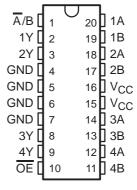
74ACT11257 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER WITH 3-STATE OUTPUTS

SCAS053B - JANUARY 1989 - REVISED APRIL 1996

- Inputs Are TTL-Voltage Compatible
- 3-State Outputs Interface Directly With System Bus
- Flow-Through Architecture Optimizes
 PCB Layout
- Center-Pin V_{CC} and GND Configurations 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 (DW) and Shrink Small-Outline (DB) Packages, and Standard Plastic 300-mil DIPs (N)

DB, DW, OR N PACKAGE (TOP VIEW)



description

The 74ACT11257 is designed to multiplex signals from 4-bit data sources to four output data lines in bus-organized systems. The 3-state outputs do not load the data lines when the output-enable (\overline{OE}) input is at a high logic level.

The 74ACT11257 is characterized for operation from -40°C to 85°C.

FUNCTION TABLE

	OUTDUT			
ŌĒ	SELECT	DA	TA	OUTPUT Y
OE	A/B	Α	В	·
Н	Х	Х	Х	Z
L	L	L	X	L
L	L	Н	X	Н
L	Н	Х	L	L
L	Н	Х	Н	Н



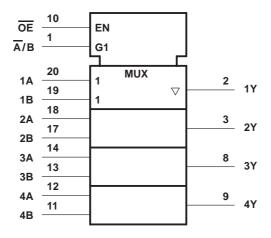
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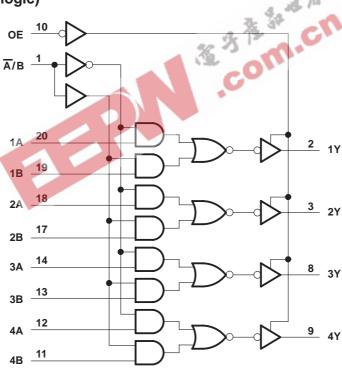
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logic symbol†



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

logic diagram (positive logic)



74ACT11257 **QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER** WITH 3-STATE OUTPUTS SCAS053B – JANUARY 1989 – REVISED APRIL 1996

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)		$-0.5 \text{ V to V}_{CC} + 0.5 \text{ V}$
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, $I_O(V_O = 0 \text{ to } V_{CC})$		±50 mA
Continuous current through V _{CC} or GND		±100 mA
Maximum power dissipation at $T_A = 55^{\circ}C$ (in still air) (see Note 2):	DB package	0.6 W
	DW package	1.6 W
	N package	1.3 W
Storage temperature range, T _{sto}		–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.

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

2. The maximum package power dissipation is calculated using a junction temperature of 150 °C and a board trace length of 750 mils, except for the N package, which has a trace length of zero.

recommended operating conditions

	473	MIN	MAX	UNIT
VCC	Supply voltage	4.5	5.5	V
VIH	High-level input voltage	2		V
VIL	Low-level input voltage		0.8	V
VI	Input voltage	0	VCC	V
٧o	Output voltage	0	VCC	V
IOH	High-level output current		-24	mA
loL	Low-level output current		24	mA
Δt/Δν	Input transition rise or fall rate	0	10	ns/V
TA	Operating free-air temperature	-40	85	°C



74ACT11257 **QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER** WITH 3-STATE OUTPUTS SCAS053B - JANUARY 1989 - REVISED APRIL 1996

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

PARAMETERS	TEST CONDITIONS	vcc	T _A = 25°C			MIN	MAX	UNIT
PARAMETERS	TEST CONDITIONS		MIN	TYP	MAX	IVIIIN	WAX	UNIT
	Laur 50 nA	4.5 V	4.4			4.4		
	ΙΟΗ = -50 μΑ		5.4			5.4		1
Vон	I _{OH} = -24 mA		3.94			3.8		V
			4.94			4.8		
	$I_{OH} = -75 \text{ mA}^{\dagger}$	5.5 V				3.85		
	I _{OL} = 50 μA				0.1		0.1	
					0.1		0.1	
V _{OL}	Jan. 24 mA	4.5 V			0.36		0.44	V
	I _{OL} = 24 mA				0.36		0.44	
	I _{OL} = 75 mA [†]	5.5 V					1.65	
loz	$V_O = V_{CC}$ or GND	5.5 V			±0.5		±5	μΑ
lį	V _I = V _{CC} or GND	5.5 V		4	±0.1		±1	μΑ
ICC	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V	3	15	8		80	μΑ
Δl _{CC} ‡	One input at 3.4 V, Other inputs a	t V _{CC} or GND 5.5 V	34	-40	0.9		1	mA
C _i	V _I = V _{CC} or GND	5 V	-	3.5				pF
Co	$V_O = V_{CC}$ or GND	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.

switching characteristics over recomended ranges of supply voltage and operating free-air temperature (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	ТО	T _A = 25°C			MIN	MAX	UNIT
PARAMETER		(OUTPUT)	MIN	TYP	MAX	IVIIIV	WAA	ONII
t _{PLH}	A or B	Y	1.5	4.4	6.4	1.5	6.9	ns
t _{PHL}			1.5	5	8	1.5	8.7	
t _{PLH}	Ā/B	Amy V	1.5	4.7	7.6	1.5	8.2	20
t _{PHL}		Any Y	1.5	5.7	8.5	1.5	9.4	ns
^t PZH	ŌĒ	Any Y	1.5	4.2	6.9	1.5	7.3	20
t _{PZL}			1.5	5.5	8.7	1.5	9.6	ns
t _{PHZ}	ŌĒ	Any V	1.5	5.7	7.6	1.5	8.4	ns
t _{PLZ}		Any Y	1.5	6	7.9	1.5	8.5	115

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

PARAMETER			TEST CO	TYP	UNIT	
C _{pd}	Power dissipation capacitance	Outputs enabled	C _I = 50 pF,	f = 1 MHz	41	pF
		Outputs disabled	CL = 50 pF,		13	

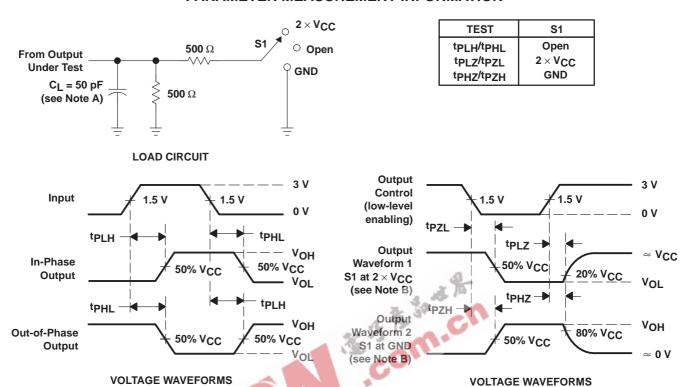


[‡] This is the increase in supply current for each input that is at one of the specified TTL voltage levels rather than 0 V to V_{CC}.

74ACT11257 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTOR/MULTIPLEXER WITH 3-STATE OUTPUTS

SCAS053B - JANUARY 1989 - REVISED APRIL 1996

PARAMETER MEASUREMENT INFORMATION



NOTES: A. CL 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 1 MHz, $Z_O = 50 \Omega$, $t_f = 3$ ns.
- D. The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

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