

SN54ALS762, SN54ALS763, SN54AS762, SN54AS763 SN74ALS762, SN74ALS763, SN74AS762, SN74AS763 OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS

DECEMBER 1983—REVISED MAY 1986

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- 'ALS762 and 'AS762 Have True and Complementary Outputs
- 'ALS763 and 'AS763 Have Complementary G and \bar{G} Inputs
- Open-Collector Outputs Drive Bus Lines or Buffer Memory Address Registers
- Eliminates the Need for 3-State Overlap Protection
- Current Sinking Capability Up to 64 mA
- Dependable Texas Instruments Quality and Reliability

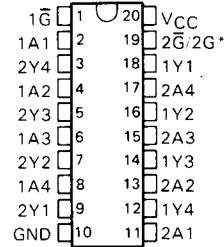
description

These octal buffers and line drivers are designed specifically to improve the performance of three-state memory address drivers, clock drivers, and bus-oriented receivers and transmitters by eliminating the need for 3-state overlap protection. The designer has a choice of selected combinations of inverting and noninverting outputs, symmetrical \bar{G} (active-low output control) inputs, and complementary G and \bar{G} inputs.

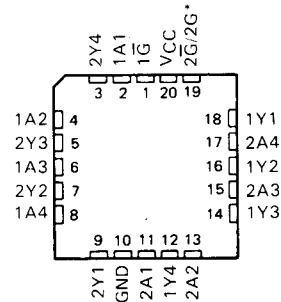
The -1 versions of the SN74ALS' parts are identical to their standard versions except that the recommended maximum I_{OL} is increased to 48 milliamperes. There are no -1 versions of the SN54ALS' parts.

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.

SN54ALS', SN54AS' ... J PACKAGE
SN74ALS', SN74AS' ... DW OR N PACKAGE
(TOP VIEW)



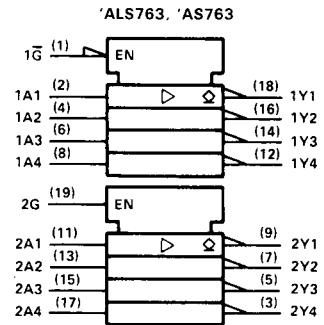
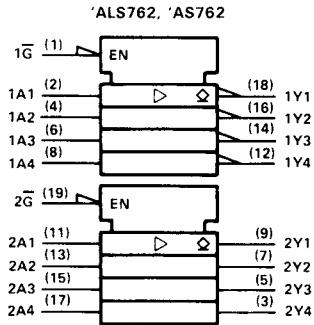
SN54ALS', SN54AS' ... FK PACKAGE
(TOP VIEW)



*2 \bar{G} for 'ALS762, 'AS762 and 2G 'ALS763, 'AS763

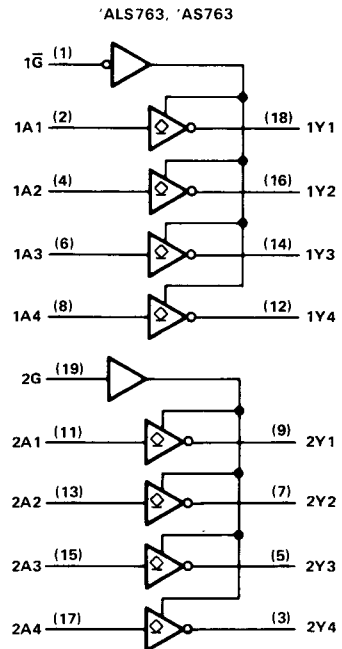
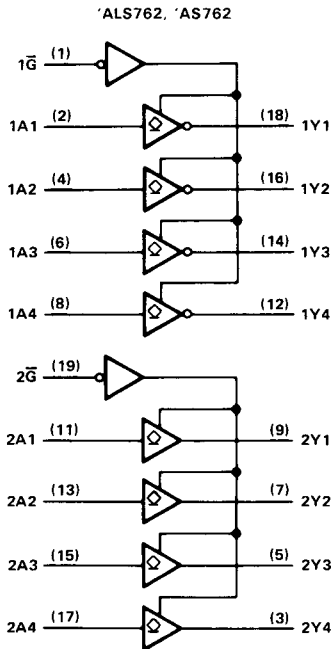
**SN54ALS762, SN54ALS763, SN54AS762, SN54AS763
SN74ALS762, SN74ALS763, SN74AS762, SN74AS763
OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS**

logic symbols †



†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagrams (positive logic)



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ALS and AS Circuits

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Off-state output voltage	7 V
Operating free-air temperature range: SN54ALS762	-55°C to 125°C
SN74ALS762	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54ALS762			SN74ALS762			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			0.7			0.8	V
V_{OH}	High-level output voltage			5.5			5.5	V
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 SN74ALS762-1 only.

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

PARAMETER	TEST CONDITIONS	SN54ALS762		SN74ALS762		UNIT		
		MIN	TYP [‡]	MAX	MIN		TYP [‡]	MAX
V_{IK}	$V_{CC} = 4.5\text{ V}, I_I = -18\text{ mA}$			-1.2		-1.2	V	
I_{OH}	$V_{CC} = 4.5\text{ V}, V_{OH} = 5.5\text{ V}$			0.1		0.1	mA	
V_{OL}	$V_{CC} = 4.5\text{ V}, I_{OL} = 12\text{ mA}$		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.5\text{ V}, I_{OL} = 24\text{ mA}$ ($I_{OL} = 48\text{ mA}$ for -1 versions)					0.35	0.5	
I_I	$V_{CC} = 5.5\text{ V}, V_I = 7\text{ V}$			0.1		0.1	mA	
I_{IH}	$V_{CC} = 5.5\text{ V}, V_I = 2.7\text{ V}$			20		20	μA	
I_{IL}	$V_{CC} = 5.5\text{ V}, V_I = 0.4\text{ V}$			-0.1		-0.1	mA	
I_{CC}	'ALS762	$V_{CC} = 5.5\text{ V}$	Outputs high		11	11		mA
			Outputs low		18	18		

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

'ALS762 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V}, C_L = 50\text{ pF}, R_L = 680\ \Omega, T_A = 25^\circ\text{C}$		$V_{CC} = 4.5\text{ V to } 5.5\text{ V}, C_L = 50\text{ pF}, R_L = 680\ \Omega, T_A = \text{MIN to MAX}$		UNIT
			'ALS762	SN54ALS762	SN74ALS762		
			TYP	MIN	MAX	MIN	
[†] PLH	A	Y	17				ns
[†] PHL			6				
[†] PLH	\bar{G}	Y	14				ns
[†] PHL			18				

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

PRODUCT PREVIEW documents contain information on products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



SN54ALS763, SN74ALS763 OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Off-state output voltage	7 V
Operating free-air temperature range: SN54ALS763	- 55°C to 125°C
SN74ALS763	0°C to 70°C
Storage temperature range	- 65°C to 150°C

recommended operating conditions

		SN54ALS763			SN74ALS763			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			V	
V_{OH}	High-level output voltage				5.5			V	
I_{OL}	Low-level output current				24			mA	
					48†				
T_A	Operating free-air temperature	- 55			125			0	°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 SN74ALS763-1 only.

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

PARAMETER	TEST CONDITIONS	SN54ALS763			SN74ALS763			UNIT
		MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	$V_{CC} = 4.5$ V, $I_I = -18$ mA	-1.2			-1.2			V
I_{OH}	$V_{CC} = 4.5$ V, $V_{OH} = 5.5$ V	0.1			0.1			mA
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 12$ mA	0.25			0.25			V
	$V_{CC} = 4.5$ V, $I_{OL} = 24$ mA ($I_{OL} = 48$ mA for -1 versions)				0.35			
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			μA
I_{IL}	$V_{CC} = 5.5$ V, $V_I = 0.4$ V	-0.1			-0.1			mA
I_{CC}	ALS763	$V_{CC} = 5.5$ V	Outputs high	7	11	7	11	mA
			Outputs low	14	22	14	22	

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

ALS763 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5$ V, $C_L = 50$ pF, $R_L = 680$ Ω, $T_A = 25$ °C	$V_{CC} = 4.5$ V to 5.5 V, $C_L = 50$ pF, $R_L = 680$ Ω, $T_A = \text{MIN to MAX}$				UNIT		
				ALS763		SN54ALS763			SN74ALS763	
				TYP	MIN	MAX	MIN		MAX	
t_{PLH}	A	Y	16	7	28	7	25	ns		
t_{PHL}			5	2	11	2	9			
t_{PLH}	\bar{G}	Y	18	8	28	9	25	ns		
t_{PHL}			13	5	25	5	21			
t_{PLH}	G	Y	18	8	28	9	25	ns		
t_{PHL}			13	5	25	5	21			

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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ALS and AS Circuits

SN54AS762, SN54AS763, SN74AS762, SN74AS763

OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Off-state output voltage	7 V
Operating free-air temperature range: SN54AS762, SN54AS763	-55°C to 125°C
SN74AS762, SN74AS763	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54AS762 SN54AS763			SN74AS762 SN74AS763			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			V
V_{OH}	High-level output voltage				5.5			V
I_{OL}	Low-level output current				48			mA
T_A	Operating free-air temperature	-55			125			°C

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

PARAMETER	TEST CONDITIONS	SN54AS762 SN54AS763			SN74AS762 SN74AS763			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 V, I_I = -18 mA$	-1.2			-1.2			V
I_{OH}	$V_{CC} = 4.5 V, V_{OH} = 5.5 V$	0.1			0.1			mA
V_{OL}	$V_{CC} = 4.5 V, I_{OL} = 48 mA$	0.55						V
	$V_{CC} = 4.5 V, I_{OL} = 64 mA$				0.55			
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			μA
I_{IL}	'AS762 2A inputs only	$V_{CC} = 5.5 V, V_I = 0.4 V$			-1			mA
	All others				-0.5			
I_{CC}	'AS762	$V_{CC} = 5.5 V$	Output high	15	23	15	23	mA
			Output low	55	87	55	87	
	'AS763	$V_{CC} = 5.5 V$	Output high	10	16	10	16	
			Output low	52	82	52	82	

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

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SN54AS762, SN54AS763, SN74AS762, SN74AS763

OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS

*AS762 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V,}$ $C_L = 50 \text{ pF,}$ $R_L = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54AS762		SN74AS762		
			MIN	MAX	MIN	MAX	
t_{PLH}	1A	1Y	3	20	3	19	ns
t_{PHL}			1	7	1	6	
t_{PLH}	2A	2Y	3	19.5	3	18.5	ns
t_{PHL}			1	7	1	6	
t_{PLH}	\bar{G}	1Y	3	22	3	19.5	ns
t_{PHL}			1	8	1	7.5	
t_{PLH}	\bar{G}	2Y	3	20	3	19	ns
t_{PHL}			1	8	1	7	

*AS763 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V,}$ $C_L = 50 \text{ pF,}$ $R_L = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54AS763		SN74AS763		
			MIN	MAX	MIN	MAX	
t_{PLH}	A	Y	3	20	3	19	ns
t_{PHL}			1	7	1	6	
t_{PLH}	\bar{G}	Y	3	22	3	19.5	ns
t_{PHL}			1	8.5	1	7.5	
t_{PLH}	G	Y	3	22	3	20	ns
t_{PHL}			1	8.5	1	8	

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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ALS and AS Circuits