MECHANICAL SPECIFICATIONS

Input / output pads shown in Blue. Grounding pads shown in gray.

Dimensions in inches [mm]
Tolerances are +/-0.002 [0.05], unless noted.
Dimensions nominal unless otherwise noted.
All contact areas are gold plated, including I/O pads.
100 mil cavity height above device. Please contact factory if alternate clearance is needed.
Multilayer Organic (MLO®) Filters
Mechanical Specifications, Pad Layout, and Mounting Recommendations
Footprint A

SUGGESTED PCB LAYOUT

Dimensions in inches [mm].
Dimensions nominal unless otherwise noted.
Line width for I/O pads should be designed to match 50-ohm characteristic impedance, depending on PCB material and thickness. Grounding for these lines not shown.
Please see DXF file in part data package.
All contact areas are gold plated, including I/O pads.
Grounding is solid copper under solder mask, with solder mask defined pads for ground openings. I/O pads are not shorted to ground.
PAD CONNECTIONS

Pins 1 & 2 are input / output. Shown in Blue.
Pin 3 - grounding pads. Shown in gray.
Dimensions in inches [mm]

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Multilayer Organic (MLO®) Filters
Mechanical Specifications, Pad Layout, and Mounting Recommendations
Footprint B

MECHANICAL SPECIFICATIONS

Input / output pads shown in Blue. Grounding pads shown in gray.
Dimensions in inches [mm]
Tolerances are +/-0.002 [0.05], unless noted.
Dimensions nominal unless otherwise noted.
All contact areas are gold plated, including I/O pads.
100 mil cavity height above device. Please contact factory if alternate clearance is needed
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Dimensions in inches [mm]
MECHANICAL SPECIFICATIONS

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PAD CONNECTIONS

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Dimensions in inches [mm]
Multilayer Organic (MLO®) Filters
Mechanical Specifications, Pad Layout,
and Mounting Recommendations
Footprint E

MECHANICAL SPECIFICATIONS

Input / output pads shown in Blue. Grounding pads shown in gray.
Dimensions in inches [mm]
Tolerances are +/-0.002 [0.05], unless noted.
Dimensions nominal unless otherwise noted.
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Multilayer Organic (MLO®) Filters
Mechanical Specifications, Pad Layout, and Mounting Recommendations
Footprint E

SUGGESTED PCB LAYOUT

Dimensions in inches [mm].
Dimensions nominal unless otherwise noted.
Line width for I/O pads should be designed to match 50-ohm characteristic impedance, depending on PCB material and thickness. Grounding for these lines not shown.
Please see DXF file in part data package.
All contact areas are gold plated, including I/O pads.
Grounding is solid copper under solder mask, with solder mask defined pads for ground openings. I/O pads are not shorted to ground.
PAD CONNECTIONS

Pins 1 & 2 are input / output. Shown in Blue.
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Dimensions in inches [mm].
MECHANICAL SPECIFICATIONS

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Pin 3 - grounding pads. Shown in gray.
Dimensions in inches [mm]
AUTOMATED SMT ASSEMBLY
The following section describes the guidelines for automated SMT assembly of MLO® RF devices which are typically Land Grid Array (LGA) packages or side termination SMT packages. Control of solder and solder paste volume is critical for surface mount assembly of MLO® RF devices onto the PCB.

SMT REFLOW PROFILE
Common IR or convection reflow SMT processes shall be used for the assembly. Standard SMT reflow profiles, for eutectic and Pb free solders, can be used to surface mount the MLO® devices onto the PCB. In all cases, a temperature gradient of 3°C/sec, or less, should be maintained to prevent warpage of the package and to ensure that all joints reflow properly. Additional soak time and slower preheating time may be required to improve the out-gassing of solder paste. In addition, the reflow profile depends on the PCB density and the type of solder paste used. Standard no-clean solder paste is generally recommended. If another type of flux is used, complete removal of flux residual may be necessary. Example of a typical lead free reflow profile is shown below.

![Reflow Profile Diagram](image)

**Figure A. Typical Lead Free Profile and Parameters**

<table>
<thead>
<tr>
<th>Profile Parameter</th>
<th>Pb free, Convection, IR/Convection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramp-up rate (T_smax to T_p)</td>
<td>3°C/second max.</td>
</tr>
<tr>
<td>Preheat temperature (T_s min to T_s max)</td>
<td>150°C to 200°C</td>
</tr>
<tr>
<td>Preheat time (t_s)</td>
<td>60 – 180 seconds</td>
</tr>
<tr>
<td>Time above TL, 217°C (t_L)</td>
<td>60 – 120 seconds</td>
</tr>
<tr>
<td>Peak temperature (T_p)</td>
<td>260°C</td>
</tr>
<tr>
<td>Time within 5°C of peak temperature (t_p)</td>
<td>10 – 20 seconds</td>
</tr>
<tr>
<td>Ramp-down rate</td>
<td>4°C/second max.</td>
</tr>
<tr>
<td>Time 25°C to peak temperature</td>
<td>6 minutes max.</td>
</tr>
</tbody>
</table>