

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.

SN54ALS1640A, SN74ALS1640A, SN54ALS1645A, SN74ALS1645A OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

D2661, DECEMBER 1982—REVISED MAY 1986

- Bidirectional Bus Transceivers in High-Density 20-Pin Packages
- Lower-Power Versions of 'ALS640 Series
- 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 octal bus transceivers are designed for asynchronous two-way communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the level at the direction control (DIR) input. The enable input (\bar{G}) can be used to disable the device so the buses are effectively isolated. The 'ALS1640A features inverting logic, while the 'ALS1645A features noninverting logic.

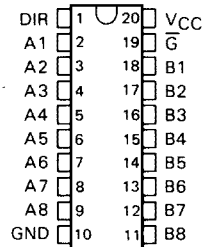
The -1 versions of the SN74ALS' parts are identical to the standard versions except that the recommended maximum I_{OL} is increased to 24 milliamperes. There are no -1 versions of the SN54ALS' parts.

The SN54ALS' family is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS' family is characterized for operation from 0°C to 70°C .

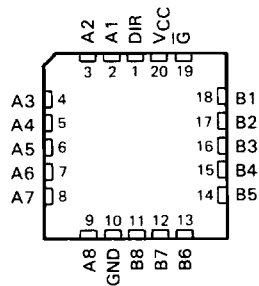
FUNCTION TABLE

CONTROL INPUTS	OPERATION	
	'ALS1640A	'ALS1645A
\bar{G} L	\bar{B} data to A bus	B data to A Bus
L H	\bar{A} data to B bus	A data to Bus
H X	Isolation	Isolation

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



SN54' . . . FK PACKAGE
(TOP VIEW)

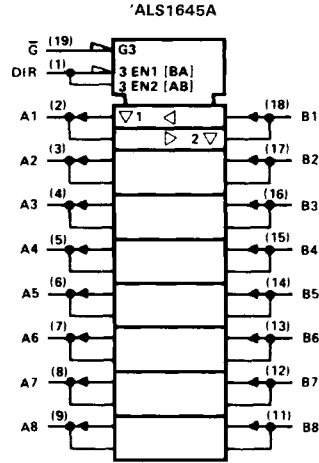
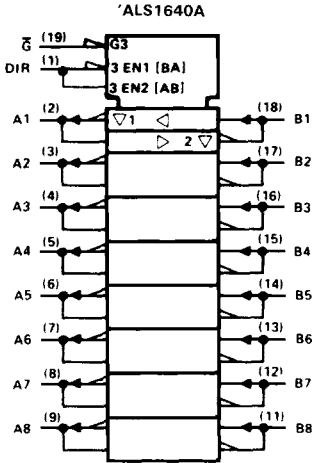


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ALS and AS Circuits

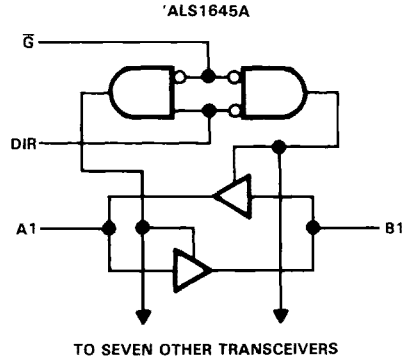
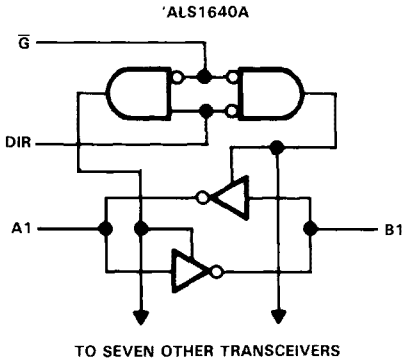
SN54ALS1640A, SN74ALS1640A, SN54ALS1645A, SN74ALS164A
OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

logic symbols[†]



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

logic diagrams (positive logic)



SN54ALS1640A, SN54ALS1645A SN74ALS1640A, SN74ALS1645A OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTS

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

Supply voltage, V_{CC}	7 V
Input voltage All inputs	7 V
I/O ports	5.5 V
Operating free-air temperature range: SN54ALS1640A, SN54ALS1645A	-55°C to 125°C
SN74ALS1640A, SN74ALS1645A	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54ALS1640A SN54ALS1645A			SN74ALS1640A SN74ALS1645A			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
I_{OH}	High-level output current	-12			-15			mA
I_{OL}	Low-level output current	8			16			mA
					24 [†]			
T_A	Operating free-air temperature	-55			125			°C

[†]The 24-mA limit applies only to the -1 versions and only if V_{CC} is maintained between 4.75 V and 5.25 V.

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

PARAMETER	TEST CONDITIONS	SN54ALS1640A SN54ALS1645A		SN74ALS1640A SN74ALS1645A		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				
	$V_{CC} = 4.5$ V, $I_{OH} = -15$ mA			2		
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 8$ mA	0.25	0.4	0.25	0.4	V
	$V_{CC} = 4.5$ V, $I_{OL} = 16$ mA			0.35	0.5	
	$V_{CC} = 4.75$ V, $I_{OL} = 24$ mA (-1 Versions)			0.35	0.5	
I_I	Control inputs	0.1		0.1		mA
	A or B ports	0.1		0.1		
I_{IH}	Control inputs	20		20		μA
	A or B ports [§]	20		20		
I_{IL}	Control inputs	-0.1		-0.1		mA
	A or B ports [§]	-0.1		-0.1		
I_O [¶]	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	-30	-112	-30	-112	mA
I_{CC}	'ALS1640A	18	35	18	32	mA
	'ALS1645A	25	40	25	36	

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

[§]For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

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

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ALS and AS Circuits

SN54ALS1640A, SN74ALS1640A, SN54ALS1645A, SN74ALS1645A
OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

ALS1640A switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V,}$ $C_L = 50 \text{ pF,}$ $R_1 = 500 \Omega,$ $R_2 = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54ALS1640A		SN74ALS1640A		
			MIN	MAX	MIN	MAX	
t_{PLH}	A or B	B or A	5	17	5	15	ns
t_{PHL}			2	13	2	10	
t_{PZH}	\bar{G}	A or B	5	23	5	20	ns
t_{PZL}			5	25	5	22	
t_{PHZ}	\bar{G}	A or B	2	12	2	10	ns
t_{PLZ}			5	16	5	13	

ALS1645A switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V,}$ $C_L = 50 \text{ pF,}$ $R_1 = 500 \Omega,$ $R_2 = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54ALS1645A		SN74ALS1645A		
			MIN	MAX	MIN	MAX	
t_{PLH}	A or B	B or A	2	15	2	13	ns
t_{PHL}			2	15	2	13	
t_{PZH}	\bar{G}	A or B	8	28	8	25	ns
t_{PZL}			8	28	8	25	
t_{PHZ}	\bar{G}	A or B	2	14	2	12	ns
t_{PLZ}			3	22	3	18	

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