

APPLICATIONS



- Battery-powered devices
- IoT
- Wearable
- Portable devices
- Input filters

FEATURES

- Size 2mmx2.5mmx1.2mm
- Semi-Shielded Construction
- Low DCR
- Low Profile
- Low Stray Field
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

ELECTRICAL CHARACTERISTICS

| Parameter | | | Value | Unit |
|--|------------------|------|-------|------|
| Inductance ⁽¹⁾ | L | ±20% | 0.68 | μH |
| Resistance | R_{DC} | typ | 33 | mΩ |
| Resistance _{MAX} | $R_{DC\ MAX}$ | max | 40 | mΩ |
| Rated Current ⁽²⁾ | I_R | typ | 3.8 | A |
| Saturation Current _{25°C} ⁽³⁾ | $I_{SAT\ 25°C}$ | typ | 4.3 | A |
| Saturation Current _{100°C} ⁽⁴⁾ | $I_{SAT\ 100°C}$ | typ | 4.3 | A |
| Resonance Frequency | f_r | typ | 120 | MHz |

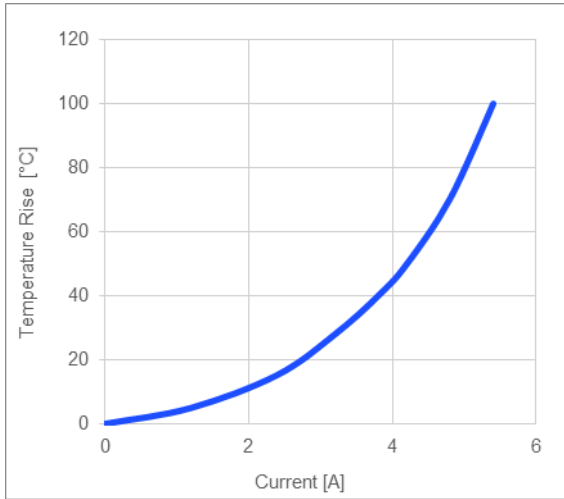
GENERAL SPECIFICATIONS

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

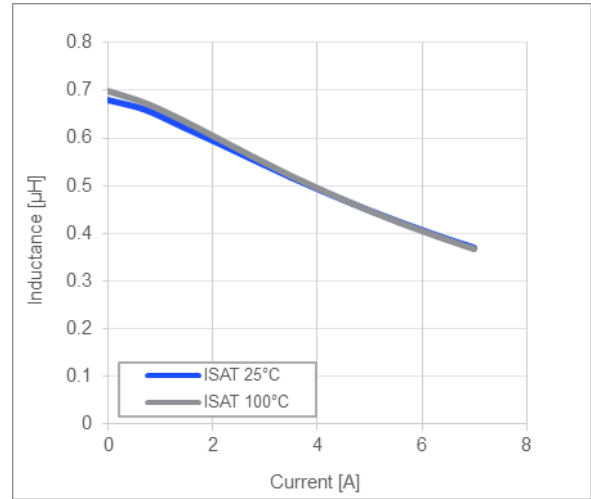
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TYPICAL PERFORMANCE CURVES

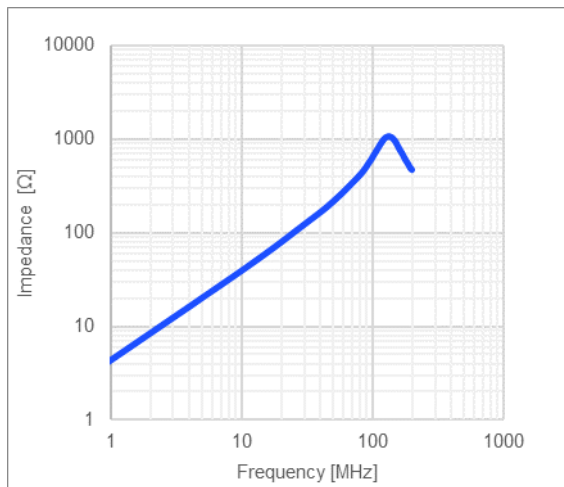
Temperature Rise vs. Current



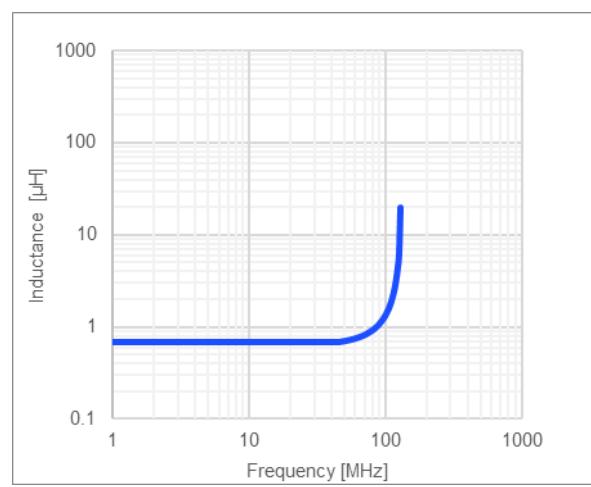
Inductance vs. Current



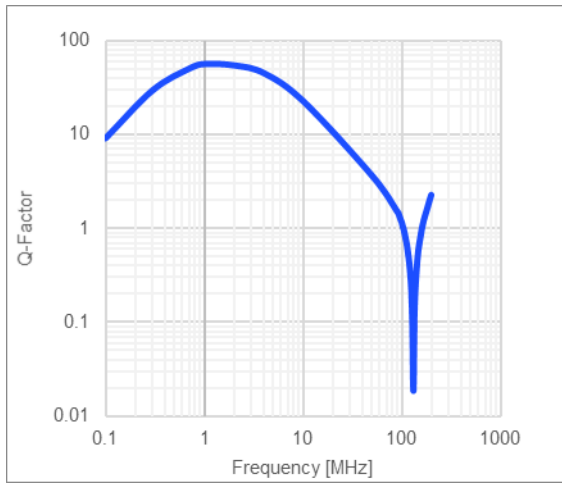
Impedance vs. Frequency



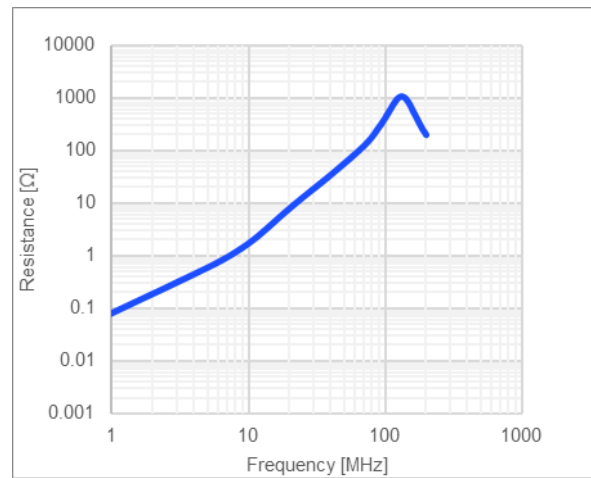
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



LAND PATTERN

| Dimensions | |
|------------|-----------|
| A | 2.10 ref. |
| B | 0.80 ref. |
| C | 2.60 ref. |

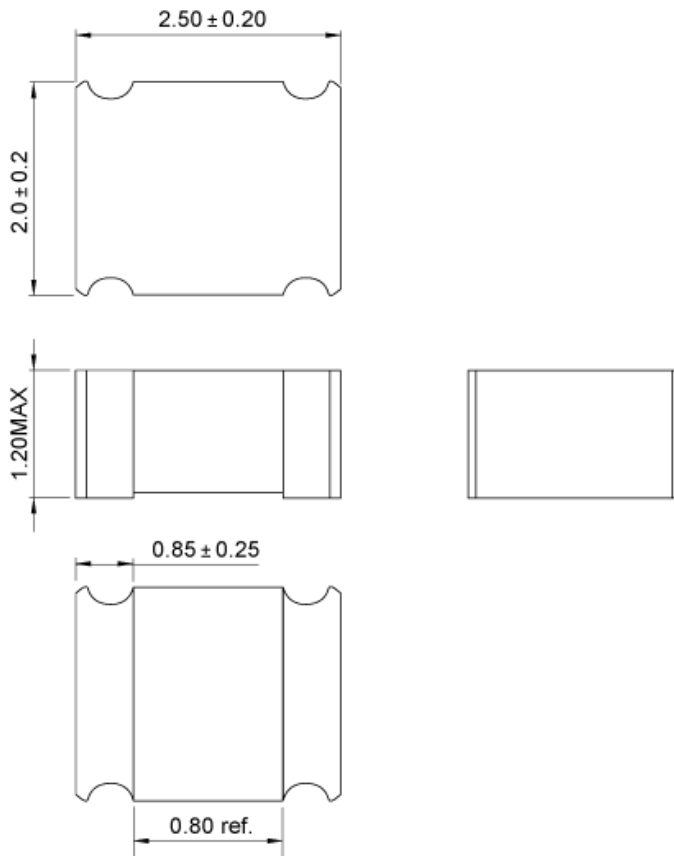
(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

| Dimensions | |
|------------|--|
|------------|--|

(unit in mm)



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-SE2512-R47 | 0.47 | 27 | 4.5 | 6.5 | 6.5 |
| MPL-SE2512-R68 | 0.68 | 33 | 3.8 | 4.3 | 4.3 |
| MPL-SE2512-1R0 | 1.0 | 45 | 3.35 | 4.2 | 4.2 |
| MPL-SE2512-1R5 | 1.5 | 62 | 2.9 | 3.2 | 3.2 |
| MPL-SE2512-2R2 | 2.2 | 92 | 2.5 | 2.7 | 2.7 |
| MPL-SE2512-3R3 | 3.3 | 158 | 1.8 | 2.4 | 2.4 |
| MPL-SE2512-4R7 | 4.7 | 205 | 1.6 | 1.9 | 1.9 |
| MPL-SE2512-100 | 10 | 400 | 1.1 | 1.3 | 1.3 |
| MPL-SE2512-150 | 15 | 620 | 0.85 | 0.9 | 0.9 |
| MPL-SE2512-220 | 22 | 1000 | 0.70 | 0.8 | 0.8 |

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