FEATURES

- Size 2.0mm x 1.6mm x 1.0mm
- 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

APPLICATIONS

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

ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inductance (1) L</td>
<td>±20%</td>
<td>4.7</td>
</tr>
<tr>
<td>Resistance DC RDC</td>
<td>typ</td>
<td>215</td>
</tr>
<tr>
<td>Resistance MAX RDC MAX max</td>
<td>typ</td>
<td>252</td>
</tr>
<tr>
<td>Rated Current (2) I_R</td>
<td>typ</td>
<td>1.5</td>
</tr>
<tr>
<td>Saturation Current 25°C (3) I_SAT 25°C typ</td>
<td>1.9</td>
<td>A</td>
</tr>
<tr>
<td>Saturation Current 100°C (4) I_SAT 100°C typ</td>
<td>1.9</td>
<td>A</td>
</tr>
<tr>
<td>Resonance Frequency f_r</td>
<td>typ</td>
<td>29</td>
</tr>
</tbody>
</table>

GENERAL SPECIFICATIONS

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

(2) Rated Current: Rated current will cause the coil temperature rise \( \Delta T \) of 40K, 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)

Storage Condition: Tape and Reel packaging: -10°C to +40°C

Humidity: <50% RH

All MPS parts are lead-free, halogen-free, and adhere to the RoHS directive. For MPS green status, please visit the MPS website under Quality Assurance. "MPS", the MPS logo, and "Simple, Easy Solutions" are registered trademarks of Monolithic Power Systems, Inc. or its subsidiaries.
Quality Factor vs. Frequency

AC Resistance vs. Frequency
**LAND PATTERN**

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
</table>
| A          | 1.6 ref.  
| B          | 0.50 ref.  
| C          | 2.0 ref. (unit in mm)  

**PRODUCT PACKAGE AND DIMENSIONS**

(unit in mm)

**TOP MARKING**

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

1M00

0.60 Typ.
ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>L (µH) typ</th>
<th>RDC (mΩ) typ</th>
<th>IR (A) typ</th>
<th>ISAT 25°C (A)</th>
<th>ISAT 100°C (A)</th>
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<tbody>
<tr>
<td>MPL-AT2010-R47</td>
<td>0.47</td>
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<tr>
<td>MPL-AT2010-4R7</td>
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<td>215</td>
<td>1.5</td>
<td>1.9</td>
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</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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