Miniature Transformers LPD5030V

With 1500 Vdc (1000 Vrms) isolation and a small package size, the LPD5030V series is ideal for use in high density isolated circuit applications.

Functional Safety Listed by UL. Functional insulation class for TNV-1 to SELV applications. Functional insulation with a maximum 60 Vdc, 42.4 V peak input/output voltages with working voltages up to 210 Vdc. (Report #E219588-A6)

These miniature transformers provide tight coupling, high inductance and excellent current handling.

They can be used as:
- Flyback transformers
- Coupled inductors in SEPIC applications
- Common mode filter chokes.

Core material  Ferrite
Core and winding loss  Go to online calculator
Environmental  RoHS compliant, halogen free
Terminations  RoHS compliant matte tin over nickel over silver
Weight 210 – 225 mg
Ambient temperature  –40°C to +85°C with (40°C rise) I rms current.
Maximum part temperature  +125°C (ambient + temp rise).
Storage temperature  Component: –40°C to +125°C.
Tape and reel packaging: –40°C to +80°C
Resistance to soldering heat  Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles
Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)
Failures in Time (FIT) / Mean Time Between Failures (MTBF) 38 per billion hours / 26,315,789 hours, calculated per Telcordia SR-332
Packaging  750/7” reel; 2500/13” reel Plastic tape: 12 mm wide, 0.32 mm thick, 8 mm pocket spacing, 3.1 mm pocket depth
Recommended pick and place nozzle OD: 5 mm; ID: ≤ 2.5 mm
PCB washing  Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

Typical Flyback Converter

Typical Buck Converter with auxiliary output

Typical SEPIC schematic

Refer to Application Note, Document 639, “Selecting Coupled Inductors for SEPIC Applications”
LPD5030V Transformers for Flyback Applications

1. When ordering, please specify packaging code:
   
   LPD5030V-224MR
   Packaging:  
   C = 7” machine-ready reel. EIA-481 embossed plastic tape (750 parts per full reel).
   B = Less than full reel. In tape, but not machine ready. To have a leader and trailer added ($25 charge), use code letter C instead.
   D = 13” machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (2500 parts per full reel).

LPD5030V Coupled Inductors for SEPIC Applications

1. When ordering, please specify packaging code:
   
   LPD5030V-224MR
   Packaging:  
   C = 7” machine-ready reel. EIA-481 embossed plastic tape (750 parts per full reel).
   B = Less than full reel. In tape, but not machine ready. To have a leader and trailer added ($25 charge), use code letter C instead.

2. Inductance is for the primary, measured at 100 kHz, 0.1 Vrms, 0 Adc on an Agilent/HP 4284A LCR meter or equivalent.

3. Peak primary current drawn at minimum input voltage.

4. DCR is for each winding.

5. Leakage inductance is for the primary winding with the secondary windings shorted.

6. 1000 Vrms, one minute isolation (hipot) between windings. Designed to provide Functional Insulation only; does not protect against electrical shock; nor intended for the isolation of SELV circuits from Hazardous Voltage circuits.

7. Electrical specifications at 25°C. Refer to Doc 362 "Soldering Surface Mount Components" before soldering.

8. Equal current when applied to each winding simultaneously that causes a 4°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.

9. Maximum current when applied to one winding that causes a 4°C temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.


LPD5030V Coupled Inductors for SEPIC Applications

<table>
<thead>
<tr>
<th>Part number1</th>
<th>Inductance2 ±20% (µH)</th>
<th>Inductance3 at 0 A4 ±20% (µH)</th>
<th>DCR1 max4 (Ohms)</th>
<th>SRF typ5 (MHz)</th>
<th>Coupling coefficient typ</th>
<th>Leakage inductance6 typ6 at Ikpk7 (µH)</th>
<th>Isat8 (A)9</th>
<th>Irms (A)10</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPD5030V-472MR_</td>
<td>4.7</td>
<td>3.3</td>
<td>0.322</td>
<td>55.0</td>
<td>0.97</td>
<td>0.109</td>
<td>1.45</td>
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<td>LPD5030V-682MR_</td>
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<td>4.7</td>
<td>0.395</td>
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<td>0.109</td>
<td>1.30</td>
<td>1.50</td>
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<td>0.490</td>
<td>37.1</td>
<td>0.97</td>
<td>0.130</td>
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<tr>
<td>LPD5030V-333MR_</td>
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<tr>
<td>LPD5030V-154MR_</td>
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<tr>
<td>LPD5030V-224MR_</td>
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<td>154</td>
<td>3.25</td>
<td>6.5</td>
<td>&gt;0.99</td>
<td>0.541</td>
<td>0.16</td>
<td>0.21</td>
</tr>
</tbody>
</table>

1. When ordering, please specify packaging code:

2. Inductance is for each winding, measured at 100 kHz, 0.1 Vrms, 0 Adc on an Agilent/HP 4284A LCR meter or equivalent.

3. DCR measured using an Agilent/HP 4284A LCR meter or equivalent. When leads are connected in parallel, SRF is the same value.

4. SRF is the same value. When leads are connected in series, SRF is twice the value.

5. Coupled Inductor Core and Winding Loss Calculator

This web-based utility allows you to enter frequency, peak-to-peak (ripple) current, and Irms current to predict temperature rise and overall losses, including core loss. Go to online calculator.

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Specification subject to change without notice. Please check web site for latest information.
LPD5030V Miniature Transformers

Typical L vs Current

Inductance (µH) vs Current (A)

Typical L vs Frequency

Inductance (µH) vs Frequency (MHz)

Dimensions are in inches

Dash number Internal code

0.189 ±0.003* 4.80 ±0.076

0.114 ±0.004* 2.90 ±0.10

Recommended Land Pattern

* Dimensions are of the case not including the termination. For maximum overall dimensions including the termination, add 0.005 in / 0.13 mm.

For optional tin-lead and tin-silver-copper terminations, dimensions are for the mounted part. Dimensions before mounting can be an additional 0.005 inch / 0.13 mm.)

Dimensions are in mm

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