



### 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 <sup>(1)</sup>                          | $L$              | $\pm 20\%$ | 3.3   | $\mu$ H    |
| Resistance   | $R_{DC}$         | typ        | 158   | m $\Omega$ |
| Resistance <sub>MAX</sub>                          | $R_{DC\ MAX}$    | max        | 189   | m $\Omega$ |
| Rated Current <sup>(2)</sup>                       | $I_R$            | typ        | 1.8   | A          |
| Saturation Current <sub>25°C</sub> <sup>(3)</sup>  | $I_{SAT\ 25°C}$  | typ        | 2.4   | A          |
| Saturation Current <sub>100°C</sub> <sup>(4)</sup> | $I_{SAT\ 100°C}$ | typ        | 2.4   | A          |
| Resonance Frequency                                | $f_r$            | typ        | 49    | MHz        |

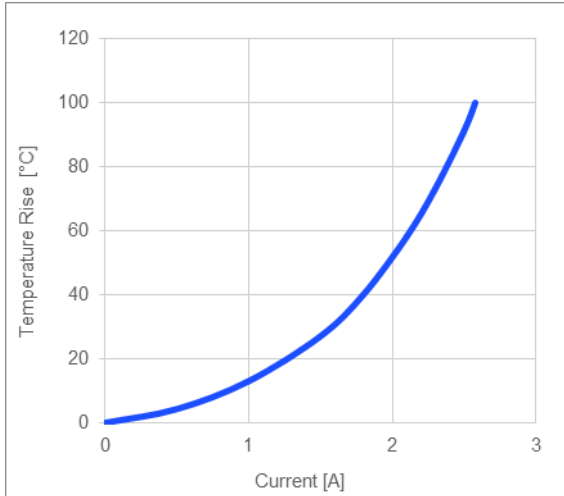
### GENERAL SPECIFICATIONS

|  |  |
|--|--|
| <b>(1) Inductance</b>                          | Measured at 100kHz, 100mA  |
| <b>(2) Rated Current</b>                       | Rated current will cause the coil temperature rise $\Delta T$ of 40K<br>$I_R$ measured with the inductor soldered in a single-layer PCB. Copper layer thickness 35 $\mu$ m Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity to other components, and trace dimensions and thickness. |
| <b>(3) Saturation Current <sub>25°C</sub></b>  | Saturation current will cause L to drop from 30% at 25°C ambient temperature   |
| <b>(4) Saturation Current <sub>100°C</sub></b> | Saturation current will cause L to drop from 30% at 100°C ambient temperature  |
| <b>Temperature Test Condition</b>              | Electrical specifications measured at 25°C, 35% RH if not given differently  |
| <b>Operating Condition</b>                     | Operating temperature: -40°C to +125°C (including temp rise)<br>Should not exceed +125°C under worst-case operation conditions   |
| <b>Storage Condition</b>                       | Tape and Reel packaging: -10°C to +40°C<br>Humidity: <50% RH   |

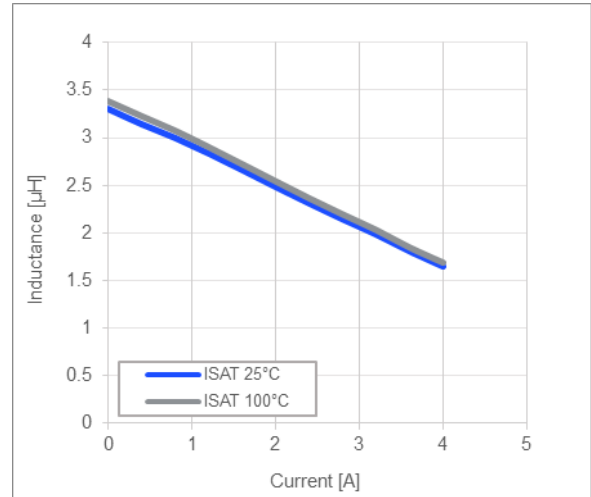
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TYPICAL PERFORMANCE CURVES

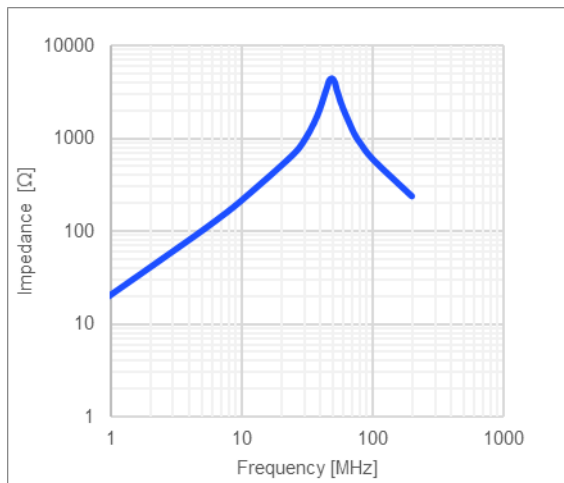
Temperature Rise vs. Current



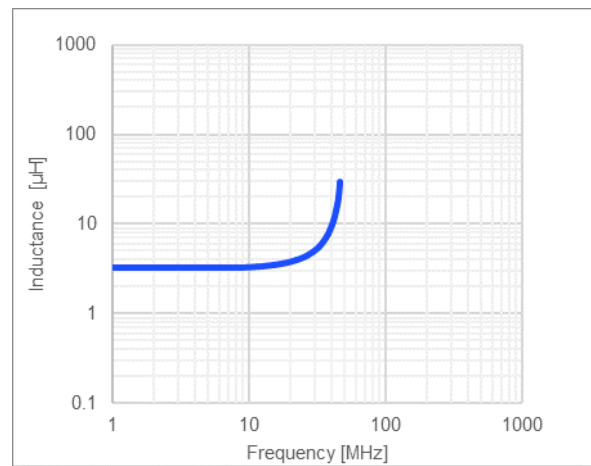
Inductance vs. Current



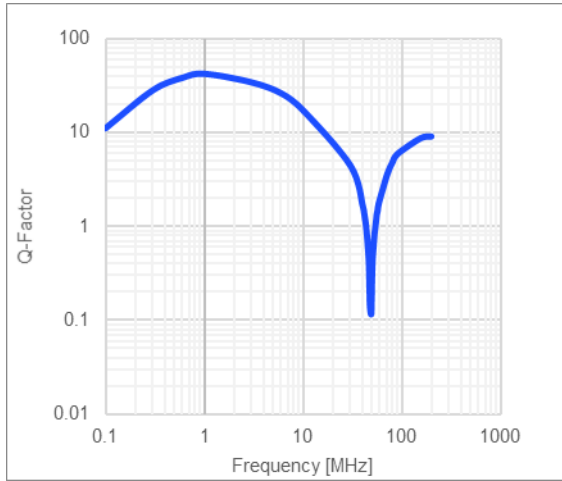
Impedance vs. Frequency



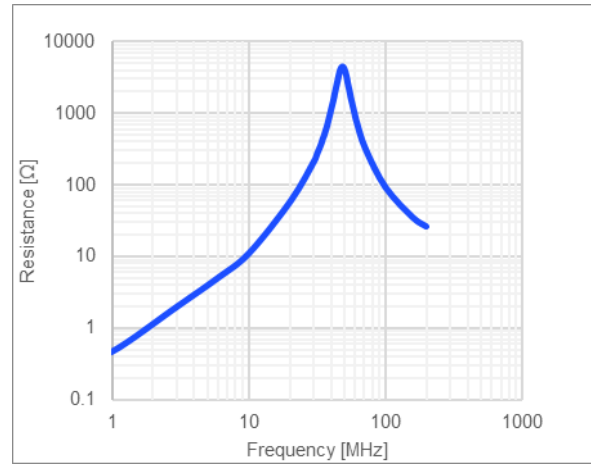
Inductance vs. Frequency



### Quality Factor vs. Frequency



### AC Resistance vs. Frequency



**LAND PATTERN**

**Dimensions**

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

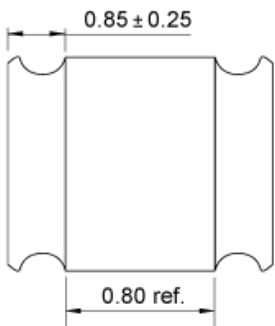
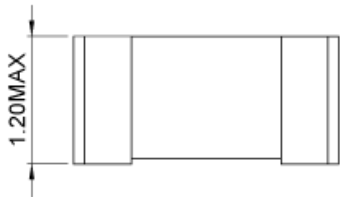
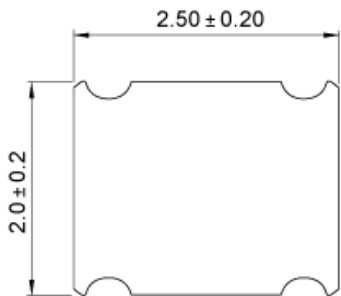
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(unit in mm)



## ORDERING INFORMATION

| Part Number    | $L$ <sup>(1)</sup><br>typ ( $\mu$ H) | $R_{DC}$<br>typ (m $\Omega$ ) | $I_R$ <sup>(2)</sup><br>typ (A) | $I_{SAT 25^{\circ}C}$ <sup>(3)</sup><br>typ (A) | $I_{SAT 100^{\circ}C}$ <sup>(4)</sup><br>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  |

## GENERAL SPECIFICATIONS

|  |   |
|--|---|
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| <b>(2) Rated Current</b>                                   | Rated current will cause the coil temperature rise $\Delta T$ of 40K<br><i><math>I_R</math> measured with the inductor soldered in a single-layer PCB. Copper layer thickness 35<math>\mu</math>m Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity to other components, and trace dimensions and thickness.</i> |
| <b>(3) Saturation Current <math>_{25^{\circ}C}</math></b>  | Saturation current will cause L to drop from 30% at 25 $^{\circ}C$ ambient temperature  |
| <b>(4) Saturation Current <math>_{100^{\circ}C}</math></b> | Saturation current will cause L to drop from 30% at 100 $^{\circ}C$ ambient temperature   |
| <b>Temperature Test Condition</b>                          | Electrical specifications measured at 25 $^{\circ}C$ , 35% RH if not given differently  |
| <b>Operating Condition</b>                                 | Operating temperature: -40 $^{\circ}C$ to +125 $^{\circ}C$ (including temp rise)<br>Should not exceed +125 $^{\circ}C$ under worst-case operation conditions  |
| <b>Storage Condition</b>                                   | Tape and Reel packaging: -10 $^{\circ}C$ to +40 $^{\circ}C$<br>Humidity: <50% RH  |

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