I2S (Inter-IC Sound Bus) is a serial bus interface used for connecting audio devices together. Typically, a three-line protocol consisting of a Serial Clock (SCK), Word Select (WS) and Serial Data (SD) lines is used for these applications, though the need for a Word Select line is not always needed. A multiplexer can be used to help support multiple audio peripherals using a single I2S bus. Since these are passive, bidirectional parts they give the user the ability to either multiplex (MUX) or demultiplex (DEMUX) the respective signals.

Figure 1. 2-Channel Implementation of I2S Using SN3257-Q1

Figure 2. 3-Channel Implementation of I2S Using TS5A23157-Q1
Design Considerations

- Select multiplexers with enough bandwidth and the appropriate channel count to support the needs of the application.
- Powered-off protection can help protect against voltages present on the inputs when the multiplexer is not powered.
- For battery powered systems, select multiplexers with low supply current to maximize battery life.
- Learn about multiplexer parameters with *TI Precision Labs Videos*.
- Ask a question on our *TI E2E™ Design Support Forum*.

### Table 1. Recommended Parts

<table>
<thead>
<tr>
<th>Part Number</th>
<th>VCC Range (V)</th>
<th>Configuration</th>
<th>Bandwidth</th>
<th>$R_{ON}$ (Ω)</th>
<th>Supply Current (μA)</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN3257-Q1</td>
<td>1.5 to 5.5</td>
<td>2:1 4-channel</td>
<td>2.0 GHz</td>
<td>5</td>
<td>40</td>
<td>1.8-V compatible control inputs, break-before-make, fail-safe logic, powered-off protection</td>
</tr>
<tr>
<td>TS3A27518E-Q1</td>
<td>1.65 to 3.6</td>
<td>2:1 6-channel</td>
<td>240 MHz</td>
<td>4.4</td>
<td>0.04</td>
<td>1.8-V compatible control inputs, break-before-make, powered-off protection</td>
</tr>
<tr>
<td>TMUX1574</td>
<td>1.5 to 5.5</td>
<td>2:1 4-channel</td>
<td>2.0 GHz</td>
<td>2</td>
<td>40</td>
<td>1.8-V compatible control inputs, fail-safe logic, integrated pulldown resistor on logic pin, powered-off protection, supports input voltage beyond supply</td>
</tr>
<tr>
<td>TS5A23157-Q1</td>
<td>1.65 to 5.5</td>
<td>2:1 2-channel</td>
<td>220 MHz</td>
<td>15</td>
<td>0.01</td>
<td>Break-before-make, low charge injection, functional safety capable</td>
</tr>
</tbody>
</table>
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