



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

| Parameter | | | Value | Unit |
|----------------------------------------------------|------------------|------|-------|------|
| Inductance ⁽¹⁾ | L | ±20% | 1.0 | μH |
| Resistance | R_{DC} | typ | 12.5 | mΩ |
| Resistance _{MAX} | $R_{DC\ MAX}$ | max | 15 | mΩ |
| Rated Current ⁽²⁾ | I_R | typ | 6.3 | A |
| Saturation Current _{25°C} ⁽³⁾ | $I_{SAT\ 25°C}$ | typ | 7.5 | A |
| Saturation Current _{100°C} ⁽⁴⁾ | $I_{SAT\ 100°C}$ | typ | 7.2 | A |
| Resonance Frequency | f_r | typ | 90 | MHz |

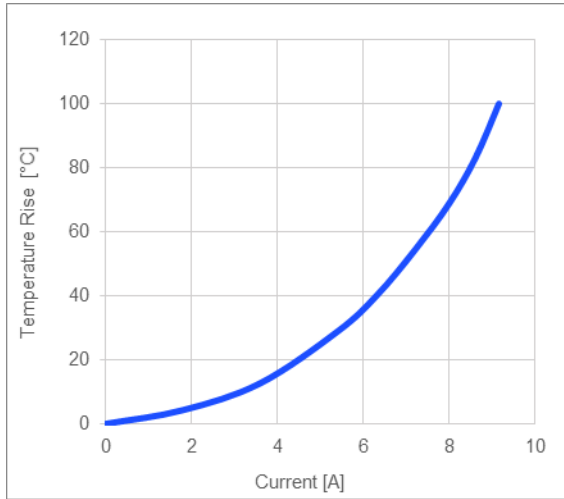
GENERAL SPECIFICATIONS

| | |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (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 |

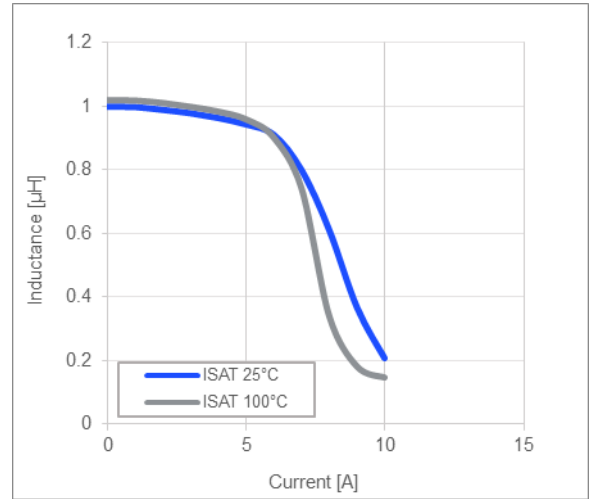
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TYPICAL PERFORMANCE CURVES

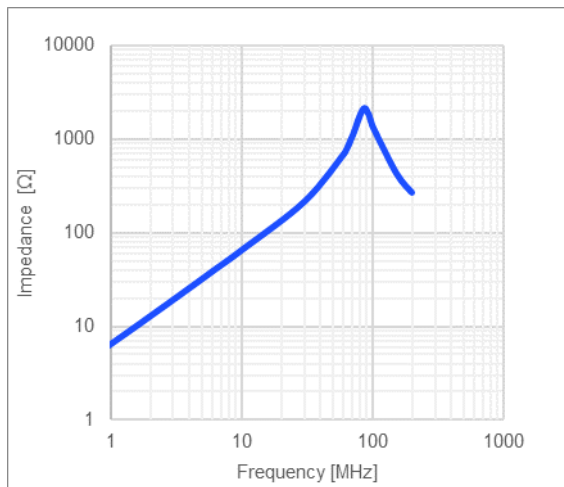
Temperature Rise vs. Current



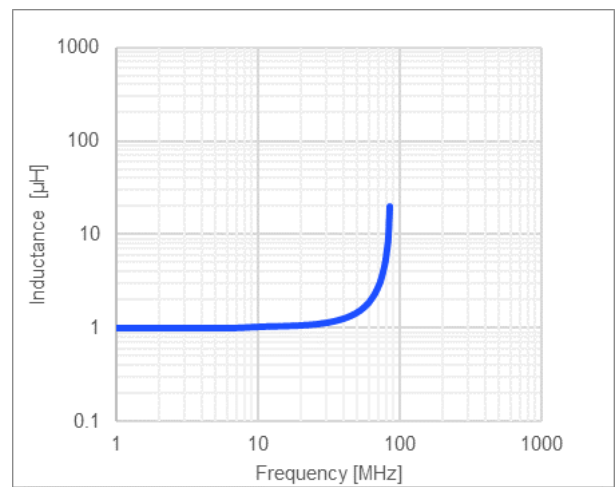
Inductance vs. Current



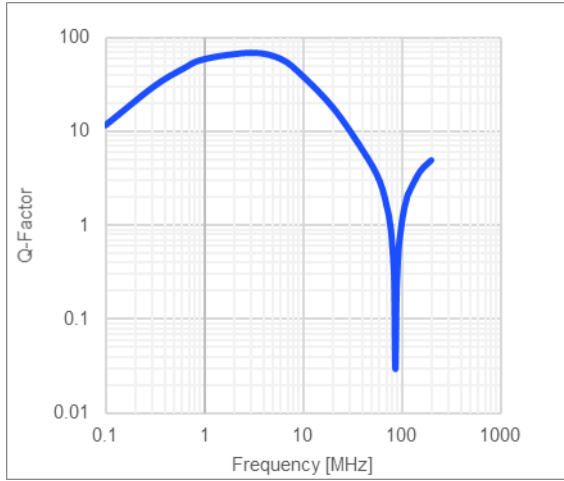
Impedance vs. Frequency



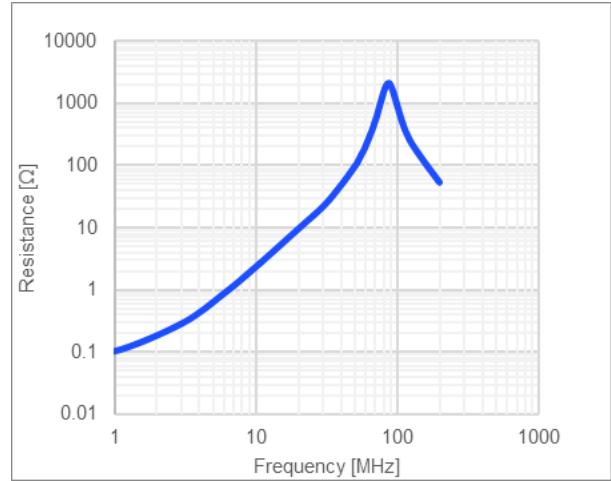
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



LAND PATTERN

Dimensions

| | |
|---|-----------|
| A | 3.60 ref. |
| B | 1.80 ref. |
| C | 4.10 ref. |

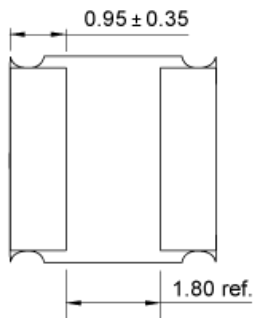
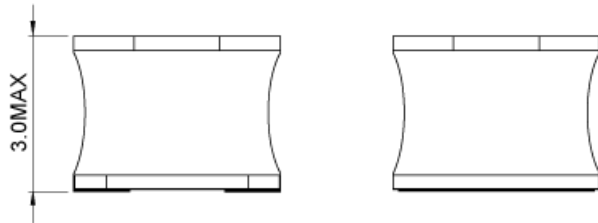
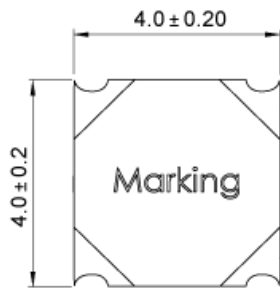
(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking

| | |
|-----------------|-----|
| Inductance Code | 1R0 |
|-----------------|-----|

ORDERING INFORMATION

| Part Number | $L^{(1)}$ | R_{DC} | $I_R^{(2)}$ | $I_{SAT\ 25^\circ C}^{(3)}$ | $I_{SAT\ 100^\circ C}^{(4)}$ |
|----------------|-----------|----------|-------------|-----------------------------|------------------------------|
| | typ (μH) | typ (mΩ) | typ (A) | typ (A) | typ (A) |
| MPL-SE4030-1R0 | 1.0 | 12.5 | 6.3 | 7.5 | 7.2 |
| MPL-SE4030-2R2 | 2.2 | 30 | 3.9 | 5.5 | 5.1 |
| MPL-SE4030-3R3 | 3.3 | 39.8 | 3.45 | 4.1 | 3.7 |
| MPL-SE4030-4R7 | 4.7 | 63 | 2.6 | 3.7 | 3.4 |
| MPL-SE4030-6R8 | 6.8 | 83 | 2.4 | 3.3 | 3.1 |
| MPL-SE4030-100 | 10 | 97 | 2.2 | 2.4 | 2 |
| MPL-SE4030-150 | 15 | 185 | 1.6 | 1.95 | 1.85 |
| MPL-SE4030-220 | 22 | 219 | 1.5 | 1.65 | 1.5 |

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