

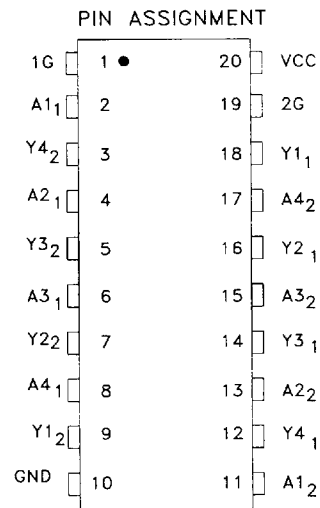
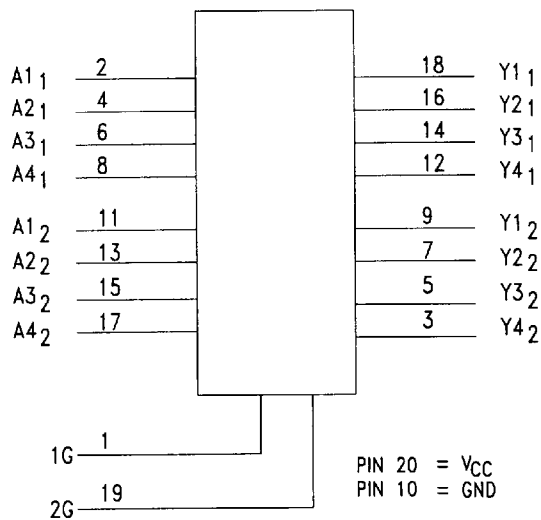
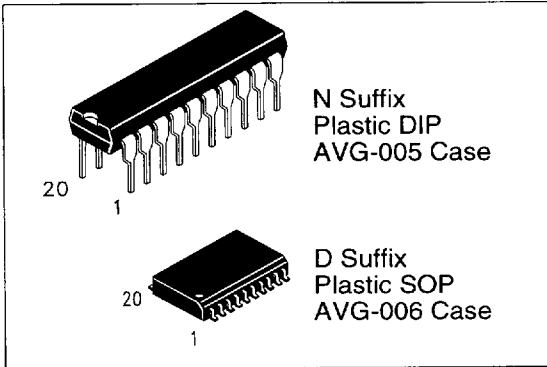
Technical Data

**3-State Octal Buffers/Inverters  
Line Drivers**

The DV74LS240, DVALS240A, DV74LS241, DV74ALS241A, DV74LS244 and DV74ALS244A are Octal Buffers and Line Drivers designed to be used as memory address drivers, clock drivers and bus-oriented transmitters/receivers which provide improved PC board density.

- 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

**DV74LS240  
DV74ALS240A  
DV74LS241  
DV74ALS241A  
DV74LS244  
DV74ALS244A**



Note: Refer to appropriate Truth Tables for signal phases.

'240  
TRUTH TABLE

INPUTS		OUTPUT
1G, 2G	An	Y
L	L	H
L	H	L
H	X	Z

'244  
TRUTH TABLE

INPUTS		OUTPUT
1G, 2G	An	Y
L	L	L
L	H	H
H	X	Z

'241  
TRUTH TABLE

INPUTS		OUTPUT	INPUTS		OUTPUT
1G	D		2G	An	Y
L	L	L	H	L	L
L	H	H	H	H	H
H	X	Z	L	X	Z

H=High Logic Level  
L=Low Logic Level  
X=Don't Care

**ABSOLUTE MAXIMUM RATINGS**

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

Symbol	Parameter	LS240, 241, 244	ALS240A, 241A, 244A	Unit
V <sub>CC</sub>	Supply Voltage	7.0	7.0	V
V <sub>IN</sub>	Input Voltage	7.0	7.0	V
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	-65 to + 150	°C

**GUARANTEED OPERATING CONDITIONS**

Symbol	Parameter	LS240, 241, 244		ALS240A, 241A, 244A		Unit
		Min	Max	Min	Max	
V <sub>CC</sub>	Supply Voltage	4.5	5.5	4.5	5.5	V
V <sub>IH</sub>	High Level Input Voltage	2.0		2.0		V
V <sub>IL</sub>	Low Level Input Voltage		0.8		0.8	V
I <sub>OH</sub>	High Level Output Current		-15		-15	mA
I <sub>OL</sub>	Low Level Output Current		24		24	mA
T <sub>A</sub>	Ambient Temperature Range	-10 to +70		-10 to +70		°C

**DC ELECTRICAL CHARACTERISTICS** over full operating conditions

Symbol	Parameter	Conditions	LS240, 241, 244			ALS240A, 241A, 244A			Unit
			Min	Typ	Max	Min	Typ	Max	
V <sub>IK</sub>	Input Clamp Voltage	V <sub>CC</sub> = min, I <sub>IN</sub> = -18 mA			-1.5			-1.5	V
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> =min, I <sub>OH</sub> = -0.4mA	2.5			2.5			V
		V <sub>CC</sub> =min, I <sub>OH</sub> =-3.0mA	2.4	3.4		2.4	3.2		
		V <sub>CC</sub> =min, I <sub>OH</sub> =-15mA	2.0			2.0			
V <sub>OL</sub>	Low Level Output Voltage (V <sub>IN</sub> =V <sub>IL</sub> or V <sub>IH</sub> per truth table)	V <sub>CC</sub> =min; I <sub>OL</sub> =12mA		0.25	0.4		0.25	0.4	V
		V <sub>CC</sub> =min; I <sub>OL</sub> =24mA		0.35	0.5		0.35	0.5	V
I <sub>OZH</sub>	Output Off Current HIGH	V <sub>CC</sub> =max, V <sub>OUT</sub> =2.7V			20			20	µA
I <sub>OZL</sub>	Output Off Current LOW	V <sub>CC</sub> =max, V <sub>OUT</sub> =0.4V			-20			-20	µA
I <sub>IH</sub>	High Level Input Current	V <sub>CC</sub> =max, V <sub>IN</sub> =2.7V			20			20	µA
		V <sub>CC</sub> =max, V <sub>IN</sub> =7.0V			0.1			0.1	mA
I <sub>IL</sub>	Low Level Input Current	V <sub>CC</sub> =max, V <sub>IN</sub> =0.4V			-0.2			-0.2	mA
I <sub>O</sub>	Short Circuit Current	V <sub>CC</sub> =max, V <sub>O</sub> =2.25 V	-30		-110	-30		-112	mA
I <sub>CC</sub>	Supply Current V <sub>CC</sub> =max	Output HIGH	240		27		4	11	mA
		Output LOW			44		13	23	
		At High Impedence			50		14	25	
		Output HIGH	241, 244		27		9	15	
		Output LOW			46		15	26	
		At High Impedence			54		17	30	

**SWITCHING CHARACTERISTICS** over full operating conditions

Symbol	Parameter	LS240, 241, 244 C <sub>L</sub> =45pF R <sub>L</sub> =667Ω		ALS240A, 241A, 244A C <sub>L</sub> = 50 pF R <sub>1</sub> =R <sub>2</sub> = 500Ω		Unit
		Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay, Data to Output LS240, ALS240A		14	2	10	ns
t <sub>PHL</sub>			18	2	10	
t <sub>PLH</sub>	Propagation Delay, Data to Output LS241, 244, ALS241A, 244A		18	3	11	ns
t <sub>PHL</sub>			18	3	10	



Symbol	Parameter	LS240, 241, 244 C <sub>L</sub> =45pF R <sub>L</sub> =667Ω		ALS240A, 241A, 244A C <sub>L</sub> = 50 pF R <sub>1</sub> =R <sub>2</sub> = 500Ω		Unit
		Min	Max	Min	Max	
t <sub>PZH</sub>	Output Enable Time LS240, ALS240A		23	5	13	ns
t <sub>PZL</sub>			30	5	18	
t <sub>PZH</sub>	Output Enable Time LS241, 244; ALS241A, 244A		23	7	21	ns
t <sub>PZL</sub>			30	7	21	
t <sub>PLZ</sub>	Output Disable Time LS240, ALS240A		25	3	12	ns
t <sub>PHZ</sub>			18	2	10	
		C <sub>L</sub> =5.0pF R <sub>L</sub> =667Ω		C <sub>L</sub> = 50 pF R <sub>1</sub> =R <sub>2</sub> = 500Ω		
t <sub>PLZ</sub>	Output Disable Time LS240, 241, 244; ALS240A, 241A, 244A		25	3	15	ns
t <sub>PHZ</sub>			18	2	10	

SWITCHING WAVEFORMS

