



### APPLICATIONS

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

### FEATURES

- Size 13.5mmx12.6mmx6.2mm
- Molded Construction
- Low Audible Noise
- Soft Saturation
- Stable Over High Temperatures
- Max Operating Temp +155°C
- RoHS/REACH-Compliant, Halogen-Free

### ELECTRICAL CHARACTERISTICS

| Parameter  |                  |            | Value | Unit       |
|--|------------------|------------|-------|------------|
| Inductance <sup>(1)</sup>                          | $L$              | $\pm 20\%$ | 4.7   | $\mu$ H    |
| Resistance   | $R_{DC}$         | typ        | 7.0   | m $\Omega$ |
| Resistance <sub>MAX</sub>                          | $R_{DC\ MAX}$    | max        | 8.1   | m $\Omega$ |
| Rated Current <sup>(2)</sup>                       | $I_R$            | typ        | 14    | A          |
| Saturation Current <sub>25°C</sub> <sup>(3)</sup>  | $I_{SAT\ 25°C}$  | typ        | 23    | A          |
| Saturation Current <sub>100°C</sub> <sup>(4)</sup> | $I_{SAT\ 100°C}$ | typ        | 23    | A          |
| Resonance Frequency                                | $f_r$            | typ        | 13    | MHz        |

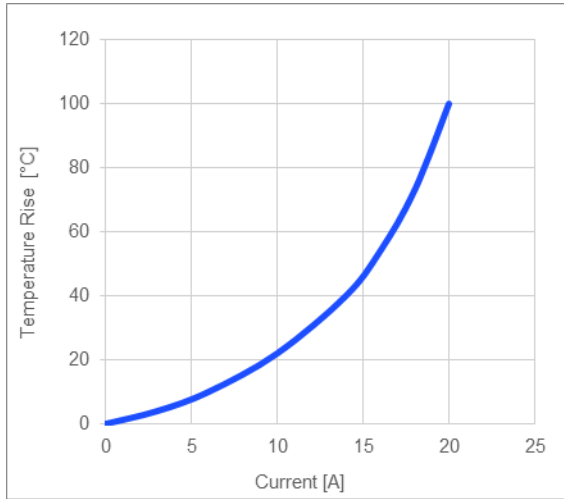
### GENERAL SPECIFICATIONS

|  |  |
|--|--|
| <sup>(1)</sup> Inductance                          | Measured at 100kHz, 100mA  |
| <sup>(2)</sup> Rated Current                       | 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. |
| <sup>(3)</sup> Saturation Current <sub>25°C</sub>  | Saturation current will cause L to drop from 30% at 25°C ambient temperature   |
| <sup>(4)</sup> Saturation Current <sub>100°C</sub> | 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)<br>Should not exceed +155°C under worst-case operation conditions   |
| Storage Condition                                  | Tape and Reel packaging: -10°C to +40°C<br>Humidity: <50% RH   |

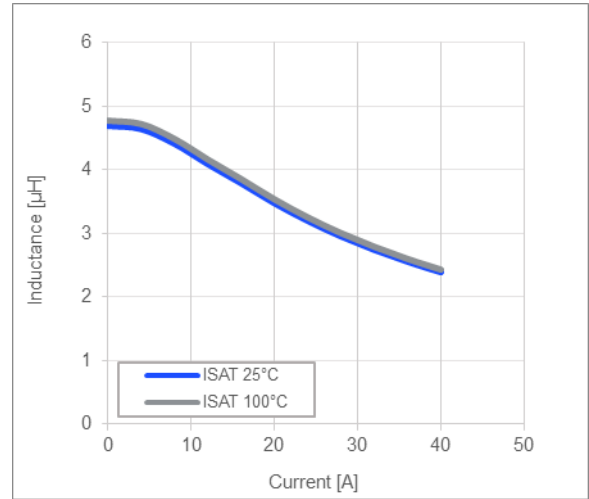
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**TYPICAL PERFORMANCE CURVES**

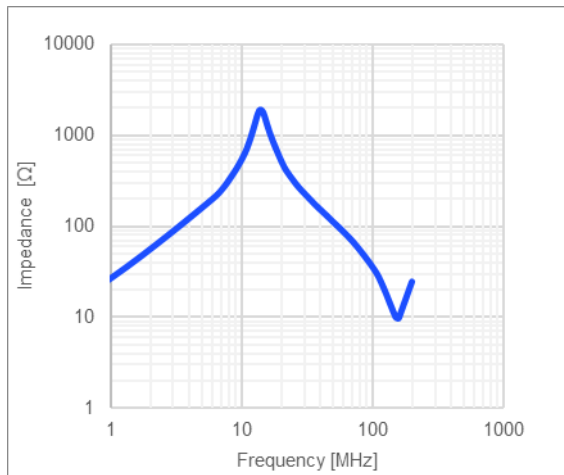
**Temperature Rise vs. Current**



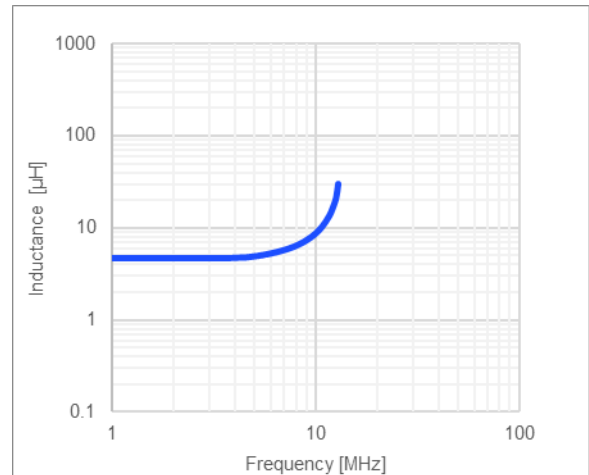
**Inductance vs. Current**



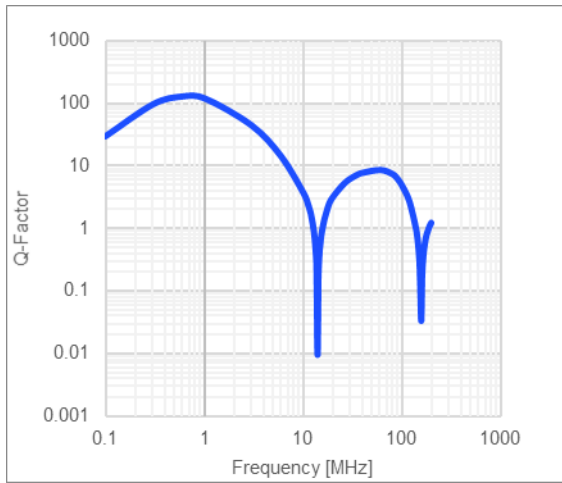
**Impedance vs. Frequency**



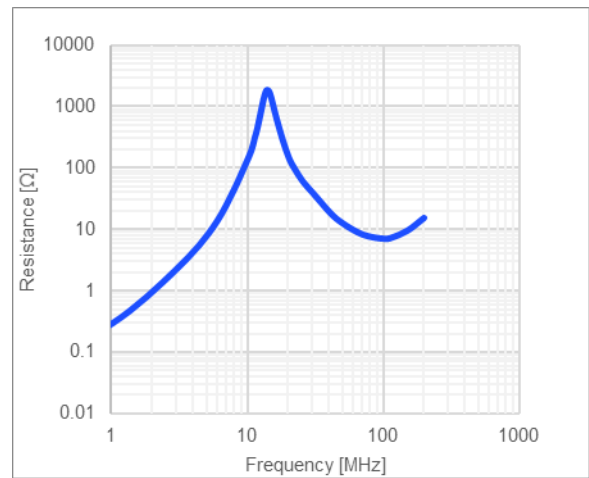
**Inductance vs. Frequency**



Quality Factor vs. Frequency



AC Resistance vs. Frequency



**LAND PATTERN**

**Dimensions**

|   |            |
|---|------------|
| A | 5.0 ref.   |
| B | 8.0 ref.   |
| C | 14.50 ref. |

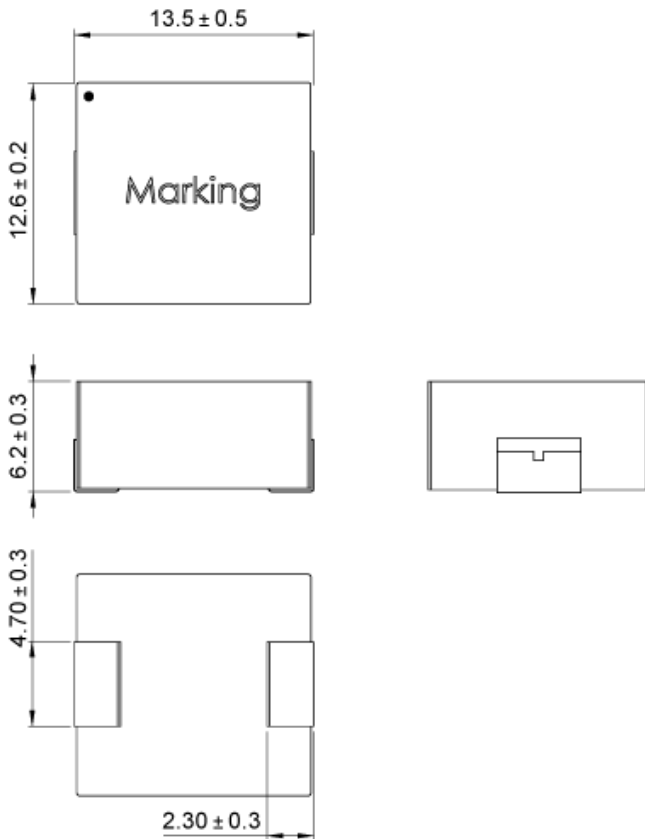
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(unit in mm)



**TOP MARKING**

**Marking**

|                  |         |
|------------------|---------|
| Start of Winding | · (dot) |
| Inductance Code  | 3R3     |
| MPS Code         | MPS     |
| Date Code        | YYWW    |

**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-AY1265-R47 | 0.47      | 0.89     | 33          | 64                          | 64                           |
| MPL-AY1265-R56 | 0.56      | 1.1      | 31          | 58                          | 58                           |
| MPL-AY1265-R68 | 0.68      | 1.25     | 29          | 51                          | 51                           |
| MPL-AY1265-R82 | 0.82      | 1.3      | 27          | 46                          | 46                           |
| MPL-AY1265-1R0 | 1.0       | 1.5      | 25.5        | 43                          | 43                           |
| MPL-AY1265-1R2 | 1.2       | 1.8      | 24          | 37                          | 37                           |
| MPL-AY1265-1R5 | 1.5       | 2.3      | 22          | 34                          | 34                           |
| MPL-AY1265-1R8 | 1.8       | 3.3      | 20          | 29                          | 29                           |
| MPL-AY1265-2R2 | 2.2       | 3.7      | 17          | 26.5                        | 26.5                         |
| MPL-AY1265-3R3 | 3.3       | 5.5      | 16          | 25                          | 25                           |
| MPL-AY1265-4R7 | 4.7       | 7.0      | 14          | 23                          | 23                           |
| MPL-AY1265-5R6 | 5.6       | 8.6      | 13          | 20                          | 20                           |
| MPL-AY1265-6R8 | 6.8       | 9.9      | 12          | 19.5                        | 19.5                         |
| MPL-AY1265-8R2 | 8.2       | 12.5     | 11.5        | 18                          | 18                           |
| MPL-AY1265-100 | 10        | 13.3     | 10.7        | 16                          | 16                           |
| MPL-AY1265-150 | 15        | 21.8     | 8.5         | 12                          | 12                           |
| MPL-AY1265-220 | 22        | 31.4     | 7           | 9                           | 9                            |

**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><math>I_R</math> 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.</i> |
| <b>(3) Saturation Current <math>_{25^\circ C}</math></b>  | Saturation current will cause L to drop from 30% at 25°C ambient temperature   |
| <b>(4) Saturation Current <math>_{100^\circ C}</math></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 +155°C (including temp rise)<br>Should not exceed +155°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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