The LT®4321 ideal diode bridge controller replaces two diode bridge rectifiers with low loss N-channel MOSFET bridges to increase the available power and reduce heat dissipation in a Power over Ethernet powered device (PoE PD). Circuit size and cost are reduced as the enhanced power efficiency eliminates heat sinking requirements. Power savings of 10× or more enables PDs to stay below PoE classification power levels, or to add value-rich functionality while maintaining class.

Features

- Low Loss Replacement for Two PoE PD Diode Bridges
- Reduces Heat to Ease Thermal Design
- Maximizes Available Power and Voltage
- PoE/PoE+/LTPoE++™ Compatible
  - Works with 2- and 4-Pair PoE
  - Does Not Corrupt Detection and Classification
  - IEEE 802.3 Compliant When Paired with a PD Controller
- 100V Absolute Maximum
- Less Than 5µA Quiescent Current During Detection
- −40°C to 125°C Guaranteed Temperature Range
- 16-Pin 4mm x 4mm QFN Package
LT4321 PoE Active Bridge Controller Power Savings

<table>
<thead>
<tr>
<th>PoE Type</th>
<th>$P_{PD(MAX)}$</th>
<th>$V_{PD(MIN)}$</th>
<th>$I_{PD(MAX)}$</th>
<th>$P_{SAVED(MAX)}$ Per Bridge</th>
<th>Powered Bridges</th>
<th>Power Savings</th>
<th>Efficiency Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>PoE, IEEE 802.3af</td>
<td>13W</td>
<td>37V</td>
<td>350mA</td>
<td>0.46W</td>
<td>1</td>
<td>0.46W</td>
<td>3.6%</td>
</tr>
<tr>
<td>PoE+, IEEE 802.3at</td>
<td>25.5W</td>
<td>42.5V</td>
<td>600mA</td>
<td>0.83W</td>
<td>1</td>
<td>0.83W</td>
<td>3.3%</td>
</tr>
<tr>
<td>LTPoE++</td>
<td>90W</td>
<td>41V</td>
<td>2.2A</td>
<td>1.6W at 1.1A</td>
<td>2</td>
<td>3.2W</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

High Efficiency 90W PD Solution
Using LT4321 and LT4275 LTPoE+/PoE+/PoE PD Controller

Thermograph Conditions: 4-Pair 90W LTPoE++, 2.2A at 41V without Forced Airflow

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