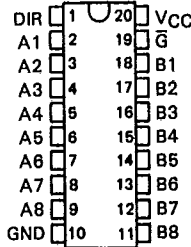


SN54ALS1245A, SN74ALS1245A
OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

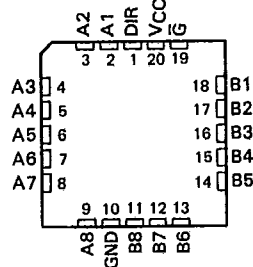
D2661, DECEMBER 1982—REVISED MAY 1986

- '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.

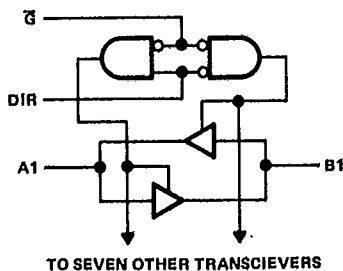
The -1 version of the SN74ALS1245A is identical to the standard versions except that the recommended maximum I_{OL} is increased to 24 milliamperes. There is no -1 version of the SN54ALS1245A.

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.

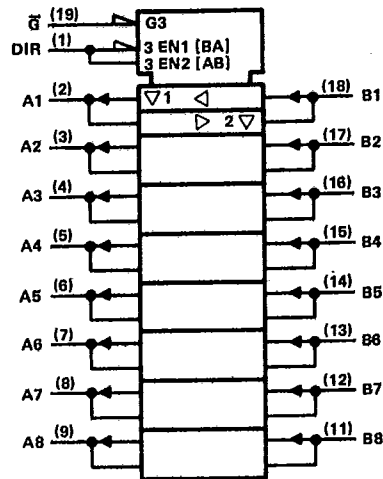
FUNCTION TABLE

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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ALS and AS Circuits

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.

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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 [†]	
T_A Operating free-air temperature	-55		125	0		70	°C

[†]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 [‡]	MAX	MIN	TYP [‡]	MAX	
V_{IK}	$V_{CC} = 4.5 V, I_I = -18 mA$			-1.5			-1.5	V
V_{OH}	$V_{CC} = 4.5 V \text{ to } 5.5 V, I_{OH} = -0.4 mA$	$V_{CC} - 2$			$V_{CC} - 2$			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				
	$V_{CC} = 4.5 V, I_{OH} = -15 mA$						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 A, B ports [§]	$V_{CC} = 5.5 V, V_I = 7 V$		0.1			0.1	mA
		$V_{CC} = 5.5 V, V_I = 5.5 V$		0.1			0.1	
I_{IH}	Control inputs A, B ports [§]	$V_{CC} = 5.5 V, V_I = 2.7 V$		20			20	μA
				20			20	
I_{IL}	Control inputs A, B ports [§]	$V_{CC} = 5.5 V, V_I = 0.4 V$		-0.1			-0.1	mA
				-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		

[‡]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.

^fThe 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

SN54ALS1245A, SN74ALS1245A
OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

T-52-31

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX				UNIT
			SN64ALS1245A		SN74ALS1245A		
			MIN	MAX	MIN	MAX	
t _{PLH}	A or B	B or A	2	19	2	13	ns
t _{PHL}			2	15	2	13	
t _{PZH}	0	A or B	8	30	8	25	ns
t _{PZL}			8	29	8	25	
t _{PHZ}	0	A or B	2	14	2	12	ns
t _{PLZ}			3	30	3	18	

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

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