1. General description

The 74LVC1G19-Q100 is a 1-of-2 decoder/demultiplexer with a common output enable. This device buffers the data on input A and passes it to the outputs 1Y (true) and 2Y (complement) when the enable (E) input signal is LOW. A HIGH E causes both outputs to assume a HIGH state.

Inputs can be driven from either 3.3 V or 5 V devices. These features allow the use of these devices in a mixed 3.3 V and 5 V environment.

Schmitt-trigger action at all inputs makes the circuit tolerant of slower input rise and fall times.

This device is fully specified for partial power down applications using I_{OFF}. The I_{OFF} circuitry disables the output, preventing the potentially damaging backflow current through the device when it is powered down.

This product has been qualified to the Automotive Electronics Council (AEC) standard Q100 (Grade 1) and is suitable for use in automotive applications.

2. Features and benefits

- Automotive product qualification in accordance with AEC-Q100 (Grade 1)
  - Specified from -40 °C to +85 °C and from -40 °C to +125 °C
- Wide supply voltage range from 1.65 V to 5.5 V
- Overvoltage tolerant inputs to 5.5 V
- High noise immunity
- ±24 mA output drive (V_{CC} = 3.0 V)
- CMOS low power dissipation
- Latch-up performance exceeds 250 mA
- Direct interface with TTL levels
- I_{OFF} circuitry provides partial Power-down mode operation
- Complies with JEDEC standard:
  - JESD8-7 (1.65 V to 1.95 V)
  - JESD8-5 (2.3 V to 2.7 V)
  - JESD8C (2.7 V to 3.6 V)
  - JESD36 (4.5 V to 5.5 V)
- ESD protection:
  - HBM: ANSI/ESDA/JEDEC JS-001 class 2 exceeds 2000 V
  - CDM: ANSI/ESDA/JEDEC JS-002 class C3 exceeds 1000 V

3. Ordering information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>74LVC1G19GW-Q100</td>
<td>plastic thin shrink small outline package; 6 leads; body width 1.25 mm</td>
<td>SOT363-2</td>
</tr>
</tbody>
</table>

Table 1. Ordering information
4. Marking

Table 2. Marking

<table>
<thead>
<tr>
<th>Type number</th>
<th>Marking code[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>74LVC1G19GW-Q100</td>
<td>VY</td>
</tr>
</tbody>
</table>

[1] The pin 1 indicator is located on the lower left corner of the device, below the marking code.

5. Functional diagram

![Logic symbol](image)

Fig. 1. Logic symbol

6. Pinning information

6.1. Pinning

![Pin configuration SOT363-2 (TSSOP6)](image)

Fig. 2. Pin configuration SOT363-2 (TSSOP6)

6.2. Pin description

Table 3. Pin description

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>data input</td>
</tr>
<tr>
<td>GND</td>
<td>2</td>
<td>ground (0 V)</td>
</tr>
<tr>
<td>E</td>
<td>3</td>
<td>enable input (active LOW)</td>
</tr>
<tr>
<td>2Y</td>
<td>4</td>
<td>data output</td>
</tr>
<tr>
<td>VCC</td>
<td>5</td>
<td>supply voltage</td>
</tr>
<tr>
<td>1Y</td>
<td>6</td>
<td>data output</td>
</tr>
</tbody>
</table>
7. Functional description

Table 4. Function table

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>( E )</td>
<td>( A )</td>
</tr>
<tr>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>L</td>
<td>H</td>
</tr>
<tr>
<td>H</td>
<td>X</td>
</tr>
</tbody>
</table>

\( H = \text{HIGH voltage level;} \ \ L = \text{LOW voltage level;} \ \ X = \text{don’t care.} \)

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{CC} )</td>
<td>supply voltage</td>
<td></td>
<td>-0.5</td>
<td>+6.5</td>
<td>V</td>
</tr>
<tr>
<td>( I_{IK} )</td>
<td>input clamping current</td>
<td>( V_{I} &lt; 0 ) V</td>
<td>-50</td>
<td>-</td>
<td>mA</td>
</tr>
<tr>
<td>( V_{I} )</td>
<td>input voltage</td>
<td></td>
<td>-0.5</td>
<td>+6.5</td>
<td>V</td>
</tr>
<tr>
<td>( I_{OK} )</td>
<td>output clamping current</td>
<td>( V_{O} &gt; V_{CC} ) or ( V_{O} &lt; 0 ) V</td>
<td>-</td>
<td>±50</td>
<td>mA</td>
</tr>
<tr>
<td>( V_{O} )</td>
<td>output voltage</td>
<td>Active mode</td>
<td>-0.5</td>
<td>( V_{CC} + 0.5 )</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power-down mode; ( V_{CC} = 0 ) V</td>
<td>-0.5</td>
<td>+6.5</td>
<td>V</td>
</tr>
<tr>
<td>( I_{O} )</td>
<td>output current</td>
<td>( V_{O} = 0 ) V to ( V_{CC} )</td>
<td>-</td>
<td>±50</td>
<td>mA</td>
</tr>
<tr>
<td>( I_{CC} )</td>
<td>supply current</td>
<td></td>
<td>-</td>
<td>100</td>
<td>mA</td>
</tr>
<tr>
<td>( I_{GND} )</td>
<td>ground current</td>
<td></td>
<td>-100</td>
<td>-</td>
<td>mA</td>
</tr>
<tr>
<td>( P_{tot} )</td>
<td>total power dissipation</td>
<td>( T_{amb} = -40^\circ C ) to +125 ( ^\circ C )</td>
<td>-</td>
<td>250</td>
<td>mW</td>
</tr>
<tr>
<td>( T_{stg} )</td>
<td>storage temperature</td>
<td></td>
<td>-65</td>
<td>+150</td>
<td>( ^\circ C )</td>
</tr>
</tbody>
</table>

[1] The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

[2] For SOT363-2 (TSSOP6) package: \( P_{tot} \) derates linearly with 3.7 mW/K above 83 °C.

9. Recommended operating conditions

Table 6. Recommended operating conditions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_{CC} )</td>
<td>supply voltage</td>
<td></td>
<td>1.65</td>
<td>-</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>( V_{I} )</td>
<td>input voltage</td>
<td></td>
<td>0</td>
<td>-</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>( V_{O} )</td>
<td>output voltage</td>
<td>Active mode</td>
<td>0</td>
<td>-</td>
<td>( V_{CC} )</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power-down mode; ( V_{CC} = 0 ) V</td>
<td>0</td>
<td>-</td>
<td>5.5</td>
<td>V</td>
</tr>
<tr>
<td>( T_{amb} )</td>
<td>ambient temperature</td>
<td></td>
<td>-40</td>
<td>-</td>
<td>+125</td>
<td>( ^\circ C )</td>
</tr>
<tr>
<td>( \Delta t/\Delta V )</td>
<td>input transition rise and fall rate</td>
<td>( V_{CC} = 1.65 ) V to 2.7 V</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>ns/V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( V_{CC} = 2.7 ) V to 5.5 V</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>ns/V</td>
</tr>
</tbody>
</table>
10. Static characteristics

Table 7. Static characteristics
At recommended operating conditions. Voltages are referenced to GND (ground = 0 V).

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min</th>
<th>Typ[1]</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$T_{amb} = -40 \degree C$ to $+85 \degree C$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$</td>
<td>0.65 $V_{CC}$</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$</td>
<td>1.7</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$</td>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$</td>
<td>0.7 $V_{CC}$</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>$V_{IH}$</td>
<td>HIGH-level input voltage</td>
<td>$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.35 $V_{CC}$</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.7</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.8</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.3 $V_{CC}$</td>
<td>V</td>
</tr>
<tr>
<td>$V_{IL}$</td>
<td>LOW-level input voltage</td>
<td>$V_{CC} = 1.65 \text{ V to } 1.95 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 2.3 \text{ V to } 2.7 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.7</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 2.7 \text{ V to } 3.6 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.8</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.3 $V_{CC}$</td>
<td>V</td>
</tr>
<tr>
<td>$V_{OH}$</td>
<td>HIGH-level output voltage</td>
<td>$V_{IH}$ or $V_{IL}$</td>
<td>$V_{CC}$ - 0.1</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = -100 \mu A$; $V_{CC} = 1.65 \text{ V to } 5.5 \text{ V}$</td>
<td>1.2</td>
<td>1.54</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = -8 \text{ mA}$; $V_{CC} = 2.3 \text{ V}$</td>
<td>1.9</td>
<td>2.15</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = -12 \text{ mA}$; $V_{CC} = 2.7 \text{ V}$</td>
<td>2.2</td>
<td>2.50</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = -24 \text{ mA}$; $V_{CC} = 3.0 \text{ V}$</td>
<td>2.3</td>
<td>2.62</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = -32 \text{ mA}$; $V_{CC} = 4.5 \text{ V}$</td>
<td>3.8</td>
<td>4.11</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>$V_{OL}$</td>
<td>LOW-level output voltage</td>
<td>$V_{IH}$ or $V_{IL}$</td>
<td>$V_{CC}$ - 0.1</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = 100 \mu A$; $V_{CC} = 1.65 \text{ V to } 5.5 \text{ V}$</td>
<td>-</td>
<td>-</td>
<td>0.10</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = 4 \text{ mA}$; $V_{CC} = 1.65 \text{ V}$</td>
<td>-</td>
<td>0.07</td>
<td>0.45</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = 8 \text{ mA}$; $V_{CC} = 2.3 \text{ V}$</td>
<td>-</td>
<td>0.12</td>
<td>0.30</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = 12 \text{ mA}$; $V_{CC} = 2.7 \text{ V}$</td>
<td>-</td>
<td>0.17</td>
<td>0.40</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = 24 \text{ mA}$; $V_{CC} = 3.0 \text{ V}$</td>
<td>-</td>
<td>0.33</td>
<td>0.55</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$I_{O} = 32 \text{ mA}$; $V_{CC} = 4.5 \text{ V}$</td>
<td>-</td>
<td>0.39</td>
<td>0.55</td>
<td>V</td>
</tr>
<tr>
<td>$I_{I}$</td>
<td>input leakage current</td>
<td>$V_{I} = 5.5 \text{ V or } \text{GND}$; $V_{CC} = 0 \text{ V to } 5.5 \text{ V}$</td>
<td>-</td>
<td>±0.1</td>
<td>±1</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>$I_{OFF}$</td>
<td>power-off leakage current</td>
<td>$V_{CC} = 0 \text{ V}; V_{I} = \text{GND}$ or $V_{O} = 5.5 \text{ V}$</td>
<td>-</td>
<td>±0.1</td>
<td>±2</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>$I_{CC}$</td>
<td>supply current</td>
<td>$V_{I} = 5.5 \text{ V or } \text{GND}$; $V_{CC} = 1.65 \text{ V to } 5.5 \text{ V}$; $I_{O} = 0 \text{ A}$</td>
<td>-</td>
<td>0.1</td>
<td>4</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>$\Delta I_{CC}$</td>
<td>additional supply current</td>
<td>per pin; $V_{CC} = 2.3 \text{ V to } 5.5 \text{ V}$; $V_{I} = \text{VCC} - 0.6 \text{ V}$; $I_{O} = 0 \text{ A}$</td>
<td>-</td>
<td>5</td>
<td>500</td>
<td>$\mu$A</td>
</tr>
<tr>
<td>$C_{I}$</td>
<td>input capacitance</td>
<td>$V_{CC} = 3.3 \text{ V}$; $V_{I} = \text{GND}$ or $V_{CC}$</td>
<td>-</td>
<td>2.5</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>Symbol</td>
<td>Parameter</td>
<td>Conditions</td>
<td>Min</td>
<td>Typ[1]</td>
<td>Max</td>
<td>Unit</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>------------</td>
<td>-----</td>
<td>--------</td>
<td>-----</td>
<td>------</td>
</tr>
<tr>
<td></td>
<td><strong>Conditions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tamb</strong></td>
<td>= -40 °C to +125 °C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V&lt;sub&gt;IH&lt;/sub&gt;</td>
<td>HIGH-level input voltage</td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V to 1.95 V</td>
<td>0.65 × V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 2.3 V to 2.7 V</td>
<td>1.7</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 2.7 V to 3.6 V</td>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 4.5 V to 5.5 V</td>
<td>0.7 × V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>-</td>
<td>-</td>
<td>V</td>
</tr>
<tr>
<td>V&lt;sub&gt;IL&lt;/sub&gt;</td>
<td>LOW-level input voltage</td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V to 1.95 V</td>
<td>-</td>
<td>-</td>
<td>0.35 × V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 2.3 V to 2.7 V</td>
<td>-</td>
<td>-</td>
<td>0.7</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 2.7 V to 3.6 V</td>
<td>-</td>
<td>-</td>
<td>0.8</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 4.5 V to 5.5 V</td>
<td>-</td>
<td>-</td>
<td>0.3 × V&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>V</td>
</tr>
<tr>
<td>V&lt;sub&gt;OH&lt;/sub&gt;</td>
<td>HIGH-level output voltage</td>
<td>V&lt;sub&gt;I&lt;/sub&gt; = V&lt;sub&gt;IH&lt;/sub&gt; or V&lt;sub&gt;IL&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 100 μA; V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V to 5.5 V</td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; - 0.1</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 4 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V</td>
<td>0.95</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = -8 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 2.3 V</td>
<td>1.7</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = -12 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 2.7 V</td>
<td>1.9</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = -24 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 3.0 V</td>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = -32 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 4.5 V</td>
<td>3.4</td>
<td>-</td>
<td>-</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>V&lt;sub&gt;OL&lt;/sub&gt;</td>
<td>LOW-level output voltage</td>
<td>V&lt;sub&gt;I&lt;/sub&gt; = V&lt;sub&gt;IH&lt;/sub&gt; or V&lt;sub&gt;IL&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 100 μA; V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V to 5.5 V</td>
<td>-</td>
<td>-</td>
<td>0.10</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 4 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V</td>
<td>-</td>
<td>-</td>
<td>0.70</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 8 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 2.3 V</td>
<td>-</td>
<td>-</td>
<td>0.45</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 12 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 2.7 V</td>
<td>-</td>
<td>-</td>
<td>0.60</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 24 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 3.0 V</td>
<td>-</td>
<td>-</td>
<td>0.80</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I&lt;sub&gt;IO&lt;/sub&gt; = 32 mA; V&lt;sub&gt;CC&lt;/sub&gt; = 4.5 V</td>
<td>-</td>
<td>-</td>
<td>0.80</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>I&lt;sub&gt;I&lt;/sub&gt;</td>
<td>input leakage current</td>
<td>V&lt;sub&gt;I&lt;/sub&gt; = 5.5 V or GND; V&lt;sub&gt;CC&lt;/sub&gt; = 0 V to 5.5 V</td>
<td>-</td>
<td>-</td>
<td>±1</td>
<td>μA</td>
</tr>
<tr>
<td>I&lt;sub&gt;OFF&lt;/sub&gt;</td>
<td>power-off leakage current</td>
<td>V&lt;sub&gt;CC&lt;/sub&gt; = 0 V; V&lt;sub&gt;I&lt;/sub&gt; or V&lt;sub&gt;O&lt;/sub&gt; = 5.5 V</td>
<td>-</td>
<td>-</td>
<td>±2</td>
<td>μA</td>
</tr>
<tr>
<td>I&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>supply current</td>
<td>V&lt;sub&gt;I&lt;/sub&gt; = 5.5 V or GND; V&lt;sub&gt;CC&lt;/sub&gt; = 1.65 V to 5.5 V; I&lt;sub&gt;IO&lt;/sub&gt; = 0 A</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>μA</td>
</tr>
<tr>
<td>ΔI&lt;sub&gt;CC&lt;/sub&gt;</td>
<td>additional supply current</td>
<td>per pin; V&lt;sub&gt;CC&lt;/sub&gt; = 2.3 V to 5.5 V; V&lt;sub&gt;I&lt;/sub&gt; = V&lt;sub&gt;CC&lt;/sub&gt; - 0.6 V; I&lt;sub&gt;IO&lt;/sub&gt; = 0 A</td>
<td>-</td>
<td>-</td>
<td>500</td>
<td>μA</td>
</tr>
</tbody>
</table>

[1] All typical values are measured at V<sub>CC</sub> = 3.3 V and T<sub>amb</sub> = 25 °C.
11. Dynamic characteristics

Table 8. Dynamic characteristics
Voltsages are referenced to GND (ground = 0 V). For test circuit see Fig. 4.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>-40 °C to +85 °C</th>
<th>-40 °C to +125 °C</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Typ[1]</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A, E to nY; see Fig. 3</td>
<td>1.0</td>
<td>4.0</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VCC = 1.65 V to 1.95 V</td>
<td>0.5</td>
<td>2.5</td>
<td>6.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VCC = 2.3 V to 2.7 V</td>
<td>1.0</td>
<td>2.8</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VCC = 3.0 V to 3.6 V</td>
<td>0.5</td>
<td>2.5</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VCC = 4.5 V to 5.5 V</td>
<td>0.5</td>
<td>1.8</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V = GND to VCC; VCC = 3.3 V</td>
<td>[3]</td>
<td>-</td>
<td>18.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[1] Typical values are measured at Tamb = 25 °C and VCC = 1.8 V, 2.5 V, 2.7 V, 3.3 V and 5.0 V respectively.
[2] tpd is the same as tPLH and tPHL.
[3] CPD is used to determine the dynamic power dissipation (PD in μW).

PD = CPD × VCC^2 × f_i × N + Σ(CL × VCC^2 × f_o) where:
- f_i = input frequency in MHz;
- f_o = output frequency in MHz;
- CL = output load capacitance in pF;
- VCC = supply voltage in V;
- N = number of inputs switching;
- Σ(CL × VCC^2 × f_o) = sum of outputs.

11.1. Waveform and test circuit

Measurement points are given in Table 9.
VOL and VOH are typical output voltage levels that occur with the output load.

Fig. 3. The input A, E to output nY propagation delays

Table 9. Measurement points

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC</td>
<td>VM</td>
<td>VM</td>
</tr>
<tr>
<td>1.65 V to 1.95 V</td>
<td>0.5 × VCC</td>
<td>0.5 × VCC</td>
</tr>
<tr>
<td>2.3 V to 2.7 V</td>
<td>0.5 × VCC</td>
<td>0.5 × VCC</td>
</tr>
<tr>
<td>2.7 V</td>
<td>1.5 V</td>
<td>1.5 V</td>
</tr>
<tr>
<td>3.0 V to 3.6 V</td>
<td>1.5 V</td>
<td>1.5 V</td>
</tr>
<tr>
<td>4.5 V to 5.5 V</td>
<td>0.5 × VCC</td>
<td>0.5 × VCC</td>
</tr>
</tbody>
</table>
Test data is given in Table 10.
Definitions for test circuit:
- $R_L$ = Load resistance;
- $C_L$ = Load capacitance including jig and probe capacitance;
- $R_T$ = Termination resistance should be equal to the output impedance $Z_o$ of the pulse generator;
- $V_{EXT}$ = External voltage for measuring switching times.

**Fig. 4. Test circuit for measuring switching times**

**Table 10. Test data**

<table>
<thead>
<tr>
<th>Supply voltage</th>
<th>Input</th>
<th>$t_r = t_f$</th>
<th>Load</th>
<th>$V_{EXT}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.65 V to 1.95 V</td>
<td>$V_{CC}$</td>
<td>≤ 2.0 ns</td>
<td>30 pF</td>
<td>1 kΩ</td>
</tr>
<tr>
<td>2.3 V to 2.7 V</td>
<td>$V_{CC}$</td>
<td>≤ 2.0 ns</td>
<td>30 pF</td>
<td>500 Ω</td>
</tr>
<tr>
<td>2.7 V</td>
<td>2.7 V</td>
<td>≤ 2.5 ns</td>
<td>50 pF</td>
<td>500 Ω</td>
</tr>
<tr>
<td>3.0 V to 3.6 V</td>
<td>2.7 V</td>
<td>≤ 2.5 ns</td>
<td>50 pF</td>
<td>500 Ω</td>
</tr>
<tr>
<td>4.5 V to 5.5 V</td>
<td>$V_{CC}$</td>
<td>≤ 2.5 ns</td>
<td>50 pF</td>
<td>500 Ω</td>
</tr>
</tbody>
</table>
12. Package outline

TSSOP6: plastic thin shrink small outline package; 6 leads; body width 1.25 mm  

Dimensions (mm are the original dimensions)

<table>
<thead>
<tr>
<th>Unit</th>
<th>A</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>bP</th>
<th>c</th>
<th>D(1)</th>
<th>E(1)</th>
<th>e</th>
<th>e1</th>
<th>Hg</th>
<th>Lp</th>
<th>V</th>
<th>W</th>
<th>y</th>
<th>θ</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>1.1 0.1</td>
<td>1.0</td>
<td>0.15</td>
<td>0.30</td>
<td>0.25</td>
<td>2.2</td>
<td>1.35</td>
<td>0.65</td>
<td>2.4</td>
<td>0.46</td>
<td>1.8</td>
<td>1.8</td>
<td>0.26</td>
<td>0.3</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>min</td>
<td>0.8 0.0</td>
<td>0.8</td>
<td>0.15</td>
<td>0.15</td>
<td>0.08</td>
<td>1.8</td>
<td>1.15</td>
<td>1.3</td>
<td>1.8</td>
<td>1.8</td>
<td>0.26</td>
<td>0.3</td>
<td>0.1</td>
<td>0.1</td>
<td>8°</td>
<td></td>
</tr>
</tbody>
</table>

Note
1. Plastic or metal protrusions of 0.2 mm maximum per side are not included.

Fig. 5. Package outline SOT363-2 (TSSOP6)
13. Abbreviations

Table 11. Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMOS</td>
<td>Complementary Metal Oxide Semiconductor</td>
</tr>
<tr>
<td>DUT</td>
<td>Device Under Test</td>
</tr>
<tr>
<td>ESD</td>
<td>ElectroStatic Discharge</td>
</tr>
<tr>
<td>HBM</td>
<td>Human Body Model</td>
</tr>
<tr>
<td>TTL</td>
<td>Transistor-Transistor Logic</td>
</tr>
</tbody>
</table>

14. Revision history

Table 12. Revision history

<table>
<thead>
<tr>
<th>Document ID</th>
<th>Release date</th>
<th>Data sheet status</th>
<th>Change notice</th>
<th>Supersedes</th>
</tr>
</thead>
<tbody>
<tr>
<td>74LVC1G19_Q100 v.5</td>
<td>20230816</td>
<td>Product data sheet</td>
<td>-</td>
<td>74LVC1G19_Q100 v.4</td>
</tr>
<tr>
<td>Modifications:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Section 2: ESD specification updated according to the latest JEDEC standard.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>74LVC1G19_Q100 v.4</td>
<td>20220127</td>
<td>Product data sheet</td>
<td>-</td>
<td>74LVC1G19_Q100 v.3</td>
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<tr>
<td>Modifications:</td>
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<td></td>
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</tr>
</tbody>
</table>
| | • Section 1 and Section 2 updated.  
| | • Package SOT363 (SC-88) changed to SOT363-2 (TSSOP6). |
| 74LVC1G19_Q100 v.3 | 20210421 | Product data sheet | - | 74LVC1G19_Q100 v.2 |
| Modifications: | | | | |
| | • Section 8: Derating values for $P_{\text{tot}}$ total power dissipation have been updated. |
| 74LVC1G19_Q100 v.2 | 20161209 | Product data sheet | - | 74LVC1G19_Q100 v.1 |
| Modifications: | | | | |
| | • Table 7: The maximum limits for leakage current and supply current have changed. |
| 74LVC1G19_Q100 v.1 | 20150924 | Product data sheet | - | - |
## 15. Legal information

### Data sheet status

<table>
<thead>
<tr>
<th>Document status</th>
<th>Product status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary [short] data sheet</td>
<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
</tr>
<tr>
<td>Objective [short] data sheet</td>
<td>Development</td>
<td>This document contains data from the objective specification for product development.</td>
</tr>
<tr>
<td>Product [short] data sheet</td>
<td>Production</td>
<td>This document contains the product specification.</td>
</tr>
</tbody>
</table>

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term "short data sheet" is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at https://www.nexperia.com.

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