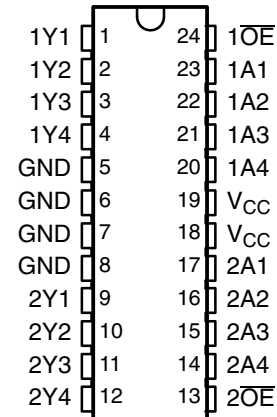


74ACT11240 OCTAL BUFFER/LINE DRIVER WITH 3-STATE OUTPUTS

SCAS210A – MAY 1987 – REVISED APRIL 1996

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

DB, DW, OR NT PACKAGE
(TOP VIEW)



description

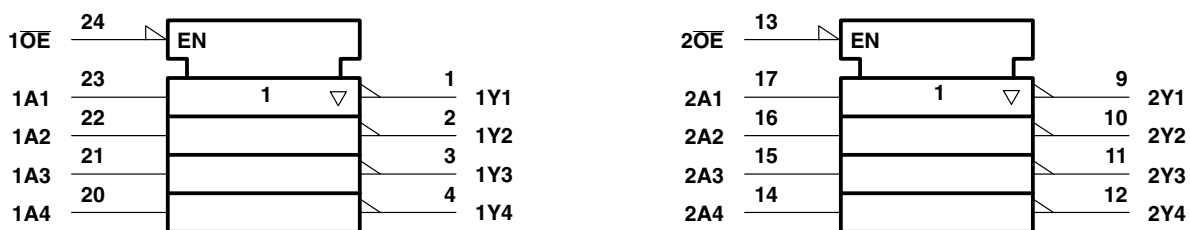
This octal buffer or line driver is designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters. This device provides inverting outputs and symmetrical active-low output-enable ($\overline{OE}$) inputs. This device features high fan-out and improved fan-in.

The 74ACT11240 is characterized for operation from -40°C to 85°C .

FUNCTION TABLE
(each buffer)

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

logic symbol†



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



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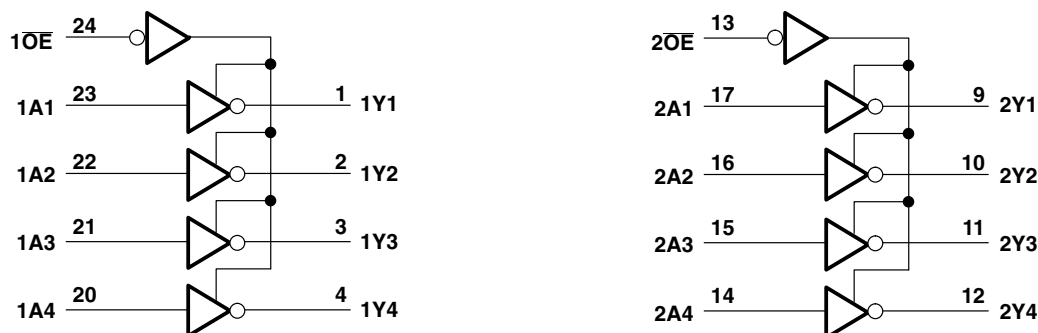
74ACT11240

OCTAL BUFFER/LINE DRIVER

WITH 3-STATE OUTPUTS

SCAS210A – MAY 1987 – REVISED APRIL 1996

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 6 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	±200 mA
Maximum power dissipation at $T_A = 55^\circ\text{C}$ (in still air) (see Note 2):	
DB package	0.65 W
DW package	1.7 W
NT package	1.3 W
Storage temperature range, T_{stg}	–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 NT package, which has a trace length of zero.

recommended operating conditions

		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

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

PARAMETER	TEST CONDITIONS	V_{CC}	$T_A = 25^\circ\text{C}$			UNIT
			MIN	TYP	MAX	
V_{OH}	$I_{OH} = -50\ \mu\text{A}$	4.5 V	4.4		4.4	V
		5.5 V	5.4		5.4	
	$I_{OH} = -24\ \text{mA}$	4.5 V	3.94		3.8	
		5.5 V	4.94		4.8	
	$I_{OH} = -75\ \text{mA}^\dagger$	5.5 V			3.85	
V_{OL}	$I_{OL} = 50\ \mu\text{A}$	4.5 V			0.1	V
		5.5 V			0.1	
	$I_{OL} = 24\ \text{mA}$	4.5 V			0.36	
		5.5 V			0.36	
	$I_{OL} = 75\ \text{mA}^\dagger$	5.5 V			1.65	
I_{OZ}	$V_O = V_{CC}$ or GND	5.5 V			± 0.5	μA
I_I	$V_I = V_{CC}$ or GND	5.5 V			± 0.1	μA
I_{CC}	$V_I = V_{CC}$ or GND, $I_O = 0$	5.5 V			8	μA
$\Delta I_{CC}^\ddagger$	One input at 3.4 V, Other inputs at GND or V_{CC}	5.5 V			0.9	mA
C_i	$V_I = V_{CC}$ or GND	5 V		4		pF
C_o	$V_I = V_{CC}$ or GND	5 V		10		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_{CC} .

**switching characteristics over recommended operating free-air temperature range,
 $V_{CC} = 5\ \text{V} \pm 0.5\ \text{V}$ (unless otherwise noted)**

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$T_A = 25^\circ\text{C}$			MIN	MAX	UNIT
			MIN	TYP	MAX			
t_{PLH}	A	Y	1.5	6.5	9.9	1.5	10.6	ns
t_{PHL}			1.5	6	8	1.5	8.7	
t_{PZH}	$\overline{OE}$	Y	1.5	7.5	11.7	1.5	12.5	ns
t_{PZL}			1.5	7.3	11.5	1.5	12.3	
t_{PHZ}	$\overline{OE}$	Y	1.5	7.3	9.4	1.5	10	ns
t_{PLZ}			1.5	7.9	10.3	1.5	10.8	

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

PARAMETER		TEST CONDITIONS		TYP	UNIT
C_{pd}	Power dissipation capacitance per buffer	Outputs enabled	$C_L = 50\ \text{pF}$, $f = 1\ \text{MHz}$	47	pF
		Outputs disabled		13	

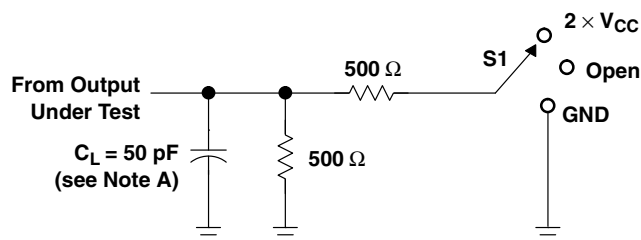
74ACT11240

OCTAL BUFFER/LINE DRIVER

WITH 3-STATE OUTPUTS

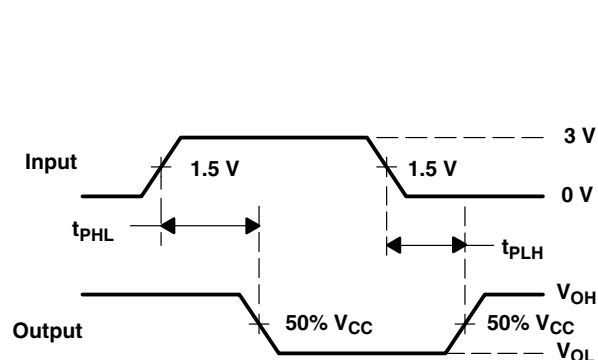
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PARAMETER MEASUREMENT INFORMATION

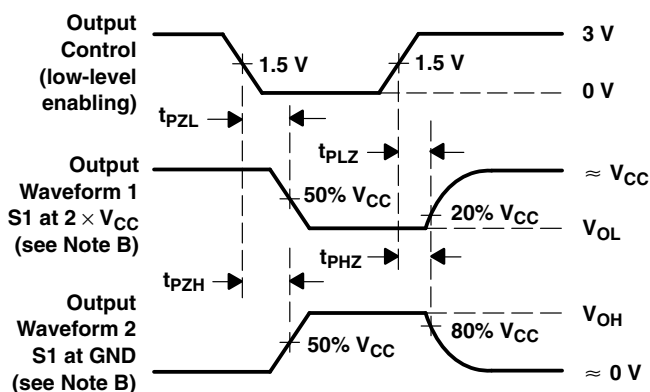


LOAD CIRCUIT

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



VOLTAGE WAVEFORMS



VOLTAGE WAVEFORMS

- NOTES:
- C_L includes probe and jig capacitance.
 - 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.
 - All input pulses are supplied by generators having the following characteristics: $PRR \leq 1 \text{ MHz}$, $Z_O = 50 \Omega$, $t_r = 3 \text{ ns}$, $t_f = 3 \text{ ns}$.
 - The outputs are measured one at a time with one input transition per measurement.

Figure 1. Load Circuit and Voltage Waveforms

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
74ACT11240DW	Active	Production	SOIC (DW) 24	25 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	ACT11240
74ACT11240DW.A	Active	Production	SOIC (DW) 24	25 TUBE	Yes	NIPDAU	Level-1-260C-UNLIM	-40 to 85	ACT11240

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

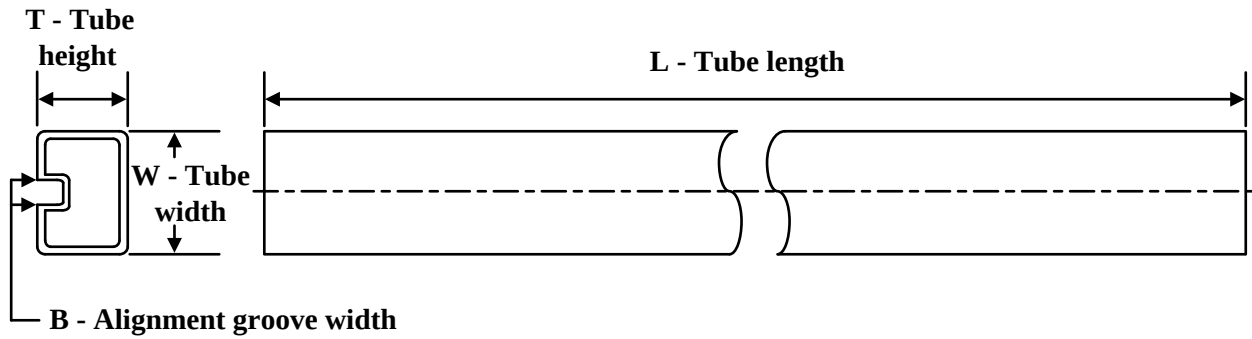
⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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TUBE

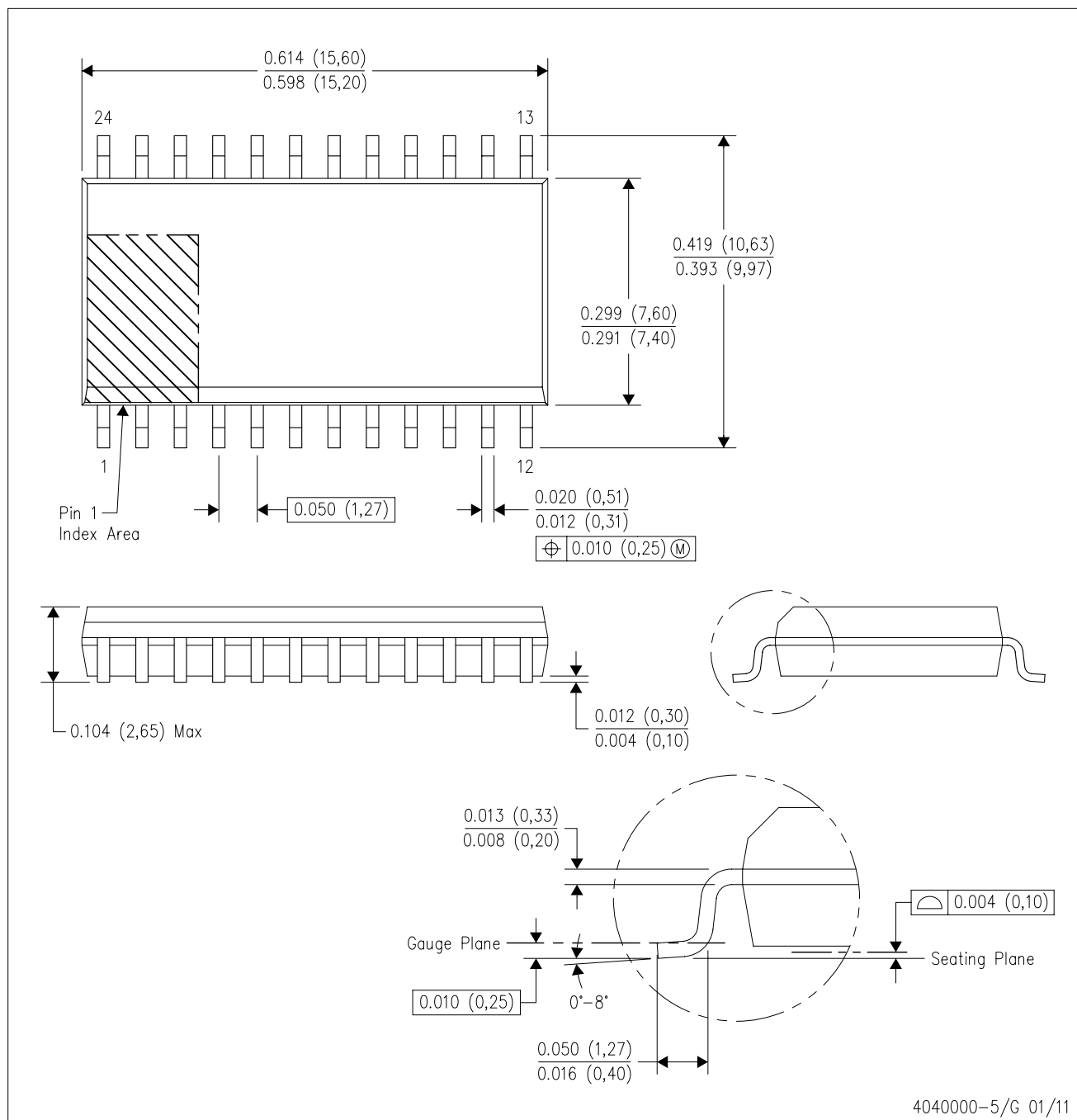


*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
74ACT11240DW	DW	SOIC	24	25	506.98	12.7	4826	6.6
74ACT11240DW.A	DW	SOIC	24	25	506.98	12.7	4826	6.6

DW (R-PDSO-G24)

PLASTIC SMALL OUTLINE



- NOTES:
- A. All linear dimensions are in inches (millimeters). Dimensioning and tolerancing per ASME Y14.5M-1994.
 - B. This drawing is subject to change without notice.
 - C. Body dimensions do not include mold flash or protrusion not to exceed 0.006 (0,15).
 - D. Falls within JEDEC MS-013 variation AD.

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