

### 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>                          | $L$              | ±20% | 6.8   | μH   |
| Resistance   | $R_{DC}$         | typ  | 83    | mΩ   |
| Resistance <sub>MAX</sub>                          | $R_{DC\ MAX}$    | max  | 115   | mΩ   |
| Rated Current <sup>(2)</sup>                       | $I_R$            | typ  | 2.4   | A    |
| Saturation Current <sub>25°C</sub> <sup>(3)</sup>  | $I_{SAT\ 25°C}$  | typ  | 3.3   | A    |
| Saturation Current <sub>100°C</sub> <sup>(4)</sup> | $I_{SAT\ 100°C}$ | typ  | 3.1   | A    |
| Resonance Frequency                                | $f_r$            | typ  | 35    | MHz  |

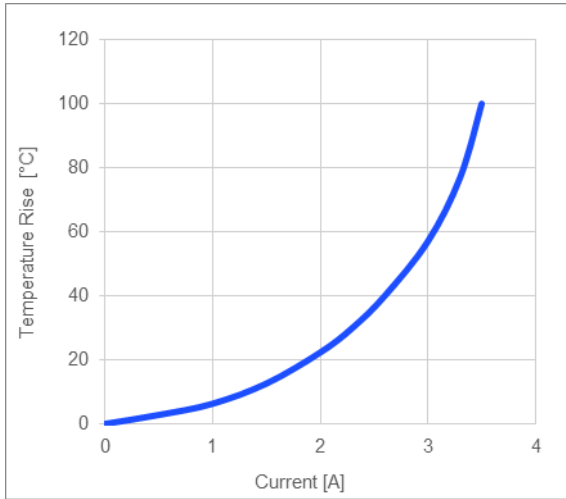
### GENERAL SPECIFICATIONS

|  |  |
|--|--|
| <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 35μm 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   |

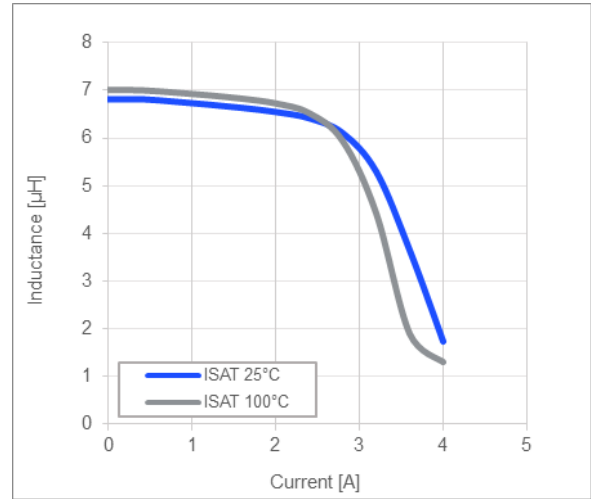
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TYPICAL PERFORMANCE CURVES

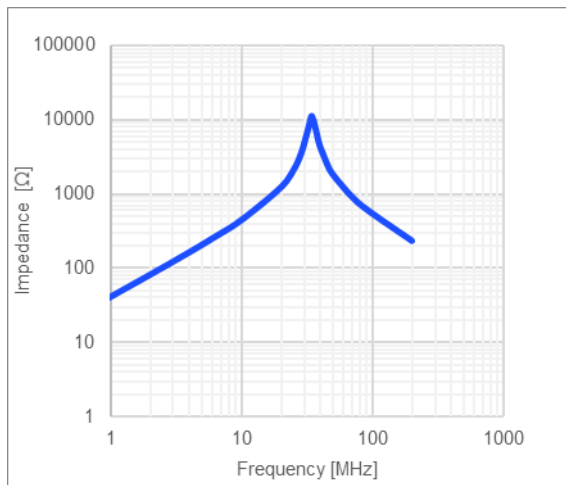
Temperature Rise vs. Current



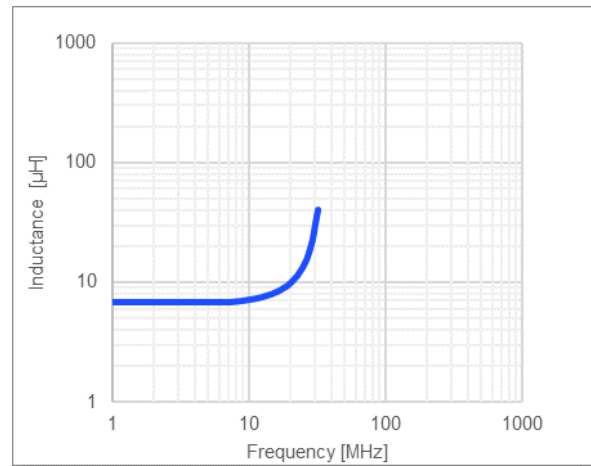
Inductance vs. Current



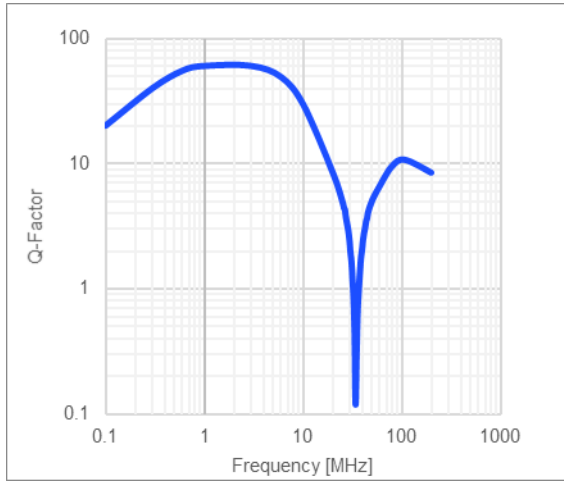
Impedance vs. Frequency



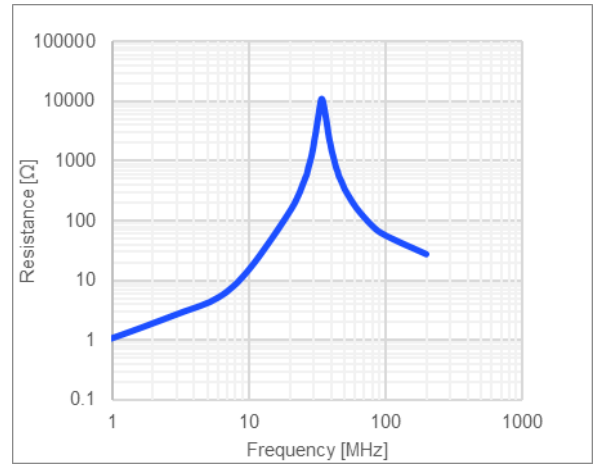
Inductance vs. Frequency



**Quality Factor vs. Frequency**



**AC Resistance vs. Frequency**



**LAND PATTERN**

**Dimensions**

|   |           |
|---|-----------|
| A | 3.60 ref. |
| B | 1.80 ref. |
| C | 4.10 ref. |

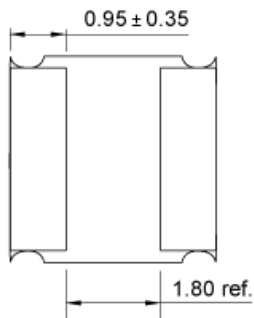
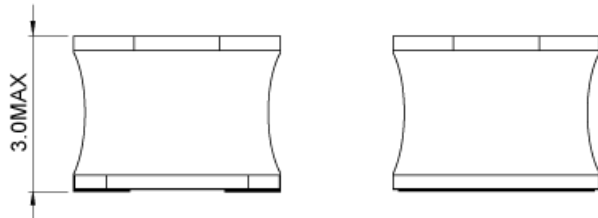
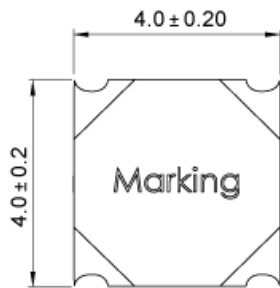
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(unit in mm)



**TOP MARKING**

**Marking**

|                 |     |
|-----------------|-----|
| Inductance Code | 6R8 |
|-----------------|-----|

**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-SE4030-1R0 | 1.0       | 12.5     | 6.3         | 7.5                         | 7.2                          |
| MPL-SE4030-2R2 | 2.2       | 30       | 3.9         | 5.5                         | 5.1                          |
| MPL-SE4030-3R3 | 3.3       | 39.8     | 3.45        | 4.1                         | 3.7                          |
| MPL-SE4030-4R7 | 4.7       | 63       | 2.6         | 3.7                         | 3.4                          |
| MPL-SE4030-6R8 | 6.8       | 83       | 2.4         | 3.3                         | 3.1                          |
| MPL-SE4030-100 | 10        | 97       | 2.2         | 2.4                         | 2                            |
| MPL-SE4030-150 | 15        | 185      | 1.6         | 1.95                        | 1.85                         |
| MPL-SE4030-220 | 22        | 219      | 1.5         | 1.65                        | 1.5                          |

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|---|--|
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