MPL-SE5040-3R3
Semi-Shielded Inductor 3.3µH

APPLICATIONS
- Battery-powered devices
- High-efficiency SMPS
- Embedded computing
- Input filters

FEATURES
- Size 4.9mmx4.9mmx4mm
- Semi-Shielded Construction
- Low DCR
- Low Stray Field
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

GENERAL SPECIFICATIONS
(1) Inductance  
Measured at 100kHz, 100mA

(2) Rated Current  
Rated current will cause the coil temperature rise ΔT of 40K
Ia 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

ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inductance (1)</td>
<td>L ±20%</td>
<td>3.3 µH</td>
</tr>
<tr>
<td>Resistance</td>
<td>R_DC typ</td>
<td>22 mΩ</td>
</tr>
<tr>
<td>Resistance MAX</td>
<td>R_DC MAX max</td>
<td>26 mΩ</td>
</tr>
<tr>
<td>Rated Current (2)</td>
<td>I_R typ</td>
<td>5.2 A</td>
</tr>
<tr>
<td>Saturation Current 25°C (3)</td>
<td>I_{SAT 25°C} typ</td>
<td>6.4 A</td>
</tr>
<tr>
<td>Saturation Current 100°C (4)</td>
<td>I_{SAT 100°C} typ</td>
<td>5.2 A</td>
</tr>
<tr>
<td>Resonance Frequency</td>
<td>f_r typ</td>
<td>37 MHz</td>
</tr>
</tbody>
</table>

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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></th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>4.0 ref.</td>
</tr>
<tr>
<td>B</td>
<td>2.10 ref.</td>
</tr>
<tr>
<td>C</td>
<td>5.10 ref.</td>
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</table>

(unit in mm)

PRODUCT PACKAGE AND DIMENSIONS

Marking

Inductance Code 3R3

TOP MARKING

Marking

Inductance Code 3R3
## ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>L (1)</th>
<th>RDC</th>
<th>I_R (2)</th>
<th>I_{SAT 25°C} (3)</th>
<th>I_{SAT 100°C} (4)</th>
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<tr>
<td>MPL-SE5040-R47</td>
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<td>8.0</td>
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<td>MPL-SE5040-1R0</td>
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<td>9.4</td>
<td>7.6</td>
<td>10.5</td>
<td>9</td>
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<td>MPL-SE5040-1R5</td>
<td>1.5</td>
<td>14</td>
<td>6.2</td>
<td>9.3</td>
<td>8.4</td>
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<td>7.3</td>
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<td>124</td>
<td>2.1</td>
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<td>2.15</td>
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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.

\[ I_n \text{ measured with the inductor soldered in a single-layer PCB. Copper layer thickness } 35\mu\text{m Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity to other components, and trace dimensions and thickness.} \]

### (3) Saturation Current
\( I_{SAT 25°C} \) Saturation current will cause \( L \) to drop from 30% at 25°C ambient temperature

### (4) Saturation Current
\( I_{SAT 100°C} \) 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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