Shielded Power Inductors XEL4012, 4014

- Extremely low DCR and ultra low AC losses for high switching frequencies (2 to 5 MHz)
- Superior current handling with soft saturation characteristics
- Can withstand high current spikes
- AEC-200 Grade 1 (−40°C to +125°C)

Core material: Composite
Environment: RoHS compliant, halogen free
Terminations: RoHS compliant, tin-silver over copper. Other terminations available at additional cost.
Weight: 0.11 g
Operating voltage: 0 − 80 V
Ambient temperature: −40°C to +125°C with (40°C) Irms current.
Maximum part temperature: +165°C (ambient + temp rise).
Storage temperature: Component: −55°C to +165°C.
Resistance to soldering heat: Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles.

Failures in Time (FIT) / Mean Time Between Failures (MTBF): 0.48 per billion hours / 2.08E+09 hours, calculated per Telcordia SR-332.

Inductance tested at 1 MHz, 0.1 Vrms, 0 Adc.
DCR measured on a micro-ohmmeter.
SRF measured using Agilent/HP 4395A or equivalent.
DC current at which the inductance drops 30% (typ) from its value without current.
Click for temperature derating information.

I\(_{\text{rms}}\) Testing
I\(_{\text{rms}}\) testing was performed on 0.75 inch wide × 0.25 inch thick copper traces in still air.
Temperature rise is highly dependent on many factors including pcb land pattern, trace size, and proximity to other components. Therefore temperature rise should be verified in application conditions.

Click for temperature derating information.

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

<table>
<thead>
<tr>
<th>Part number</th>
<th>Inductance(^2) (nH)</th>
<th>DCR (mOhms)(^3)</th>
<th>SRF typ(^4) (MHz)</th>
<th>Isat(^5) (A)</th>
<th>Irms (A)(^6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>XEL4012-920NE</td>
<td>92 ±30%</td>
<td>5.2</td>
<td>5.7</td>
<td>279</td>
<td>24.0</td>
</tr>
<tr>
<td>XEL4012-221NE</td>
<td>220 ±30%</td>
<td>9.7</td>
<td>10.6</td>
<td>146</td>
<td>16.0</td>
</tr>
<tr>
<td>XEL4014-221ME</td>
<td>220 ±20%</td>
<td>7.5</td>
<td>9.5</td>
<td>150</td>
<td>18.2</td>
</tr>
<tr>
<td>XEL4014-331ME</td>
<td>330 ±20%</td>
<td>9.9</td>
<td>12.0</td>
<td>110</td>
<td>14.6</td>
</tr>
<tr>
<td>XEL4014-561ME</td>
<td>560 ±20%</td>
<td>16.5</td>
<td>18.4</td>
<td>80</td>
<td>11.6</td>
</tr>
<tr>
<td>XEL4014-781ME</td>
<td>780 ±20%</td>
<td>20.3</td>
<td>22.8</td>
<td>70</td>
<td>9.8</td>
</tr>
</tbody>
</table>

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

Termination: E = RoHS compliant tin-silver over copper.
Special order: S = non-RoHS tin-lead (63/37).
Packaging: C = 7” machine-ready reel. EIA-481 embossed plastic tape. Quantities less than full reel available: in tape (not machine ready) or with leader and trailer ($25 charge).
B = 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.

2. Inductance tested at 1 MHz, 0.1 Vrms, 0 Adc.
3. DCR measured on a micro-ohmmeter.
4. SRF measured using Agilent/HP 4395A or equivalent.
5. DC current at which the inductance drops 30% (typ) from its value without current.
6. Current that causes the specified temperature rise from 25°C ambient. This information is for reference only and does not represent absolute maximum ratings.

Click for temperature derating information.

7. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.
Shielded Power Inductors – XEL4012, XEL4014

L vs Current

L vs Frequency

Dash number Indicates direction of terminals and start (short) lead. Connect high dv/dt here for lowest EMI.

Recommended Land Pattern

Part number Height* max (in / mm)
XEL4012-920 0.047 / 1.20
XEL4014-221 0.047 / 1.20
XEL4014-221 0.055 / 1.40
XEL4014-331 0.055 / 1.40
XEL4014-561 0.055 / 1.40
XEL4014-781 0.055 / 1.40

* 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 inches / mm

Packaging
XEL4012 1500/13’’ reel; 5000/13’’ reel Plastic tape: 12 mm wide, 0.23 mm thick, 8 mm pocket spacing, 1.40 mm pocket depth
XEL4014 1000/13’’ reel; 4000/13’’ reel Plastic tape: 12 mm wide, 0.23 mm thick, 8 mm pocket spacing, 1.78 mm pocket depth

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