

SN74ALVC16240

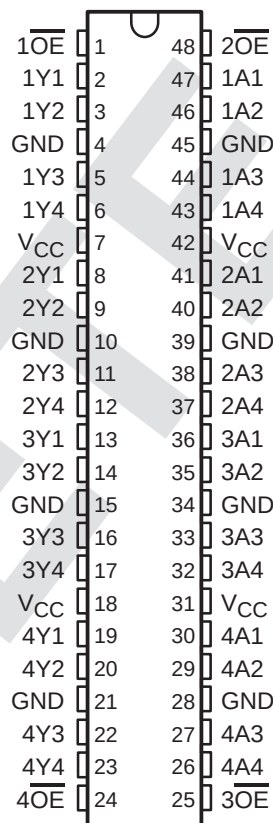
16-BIT BUFFER/DRIVER

WITH 3-STATE OUTPUTS

SCAS415A – JANUARY 1993 – REVISED JULY 1995

- Member of the Texas Instruments *Widebus™* Family
- *EPIC™* (Enhanced-Performance Implanted CMOS) Submicron Process
- Designed to Facilitate Incident-Wave Switching for Line Impedances of 50 Ω or Greater
- Typical V_{OLP} (Output Ground Bounce) < 0.8 V at $V_{CC} = 3.3$ V, $T_A = 25^\circ\text{C}$
- Typical V_{OHV} (Output V_{OH} Undershoot) > 2 V at $V_{CC} = 3.3$ V, $T_A = 25^\circ\text{C}$
- Bus Hold on Data Inputs Eliminates the Need for External Pullup/Pulldown Resistors
- Package Options Include Plastic 300-mil Shrink Small-Outline (DL) and Thin Shrink Small-Outline (DGG) Packages

DGG OR DL PACKAGE
(TOP VIEW)



description

This 16-bit buffer/driver is designed for 2.7-V to 3.6-V V_{CC} operation.

The SN74ALVC16240 is designed specifically to improve both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters.

The device can be used as four 4-bit buffers, two 8-bit buffers, or one 16-bit buffer. It provides inverting outputs and symmetrical $\overline{OE}$ (active-low output-enable) inputs.

The SN74ALVC16240 is available in TI's shrink small-outline (DL) and thin shrink small-outline (DGG) packages, which provide twice the I/O pin count and functionality of standard small-outline packages in the same printed-circuit-board area.

The SN74ALVC16240 is characterized for operation from -40°C to 85°C .

FUNCTION TABLE
(each 4-bit buffer)

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



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PRODUCT PREVIEW

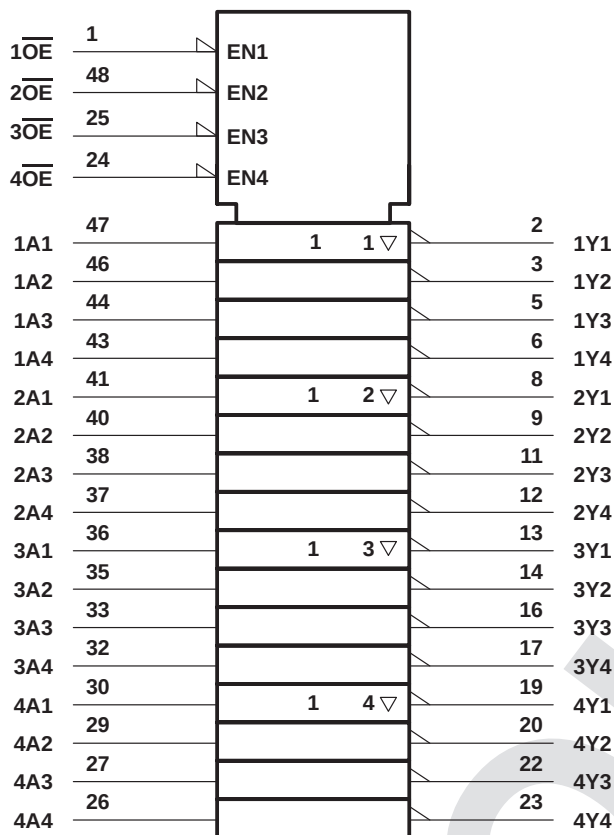
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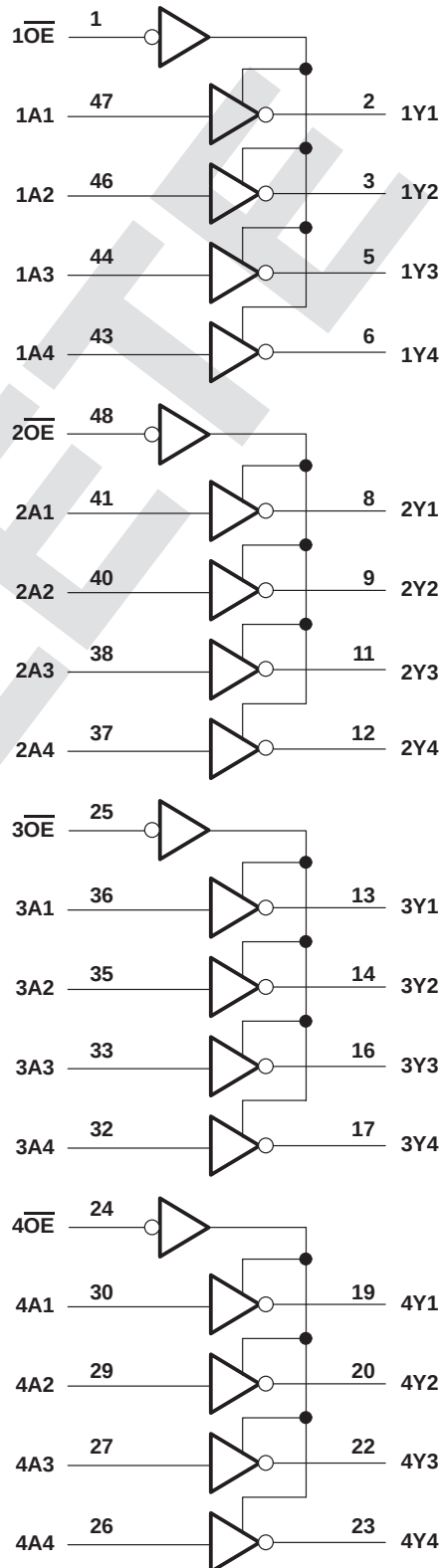
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logic symbol†



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

logic diagram (positive logic)



PRODUCT PREVIEW

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

Supply voltage range, V_{CC}	–0.5 V to 4.6 V
Input voltage range, V_I (see Note 1)	–0.5 V to 4.6 V
Output voltage range, V_O (see Notes 1 and 2)	–0.5 V to $V_{CC} + 0.5$ V
Input clamp current, I_{IK} ($V_I < 0$)	–50 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
Maximum power dissipation at $T_A = 55^\circ\text{C}$ (in still air) (see Note 3): DGG package	0.85 W
DL package	1.2 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 negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
2. This value is limited to 4.6 V maximum.
3. The maximum package power dissipation is calculated using a junction temperature of 150°C and a board trace length of 750 mils. For more information, refer to the *Package Thermal Considerations* application note in the 1994 *ABT Advanced BiCMOS Technology Data Book*, literature number SCBD002B.

recommended operating conditions (see Note 4)

			MIN	MAX	UNIT
V _{CC}	Supply voltage		2.7	3.6	V
V _{IH}	High-level input voltage	V _{CC} = 2.7 V to 3.6 V	2		V
V _{IL}	Low-level input voltage	V _{CC} = 2.7 V to 3.6 V		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	V _{CC} = 2.7 V		−12	mA
		V _{CC} = 3 V		−24	
I _{OL}	Low-level output current	V _{CC} = 2.7 V		12	mA
		V _{CC} = 3 V		24	
Δt/Δv	Input transition rise or fall rate		0	10	ns/V
T _A	Operating free-air temperature		−40	85	°C

NOTE 4: Unused control inputs must be held high or low to prevent them from floating.

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

PARAMETER	TEST CONDITIONS	$V_{CC}^{\dagger}$	MIN	MAX	UNIT
V_{OH}	$I_{OH} = -100 \mu A$	MIN to MAX	$V_{CC} - 0.2$		V
	$I_{OH} = -12 \text{ mA}$	2.7 V	2.2		
		3 V	2.4		
	$I_{OH} = -24 \text{ mA}$	3 V	2		
V_{OL}	$I_{OL} = 100 \mu A$	MIN to MAX		0.2	V
	$I_{OL} = 12 \text{ mA}$	2.7 V		0.4	
	$I_{OL} = 24 \text{ mA}$	3 V		0.55	
I_I	$V_I = V_{CC}$ or GND	3.6 V		± 5	μA
$I_I(\text{hold})$	$V_I = 0.8 \text{ V}$	3 V	75		μA
	$V_I = 2 \text{ V}$		-75		
I_{OZ}	$V_O = V_{CC}$ or GND	3.6 V		± 10	μA
I_{CC}	$V_I = V_{CC}$ or GND, $I_O = 0$	3.6 V		40	μA
ΔI_{CC}	One input at $V_{CC} - 0.6 \text{ V}$, Other inputs at V_{CC} or GND	3 V to 3.6 V		750	μA
C_i	$V_I = V_{CC}$ or GND	3.3 V			pF
C_o	$V_O = V_{CC}$ or GND	3.3 V			pF

[†] For conditions shown as MIN or MAX, use the appropriate values under recommended operating conditions.

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