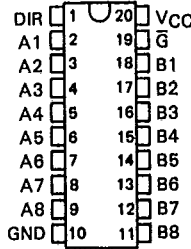


**SN54ALS1245A, SN74ALS1245A**  
**OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS**

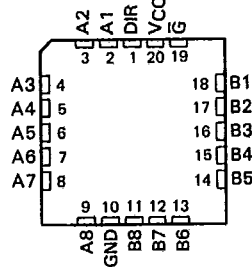
D2661, DECEMBER 1982—REVISED MAY 1986

- 'Bidirectional Bus Transceivers in High-Density 20-Pin Packages
- Lower-Power Version of 'ALS245A
- 'ALS1245A is Identical to 'ALS1645A
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

SN54ALS1245A . . . J PACKAGE  
SN74ALS1245A . . . DW OR N PACKAGE T-52.31  
(TOP VIEW)



SN54ALS1245A . . . FK PACKAGE  
(TOP VIEW)



**description**

This octal bus transceiver is designed for asynchronous two-way communication between data buses. The device transmits 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 (G) can be used to disable the device so the buses are effectively isolated.

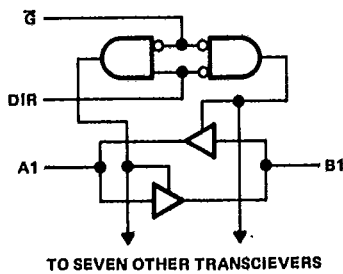
The -1 version of the SN74ALS1245A is identical to the standard versions except that the recommended maximum I<sub>OL</sub> is increased to 24 milliamperes. There is no -1 version of the SN54ALS1245A.

The SN54ALS1245A is characterized for operation over the full military temperature range of -55°C to 125°C. The SN74ALS1245A is characterized for operation from 0°C to 70°C.

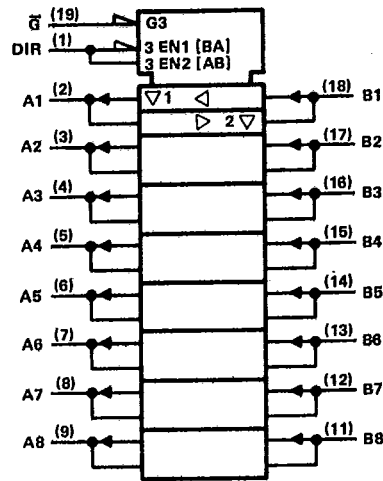
**FUNCTION TABLE**

CONTROL INPUTS		OPERATION
G	DIR	
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

**logic diagram (positive logic)**



**logic symbol†**



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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**SN54ALS1245A, SN74ALS1245A**  
**OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS**

T-52-31

**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: SN54ALS1245A .....	-55°C to 125°C
SN74ALS1245A .....	0°C to 70°C
Storage temperature range .....	-65°C to 150°C

**recommended operating conditions**

		SN54ALS1245A			SN74ALS1245A			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 <sup>†</sup>	
$T_A$	Operating free-air temperature	-55		125	0		70	°C

<sup>†</sup>The extended limit applies only if  $V_{CC}$  is maintained between 4.75 V and 5.25 V.  
 The 24-mA limit applies for the SN74ALS1245A-1 only.

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

PARAMETER	TEST CONDITIONS	SN54ALS1245A			SN74ALS1245A			UNIT
		MIN	TYP <sup>‡</sup>	MAX	MIN	TYP <sup>‡</sup>	MAX	
$V_{IK}$	$V_{CC} = 4.5 V, I_I = -18 mA$			-1.5			-1.5	V
$V_{OH}$	$V_{CC} = 4.5 V \text{ to } 5.5 V, I_{OH} = -0.4 mA$	$V_{CC} - 2$			$V_{CC} - 2$			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			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
	$V_{CC} = 4.5 V, I_{OL} = 16 mA$ ( $I_{OL} = 24 mA$ for -1 version)					0.35	0.5	
$I_I$	Control inputs	$V_{CC} = 5.5 V, V_I = 7 V$		0.1			0.1	mA
	A, B ports <sup>§</sup>	$V_{CC} = 5.5 V, V_I = 5.5 V$		0.1			0.1	
$I_{IH}$	Control inputs	$V_{CC} = 5.5 V, V_I = 2.7 V$		20			20	$\mu A$
	A, B ports <sup>§</sup>			20			20	
$I_{IL}$	Control inputs	$V_{CC} = 5.5 V, V_I = 0.4 V$		-0.1			-0.1	mA
	A, B ports <sup>§</sup>			-0.1			-0.1	
$I_{O}^f$	$V_{CC} = 5.5 V, V_O = 2.25 V$	-30		-112	-30		-112	mA
$I_{CC}$	$V_{CC} = 5.5 V$	Output high	21	33	21	33	30	mA
		Output low	23	36	23	33		
		Output disabled	25	40	25	36		

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

<sup>§</sup>For I/O ports, the parameters  $I_{IH}$  and  $I_{IL}$  include the off-state output current.

<sup>f</sup>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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**SN54ALS1245A, SN74ALS1245A**  
**OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS**

T-52-31

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>1</sub> = 500 Ω, R <sub>2</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX				UNIT
			SN64ALS1245A		SN74ALS1245A		
			MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A or B	B or A	2	19	2	13	ns
t <sub>PHL</sub>			2	15	2	13	
t <sub>PZH</sub>	0	A or B	8	30	8	25	ns
t <sub>PZL</sub>			8	29	8	25	
t <sub>PHZ</sub>	0	A or B	2	14	2	12	ns
t <sub>PLZ</sub>			3	30	3	18	

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

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