Flexible Ferrite Sheets
For NFC & Wireless Charging
MULL Series

FEATURES
- Flexible ferrite sheets for 13.56 MHz NFC, RFID application & wireless charging application
- Made by thin, high permeability sintered ferrite with PET film and adhesive tape
- Standard ferrite layer thickness 0.05mm, 0.1mm and 0.2mm
- Custom size or thickness available upon request
- Operating temperature -40°C to 85°C
- RoHS compliant

APPLICATIONS
- NFC antenna for mobile phones
- NFC antenna for automobile
- NFC or RFID antenna for security & access control system
- Wireless charging for mobile phones and battery powered handheld electronic devices
- NFC or RFID read/write devices, improved read distance
- EMI suppression for IC or IC circuitry

SHAPES AND DIMENSIONS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>A mm (inches)</th>
<th>B mm (inches)</th>
<th>C mm (inches)</th>
<th>D mm MAX (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MULL5040-000</td>
<td>50 (1.969)</td>
<td>40 (1.575)</td>
<td>0.20 (0.008)</td>
<td>0.35 (0.014)</td>
</tr>
<tr>
<td>MULL5040-200</td>
<td>50 (1.969)</td>
<td>40 (1.575)</td>
<td>0.10 (0.004)</td>
<td>0.20 (0.008)</td>
</tr>
<tr>
<td>MULL6060-300</td>
<td>60 (2.362)</td>
<td>60 (2.362)</td>
<td>0.05 (0.002)</td>
<td>0.09 (0.004)</td>
</tr>
<tr>
<td>MULL12060-000</td>
<td>120 (4.724)</td>
<td>60 (2.362)</td>
<td>0.20 (0.008)</td>
<td>0.35 (0.014)</td>
</tr>
<tr>
<td>MULL12060-200</td>
<td>120 (4.724)</td>
<td>60 (2.362)</td>
<td>0.10 (0.004)</td>
<td>0.20 (0.008)</td>
</tr>
</tbody>
</table>

PART NUMBER SYSTEM EXAMPLE

<table>
<thead>
<tr>
<th>MULL</th>
<th>12060</th>
<th>-</th>
<th>000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Code</td>
<td>Part Size Code</td>
<td>Thickness Code</td>
<td>Catalog or Custom Information</td>
</tr>
</tbody>
</table>

USA: +1.423.308.1690
Europe: +42.0.4885.7511.1
Asia: +86.757.2563.8860

www.lairdtech.com
Flexible Ferrite Sheets
For NFC & Wireless Charging
MULL Series

MATERIAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Property</th>
<th>MULL Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Permeability, $\mu'$@13.56MHz, 0.1V</td>
<td>150 ± 20%</td>
</tr>
<tr>
<td>Imaginary Permeability, $\mu''$@13.56MHz, 0.1V</td>
<td>5 max</td>
</tr>
<tr>
<td>Operating Temperature, °C</td>
<td>-40°C ~ +85°C</td>
</tr>
</tbody>
</table>

TYPICAL ELECTRICAL CHARACTERISTICS

Complex Permeability vs. Frequency

Complex permeability $\mu'$ $\mu''$

Frequency(MHz)

USA: +1.423.308.1690
Europe: +42.0.4885.7511.1
Asia: +86.757.2563.8860

MCP-DS-MULL SHEET 0814

Any information furnished by Laird Technologies, Inc. and its agents is believed to be accurate and reliable. All specifications are subject to change without notice. Responsibility for the use and application of Laird Technologies materials rests with the end user. Laird Technologies makes no warranties as to the fitness, merchantability, suitability or non-infringement of any Laird Technologies materials or products for any specific or general uses. Laird Technologies shall not be liable for incidental or consequential damages of any kind. All Laird Technologies products are sold pursuant to the Laird Technologies’ Terms and Conditions of sale in effect from time to time, a copy of which will be furnished upon request. © Copyright 2014 Laird Technologies, Inc. All Rights Reserved. Laird, Laird Technologies, the Laird Technologies Logo, and other marks are trademarks or registered trademarks of Laird Technologies, Inc. or an affiliate company thereof. Other product or service names may be the property of third parties. Nothing herein provides a license under any Laird Technologies or any third party intellectual property rights.

www.lairdtech.com