



APPLICATIONS

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

FEATURES

- Size 2.5mmx2.0mmx1.4mm
- 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 ⁽¹⁾ | L | ±20% | 4.7 μH |
| Resistance | R_{DC} | typ | 180 mΩ |
| Resistance _{MAX} | $R_{DC MAX}$ | max | 215 mΩ |
| Rated Current ⁽²⁾ | I_R | typ | 1.7 A |
| Saturation Current _{25°C} ⁽³⁾ | $I_{SAT 25°C}$ | typ | 2.4 A |
| Saturation Current _{100°C} ⁽⁴⁾ | $I_{SAT 100°C}$ | typ | 2.4 A |
| Resonance Frequency | f_r | typ | 28 MHz |

GENERAL SPECIFICATIONS

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

⁽²⁾ **Rated Current** Rated current will cause the coil temperature rise ΔT 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°C}** Saturation current will cause L to drop from 30% at 25°C ambient temperature

⁽⁴⁾ **Saturation Current _{100°C}** Saturation current will cause L to drop from 30% at 100°C ambient temperature

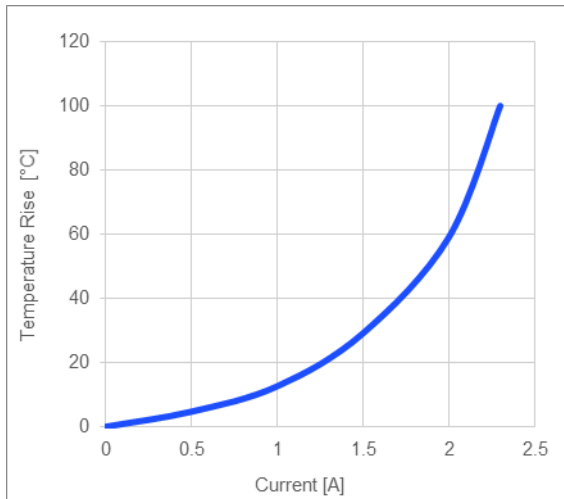
Temperature Test Condition Electrical specifications measured at 25°C, 35% RH if not given differently

Operating Condition Operating temperature: -40°C to +125°C (including temp rise)
 Should not exceed +125°C under worst-case operation conditions

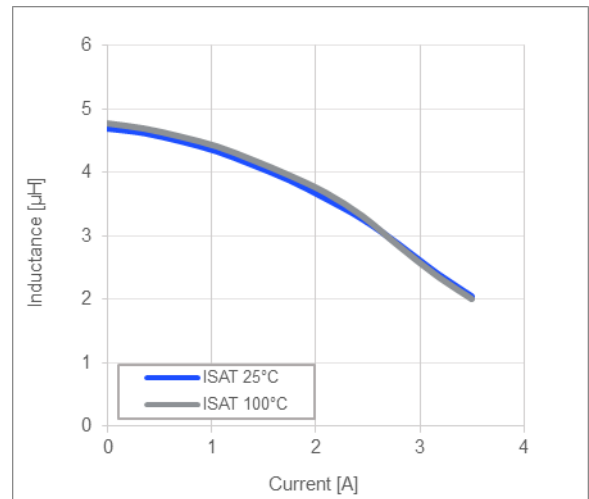
Storage Condition Tape and Reel packaging: -10°C to +40°C
 Humidity: <50% RH

TYPICAL PERFORMANCE CURVES

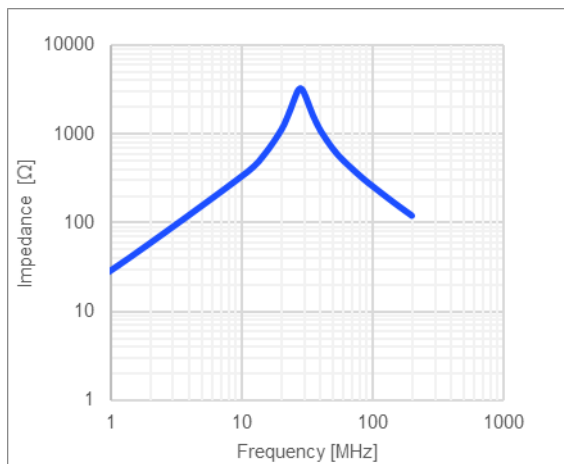
Temperature Rise vs. Current



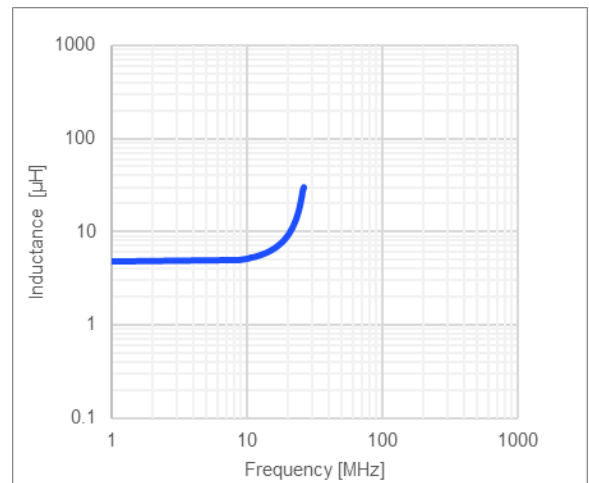
Inductance vs. Current



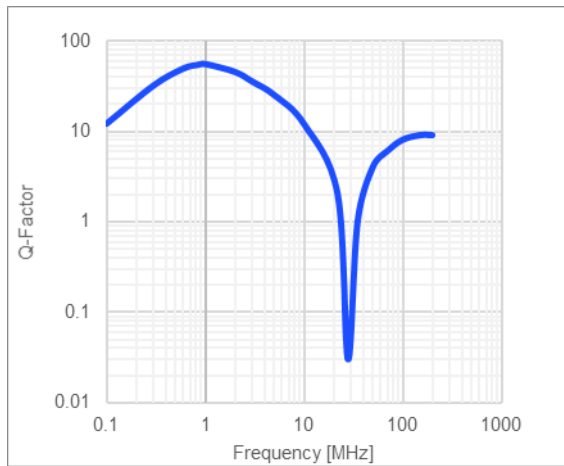
Impedance vs. Frequency



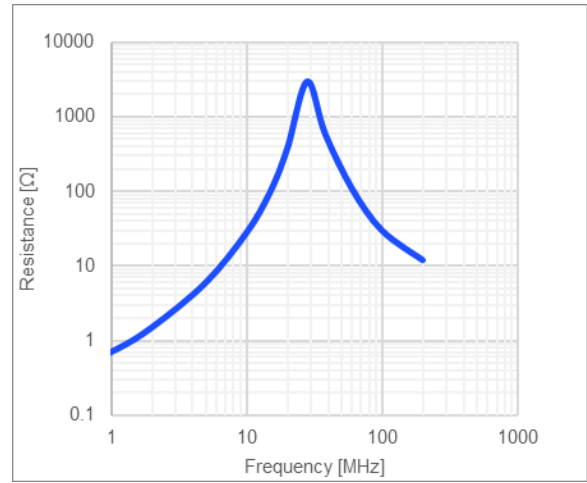
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



LAND PATTERN

Dimensions

| | |
|---|-----------|
| A | 2.0 ref. |
| B | 1.20 ref. |
| C | 2.80 ref. |

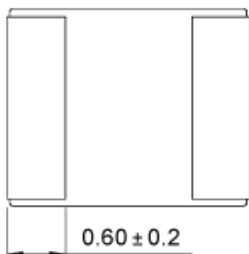
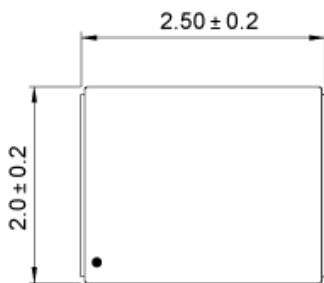
(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking

Start of Winding · (dot)

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-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 ΔT of 40K <i>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.</i> |
| (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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