**APPLICATIONS**

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

**FEATURES**

- Size 4mmx4mmx3mm
- Semi-Shielded Construction
- Low DCR
- Low Stray Field
- 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</td>
<td>R_{DC}</td>
<td>typ</td>
</tr>
<tr>
<td>Resistance MAX</td>
<td>R_{DC , MAX}</td>
<td>max</td>
</tr>
<tr>
<td>Rated Current (2)</td>
<td>I_{R}</td>
<td>typ</td>
</tr>
<tr>
<td>Saturation Current 25°C (3)</td>
<td>I_{SAT , 25°C}</td>
<td>typ</td>
</tr>
<tr>
<td>Saturation Current 100°C (4)</td>
<td>I_{SAT , 100°C}</td>
<td>typ</td>
</tr>
<tr>
<td>Resonance Frequency</td>
<td>f_{r}</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

I_{R} 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>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
</tbody>
</table>

(unit in mm)

## PRODUCT PACKAGE AND DIMENSIONS

(unit in mm)

## TOP MARKING

<table>
<thead>
<tr>
<th>Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inductance Code</td>
</tr>
</tbody>
</table>

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### GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>$L^{(1)}$</th>
<th>$R_{DC}^{(2)}$</th>
<th>$I_R^{(3)}$</th>
<th>$I_{SAT, 25^\circ C}^{(3)}$</th>
<th>$I_{SAT, 100^\circ C}^{(4)}$</th>
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</thead>
<tbody>
<tr>
<td>MPL-SE4030-1R0</td>
<td>1.0</td>
<td>12.5</td>
<td>6.3</td>
<td>7.5</td>
<td>7.2</td>
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<tr>
<td>MPL-SE4030-2R2</td>
<td>2.2</td>
<td>30</td>
<td>3.9</td>
<td>5.5</td>
<td>5.1</td>
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<tr>
<td>MPL-SE4030-3R3</td>
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<td>3.45</td>
<td>4.1</td>
<td>3.7</td>
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<tr>
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<td>2.6</td>
<td>3.7</td>
<td>3.4</td>
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<tr>
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<td>83</td>
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<td>3.1</td>
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<tr>
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<td>219</td>
<td>1.5</td>
<td>1.65</td>
<td>1.5</td>
</tr>
</tbody>
</table>

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

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

$\Delta T$ 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 $25^\circ C$
Saturation current will cause $L$ to drop from 30% at 25°C ambient temperature

#### (4) Saturation Current $100^\circ C$
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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