



### APPLICATIONS

- Battery-powered devices
- High switching frequency SMPS
- IoT
- Wearable
- Portable devices
- Input filters

### FEATURES

- Size 2.5mmx2.0mmx1.2mm
- Low Profile
- Low Audible Noise
- Molded Construction
- Soft Saturation
- Stable Over High Temperatures
- Low DCR
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

### ELECTRICAL CHARACTERISTICS

| Parameter                                          |                  |      | Value | Unit |
|----------------------------------------------------|------------------|------|-------|------|
| Inductance <sup>(1)</sup>                          | $L$              | ±20% | 6.8   | μH   |
| Resistance                                         | $R_{DC}$         | typ  | 280   | mΩ   |
| Resistance <sub>MAX</sub>                          | $R_{DC\ MAX}$    | max  | 325   | mΩ   |
| Rated Current <sup>(2)</sup>                       | $I_R$            | typ  | 1.4   | A    |
| Saturation Current <sub>25°C</sub> <sup>(3)</sup>  | $I_{SAT\ 25°C}$  | typ  | 2.2   | A    |
| Saturation Current <sub>100°C</sub> <sup>(4)</sup> | $I_{SAT\ 100°C}$ | typ  | 2.2   | A    |
| Resonance Frequency                                | $f_r$            | typ  | 21    | MHz  |

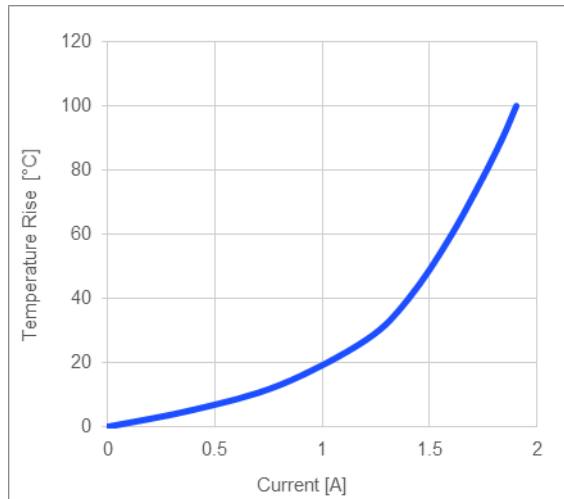
### GENERAL SPECIFICATIONS

|                                                    |                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <sup>(1)</sup> Inductance                          | Measured at 100kHz, 100mA                                                                                                                                                                                                                                                                                            |
| <sup>(2)</sup> Rated Current                       | Rated current will cause the coil temperature rise ΔT 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 +125°C (including temp rise)<br>Should not exceed +125°C under worst-case operation conditions                                                                                                                                                                                       |
| Storage Condition                                  | Tape and Reel packaging: -10°C to +40°C<br>Humidity: <50% RH                                                                                                                                                                                                                                                         |

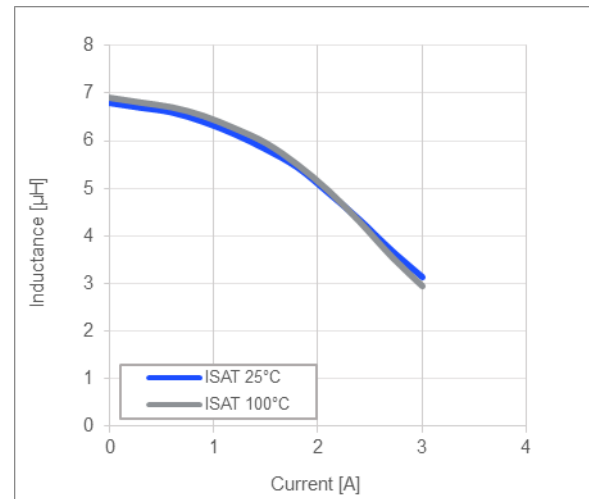
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**TYPICAL PERFORMANCE CURVES**

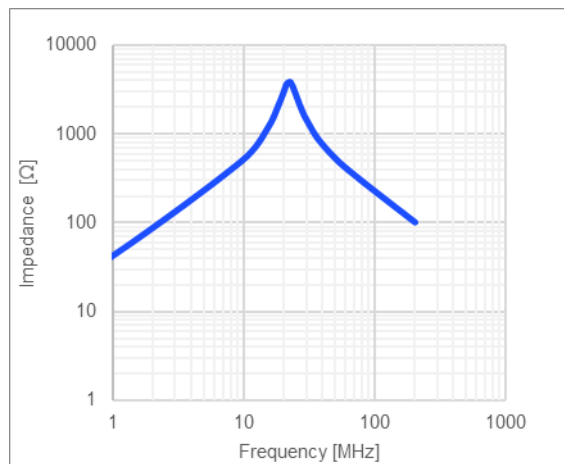
**Temperature Rise vs. Current**



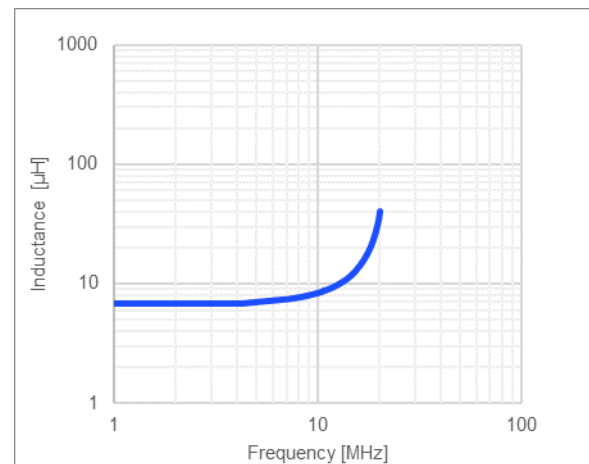
**Inductance vs. Current**



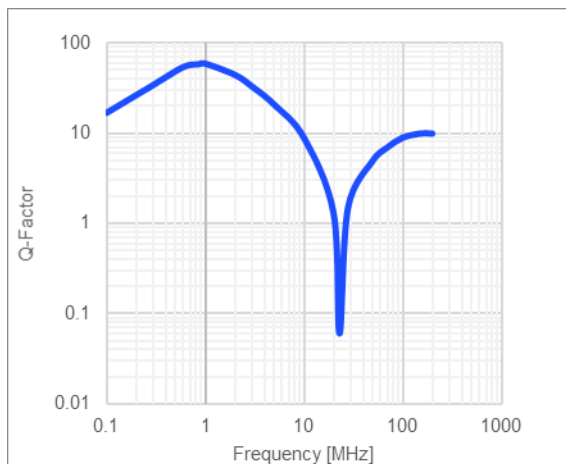
**Impedance vs. Frequency**



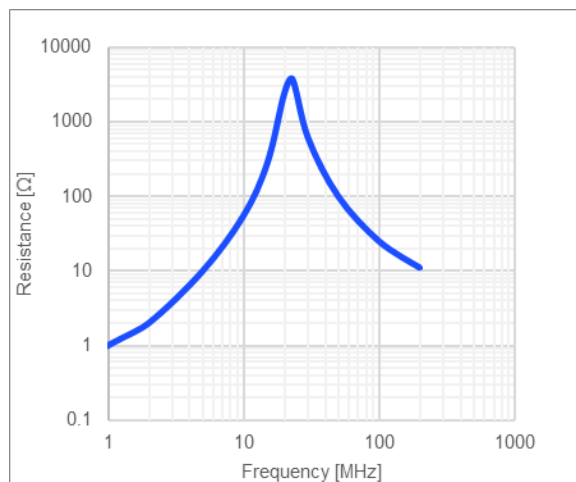
**Inductance vs. Frequency**



**Quality Factor vs. Frequency**

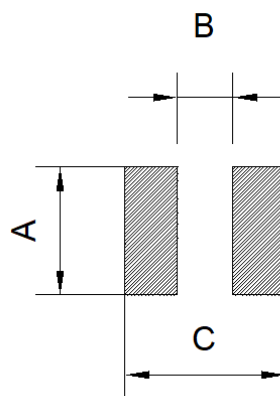


**AC Resistance vs. Frequency**



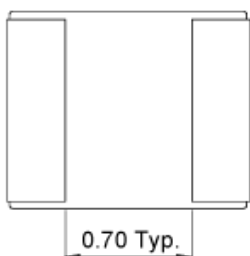
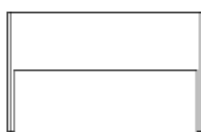
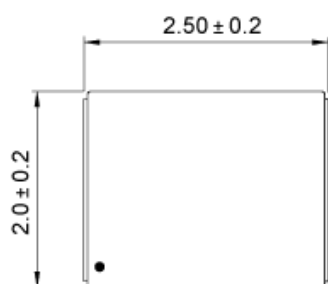
## LAND PATTERN

| Dimensions |                           |
|------------|---------------------------|
| A          | 2.1 ref.                  |
| B          | 0.60 ref.                 |
| C          | 2.60 ref.<br>(unit in mm) |



## PRODUCT PACKAGE AND DIMENSIONS

| Dimensions   |
|--------------|
| (unit in mm) |



## TOP MARKING

| Marking                  |
|--------------------------|
| Start of Winding · (dot) |

## 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-AT2512-R33 | 0.33                  | 13.5                 | 6.4                    | 8.5                                     | 8.5                                      |
| MPL-AT2512-R47 | 0.47                  | 19                   | 5.5                    | 6.4                                     | 6.4                                      |
| MPL-AT2512-R68 | 0.68                  | 26                   | 4.7                    | 6                                       | 6                                        |
| MPL-AT2512-1R0 | 1.0                   | 35                   | 4.0                    | 5.2                                     | 5.2                                      |
| MPL-AT2512-1R5 | 1.5                   | 56                   | 3.2                    | 4.2                                     | 4.2                                      |
| MPL-AT2514-2R2 | 2.2                   | 70                   | 2.6                    | 3.4                                     | 3.4                                      |
| MPL-AT2512-3R3 | 3.3                   | 121                  | 2.0                    | 2.7                                     | 2.7                                      |
| MPL-AT2514-4R7 | 4.7                   | 180                  | 1.7                    | 2.4                                     | 2.4                                      |
| MPL-AT2512-6R8 | 6.8                   | 280                  | 1.4                    | 2.2                                     | 2.2                                      |
| MPL-AT2512-100 | 10                    | 355                  | 1.2                    | 1.7                                     | 1.7                                      |

## GENERAL SPECIFICATIONS

**(1) Inductance** Measured at 100kHz, 100mA

**(2) Rated Current**

Rated current will cause the coil temperature rise  $\Delta T$  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  $_{25^{\circ}C}$**

Saturation current will cause L to drop from 30% at 25°C ambient temperature

**(4) Saturation Current  $_{100^{\circ}C}$**

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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