245

Octal Bus Transceiver, NINV (3 State)

DV74LS245
DV74ALS245A

P Suffix
Plastic DIP
AVG-005 Case

20   1

D Suffix
Plastic SOP
AVG-006 Case
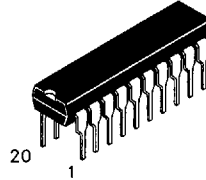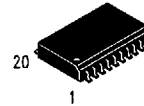
20

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This device contains eight pairs of 3-state logic elements designed for asynchronous two-way communication between data buses. These circuits are suited for use in memory, microprocessor systems and asynchronous bi-directional data buses. The Enable input ($\overline{E}$) can be used to isolate the buses.

- **AVG's LS operates over extended Vcc from 4.5 to 5.5 V**
- **AVG's LS and ALS both have guaranteed DC and AC specification over full temperature and Vcc range**
- **Switching specifications for ALS at 50 pF**
- **AVG's ALS has the lowest speed power product (4pJ per gate typical) of all logic series**
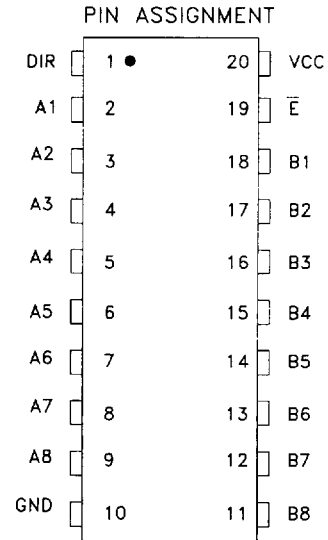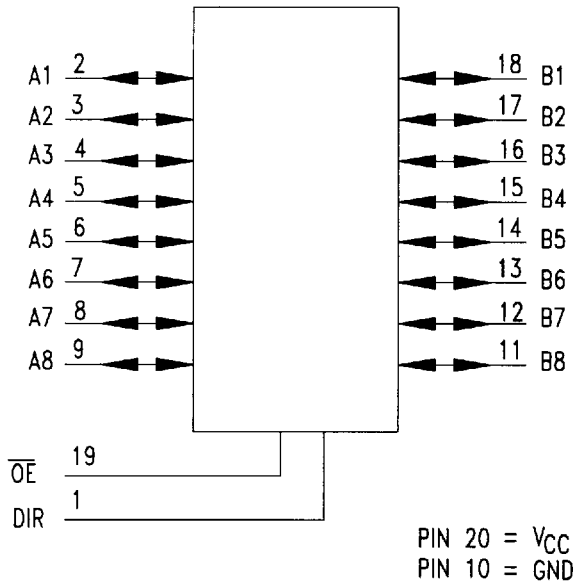
PIN ASSIGNMENT

A1	2		18	B1
A2	3		17	B2
A3	4		16	B3
A4	5		15	B4
A5	6		14	B5
A6	7		13	B6
A7	8		12	B7
A8	9		11	B8

$\overline{OE}$ 19
DIR 1

PIN 20 = V_{CC}
PIN 10 = GND

DIR	1 ●	20	VCC
A1	2	19	$\overline{E}$
A2	3	18	B1
A3	4	17	B2
A4	5	16	B3
A5	6	15	B4
A6	7	14	B5
A7	8	13	B6
A8	9	12	B7
GND	10	11	B8

TRUTH TABLE

Inputs		Outputs
$\overline{OE}$	DIR	
L	L	B Data to Bus A
L	H	A Data to Bus B
H	X	High-Z State
H=High Logic Level		
L=Low Logic Level		
X=Immaterial		

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ABSOLUTE MAXIMUM RATINGS
Maximum ratings are those values beyond which damage to the device may occur.

Symbol	Parameter	LS245	ALS245A	Unit
V_{CC}	Supply Voltage	7.0	7.0	V
V_{IN}	Input Voltage	7.0	7.0	V
T_{STG}	Storage Temperature Range	−65 to+150	−65 to + 150	°C

GUARANTEED OPERATING CONDITIONS

Symbol	Parameter	LS245		ALS245A		Unit
		Min	Max	Min	Max	
V_{CC}	Supply Voltage	4.5	5.5	4.5	5.5	V
V_{IH}	High Level Input Voltage	2.0		2.0		V
V_{IL}	Low Level Input Voltage		0.8		0.8	V
I_{OH}	High Level Output Current		−15		−15	mA
I_{OL}	Low Level Output Current		24		24	mA
T_A	Ambient Temperature Range	−10 to +70		−10 to +70		°C

DC ELECTRICAL CHARACTERISTICS over full operating conditions

Symbol	Parameter	Conditions		LS245			ALS245A			Units
				Min	Typ	Max	Min	Typ	Max	
V_{IK}	Input Clamp Voltage	V_{CC} = min, I_{IN} = −18 mA				-1.5			-1.5	V
V_{OH}	High Level Output Voltage	V_{CC}=min, I_{OH}=−3.0 mA		2.4	3.4		2.4	3.2		V
		V_{CC}=min., I_{OH}=Max		2.0			2.0			V
V_{OL}	Low Level Output Voltage	V_{CC}=min; I_{OL} =12 mA			0.25	0.4		0.25	0.4	V
		V_{CC}=min; I_{OL} =24 mA			0.35	0.5		0.35	0.5	V
$V_{T+} - V_{T-}$	Hysteresis	V_{CC}=min		0.2	0.4			0.2	0.4	V
I_{IH}	High Level Input Current	V_{CC}=max, V_{IN}= 2.7V				20			20	μA
		V_{CC}=max, V_{IN}= 7V				0.1			0.1	mA
I_{IL}	Low Level Input Current	V_{CC}=max, V_{IN}=0.4V				-0.2			-0.1	mA
I_O	Output Short Circuit Current	V_{CC}=max; V_O=2.25V		−40		−225	−30		−112	mA
I_{OZH}	High Level 3-State Output Current	V_{CC}=max, V_{OUT}= 2.7V;				20				μA
I_{OZL}	Low Level 3-State Output Current	V_{CC}=max, V_{OUT}=0.4V				−200				μA
I_{CC}	Supply Current	V_{CC}=max	Outputs High			70		30	45	mA
			Outputs Low			90		36	55	mA
			3-State (High Z)			95		38	58	mA

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SWITCHING CHARACTERISTICS over full operating conditions

Symbol	Parameter	From	To	LS245 C_L=45 pF R_L = 667Ω		ALS245A C_L=50 pF R_L= 500Ω		Unit
				Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time, Low-to-High Level Output	A or B	Output		12	3	10	ns
t_{PHL}	Propogation Delay Time High-to-Low Level Output	A or B	Output		12	3	10	ns
t_{PZH}	Output Enable Time to High Level	OE	Output		40	5	20	ns
t_{PZL}	Output Enable Time to Low Level	OE	Output		40	5	20	ns
t_{PHZ}	Output Disable Time from High Level	OE	Output			2	10	ns
t_{PLZ}	Output Disable Time From Low Level	OE	Output			4	15	ns
t_{PHZ}	Output Disable Time from High Level C_L=5pF	OE	Output		25			ns
t_{PLZ}	Output Disable Time From Low Level, C_L=5pF	OE	Output		25			ns

SWITCHING WAVEFORMS

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