O = 0	5.5 V			8		160	80	μA	
C _i	V _I = V _{CC} or GND	5 V			3.5				pF	
C _o	V _O = V _{CC} or GND	5.5 V			8				pF	

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

PRODUCT PREVIEW information concerns products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



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switching characteristics, $V_{CC} = 3.3 V \pm 0.3 V$ (See Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$T_A = 25^\circ C$			54AC11257		74AC11257		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	1.5	5.6	8.1	1.5	9.4	1.5	8.9	ns
t_{PHL}			1.5	6.2	9	1.5	10.8	1.5	10.1	
t_{PLH}	\bar{A}/B	Any Y	1.5	6.1	9.2	1.5	10.8	1.5	10.2	ns
t_{PHL}			1.5	6.6	10	1.5	12	1.5	11.2	
t_{PZH}	\bar{G}	Any Y	1.5	5.6	8.2	1.5	9.6	1.5	9.1	ns
t_{PZL}			1.5	7.5	10.4	1.5	12.8	1.5	11.8	
t_{PHZ}	\bar{G}	Any Y	1.5	5.6	7.6	1.5	8.7	1.5	8.3	ns
t_{PLZ}			1.5	6.2	8.8	1.5	10	1.5	9.6	

switching characteristics, $V_{CC} = 5 V \pm 0.5 V$ (See Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$T_A = 25^\circ C$			54AC11257		74AC11257		UNIT
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A or B	Y	1.5	3.6	5.8	1.5	6.8	1.5	6.4	ns
t_{PHL}			1.5	4.1	6.5	1.5	7.6	1.5	7.2	
t_{PLH}	\bar{A}/B	Any Y	1.5	4	6.5	1.5	7.6	1.5	7.2	ns
t_{PHL}			1.5	4.4	7.1	1.5	8.4	1.5	7.9	
t_{PZH}	\bar{G}	Any Y	1.5	3.8	5.9	1.5	6.8	1.5	6.5	ns
t_{PZL}			1.5	5	7.6	1.5	9.2	1.5	8.6	
t_{PHZ}	\bar{G}	Any Y	1.5	4.5	6.4	1.5	7.7	1.5	7.6	ns
t_{PLZ}			1.5	4.8	6.9	1.5	7.9	1.5	7.6	

operating characteristics, $V_{CC} = 5 V, T_A = 25^\circ C$

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

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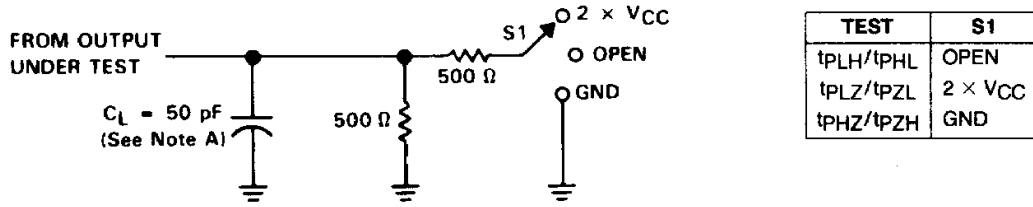


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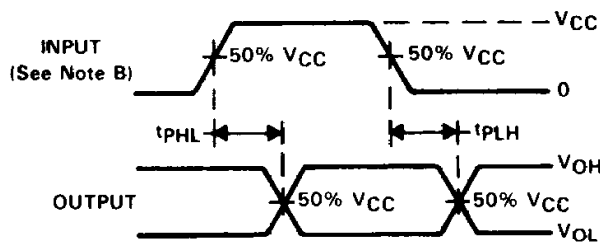
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PARAMETER MEASUREMENT INFORMATION

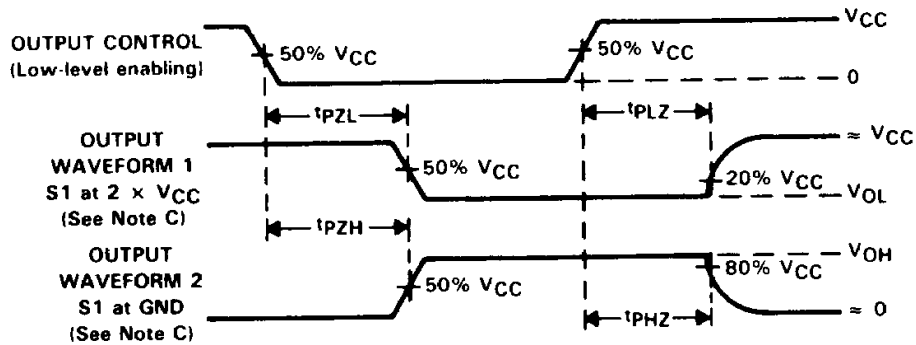


TEST	S1
t_{PLH}/t_{PHL}	OPEN
t_{PLZ}/t_{PZL}	$2 \times V_{CC}$
t_{PHZ}/t_{PZH}	GND

LOAD CIRCUIT



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

- NOTES: A. C_L includes probe and jig capacitance.
 B. Input pulses are supplied by generators having the following characteristics: $PRR \leq 10$ MHz, $Z_o = 50 \Omega$, $t_r = 3$ ns, $t_f = 3$ ns.
 C. 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.
 D. The outputs are measured one at a time with one input transition per measurement.

FIGURE 1. LOAD CIRCUIT AND VOLTAGE WAVEFORMS