MPL-AY3020-6R8
Molded Inductor 6.8µH

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

FEATURES
- Size 3.5mm x 3.2mm x 1.8mm
- Molded Construction
- Low Audible Noise
- Soft Saturation
- Stable Over High Temperatures
- 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>
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<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>

(1) Inductance is measured at 100kHz, 100mA. Rated current will cause the coil temperature rise ΔT of 40K.

(2) Rated current 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 will cause L to drop from 30% at 25°C ambient temperature

(4) Saturation current will cause L to drop from 30% at 100°C ambient temperature

GENERAL SPECIFICATIONS

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>
<th></th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1.45 ref.</td>
</tr>
<tr>
<td>B</td>
<td>1.90 ref.</td>
</tr>
<tr>
<td>C</td>
<td>4.10 ref.</td>
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</tbody>
</table>

(unit in mm)

PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)

TOP MARKING

Marking

Start of Winding · (dot)

Inductance Code 6.8
ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>L (1) typ (µH)</th>
<th>RDC typ (mΩ)</th>
<th>IR (2) typ (A)</th>
<th>ISAT 25°C (3) typ (A)</th>
<th>ISAT 100°C (4) typ (A)</th>
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<tbody>
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<td>MPL-AY3020-R47</td>
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<td>370</td>
<td>1.3</td>
<td>1.75</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
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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