

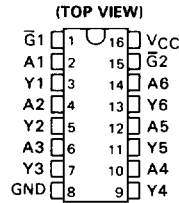
TYPES SN54ALS365 THRU SN54ALS368, SN74ALS365 THRU SN74ALS368 HEX BUS DRIVERS WITH 3-STATE OUTPUTS

D2661, DECEMBER 1982 - REVISED DECEMBER 1983

- 3-State Outputs Drive Bus Lines Or Buffer Memory Address Registers
- Choice of True or Inverting Outputs
- Package Options Include Both Plastic and Ceramic Chip Carriers in Addition to Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

'ALS365, 'ALS367 True Outputs
'ALS366, 'ALS368 Inverting Outputs

SN54ALS365, SN54ALS366 . . . J PACKAGE
SN74ALS365, SN74ALS366 . . . N PACKAGE



description

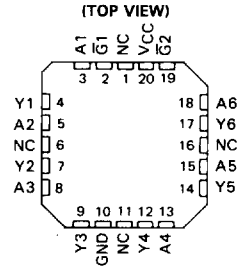
These Hex buffers and line drivers are designed specifically to improve both the performance and density of three state memory address drivers, clock drivers, and bus oriented receivers and transmitters. The designer has a choice of selected combinations of inverting and noninverting outputs, symmetrical \bar{G} (active-low control) inputs.

These devices feature high fan-out, and improved fan-in. The SN74ALS365 through SN74ALS368 can be used to drive terminated lines down to 133 ohms.

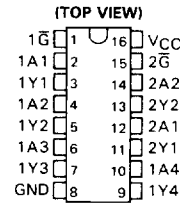
The -1 versions of the SN74ALS' parts are identical to the standard versions except that the recommended maximum I_{OL} is increased to 48 milliamperes. There are no -1 versions of the SN54ALS' parts.

The SN54' family is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74' family is characterized for operation from 0°C to 70°C .

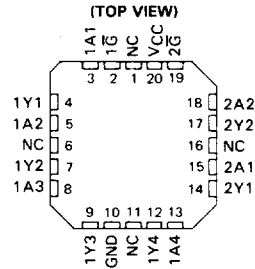
SN54ALS365, SN54ALS366 . . . FH PACKAGE
SN74ALS365, SN74ALS366 . . . FN PACKAGE



SN54ALS367, SN54ALS368 . . . J PACKAGE
SN74ALS367, SN74ALS368 . . . N PACKAGE



SN54ALS367, SN54ALS368 . . . FH PACKAGE
SN74ALS367, SN74ALS368 . . . FN PACKAGE



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ALS AND AS CIRCUITS

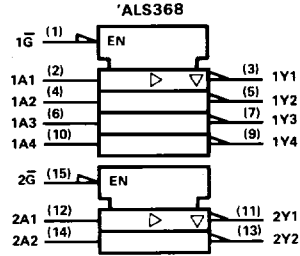
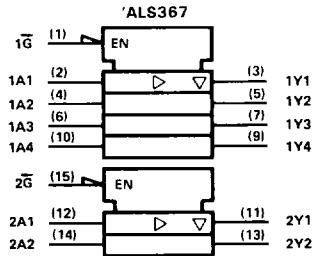
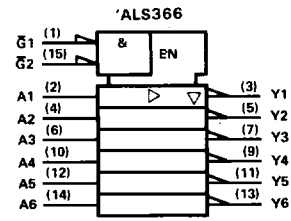
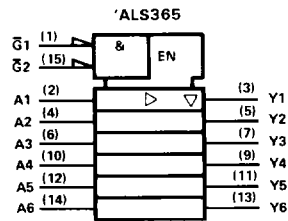
ADVANCE INFORMATION

This document contains information on a new product. Specifications are subject to change without notice.

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**TYPES SN54ALS365 THRU SN54ALS368, SN74ALS365 THRU SN74ALS368
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

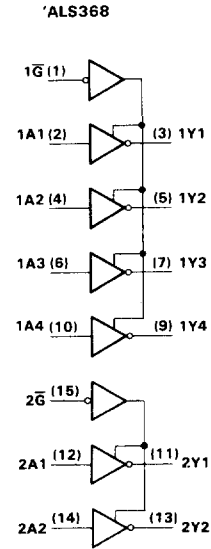
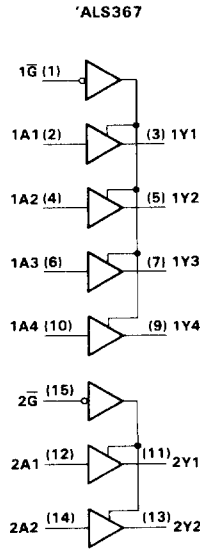
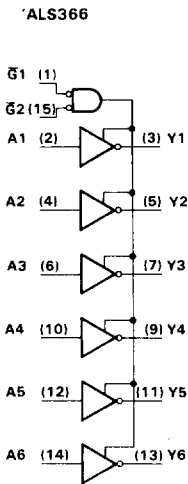
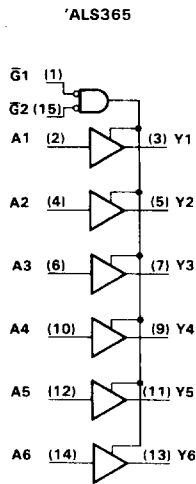
logic symbols



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ALS AND AS CIRCUITS

logic diagrams (positive logic)



Pin numbers shown are for J and N packages.

TYPES SN54ALS365 THRU SN54ALS368, SN74ALS365 THRU SN74ALS368 HEX BUS DRIVERS WITH 3-STATE OUTPUTS

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Voltage applied to a disabled 3-state output	5.5 V
Operating free-air temperature range: SN54ALS365 thru SN54ALS368	-55 °C to 125 °C
SN74ALS365 thru SN74ALS368	0 °C to 70 °C
Storage temperature range	-65 °C to 150 °C

recommended operating conditions

		SN54ALS365 THRU SN54ALS368			SN74ALS365 THRU SN74ALS368			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{OH}	High-level output current			-12			-15	mA
I_{OL}	Low-level output current			12			24	mA
							48 [†]	
T_A	Operating free-air temperature	-55		125	0		70	°C

[†]The extended limits apply only if V_{CC} is maintained between 4.75 V and 5.25 V.
The 48-mA limit applies for the SN74ALS365-1 thru SN74ALS368-1 only.

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

PARAMETER	TEST CONDITIONS	SN54ALS365 THRU SN54ALS368			SN74ALS365 THRU SN74ALS368			UNIT
		MIN	TYP [‡]	MAX	MIN	TYP [‡]	MAX	
V_{IK}	$V_{CC} = 4.5$ V, $I_I = -18$ mA			-1.5			-1.5	V
V_{OH}	$V_{CC} = 4.5$ V to 5.5 V, $I_{OH} = -0.4$ mA	$V_{CC} - 2$			$V_{CC} - 2$			V
	$V_{CC} = 4.5$ V, $I_{OH} = -3$ mA	2.4	3.2		2.4	3.2		
	$V_{CC} = 4.5$ V, $I_{OH} = -12$ mA	2						
V_{OL}	$V_{CC} = 4.5$ V, $I_{OH} = -15$ mA				2			V
	$V_{CC} = 4.5$ V, $I_{OL} = 12$ mA		0.25	0.4		0.25	0.4	
	($I_{OL} = 48$ mA for -1 versions)					0.35	0.5	
I_{OZH}	$V_{CC} = 5.5$ V, $V_O = 2.7$ V			20			20	μ A
I_{OZL}	$V_{CC} = 5.5$ V, $V_O = 0.4$ V			-20			-20	μ A
I_I	$V_{CC} = 5.5$ V, $V_I = 7$ V			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5$ V, $V_I = 2.7$ V			20			20	μ A
I_{IL}	$V_{CC} = 5.5$ V, $V_I = 0.4$ V			-0.1			-0.1	mA
I_O^{\S}	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	-30		-112	-30		-112	mA
I_{CC}	$V_{CC} = 5.5$ V	Outputs high		7			7	mA
		Outputs low		12			12	
		Outputs disabled		13			13	
		Outputs high		3			3	
		Outputs low		10			10	
		Outputs disabled		11			11	

[‡]All typical values are at $V_{CC} = 5$ V, $T_A = 25$ °C.

[§]The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .

**TYPES SN54ALS365 THRU SN54ALS368, SN74ALS365 THRU SN74ALS368
HEX BUS DRIVERS WITH 3-STATE OUTPUTS**

'ALS365, 'ALS367 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX						UNIT
			SN54ALS365 SN54ALS367			SN74ALS365 SN74ALS367			
			MIN	TYP [†]	MAX	MIN	TYP [†]	MAX	
t _{PLH}	A	Y	7			7			ns
t _{PHL}			7			7			
t _{PZH}	\bar{G}	Y	14			14			ns
t _{PZL}			14			14			
t _{PHZ}	\bar{G}	Y	5			5			ns
t _{PLZ}			8			8			

'ALS366, 'ALS368 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX						UNIT
			SN54ALS366 SN54ALS368			SN74ALS366 SN74ALS368			
			MIN	TYP [†]	MAX	MIN	TYP [†]	MAX	
t _{PLH}	A	Y	6			6			ns
t _{PHL}			5			5			
t _{PZH}	\bar{G}	Y	10			10			ns
t _{PZL}			17			17			
t _{PHZ}	\bar{G}	Y	6			6			ns
t _{PLZ}			6			6			

[†]All typical values are at V_{CC} = 5 V, T_A = 25°C.

NOTE 1: For load circuit and voltage waveforms, see page 1-12.