SN54LS55, SN74LS55
2-WIDE 4-INPUT AND-OR-INVERT GATES

- Package Options Include "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

description

These devices contain 2-wide 4-input AND-OR-INVERT gates. They perform the Boolean function \( Y = ABCD + EFGH \).

The SN54LS55 is characterized for operation over the full military temperature range of \(-55^\circ C \) to \(125^\circ C\).
The SN74LS55 is characterized for operation from \(0^\circ C \) to \(70^\circ C\).

logic symbol†

![Logic Symbol](image)

positive logic: \( Y = \overline{ABCD + EFGH} \)

†This symbol is in accordance with ANSI/IEEE Std. 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, N, and W packages.

logic diagram

![Logic Diagram](image)

schematic

![Schematic](image)

Resistor values shown are nominal.
### SN54LS55, SN74LS55
#### 2-WIDE 4-INPUT AND-OR-INVERT GATES

**Absolute Maximum Ratings**
- Supply voltage, \( V_{CC} \) (see Note 1) ............................................. 7 V
- Input voltage ................................................................. 7 V
- Operating free-air temperature: SN54LS55 ........................................... -55°C to 125°C
  SN74LS55 ................................................................. 0°C to 70°C
- Storage temperature range ...................................................... -65°C to 150°C

**NOTE 1:** Voltage values are with respect to network ground terminal.

#### Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SN54LS55</th>
<th>SN74LS55</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{CC} ) Supply voltage</td>
<td>MIN</td>
<td>NOM</td>
<td>MAX</td>
</tr>
<tr>
<td>( V_{IL} ) High-level input voltage</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>( V_{IL} ) Low-level input voltage</td>
<td>0.7</td>
<td>-</td>
<td>0.3</td>
</tr>
<tr>
<td>( I_{OH} ) High-level output current</td>
<td>-0.4</td>
<td>-</td>
<td>-0.4</td>
</tr>
<tr>
<td>( I_{OL} ) Low-level output current</td>
<td>4</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>( T_A ) Operating free-air temperature</td>
<td>-65</td>
<td>-</td>
<td>125</td>
</tr>
</tbody>
</table>

#### Electrical Characteristics

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.
- All typical values are at \( V_{CC} = 5 \) V, \( T_A = 25°C \).

#### Switching Characteristics, \( V_{CC} = 5 \) V, \( T_A = 25°C \) (see note 3)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>From (Input)</th>
<th>To (Output)</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( t_{PLH} )</td>
<td>Any</td>
<td>Y</td>
<td>( R_L = 2 ) kΩ, ( C_L = 15 ) pF</td>
<td>12</td>
<td>20</td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>( t_{PHL} )</td>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>20</td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

**NOTE 3:** Load circuits and voltage waveforms are shown in Section 1.
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