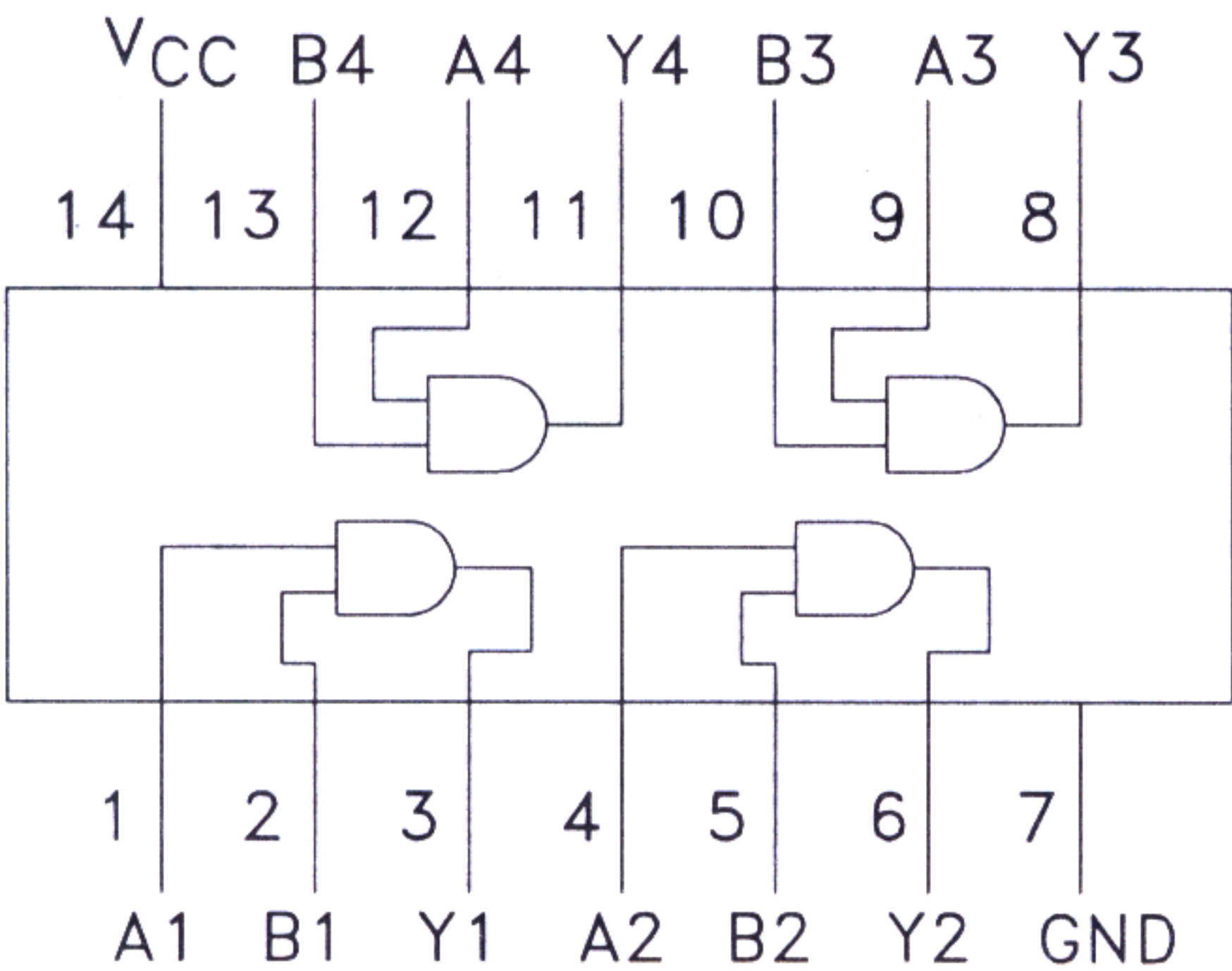
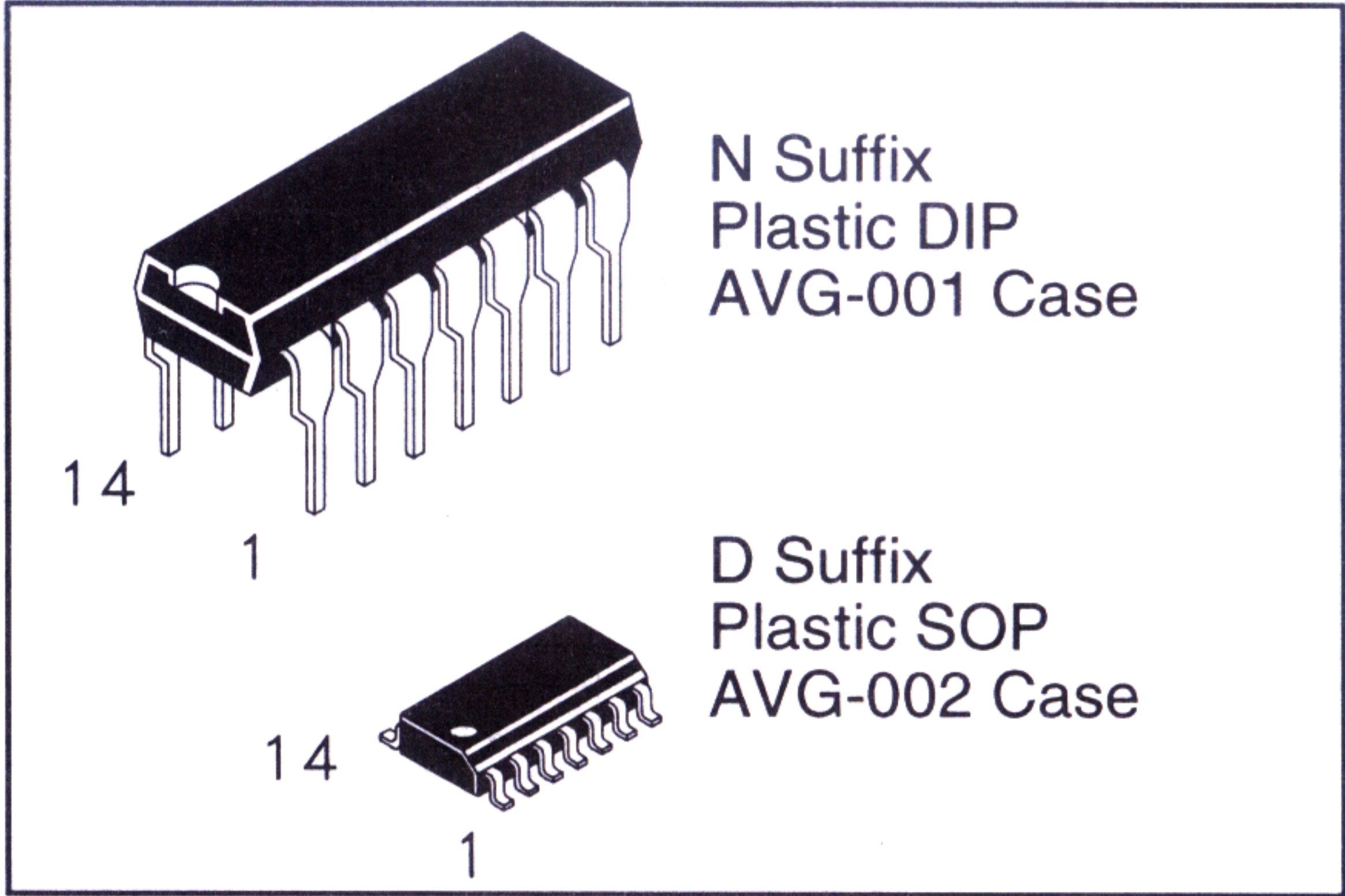


QUAD 2-INPUT AND GATE

This device contains four independent 2-input AND gates.

- 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

DV74LS08  
DV74ALS08



TRUTH TABLE

$Y = AB$

| Inputs |   | Outputs |
|--------|---|---------|
| A      | B | Y       |
| H      | H | H       |
| L      | X | L       |
| X      | L | L       |

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                 | LS08        | ALS08        | 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                 | LS08       |      | ALS08       |      | 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 |            | −0.4 |             | −0.4 | mA   |
| I <sub>OL</sub> | Low Level Output Current  |            | 8.0  |             | 8.0  | 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                                | LS08         |      |      | ALS08        |      |      | Unit          |
|----------|---|---|--------------|------|------|--------------|------|------|---------------|
|          |   |   | Min          | Typ  | Max  | Min          | Typ  | Max  |               |
| $V_{IK}$ | Input Clamp Voltage                           | $V_{CC} = \min, I_{IN} = -18 \text{ mA}$  |              |      | -1.5 |              |      | -1.5 | V             |
| $V_{OH}$ | High Level Output Voltage                     | $V_{CC} = \min, I_{OH} = \max$            | $V_{CC} - 2$ | 3.5  |      | $V_{CC} - 2$ |      |      | V             |
| $V_{OL}$ | Low Level Output Voltage                      | $V_{CC} = \min$                           |              |      |      |              |      |      |               |
|          |   | $V_{CC} = \min; I_{OL} = 4 \text{ mA}$    |              | 0.25 | 0.4  |              | 0.25 | 0.4  | V             |
|          |   | $V_{CC} = \min; I_{OL} = 8 \text{ mA}$    |              | 0.35 | 0.5  |              | 0.35 | 0.5  | V             |
| $I_{IH}$ | High Level Input Current                      | $V_{CC} = \max, V_{IN} = 2.7 \text{ V}$   |              |      | 20   |              |      | 20   | $\mu\text{A}$ |
|          |   | $V_{CC} = \max, V_{IN} = 7 \text{ V}$     |              |      | 0.1  |              |      | 0.1  | mA            |
| $I_{IL}$ | Low Level Input Current                       | $V_{CC} = \max, V_{IN} = 0.4 \text{ V}$   |              |      | -0.4 |              |      | -0.1 | mA            |
| $I_O$    | Output Short Circuit Current                  | $V_{CC} = \max, V_{OUT} = 2.25 \text{ V}$ | -20          |      | -110 | -30          |      | -112 | mA            |
| $I_{CC}$ | Supply Current<br>Outputs High<br>Outputs Low | $V_{CC} = \max$                           |              |      | 4.8  |              | 1.3  | 2.4  | mA            |
|          |   |   |              |      | 8.8  |              | 2.2  | 4.0  |               |

**SWITCHING CHARACTERISTICS** over full operating conditions

| Symbol    | Parameter   | From  | To     | LS08<br>$CL = 15 \text{ pF}$ |     | ALS08<br>$CL = 50 \text{ pF}$<br>$RL = 500 \Omega$ |     | Unit |
|-----------|---|-------|--------|------------------------------|-----|--|-----|------|
|           |   |       |        | Min                          | Max | Min  | Max |      |
| $t_{PLH}$ | Propagation Delay Time,<br>Low to High Level Output | Input | Output |                              | 15  | 4  | 14  | ns   |
| $t_{PHL}$ | Propagation Delay Time,<br>High to Low Level Output | Input | Output |                              | 20  | 3  | 10  | ns   |

**SWITCHING WAVEFORMS**