RFID Transponder Coils – 4312RV

The 4312RV series of transponder coils is designed for RFID applications at 125 kHz. It is Coilcraft’s smallest transponder coil developed specifically for the harshest mechanical environments.

The coil is wound on a plastic base, providing great durability and allowing this part to withstand physical shock. With operating temperature range to 125°C, these parts pass AEC-200 Grade 1 (-40°C to +125°C) qualification and are ideal for use in a wide range of automotive applications. The uniquely shaped termination provides excellent board adhesion.

In addition to our standard models, Coilcraft can also design transponder coils to operate at other frequencies.

To request free evaluation samples, contact Coilcraft or visit www.coilcraft.com.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Inductance at 125 kHz ±2% (mH)</th>
<th>Q min</th>
<th>Read distance (inches/cm)</th>
<th>Sensitivity (mV/µT)</th>
<th>Matching capacitor (pF)</th>
<th>DCR max (Ohms)</th>
<th>SRF typ (kHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4312RV-404XGL</td>
<td>0.40</td>
<td>21</td>
<td>19.65/49.91</td>
<td>9.14</td>
<td>4050</td>
<td>11.5</td>
<td>6340</td>
</tr>
<tr>
<td>4312RV-105XGL</td>
<td>1.00</td>
<td>21</td>
<td>24.25/61.60</td>
<td>15.26</td>
<td>1621</td>
<td>29</td>
<td>4150</td>
</tr>
<tr>
<td>4312RV-245XGL</td>
<td>2.38</td>
<td>26</td>
<td>28.35/72.01</td>
<td>24.72</td>
<td>681</td>
<td>55</td>
<td>2470</td>
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<tr>
<td>4312RV-495XGL</td>
<td>4.90</td>
<td>24</td>
<td>32.85/83.44</td>
<td>42.45</td>
<td>331</td>
<td>103</td>
<td>1270</td>
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<tr>
<td>4312RV-725XGL</td>
<td>7.20</td>
<td>30</td>
<td>35.05/89.03</td>
<td>60.02</td>
<td>225</td>
<td>128</td>
<td>1465</td>
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<tr>
<td>4312RV-905XGL</td>
<td>9.00</td>
<td>32</td>
<td>35.80/91.00</td>
<td>78.10</td>
<td>180</td>
<td>150</td>
<td>1200</td>
</tr>
</tbody>
</table>

1. When ordering, please specify packaging code:

4312RV-725XGLD

Packaging: D = 13” machine-ready reel. EIA-481 embossed plastic tape (3000 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.

2. Inductance and Q measured using Agilent/HP 4192A impedance analyzer at 125 kHz. For recommended test procedures, contact Coilcraft.

3. Read distance measured using the KEELQO® Transponder Evaluation Kit part number DM303005 from Microchip. Distance was recorded as the voltage across the resonant circuit dropped below 10 mV.

4. Sensitivity measured in accordance with Coilcraft application note “Measuring Sensitivity of Transponder Coils.”

5. Matching capacitor value required for parallel resonant circuit operating at 125 kHz.

6. DCR measured on micro-ohmmeter.

7. SRF measured using Agilent/HP 8753D network analyzer.

8. Electrical specifications at 25°C

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

Terminations  RoHS compliant gold over nickel over phos bronze.

Weight  210 – 240 mg

Ambient temperature  -40°C to +125°C

Storage temperature  Component: -40°C to +125°C.

Moisture Sensitivity Level (MSL) 1 (unlimited floor life at <30°C / 85% relative humidity)

Temperature coefficient of inductance  +300 to +1100 ppm/°C

Failures in Time (FIT) / Mean Time Between Failures (MTBF)  
One per billion hours / one billion hours, calculated per Telcordia SR-332

Packaging  3000 per 13” reel  Plastic tape: 24 mm wide, 0.3 mm thick, 8 mm pocket spacing, 2.49 mm pocket depth

PCB washing  Tested with pure water or alcohol only. For other solvents, see Doc787_PCB_Washing.pdf.
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Typical L vs Frequency

- Inductance (mH) vs Frequency (MHz)
- Typical L values:
  - 9.0 mH at 125 kHz
  - 7.2 mH at 2.38 MHz
  - 4.9 mH at 11.43 MHz
  - 2.38 mH at 2.38 MHz
  - 1.0 mH at 11.43 MHz
  - 0.40 mH at 125 kHz

Dimensions

- Dimensions are in inches
- Recommended land pattern
- Dimensions are in mm
- Note: Unless otherwise indicated, all part dimensions ±0.002/0.05

RoHS Compliant

AEC

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This product may not be used in medical or high risk applications without prior Coilcraft approval.

Specification subject to change without notice.

Please check web site for latest information.

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