

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

SDAS067A – 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

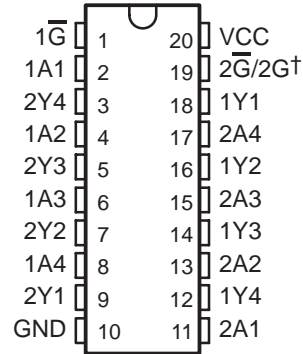
description

These octal buffers and line drivers are designed specifically to improve the performance of 3-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.

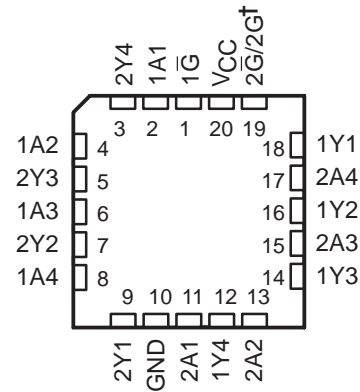
The -1 versions of the SN74ALS' parts are identical to their standard versions except that the recommended maximum I_{OL} is increased to 48-mA. There are no -1 versions of the SN54ALS' parts.

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

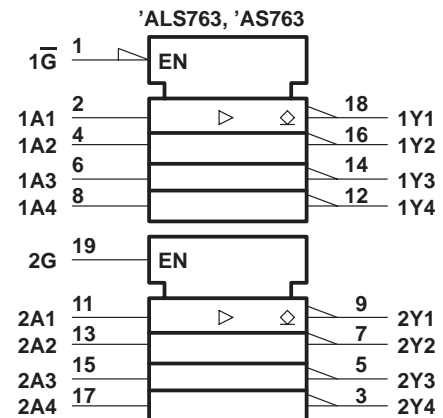
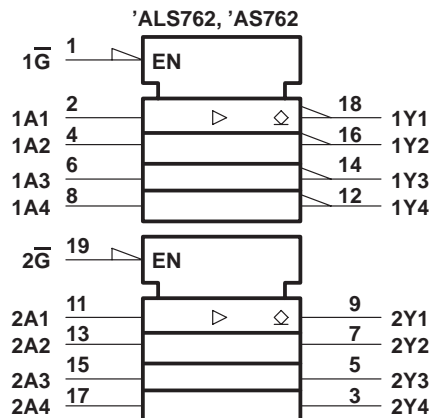
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OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUTS

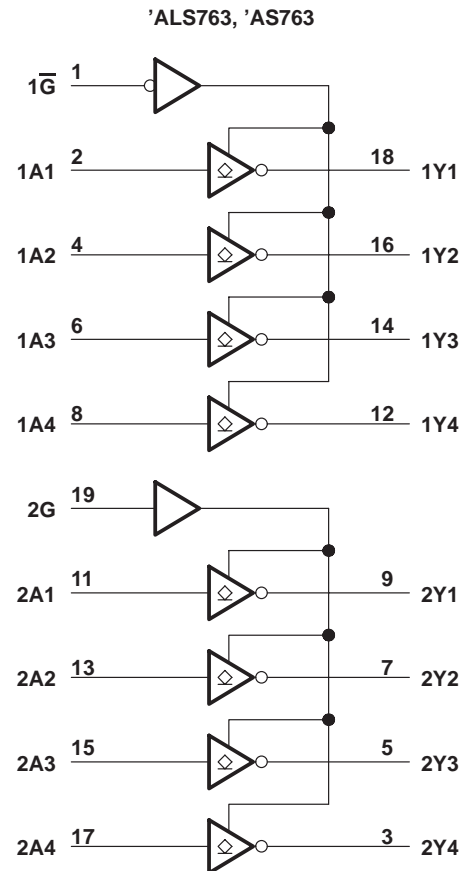
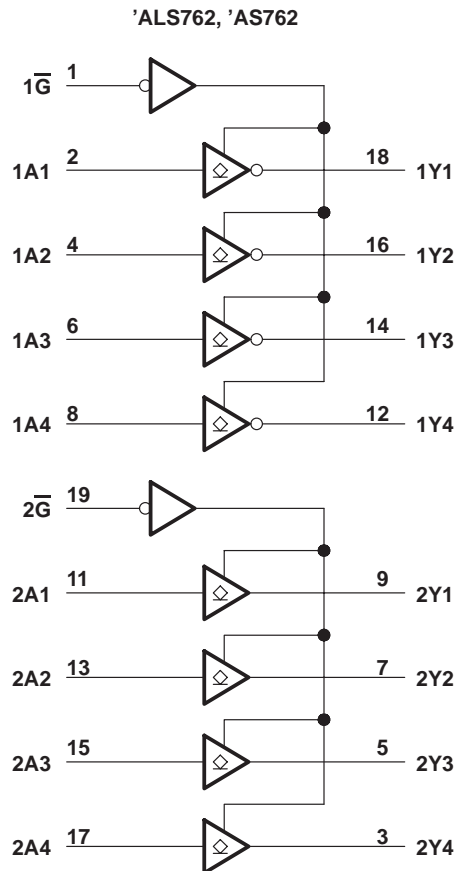
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logic symbols†



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

logic diagrams (positive logic)



SN54ALS762, SN74ALS762 OCTAL BUFFERS AND LINE DRIVERS WITH OPEN-COLLECTOR OUTPUT

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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	mA
I_{OL}	Low-level output current			12			24 48†	mA
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}	$V_{CC} = 4.5$ 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	0.4		0.25	0.4	V
	$V_{CC} = 4.5$ V, $I_{OL} = 24$ mA ($I_{OL} = 48$ mA for -1 versions)					0.35	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}	$V_{CC} = 5.5$ V, $V_I = 0.4$ V			-0.1			-0.1	mA
I_{CC}	'ALS762	$V_{CC} = 5.5$ V	Outputs high	11		11		mA
			Outputs low	18		18		

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

'ALS762 switching characteristics (see Note 1)

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

§ The conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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

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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			0.7			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 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	0.4		0.25	0.4	V	
	$V_{CC} = 4.5$ V, $I_{OL} = 24$ mA ($I_{OL} = 48$ mA for -1 versions)					0.35	0.5		
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, $T_A = 25^\circ\text{C}$.

'ALS763 switching characteristics (see Note 1)

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

§ The conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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

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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			0.8	V
V_{OH}	High-level output voltage			5.5			5.5	V
I_{OL}	Low-level output current			48			64	mA
T_A	Operating free-air temperature	–55		125	0		70	°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}	$V_{CC} = 4.5\text{ V}$, $I_I = -18\text{ mA}$			–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}	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 48\text{ mA}$			0.55				V	
	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 64\text{ mA}$						0.55		
I_I	$V_{CC} = 5.5\text{ V}$, $V_I = 7\text{ V}$			0.1			0.1	mA	
I_{IH}	$V_{CC} = 5.5\text{ V}$, $V_O = 2.7\text{ V}$			20			20	μA	
I_{IL}	'AS762 2A Inputs only	$V_{CC} = 5.5\text{ V}$,	$V_I = 0.4\text{ V}$				–1	mA	
	All others						–0.5		
I_{CC}	'AS762	$V_{CC} = 5.5\text{ V}$	Output high	15	23		15	23	mA
			Output low	55	87		55	87	
	'AS763	$V_{CC} = 5.5\text{ V}$	Output high	10	16		10	16	
			Output low	52	82		52	82	

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

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'AS762 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 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}	\overline{G}	1Y	3	22	3	19.5	ns
t _{PHL}			1	8	1	7.5	
t _{PLH}	\overline{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 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 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}	\overline{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	

† The conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

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

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