MPL-AL4020-1R2
Low-Resistance Molded Inductor 1.2µH

APPLICATIONS
- Battery-powered devices
- Embedded computing
- High-current SMPS
- High-frequency SMPS
- POL converters
- FPGA

FEATURES
- Size 4.1mmx4.1mmx1.9mm
- Low DCR
- Low AC Losses
- Low Audible Noise
- Molded Construction
- Soft Saturation
- Stable Over High Temperatures
- Max Operating Temp +155°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</td>
<td>L</td>
<td>±20%</td>
</tr>
<tr>
<td>Resistance</td>
<td>R_{DC}</td>
<td>typ</td>
</tr>
<tr>
<td>Resistance \text{MAX}</td>
<td>R_{DC \text{MAX}}</td>
<td>max</td>
</tr>
<tr>
<td>Rated Current \text{typ}</td>
<td>I_R</td>
<td>typ</td>
</tr>
<tr>
<td>Saturation Current \text{25°C}</td>
<td>I_{SAT \text{25°C}}</td>
<td>typ</td>
</tr>
<tr>
<td>Saturation Current \text{100°C}</td>
<td>I_{SAT \text{100°C}}</td>
<td>typ</td>
</tr>
<tr>
<td>Resonance Frequency</td>
<td>f_r</td>
<td>typ</td>
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</table>

GENERAL SPECIFICATIONS

(1) Inductance
Measured at 100kHz, 100mA

(2) Rated Current
Rated current will cause the coil temperature rise ΔT of 40K when 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 \text{25°C}
Saturation current will cause L to drop from 30% at 25°C ambient temperature

(4) Saturation Current \text{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 +155°C (including temp rise)
Should not exceed +155°C under worst-case operation conditions

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

**Temperature Rise vs. Current**

![Temperature Rise vs. Current Graph](image)

**Inductance vs. Current**

![Inductance vs. Current Graph](image)

**Impedance vs. Frequency**

![Impedance vs. Frequency Graph](image)

**Inductance vs. Frequency**

![Inductance vs. Frequency Graph](image)
Quality Factor vs. Frequency

AC Resistance vs. Frequency
PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)

TOP MARKING

Marking

Start of Winding · (dot)

Inductance Code 1R2

MPS Code MPS
<table>
<thead>
<tr>
<th>Part Number</th>
<th>L (µH)</th>
<th>RDC (mΩ)</th>
<th>IR (A)</th>
<th>ISAT 25°C (A)</th>
<th>ISAT 100°C (A)</th>
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<tbody>
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</tbody>
</table>

**GENERAL SPECIFICATIONS**

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

**(2) Rated Current**  
Rated current will cause the coil temperature rise ΔT of 40K when 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 +155°C (including temp rise)  
Should not exceed +155°C under worst-case operation conditions

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

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