**Coupled Inductors – LPR4012**

For Step-Up, Resonant & Flyback Applications

- Miniature, shielded coupled inductors are only 1.1 mm high and 4 mm square
- Excellent coupling coefficient \((k = 0.95)\) makes them ideal for use as flyback transformers in DC-DC converters or as coupled inductors in buck regulators to provide multiple outputs
- 100 Vrms, one minute isolation (hipot) between windings
- Wide selection of turns ratios makes them suitable for a variety of voltage step-up and step-down applications
- Can also be used in autotransformer applications.
- High \(I_{sat}\) and low DCR ratings of these low profile parts provide high efficiency and excellent current handling in a rugged, low cost design
- Custom inductance values and turn ratios are available upon request.

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**Table:**

<table>
<thead>
<tr>
<th>Part number(^1)</th>
<th>Primary (L1) (\pm 20% (\mu H))</th>
<th>Turns ratio</th>
<th>DCR max (Ohms)</th>
<th>SRF typ(^2) (MHz)</th>
<th>10% drop 20% drop 30% drop</th>
<th>Isat (A)(^4) 20°C rise 40°C rise</th>
<th>Irms (A)(^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPR4012-202AMR_</td>
<td>2.0</td>
<td>1:2</td>
<td>0.240 0.235</td>
<td>30.5</td>
<td>1.70 1.73 1.74</td>
<td>1.10 1.45</td>
<td></td>
</tr>
<tr>
<td>LPR4012-202BMR_</td>
<td>2.0</td>
<td>1:2</td>
<td>0.240 0.480</td>
<td>49.4</td>
<td>1.70 1.73 1.74</td>
<td>1.10 1.45</td>
<td></td>
</tr>
<tr>
<td>LPR4012-202DMR_</td>
<td>2.0</td>
<td>1:3</td>
<td>0.240 1.15</td>
<td>31.0</td>
<td>1.70 1.73 1.74</td>
<td>1.10 1.45</td>
<td></td>
</tr>
<tr>
<td>LPR4012-202LRM_</td>
<td>2.0</td>
<td>1:10</td>
<td>0.240 11.62</td>
<td>7.43</td>
<td>1.70 1.73 1.74</td>
<td>1.10 1.45</td>
<td></td>
</tr>
<tr>
<td>LPR4012-103AMR_</td>
<td>10.0</td>
<td>1:2</td>
<td>1.00 1.55</td>
<td>19.5</td>
<td>0.62 0.64 0.65</td>
<td>0.52 0.70</td>
<td></td>
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<tr>
<td>LPR4012-103BMR_</td>
<td>10.0</td>
<td>1:3</td>
<td>0.600 3.71</td>
<td>12.8</td>
<td>0.62 0.64 0.65</td>
<td>0.52 0.70</td>
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<tr>
<td>LPR4012-103DMR_</td>
<td>10.0</td>
<td>1:2</td>
<td>1.16 3.65</td>
<td>11.2</td>
<td>0.43 0.45 0.46</td>
<td>0.43 0.57</td>
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<tr>
<td>LPR4012-103LRM_</td>
<td>10.0</td>
<td>1:3</td>
<td>1.16 7.08</td>
<td>8.00</td>
<td>0.43 0.45 0.46</td>
<td>0.43 0.57</td>
<td></td>
</tr>
</tbody>
</table>

1. When ordering, please specify termination and packaging codes:

   **LPR4012-223**
   - **Termination:**
     - \(R\) = RoHS compliant matte tin over nickel over silver.
     - Special order: \(Q\) = RoHS tin-silver-copper (95.5/4/0.5) or \(P\) = non-RoHS tin-lead (63/37).
   - **Packaging:**
     - \(C\) = 7″ machine-ready reel. EIA-481 embossed plastic tape (1000 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 D instead.
     - \(D\) = 13″ machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (3500 parts per full reel).

2. Inductance is measured at 100 kHz, 0.1 Vrms, 0 Adc on an Agilent/HP 4284A LCR meter or equivalent.
3. SRF measured using an Agilent/HP 4191A or equivalent. When leads are connected in parallel, SRF is the same value.
4. DC current at 25°C applied to L1 that causes the specified inductance drop from its value without current.
5. Current applied to L1 that causes the specified temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.
Coupled Inductors – LPR4012 Series

Core material  Ferrite
Weight  54 – 64 mg
Terminations  RoHS compliant matte tin over nickel over silver. Other terminations available at additional cost.
Ambient temperature  −40°C to +85°C with Irms 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
Winding to winding isolation  100 Vrms
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)
Mean Time Between Failures (MTBF)  26,315,789 hours
Failures in Time (FIT)  38 per one billion hours
Packaging  1000/7” reel; 3500/13” reel Plastic tape: 12 mm wide, 0.25 mm thick, 8 mm pocket spacing, 1.32 mm pocket depth
Recommended pick and place nozzle  OD: 4 mm; ID: ≤ 2 mm
PCB washing  Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

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.

Recommended Land Pattern

Dimensions are in inches / mm

* 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.

Document 713-2 Revised 08/25/16

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