

## Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

## Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
  - Class Q Military
  - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
  - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

# SN54ALS758, SN54AS758, SN54AS759 SN74ALS758, SN74AS758, SN74AS759 QUADRUPLE BUS TRANSCEIVERS WITH OPEN-COLLECTOR OUTPUTS

D2910, DECEMBER 1983—REVISED MAY 1986

- 2-Way Asynchronous Communication Between Data Buses
- P-N-P Inputs Reduce Loading
- Open-Collector Versions of 'ALS242A, 'ALS243A and 'AS242, 'AS243
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

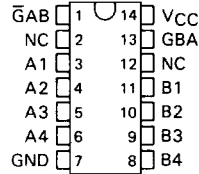
## description

These four-data-line transceivers are designed for asynchronous two-way communications between data buses.

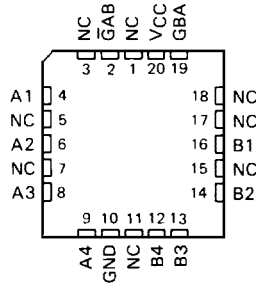
The -1 versions of the SN74ALS' parts are identical to their standard versions except that the recommended maximum  $I_{OL}$  is increased to 48 milliamperes. There are no -1 versions of the SN54ALS' parts.

The SN54' family is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74' family is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

SN54' . . . J PACKAGE  
SN74' . . . D OR N PACKAGE  
(TOP VIEW)



SN54' . . . FK PACKAGE  
(TOP VIEW)



NC—No internal connection

FUNCTION TABLE

INPUTS		'ALS758 'AS758	'AS759
$\bar{G}AB$	GBA		
L	L	$\bar{A}$ to B	A to B
H	H	$\bar{B}$ to A	B to A
H	L	Isolation	Isolation
L	H	Latch A and B ( $A = \bar{B}$ )	Latch A and B ( $A = B$ )

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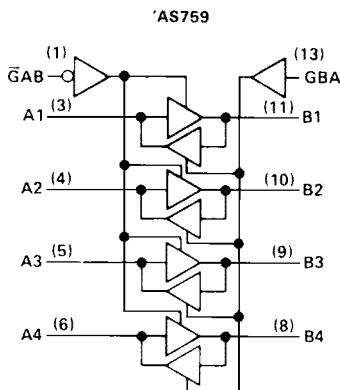
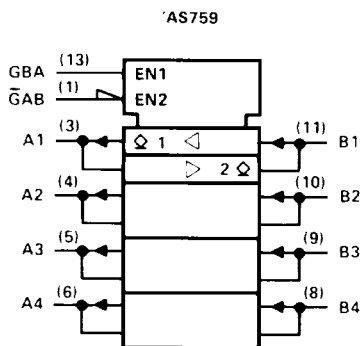
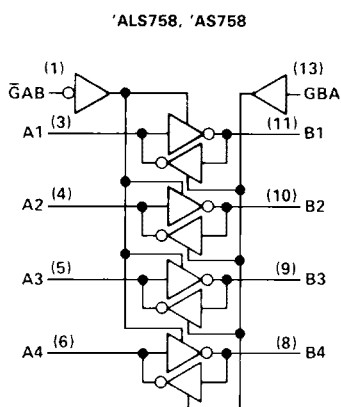
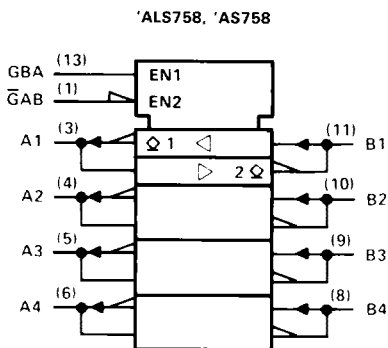
ALS and AS Circuits

**SN54ALS758, SN54AS758, SN54AS759  
SN74ALS758, SN74AS758, SN74AS759  
QUADRUPLE BUS TRANSCEIVERS WITH OPEN-COLLECTOR OUTPUTS**

logic symbols †

logic diagrams (positive logic)

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†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12. Pin numbers shown are for D, J, and N packages.

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

Supply voltage, $V_{CC}$ .....	7 V
Input voltage: All inputs and I/O ports .....	7 V
Operating free-air temperature range: SN54' .....	-55 °C to 125 °C
SN74' .....	0 °C to 70 °C
Storage temperature range .....	-65 °C to 150 °C

# SN54ALS758, SN74ALS758 QUADRUPLE BUS TRANSCEIVERS WITH OPEN-COLLECTOR OUTPUTS

## recommended operating conditions

		SN54ALS758			SN74ALS758			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub>	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V <sub>IH</sub>	High-level input voltage	2			2			V
V <sub>IL</sub>	Low-level input voltage				0.7			V
V <sub>OH</sub>	High-level output voltage				5.5			V
I <sub>OL</sub>	Low-level output current				12			mA
					24			
					48 <sup>†</sup>			
T <sub>A</sub>	Operating free-air temperature	-55			125			°C

<sup>†</sup>The extended limit applies only if V<sub>CC</sub> is maintained between 4.75 V and 5.25 V.  
The 48 mA limit applies for the SN74ALS758-1.

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

PARAMETER		TEST CONDITIONS	SN54ALS758		SN74ALS758		UNIT	
			MIN	TYP <sup>‡</sup> MAX	MIN	TYP <sup>‡</sup> MAX		
V <sub>IK</sub>		V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = -18 mA	-1.2		-1.2		V	
I <sub>OH</sub>		V <sub>CC</sub> = 4.5 V, V <sub>OH</sub> = 5.5 V	0.1		0.1		mA	
V <sub>OL</sub>		V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 12 mA	0.25	0.4	0.25	0.4	V	
		V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 24 mA <sup>§</sup>			0.35			
I <sub>I</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 7 V	0.1		0.1		mA	
	A or B ports	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 5.5 V	0.1		0.1			
I <sub>IH</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 2.7 V	20		20		μA	
	A or B ports <sup>¶</sup>		20		20			
I <sub>IL</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0.4 V	-0.1		-0.1		mA	
	A or B ports <sup>¶</sup>		-0.1		-0.1			
I <sub>CC</sub>		V <sub>CC</sub> = 5.5 V	Outputs high	6	10	6	10	mA
			Outputs low	10	16	10	16	

<sup>‡</sup>All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

<sup>§</sup>I<sub>OL</sub> = 48 mA for -1 versions.

<sup>¶</sup>For I/O ports, the parameters I<sub>IH</sub> and I<sub>IL</sub> include the off-state output current.

## switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 680 Ω, T <sub>A</sub> = 25°C	V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 680 Ω, T <sub>A</sub> = MIN to MAX				UNIT		
				ALS758		SN54ALS758			SN74ALS758	
				TYP	MIN	MAX	MIN		MAX	
t <sub>PLH</sub>	A or B	B or A	20	10	33	10	28	ns		
t <sub>PHL</sub>			5	2	15	2	12			
t <sub>PLH</sub>	GBA	A	18	10	33	10	28	ns		
t <sub>PHL</sub>			13	6	25	6	21			
t <sub>PLH</sub>	$\overline{\text{GAB}}$	B	18	10	33	10	28	ns		
t <sub>PHL</sub>			13	6	25	6	21			

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

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.



# SN54AS758, SN74AS758 QUADRUPLE BUS TRANSCEIVERS WITH OPEN-COLLECTOR OUTPUTS

## recommended operating conditions

		SN54AS758			SN74AS758			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub>	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V <sub>IH</sub>	High-level input voltage	2			2			V
V <sub>IL</sub>	Low-level input voltage				0.8			V
V <sub>OH</sub>	High-level output voltage				5.5			V
I <sub>OL</sub>	Low-level output current				64			mA
T <sub>A</sub>	Operating free-air temperature	-55			125			°C

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

PARAMETER	TEST CONDITIONS	SN54AS758			SN74AS758			UNIT
		MIN	TYP <sup>†</sup>	MAX	MIN	TYP <sup>†</sup>	MAX	
V <sub>IK</sub>	V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = -18 mA	-1.2			-1.2			V
I <sub>OH</sub>	V <sub>CC</sub> = 4.5 V, V <sub>OH</sub> = 5.5 V	0.1			0.1			mA
V <sub>OL</sub>	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 48 mA	0.55						V
	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 64 mA				0.55			
I <sub>I</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 7 V			0.1			mA
	A or B ports	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 5.5 V			0.1			
I <sub>IH</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 2.7 V			20			μA
	A or B ports				50			
I <sub>IL</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0.4 V			-0.5			mA
	A or B ports <sup>‡</sup>				-0.5			
I <sub>CC</sub>	V <sub>CC</sub> = 5.5 V	Outputs high		17	27	17	27	mA
		Outputs low		38	60	38	60	

<sup>†</sup>All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

<sup>‡</sup>For I/O ports, the parameters I<sub>IH</sub> and I<sub>IL</sub> include the off-state output current.

## switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX				UNIT
			SN54AS758		SN74AS758		
			MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A or B	B or A	3	20.5	3	19.5	ns
t <sub>PHL</sub>			1	7	1	6	
t <sub>PLH</sub>	GBA	A	3	22	3	19.5	ns
t <sub>PHL</sub>			1	8.5	1	7.5	
t <sub>PLH</sub>	$\bar{G}$ AB	B	3	22	3	21	ns
t <sub>PHL</sub>			1	8.5	1	8	

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

# SN54AS759, SN74AS759 QUADRUPLE BUS TRANSCEIVERS WITH OPEN-COLLECTOR OUTPUTS

## recommended operating conditions

	SN54AS759			SN74AS759			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
V <sub>CC</sub> Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V <sub>IH</sub> High-level input voltage	2			2			V
V <sub>IL</sub> Low-level input voltage				0.8			V
V <sub>OH</sub> High-level output voltage				5.5			V
I <sub>OL</sub> Low-level output current				48			64 mA
T <sub>A</sub> Operating free-air temperature	-55			125			0 70 °C

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

PARAMETER	TEST CONDITIONS		SN54AS759		SN74AS759		UNIT
			MIN	TYP <sup>†</sup>	MAX	MIN	
V <sub>IK</sub>	V <sub>CC</sub> = 4.5 V, I <sub>I</sub> = -18 mA		-1.2		-1.2		V
I <sub>OH</sub>	V <sub>CC</sub> = 4.5 V, V <sub>OH</sub> = 5.5 V		0.1		0.1		mA
V <sub>OL</sub>	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 48 mA		0.55				V
	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 64 mA				0.55		
I <sub>I</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 7 V	0.1		0.1		mA
	A or B ports	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 5.5 V	0.1		0.1		
I <sub>IH</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 2.7 V	20		20		μA
	A or B ports		50		50		
I <sub>IL</sub>	Control inputs	V <sub>CC</sub> = 5.5 V, V <sub>I</sub> = 0.4 V	-0.5		-0.5		mA
	A or B ports <sup>‡</sup>		-1		-1		
I <sub>CC</sub>	V <sub>CC</sub> = 5.5 V		Outputs high		Outputs high		mA
			Outputs low		Outputs low		

<sup>†</sup>All typical values are at V<sub>CC</sub> = 5 V, T<sub>A</sub> = 25°C.

<sup>‡</sup>For I/O ports, the parameters I<sub>IH</sub> and I<sub>IL</sub> include the off-state output current.

## switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX				UNIT
			SN54AS759		SN74AS759		
			MIN	MAX	MIN	MAX	
<sup>t</sup> PLH	A or B	B or A	3	21	3	20	ns
<sup>t</sup> PHL			1	7	1	6	
<sup>t</sup> PLH	GBA	A	3	21	3	20	ns
<sup>t</sup> PHL			1	8	1	7	
<sup>t</sup> PLH	GAB	B	3	22.5	3	21	ns
<sup>t</sup> PHL			1	8.5	1	7.5	

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

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ALS and AS Circuits

# 2

## ALS and AS Circuits