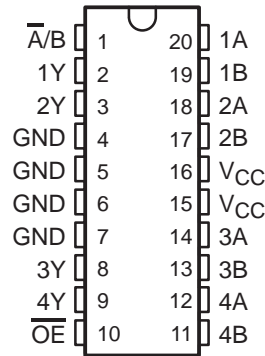


# 74ACT11157 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER

SCAS180 – D3908, SEPTEMBER 1991 – REVISED APRIL 1993

- Inputs Are TTL-Voltage Compatible
- Flow-Through Architecture Optimizes PCB Layout
- Center-Pin  $V_{CC}$  and GND Pin Configurations Minimize High-Speed Switching Noise
- EPIC™ (Enhanced-Performance Implanted CMOS) 1- $\mu$ m Process
- 500-mA Typical Latch-Up Immunity at 125°C
- Package Options Include Plastic Small-Outline Packages and Standard Plastic 300-mil DIPs

DW OR N PACKAGE  
(TOP VIEW)



## description

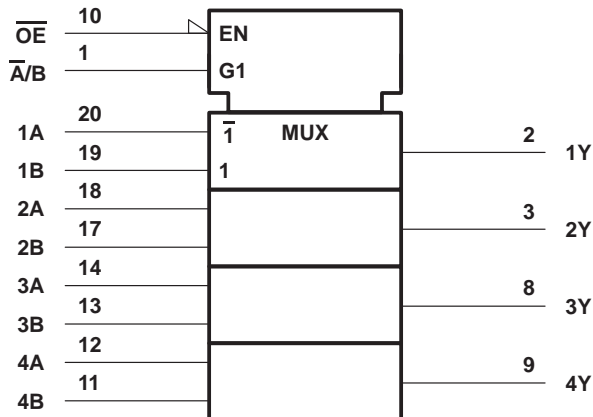
This data selector/multiplexer contains inverters and drivers to supply full data selection to the four output gates. A separate output-enable ( $\overline{OE}$ ) input is provided. A 4-bit word is selected from one of two sources and is routed to the four outputs. The 74ACT11157 provides true data.

The 74ACT11157 is characterized for operation from -40°C to 85°C.

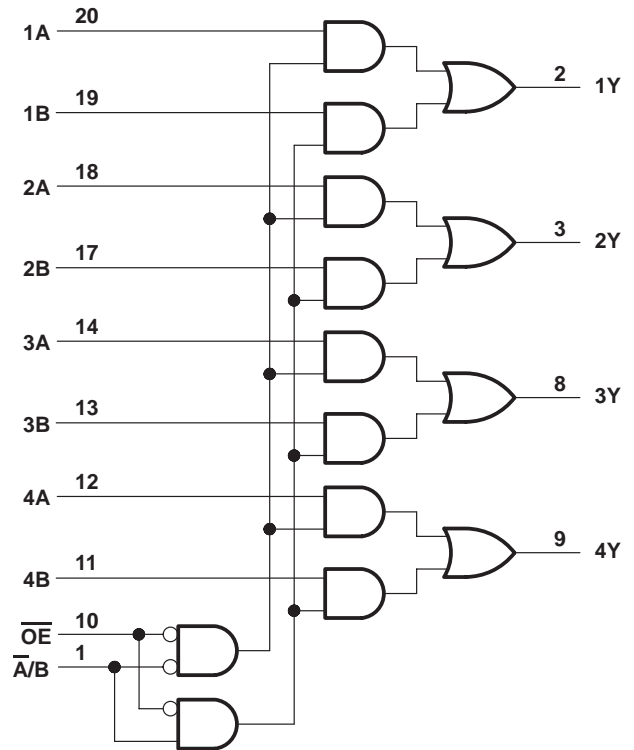
FUNCTION TABLE

$\overline{OE}$	INPUTS			OUTPUT Y
	$\overline{A/B}$	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

## logic symbol†



## logic diagram (positive logic)



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

EPIC is a trademark of Texas Instruments Incorporated.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS  
INSTRUMENTS**

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 1993, Texas Instruments Incorporated

# 74ACT11157

## QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER

SCAS180 – D3908, SEPTEMBER 1991 – REVISED APRIL 1993

### absolute maximum ratings over operating free-air temperature range (unless otherwise noted)<sup>†</sup>

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	±100 mA
Storage temperature range	–65°C to 150°C

<sup>†</sup> 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 clamp-current ratings are observed.

### recommended operating conditions (see Note 2)

	MIN	NOM	MAX	UNIT
$V_{CC}$ Supply voltage	4.5	5	5.5	V
$V_{IH}$ High-level input voltage	2			V
$V_{IL}$ Low-level input voltage			0.8	V
$V_I$ Input voltage	0		$V_{CC}$	V
$V_O$ Output voltage	0		$V_{CC}$	V
$I_{OH}$ High-level output current			–24	mA
$I_{OL}$ Low-level output current			24	mA
$\Delta t/\Delta v$ Input transition rise or fall rate	0		10	ns/V
$T_A$ Operating free-air temperature	–40		85	°C

NOTE 2: Unused or floating inputs must be held high or low.



74ACT11157

# QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER

SCAS180 – D3908, SEPTEMBER 1991 – REVISED APRIL 1993

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

PARAMETER	TEST CONDITIONS	V <sub>CC</sub>	T <sub>A</sub> = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
V <sub>OH</sub>	I <sub>OH</sub> = –50 µA	4.5 V	4.4			4.4		V
		5.5 V	5.4			5.4		
	I <sub>OH</sub> = –24 mA	4.5 V	3.94			3.8		
		5.5 V	4.94			4.8		
	I <sub>OH</sub> = –75 mA†	5.5 V				3.85		
V <sub>OL</sub>	I <sub>OL</sub> = 50 µA	4.5 V			0.1		0.1	V
		5.5 V			0.1		0.1	
	I <sub>OL</sub> = 24 mA	4.5 V			0.36		0.44	
		5.5 V			0.36		0.44	
	I <sub>OL</sub> = 75 mA†	5.5 V					1.65	
I <sub>I</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5.5 V			±0.1		±1	µA
I <sub>CC</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND, I <sub>O</sub> = 0	5.5 V			8		80	µA
ΔI <sub>CC</sub> ‡	One input at 3.4 V, Other inputs at V <sub>CC</sub> or GND	5.5 V			0.9		1	mA
C <sub>i</sub>	V <sub>I</sub> = V <sub>CC</sub> or GND	5 V		3				pF

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

‡ This is the increase in supply current for each input that is at one of the specified TTL voltage levels rather than 0 V or V<sub>CC</sub>.

**switching characteristics over recommended operating free-air temperature range, V<sub>CC</sub> = 5 V ± 0.5 V (unless otherwise noted) (see Figure 1)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	T <sub>A</sub> = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
t <sub>PLH</sub>	A or B	Y	2.6	5.1	7.1	2.6	7.8	ns
t <sub>PHL</sub>			3.1	6.6	10.4	3.1	11.3	
t <sub>PLH</sub>	$\bar{A}/B$	Y	2.3	5.6	8.7	2.3	9.5	ns
t <sub>PHL</sub>			3.1	6.8	10.5	3.1	11.5	
t <sub>PLH</sub>	$\overline{OE}$	Y	2.1	5.1	7.9	2.1	8.6	ns
t <sub>PHL</sub>			3.6	6.9	9.7	3.6	10.8	

**operating characteristics, V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C**

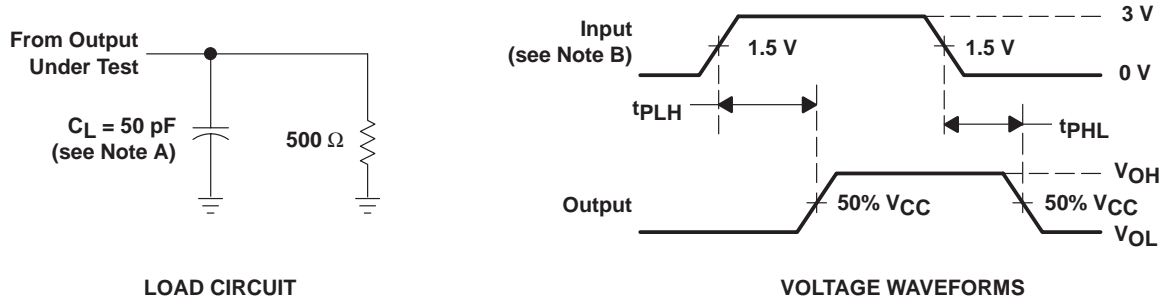
PARAMETER		TEST CONDITIONS	TYP	UNIT
C <sub>pd</sub>	Power dissipation capacitance	C <sub>L</sub> = 50 pF, f = 1 MHz	37	pF

# 74ACT11157

## QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER

SCAS180 – D3908, SEPTEMBER 1991 – REVISED APRIL 1993

### PARAMETER MEASUREMENT INFORMATION



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

Figure 1. Load Circuit and Voltage Waveforms

## **IMPORTANT NOTICE**

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.