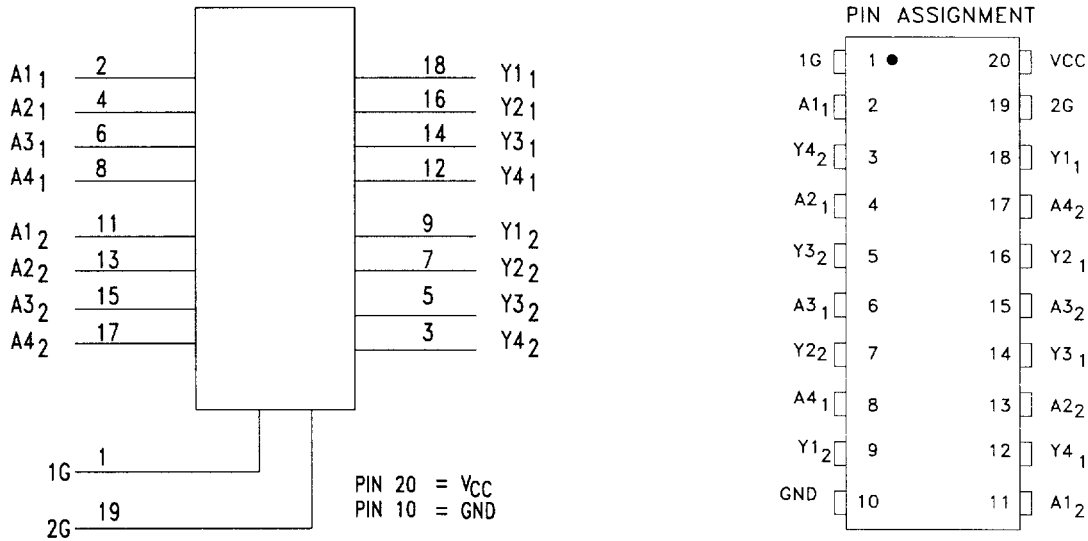
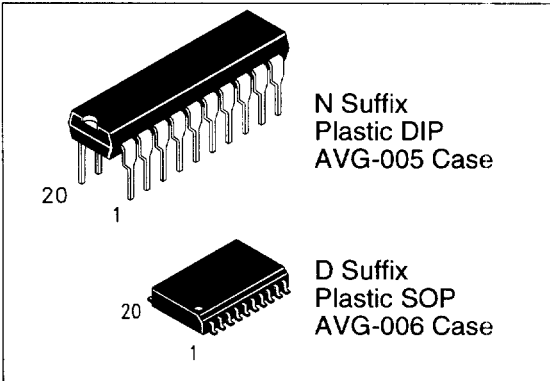


3-State Octal Buffers/Inverters Line Drivers

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 Y |
|--------|----|----------|
| 1G, 2G | An | Y |
| L | L | H |
| L | H | L |
| H | X | Z |

'244 TRUTH TABLE

| INPUTS | | OUTPUT Y |
|--------|----|----------|
| 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 _{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 | LS240, 241, 244 | | ALS240A, 241A, 244A | | 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 | LS240, 241, 244 | | | ALS240A, 241A, 244A | | | Unit |
|------------------|---|---|-----------------|------|------|---------------------|------|------|------|
| | | | 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} =-0.4mA | 2.5 | | | 2.5 | | | V |
| | | V _{CC} =min, I _{OH} =-3.0mA | 2.4 | 3.4 | | 2.4 | 3.2 | | |
| | | V _{CC} =min, I _{OH} =-15mA | 2.0 | | | 2.0 | | | |
| V _{OL} | Low Level Output Voltage (V _{IN} =V _{IL} or V _{IH} per truth table) | V _{CC} =min; I _{OL} =12mA | | 0.25 | 0.4 | | 0.25 | 0.4 | V |
| | | V _{CC} =min; I _{OL} =24mA | | 0.35 | 0.5 | | 0.35 | 0.5 | V |
| I _{OZH} | Output Off Current HIGH | V _{CC} =max, V _{OUT} =2.7V | | | 20 | | | 20 | µA |
| I _{OZL} | Output Off Current LOW | V _{CC} =max, V _{OUT} =0.4V | | | -20 | | | -20 | µA |
| I _{IH} | High Level Input Current | V _{CC} =max, V _{IN} =2.7V | | | 20 | | | 20 | µA |
| | | V _{CC} =max, V _{IN} =7.0V | | | 0.1 | | | 0.1 | mA |
| I _{IL} | Low Level Input Current | V _{CC} =max, V _{IN} =0.4V | | | -0.2 | | | -0.2 | mA |
| I _O | Short Circuit Current | V _{CC} =max, V _O =2.25 V | -30 | | -110 | -30 | | -112 | mA |
| I _{CC} | Supply Current V _{CC} =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 _L =45pF R _L =667Ω | | ALS240A, 241A, 244A C _L = 50 pF R ₁ =R ₂ = 500Ω | | Unit |
|------------------|--|---|-----|--|-----|------|
| | | Min | Max | Min | Max | |
| t _{PLH} | Propagation Delay, Data to Output LS240, ALS240A | | 14 | 2 | 10 | ns |
| t _{PHL} | | | 18 | 2 | 10 | |
| t _{PLH} | Propagation Delay, Data to Output LS241, 244, ALS241A, 244A | | 18 | 3 | 11 | ns |
| t _{PHL} | | | 18 | 3 | 10 | |

240, 241, 244

| Symbol | Parameter | LS240, 241, 244 $C_L=45\text{pF}$ $R_L=667\Omega$ | | ALS240A, 241A, 244A $C_L=50\text{pF}$ $R_1=R_2=500\Omega$ | | Unit |
|------------------|---|---|-----|---|-----|------|
| | | Min | Max | Min | Max | |
| t _{PZH} | Output Enable Time LS240, ALS240A | | 23 | 5 | 13 | ns |
| t _{PZL} | | | 30 | 5 | 18 | |
| t _{PZH} | Output Enable Time LS241, 244; ALS241A, 244A | | 23 | 7 | 21 | ns |
| t _{PZL} | | | 30 | 7 | 21 | |
| t _{PLZ} | Output Disable Time LS240, ALS240A | | 25 | 3 | 12 | ns |
| t _{PHZ} | | | 18 | 2 | 10 | |
| | | $C_L=5.0\text{pF}$ $R_L=667\Omega$ | | $C_L=50\text{pF}$ $R_1=R_2=500\Omega$ | | |
| t _{PLZ} | Output Disable Time LS240, 241, 244; ALS240A, 241A, 244A | | 25 | 3 | 15 | ns |
| t _{PHZ} | | | 18 | 2 | 10 | |

SWITCHING WAVEFORMS

