Common Mode EMI Filters – M2022

-40dB

• Provide excellent noise attenuation
• Compact, 1812 size surface mount package.
• Available as the standard filter, a low profile (-ALPL) and a shielded (-ASL) version
• Excellent isolation, environmental stability and low cost.

**Core material** Ferrite  
**Terminations** RoHS compliant gold over nickel over moly-manganese  
**Weight:** M2022-AL 155 mg; M2022-ALPL 85.5 mg; M2022-ASL 319 mg  
**Ambient temperature** –40°C to +85°C  
**Storage temperature** Component: –40°C to +85°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)  
**PCB washing** Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

<table>
<thead>
<tr>
<th>Part number</th>
<th>Common mode peak impedance (kΩms)</th>
<th>Cutoff frequency (MHz)</th>
<th>Inductance (µH)</th>
<th>DCR max (mΩms)</th>
<th>Isolation (Vrms)</th>
<th>Current max (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2022-AL</td>
<td>38.3 @ 120 MHz</td>
<td>170</td>
<td>4.2 ±10%</td>
<td>800</td>
<td>50</td>
<td>500</td>
</tr>
<tr>
<td>M2022-ALPL</td>
<td>40.0 @ 160 MHz</td>
<td>120</td>
<td>4.0 ±10%</td>
<td>990</td>
<td>50</td>
<td>500</td>
</tr>
<tr>
<td>M2022-ASL</td>
<td>32.0 @ 66 MHz</td>
<td>140</td>
<td>11.5 min</td>
<td>850</td>
<td>50</td>
<td>500</td>
</tr>
</tbody>
</table>

1. When ordering, please specify **packaging** codes:  
   M2022-ALPL\_C  
   **Packaging:**  
   C = 7” machine-ready reel. EIA-481 embossed plastic tape (600 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 (2200 parts per full reel).  
   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.  

2. Frequency at which the differential mode attenuation equals −3 dB  
3. Inductance is per winding, measured at 10 MHz.  
4. DCR is specified per winding.  
5. Winding to winding isolation (hipot) tested for one minute.  
6. Electrical specifications at 25°C.
M2022 Common Mode EMI Filters

Typical Attenuation*

![Typical Attenuation graph]

*Ref: 50 Ohms.

Typical Impedance vs Frequency

![Typical Impedance graph]

M2022-AL, M2022-ALPL

![M2022-AL, M2022-ALPL component images]

M2022-ASL

![M2022-ASL component images]

M2022-AL

<table>
<thead>
<tr>
<th>A max</th>
<th>B max</th>
<th>C max</th>
<th>D ref</th>
<th>E ref</th>
<th>F ref</th>
<th>G min</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.195</td>
<td>0.150</td>
<td>0.135</td>
<td>0.070</td>
<td>0.100</td>
<td>0.178</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>4,95</td>
<td>3.81</td>
<td>3.43</td>
<td>1.78</td>
<td>2.54</td>
<td>4.52</td>
<td>1.02</td>
<td>0.76</td>
</tr>
</tbody>
</table>

M2022-ALPL

<table>
<thead>
<tr>
<th>A max</th>
<th>B max</th>
<th>C max</th>
<th>D ref</th>
<th>E ref</th>
<th>F ref</th>
<th>G min</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.195</td>
<td>0.150</td>
<td>0.079</td>
<td>0.070</td>
<td>0.100</td>
<td>0.178</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>4,95</td>
<td>3.81</td>
<td>2.01</td>
<td>1.78</td>
<td>2.54</td>
<td>4.52</td>
<td>1.02</td>
<td>0.76</td>
</tr>
</tbody>
</table>

M2022-ASL

<table>
<thead>
<tr>
<th>A max</th>
<th>B max</th>
<th>C max</th>
<th>D ref</th>
<th>E ref</th>
<th>F ref</th>
<th>G min</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.231</td>
<td>0.196</td>
<td>0.150</td>
<td>0.107</td>
<td>0.100</td>
<td>0.178</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>5,87</td>
<td>4,98</td>
<td>3,81</td>
<td>2,72</td>
<td>2,54</td>
<td>4,52</td>
<td>1,02</td>
<td>0,76</td>
</tr>
</tbody>
</table>

Packaging
- 600 per 7” reel; 2200 per 13” reel
- Plastic tape: 12 mm wide, 8 mm pocket spacing
- M2022-AL: 0.3 mm thick, 3.7 mm pocket depth
- M2022-ALP: 0.3 mm thick, 2.25 mm pocket depth
- M2022-AS: 0.25 mm thick, 3.94 mm pocket depth

Recommended Land Pattern

![Recommended Land Pattern diagram]