Miniature Transformers LPD8035V

Key features
- AEC-Q200 Grade 3 (−40°C to +85°C)
- Maximum part temperature 125°C
- Ultra-small package size 8.0 × 6.4 × 3.5 mm
- Tight coupling coefficient ≥0.97
- 1500 Vrms, one minute isolation (hipot) between windings
- Provides Functional Insulation

Applications
- Flyback transformer
- Coupled inductor in SEPIC applications
- Common mode filter choke

Typical Flyback Converter

Typical Buck Converter with auxiliary output

Typical SEPIC schematic
Refer to Application Note, Document 639, “Selecting Coupled Inductors for SEPIC Applications”

Dimensions are in inches

Recommended Land Pattern

Dimensions are in mm
# LPD8035V Transformers for Flyback Applications

<table>
<thead>
<tr>
<th>Part number1</th>
<th>Inductance at 0 A2 typ ±20% (µH)</th>
<th>Inductance at Ipk3 max ±20% (µH)</th>
<th>DCR (Ohms)4 typ</th>
<th>Leakage inductance5 max (µH)</th>
<th>Isolation6 (Vrms)</th>
<th>Turns ratio</th>
<th>Ipk3 (A)</th>
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</thead>
<tbody>
<tr>
<td>LPD8035V-472MR_</td>
<td>4.7</td>
<td>3.3</td>
<td>0.120</td>
<td>0.140</td>
<td>0.150</td>
<td>1 : 1</td>
<td>2.7</td>
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</table>

1. When ordering, please specify packaging code:

   **LPD8035V-474MR**

   **Packaging:**
   - **C** = 7” machine-ready reel. EIA-481 embossed plastic tape (350 parts per full reel). Quantities less than full reel available: in tape (not machine ready) or with leader and trailer ($25 charge).
   - **D** = 13” machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (1500 parts per full reel).
   - **B** = Less than full reel. Less than full reel. In an effort to simplify our part numbering system, Coilcraft is eliminating the need for multiple packaging codes. When ordering, simply change the last letter of your part number from B to C.

2. Inductance is for the primary, measured at 100 kHz, 0.1 Vrms, 0 Aedc 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. 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.

**Designer’s Kit C481** contains 3 parts of each value in the LPD8035V and LPD5030V series.

**Core material** Ferrite

**Environment** RoHS compliant, halogen free

**Terminations** RoHS compliant matte tin over nickel over silver.

**Weight** 0.53 – 0.58 g

**Ambient temperature** –40°C to +85°C with (40°C rise) I rms current.

**Maximum part temperature** +125°C (ambient + temp rise). Derating.

**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)

**Packaging** 350/7” reel; 1500/13” reel Plastic tape: 16 mm wide, 0.35 mm thick, 12 mm pocket spacing, 3.68 mm pocket depth

**Recommended pick and place nozzle** OD: 6.2 mm; ID: ≤ 3.1 mm

**PCB washing** Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

[Core material Ferrite](#)

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LPD8035V Coupled Inductors for SEPIC Applications

<table>
<thead>
<tr>
<th>Part number</th>
<th>Inductance (µH)</th>
<th>DCR (Ohms)</th>
<th>SRF (MHz)</th>
<th>Coupling factor</th>
<th>Leakage inductance (µH)</th>
<th>Isolation (Vrms)</th>
<th>Isat (A)</th>
<th>both windings</th>
<th>one winding</th>
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<tbody>
<tr>
<td>LPD8035V-472MR</td>
<td>4.7</td>
<td>0.120</td>
<td>0.140</td>
<td>45.6</td>
<td>0.97</td>
<td>0.150</td>
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<td>0.440</td>
<td>1500</td>
<td>0.49</td>
<td>0.42</td>
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<tr>
<td>LPD8035V-683MR</td>
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<td>0.565</td>
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<td>0.39</td>
<td>0.31</td>
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<tr>
<td>LPD8035V-124MR</td>
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<td>1.68</td>
<td>8.67</td>
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<td>0.28</td>
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</table>

1. When ordering, please specify packaging code:
LPD8035V-154MR

**Packaging:**
- C = 7” machine-ready reel. EIA-481 embossed plastic tape 350 parts per full reel). Quantities less than full reel available in tape (not machine ready) or with leader and trailer ($25 charge).
- B = Less than full reel. Less than full reel. In an effort to simplify our part numbering system, Coilcraft is eliminating the need for multiple packaging codes. When ordering, simply change the last letter of your part number from B to C.
- D = 13” machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (1500 parts per full reel).

2. Inductance shown for each winding, measured at 100 kHz, 0.1 Vrms, 0 Adc on an Agilent/HP 4284A LCR meter or equivalent. When leads are connected in parallel, inductance is the same value. When leads are connected in series, inductance is four times the value.

3. DCR is for each winding. When leads are connected in parallel, DCR is half the value. When leads are connected in series, DCR is twice the value.

4. SRF measured using an Agilent/HP 4191A or equivalent. When leads are connected in parallel, SRF is the same value.

5. Leakage Inductance is for L1 and is measured with L2 shorted.

6. 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. DC current, at which the inductance drops 30% (typ) from its value without current. It is the sum of the current flowing in both windings.

8. Equal current when applied to each winding simultaneously that causes a 40°C temperature rise from 25°C ambient.

9. Maximum current when applied to one winding that causes a 40°C temperature rise from 25°C ambient. See temperature rise calculation. Refer to Doc 639 “Selecting Coupled Inductors for SEPIC Applications.” Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

Typical L vs Current

Typical L vs Frequency