



### APPLICATIONS

- Battery-Powered Devices
- High-Efficiency SMPS
- Embedded Computing
- Input Filters

### FEATURES

- Size 4mmx4mmx3mm
- Semi-Shielded Construction
- Low DCR
- Low Stray Field
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

### ELECTRICAL CHARACTERISTICS

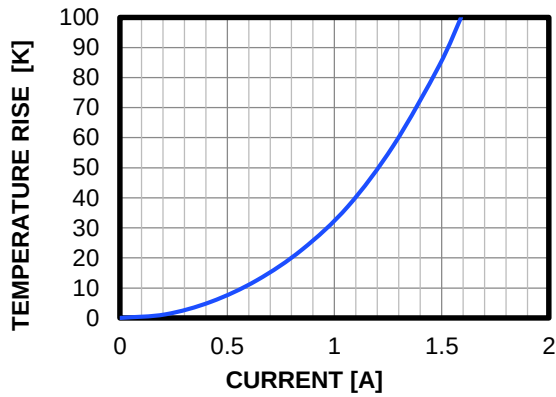
| Parameter                                          |                  |            | Value | Unit       |
|----------------------------------------------------|------------------|------------|-------|------------|
| Inductance <sup>(1)</sup>                          | $L$              | $\pm 20\%$ | 33    | $\mu$ H    |
| Resistance                                         | $R_{DC}$         | Typ        | 330   | m $\Omega$ |
| Resistance <sub>MAX</sub>                          | $R_{DC\ MAX}$    | Max        | 400   | m $\Omega$ |
| Rated Current <sup>(2)</sup>                       | $I_R$            | Typ        | 1.1   | A          |
| Saturation Current <sub>25°C</sub> <sup>(3)</sup>  | $I_{SAT\ 25°C}$  | Typ        | 1.2   | A          |
| Saturation Current <sub>100°C</sub> <sup>(4)</sup> | $I_{SAT\ 100°C}$ | Typ        | 0.97  | A          |
| Resonance Frequency                                | $f_r$            | Typ        | 16    | MHz        |

### GENERAL SPECIFICATIONS

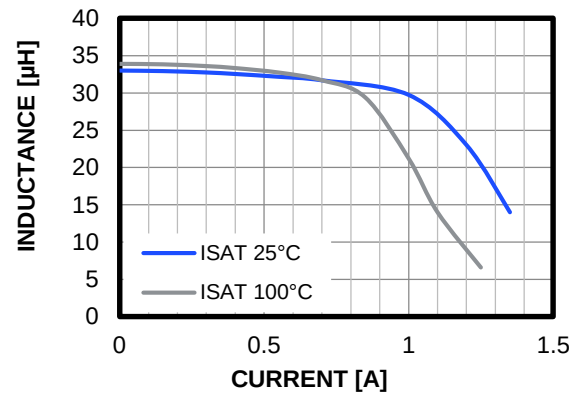
|                                                    |                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <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 +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                                                                                                                                                                                                                                                                       |

## TYPICAL PERFORMANCE CURVES

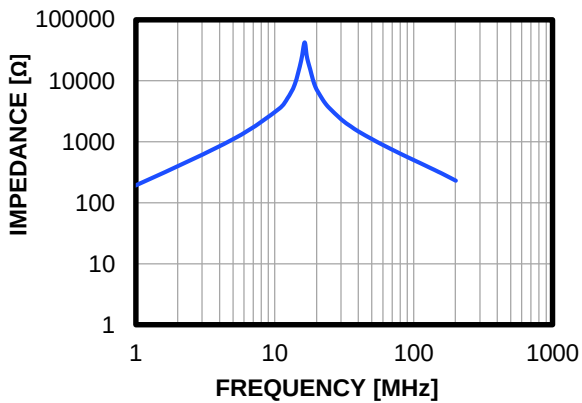
Temperature Rise vs. Current



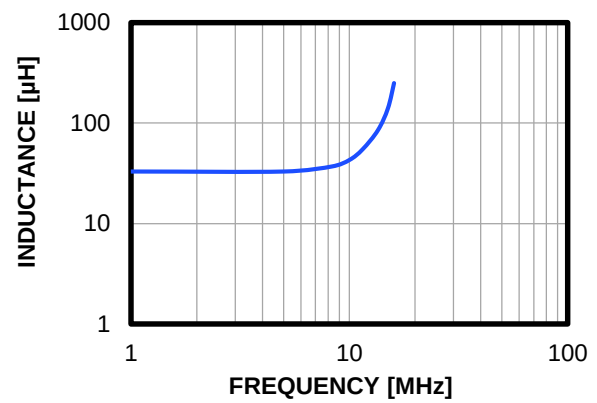
Inductance vs. Current



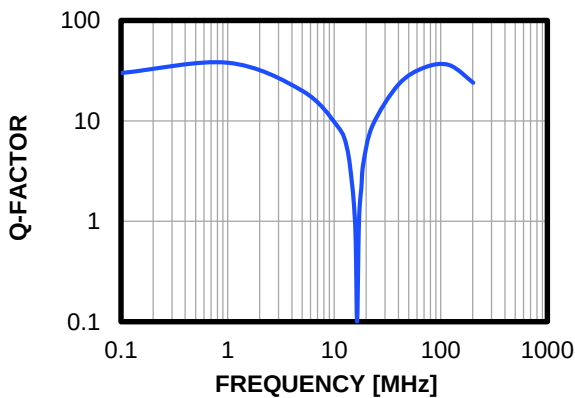
Impedance vs. Frequency



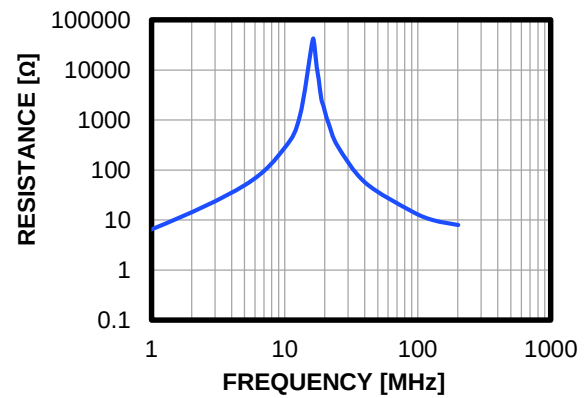
Inductance vs. Frequency



Quality Factor vs. Frequency



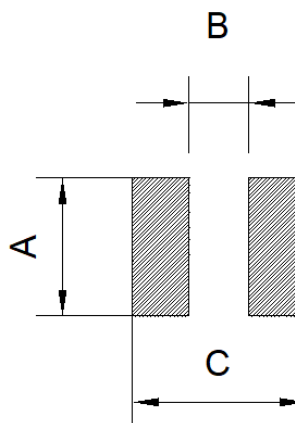
AC Resistance vs. Frequency



# LAND PATTERN

## Dimensions

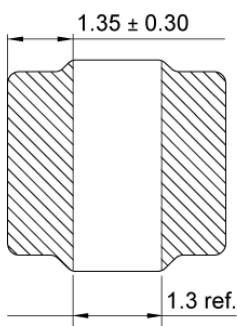
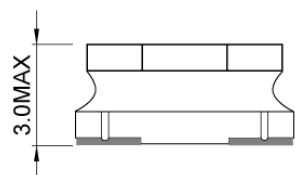
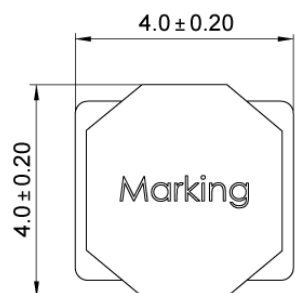
|   |                            |
|---|----------------------------|
| A | 4.50 ref.                  |
| B | 1.50 ref.                  |
| C | 4.50 ref.<br>(units in mm) |



# PRODUCT PACKAGE AND DIMENSIONS

## Dimensions

(units in mm)



# TOP MARKING

## Marking

|                 |     |
|-----------------|-----|
| Inductance Code | 330 |
|-----------------|-----|

## ORDERING INFORMATION

| Part Number    | $L$ <sup>(1)</sup>    | $R_{DC}$          | $I_R$ <sup>(2)</sup> | $I_{SAT\ 25^{\circ}C}$ <sup>(3)</sup> | $I_{SAT\ 100^{\circ}C}$ <sup>(4)</sup> |
|----------------|-----------------------|-------------------|----------------------|---------------------------------------|----------------------------------------|
|                | $\pm 20\%$ ( $\mu$ H) | Typ ( $m\Omega$ ) | Typ (A)              | Typ (A)                               | Typ (A)                                |
| MPL-SE4030-R68 | 0.68                  | 10                | 6                    | 7.5                                   | 6.5                                    |
| MPL-SE4030-1R0 | 1                     | 14                | 5.5                  | 7                                     | 5.7                                    |
| MPL-SE4030-2R2 | 2.2                   | 30                | 3.7                  | 5.5                                   | 4.2                                    |
| MPL-SE4030-3R3 | 3.3                   | 40                | 3.3                  | 4.1                                   | 3.6                                    |
| MPL-SE4030-4R7 | 4.7                   | 62                | 2.6                  | 3.4                                   | 2.7                                    |
| MPL-SE4030-6R8 | 6.8                   | 90                | 2.2                  | 2.9                                   | 2.2                                    |
| MPL-SE4030-100 | 10                    | 100               | 2                    | 2.2                                   | 1.75                                   |
| MPL-SE4030-150 | 15                    | 185               | 1.4                  | 1.8                                   | 1.47                                   |
| MPL-SE4030-220 | 22                    | 220               | 1.3                  | 1.5                                   | 1.12                                   |
| MPL-SE4030-330 | 33                    | 330               | 1.1                  | 1.2                                   | 0.97                                   |
| MPL-SE4030-470 | 47                    | 480               | 0.9                  | 1                                     | 0.82                                   |

## 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><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> |
| <sup>(3)</sup> Saturation Current $_{25^{\circ}C}$  | Saturation current will cause L to drop from 30% at 25 $^{\circ}C$ ambient temperature                                                                                                                                                                                                                                                                        |
| <sup>(4)</sup> Saturation Current $_{100^{\circ}C}$ | Saturation current will cause L to drop from 30% at 100 $^{\circ}C$ ambient temperature                                                                                                                                                                                                                                                                       |
| Temperature Test Condition                          | Electrical specifications measured at 25 $^{\circ}C$ , 35% RH if not given differently                                                                                                                                                                                                                                                                        |
| Operating Condition                                 | Operating temperature: -40 $^{\circ}C$ to +125 $^{\circ}C$ (including temp rise)<br>Should not exceed +125 $^{\circ}C$ under worst-case operation conditions                                                                                                                                                                                                  |
| Storage Condition                                   | Tape and Reel packaging: -10 $^{\circ}C$ to +40 $^{\circ}C$<br>Humidity: <50% RH                                                                                                                                                                                                                                                                              |

## REVISION HISTORY

| Revision # | Revision Date | Description     | Pages Updated |
|------------|---------------|-----------------|---------------|
| 1.0        | 9/19/2022     | Initial Release | -             |

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