Molded Inductor 5.6µH

APPLIED SPECIFICATIONS

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

FEATURES

- Size 4.45mmx4.1mmx1.8mm
- Molded Construction
- Low Audible Noise
- 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 (1)</td>
<td>L</td>
<td>±20%</td>
</tr>
<tr>
<td>Resistance</td>
<td>R_{DC} typ</td>
<td>97</td>
</tr>
<tr>
<td>Resistance_{MAX}</td>
<td>R_{DC MAX} max</td>
<td>116</td>
</tr>
<tr>
<td>Rated Current (2)</td>
<td>I_{R} typ</td>
<td>2.45</td>
</tr>
<tr>
<td>Saturation Current 25°C (3)</td>
<td>I_{SAT 25°C} typ</td>
<td>2.6</td>
</tr>
<tr>
<td>Saturation Current 100°C (4)</td>
<td>I_{SAT 100°C} typ</td>
<td>2.6</td>
</tr>
<tr>
<td>Resonance Frequency</td>
<td>f_{r} typ</td>
<td>23</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 +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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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

Dimensions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2.50 ref.</td>
</tr>
<tr>
<td>B</td>
<td>2.20 ref.</td>
</tr>
<tr>
<td>C</td>
<td>5.20 ref.</td>
</tr>
</tbody>
</table>

(unit in mm)

PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)

TOP MARKING

Marking

Start of Winding · (dot)

Inductance Code 5R6
ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>$L^{(1)}$</th>
<th>$R_{DC}$</th>
<th>$I_R^{(2)}$</th>
<th>$I_{SAT,25{}^\circ C}^{(3)}$</th>
<th>$I_{SAT,100{}^\circ C}^{(4)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPL-A4020-5R6</td>
<td>5.6 µH</td>
<td>97 mΩ</td>
<td>2.45 A</td>
<td>2.6 A</td>
<td>2.6 A</td>
</tr>
<tr>
<td>MPL-A4020-6R8</td>
<td>6.8 µH</td>
<td>129 mΩ</td>
<td>2.20 A</td>
<td>2.4 A</td>
<td>2.4 A</td>
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<tr>
<td>MPL-A4020-8R2</td>
<td>8.2 µH</td>
<td>136 mΩ</td>
<td>2.10 A</td>
<td>2.1 A</td>
<td>2.1 A</td>
</tr>
<tr>
<td>MPL-A4020-100</td>
<td>10 µH</td>
<td>163 mΩ</td>
<td>1.90 A</td>
<td>2 A</td>
<td>2 A</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.  
$I_R$ 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 $25{}^\circ C$  
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 +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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