# MPL-AT2512-6R8

## Low-Profile Molded Inductor 6.8µH

### APPLICATIONS

- Battery-powered devices
- High switching frequency SMPS
- IoT
- Wearable
- Portable devices
- Input filters

### FEATURES

- Size 2.5mmx2.0mmx1.2mm
- Low Profile
- Low Audible Noise
- Molded Construction
- Soft Saturation
- Stable Over High Temperatures
- Low DCR
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

### ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inductance (1)</td>
<td>L</td>
<td>±20%</td>
</tr>
<tr>
<td>Resistance R&lt;sub&gt;DC&lt;/sub&gt;</td>
<td>typ</td>
<td>280</td>
</tr>
<tr>
<td>Resistance R&lt;sub&gt;DC MAX&lt;/sub&gt;</td>
<td>max</td>
<td>325</td>
</tr>
<tr>
<td>Rated Current (2)</td>
<td>I&lt;sub&gt;R&lt;/sub&gt;</td>
<td>typ</td>
</tr>
<tr>
<td>Saturation Current 25°C (3)</td>
<td>I&lt;sub&gt;SAT 25°C&lt;/sub&gt;</td>
<td>typ</td>
</tr>
<tr>
<td>Saturation Current 100°C (4)</td>
<td>I&lt;sub&gt;SAT 100°C&lt;/sub&gt;</td>
<td>typ</td>
</tr>
<tr>
<td>Resonance Frequency</td>
<td>f&lt;sub&gt;r&lt;/sub&gt;</td>
<td>typ</td>
</tr>
</tbody>
</table>

### GENERAL SPECIFICATIONS

1. **Inductance**
   - Measured at 100kHz, 100mA

2. **Rated Current**
   - Rated current will cause the coil temperature rise ΔT of 40K
   - In measured with the inductor soldered in a single-layer PCB. Copper layer thickness 35µm Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity to other components, and trace dimensions and thickness.

3. **Saturation Current 25°C**
   - Saturation current will cause L to drop from 30% at 25°C ambient temperature

4. **Saturation Current 100°C**
   - Saturation current will cause L to drop from 30% at 100°C ambient temperature

### Temperature Test Condition

- Electrical specifications measured at 25°C, 35% RH if not given differently

### Operating Condition

- Operating temperature: -40°C to +125°C (including temp rise)
- Should not exceed +125°C under worst-case operation conditions

### Storage Condition

- Tape and Reel packaging: -10°C to +40°C
- Humidity: <50% RH

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TYPICAL PERFORMANCE CURVES

Temperature Rise vs. Current

Inductance vs. Current

Impedance vs. Frequency

Inductance vs. Frequency
Quality Factor vs. Frequency

AC Resistance vs. Frequency
**LAND PATTERN**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>A</th>
<th>2.1 ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>0.60 ref.</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>2.60 ref. (unit in mm)</td>
</tr>
</tbody>
</table>

**PRODUCT PACKAGE AND DIMENSIONS**

(unit in mm)

**TOP MARKING**

<table>
<thead>
<tr>
<th>Marking</th>
<th>Start of Winding · (dot)</th>
</tr>
</thead>
</table>

**MARKING**

Start of Winding · (dot)
ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>L (µH)</th>
<th>R&lt;sub&gt;DC&lt;/sub&gt; (mΩ)</th>
<th>I&lt;sub&gt;R&lt;/sub&gt; (A)</th>
<th>I&lt;sub&gt;SAT 25°C&lt;/sub&gt; (A)</th>
<th>I&lt;sub&gt;SAT 100°C&lt;/sub&gt; (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPL-AT2512-R33</td>
<td>0.33</td>
<td>13.5</td>
<td>6.4</td>
<td>8.5</td>
<td>8.5</td>
</tr>
<tr>
<td>MPL-AT2512-R47</td>
<td>0.47</td>
<td>19</td>
<td>5.5</td>
<td>6.4</td>
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<td>MPL-AT2512-R68</td>
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<td>26</td>
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<td>6</td>
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<tr>
<td>MPL-AT2512-1R0</td>
<td>1.0</td>
<td>35</td>
<td>4.0</td>
<td>5.2</td>
<td>5.2</td>
</tr>
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<td>MPL-AT2512-1R5</td>
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<td>56</td>
<td>3.2</td>
<td>4.2</td>
<td>4.2</td>
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<tr>
<td>MPL-AT2514-2R2</td>
<td>2.2</td>
<td>70</td>
<td>2.6</td>
<td>3.4</td>
<td>3.4</td>
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<td>MPL-AT2512-3R3</td>
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<td>121</td>
<td>2.0</td>
<td>2.7</td>
<td>2.7</td>
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<tr>
<td>MPL-AT2514-4R7</td>
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<td>180</td>
<td>1.7</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>MPL-AT2512-6R8</td>
<td>6.8</td>
<td>280</td>
<td>1.4</td>
<td>2.2</td>
<td>2.2</td>
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<tr>
<td>MPL-AT2512-100</td>
<td>10</td>
<td>355</td>
<td>1.2</td>
<td>1.7</td>
<td>1.7</td>
</tr>
</tbody>
</table>

GENERAL SPECIFICATIONS

(1) Inductance
- Measured at 100kHz, 100mA

(2) Rated Current
- Rated current will cause the coil temperature rise ΔT of 40K
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  PCB layout, proximity to other components, and trace dimensions and thickness.

(3) Saturation Current \(25°C\)
- Saturation current will cause \(L\) to drop from 30% at 25°C ambient temperature

(4) Saturation Current \(100°C\)
- Saturation current will cause \(L\) to drop from 30% at 100°C ambient temperature

Temperature Test Condition
- Electrical specifications measured at 25°C, 35% RH if not given differently

Operating Condition
- Operating temperature: -40°C to +125°C (including temp rise)
  Should not exceed +125°C under worst-case operation conditions

Storage Condition
- Tape and Reel packaging: -10°C to +40°C
  Humidity: <50% RH

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