



### 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>                          | $L$              | ±20% | 1.2   | μH   |
| Resistance                                         | $R_{DC}$         | typ  | 1.8   | mΩ   |
| Resistance <sub>MAX</sub>                          | $R_{DC\ MAX}$    | max  | 2.2   | mΩ   |
| Rated Current <sup>(2)</sup>                       | $I_R$            | typ  | 24    | A    |
| Saturation Current <sub>25°C</sub> <sup>(3)</sup>  | $I_{SAT\ 25°C}$  | typ  | 37    | A    |
| Saturation Current <sub>100°C</sub> <sup>(4)</sup> | $I_{SAT\ 100°C}$ | typ  | 37    | A    |
| Resonance Frequency                                | $f_r$            | typ  | 38    | MHz  |

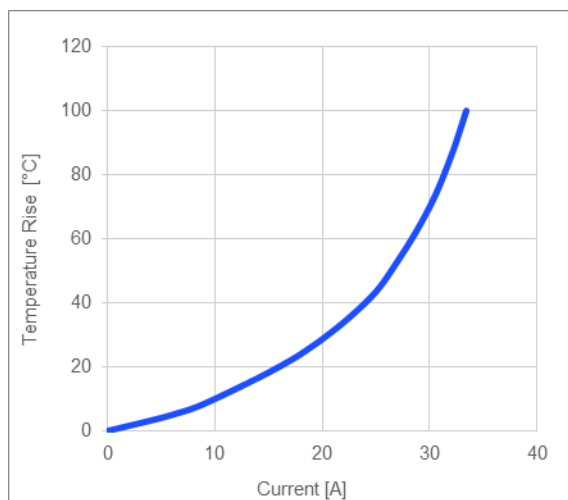
### GENERAL SPECIFICATIONS

|                                                    |                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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 35μm 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                                                                                                                                                                                                                                                                 |

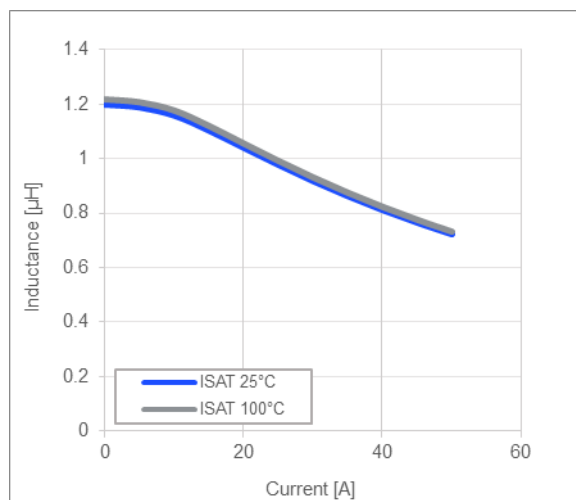
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**TYPICAL PERFORMANCE CURVES**

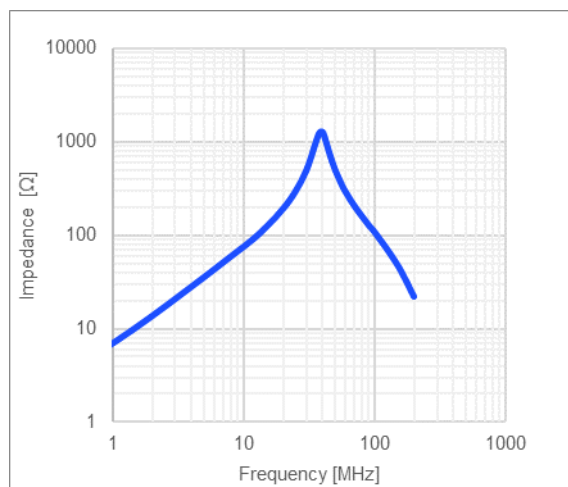
**Temperature Rise vs. Current**



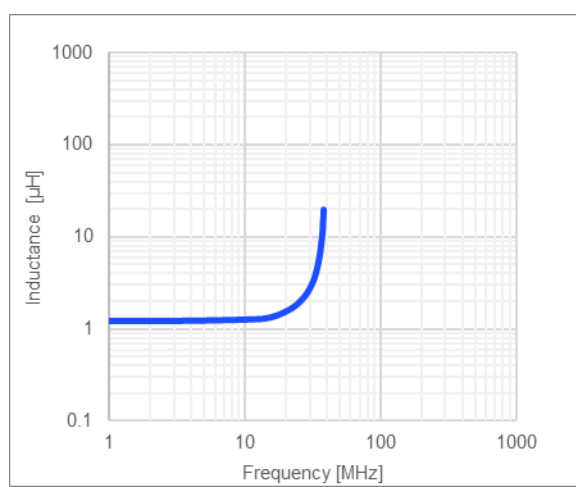
**Inductance vs. Current**



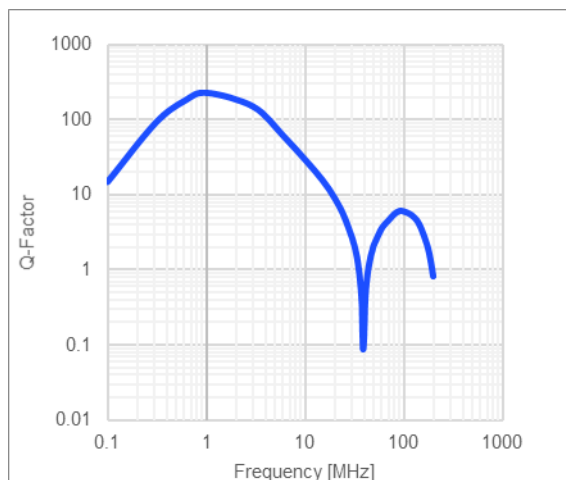
**Impedance vs. Frequency**



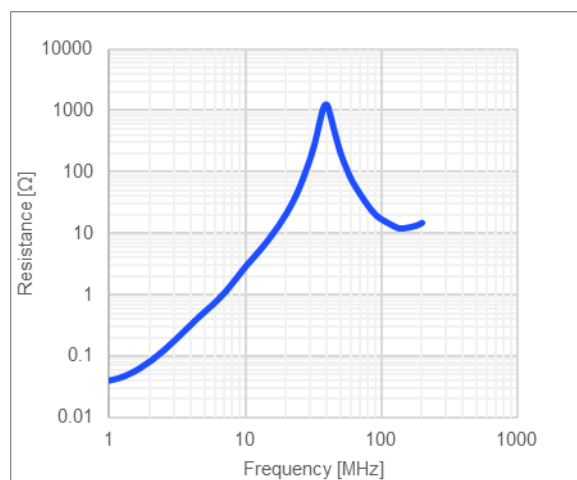
**Inductance vs. Frequency**



**Quality Factor vs. Frequency**



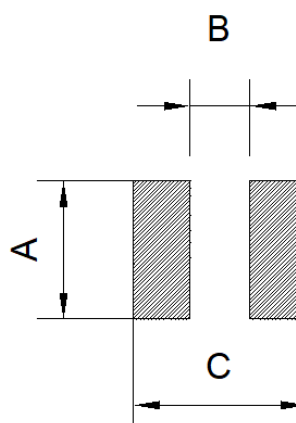
**AC Resistance vs. Frequency**



# LAND PATTERN

## Dimensions

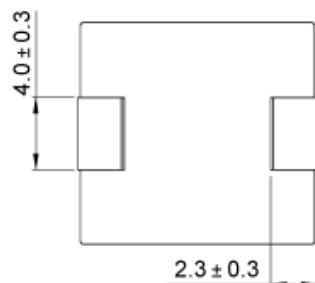
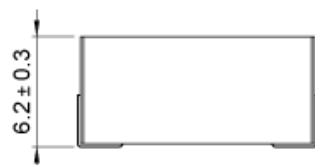
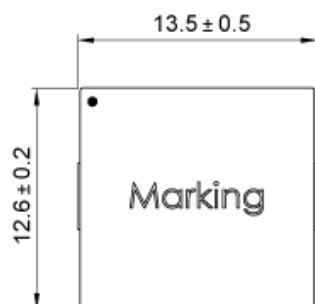
|   |                            |
|---|----------------------------|
| A | 5.0 ref.                   |
| B | 8.0 ref.                   |
| C | 14.50 ref.<br>(unit in mm) |



# PRODUCT PACKAGE AND DIMENSIONS

## Dimensions

(unit in mm)



# TOP MARKING

## Marking

|                  |         |
|------------------|---------|
| Start of Winding | · (dot) |
| Inductance Code  | 1R2     |
| MPS Code         | MPS     |
| Date Code        | YYWW    |

## ORDERING INFORMATION

| Part Number    | $L^{(1)}$<br>typ (μH) | $R_{DC}$<br>typ (mΩ) | $I_R^{(2)}$<br>typ (A) | $I_{SAT\ 25^{\circ}C}^{(3)}$<br>typ (A) | $I_{SAT\ 100^{\circ}C}^{(4)}$<br>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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