

### 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%	0.47	μH
Resistance	$R_{DC}$	typ	19	mΩ
Resistance <sub>MAX</sub>	$R_{DC MAX}$	max	27	mΩ
Rated Current <sup>(2)</sup>	$I_R$	typ	5.5	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	$I_{SAT 25°C}$	typ	6.4	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	$I_{SAT 100°C}$	typ	6.4	A
Resonance Frequency	$f_r$	typ	98	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  
 $I_R$  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

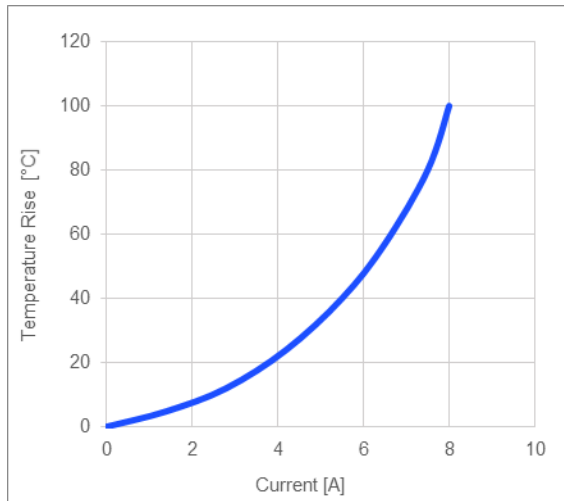
Operating temperature: -40°C to +125°C (including temp rise)  
 Should not exceed +125°C under worst-case operation conditions

#### Storage Condition

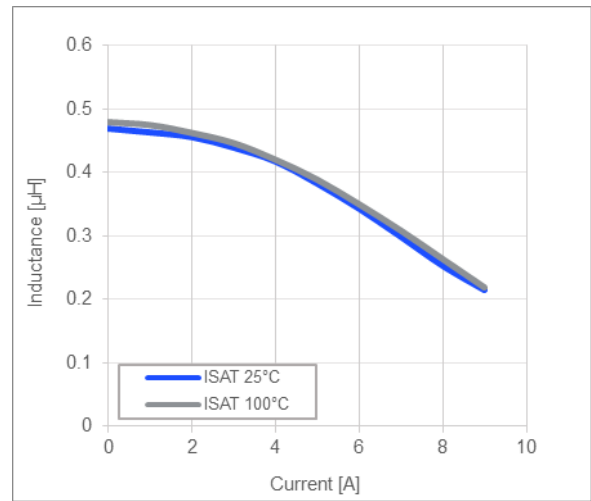
Tape and Reel packaging: -10°C to +40°C  
 Humidity: <50% RH

TYPICAL PERFORMANCE CURVES

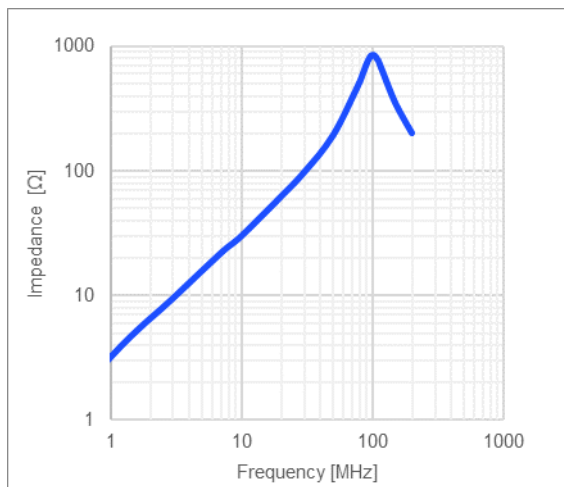
Temperature Rise vs. Current



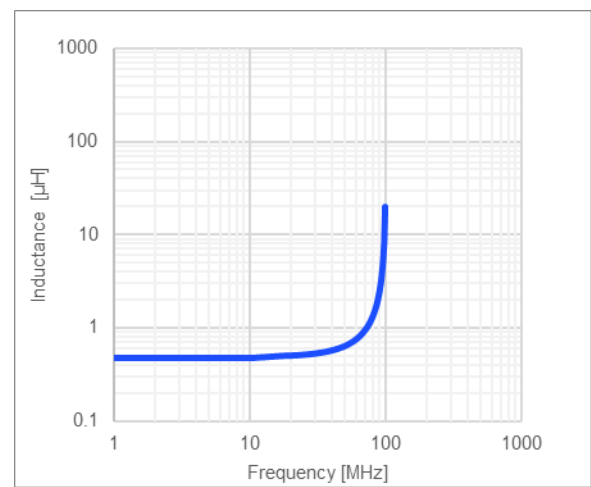
Inductance vs. Current



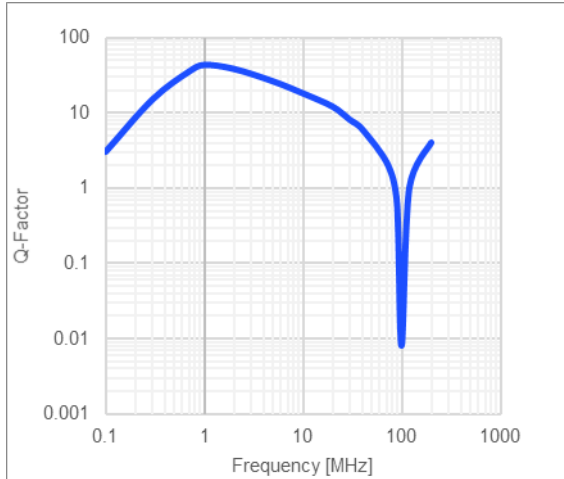
Impedance vs. Frequency



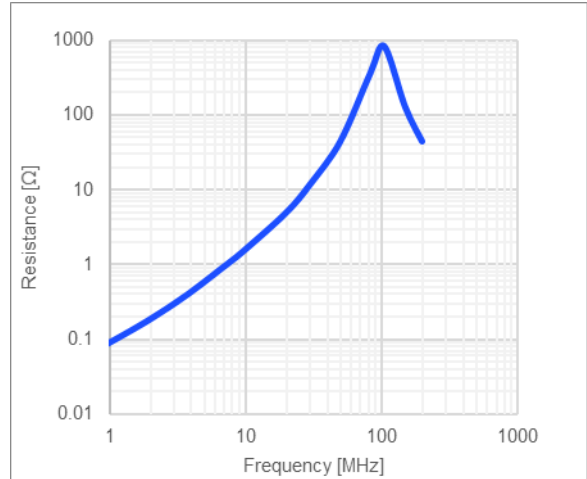
Inductance vs. Frequency



**Quality Factor vs. Frequency**

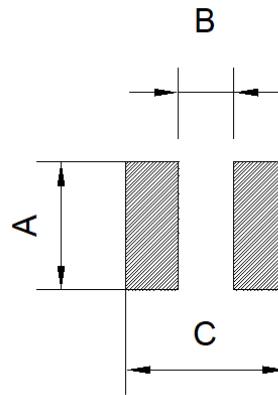


**AC Resistance vs. Frequency**



**LAND PATTERN**

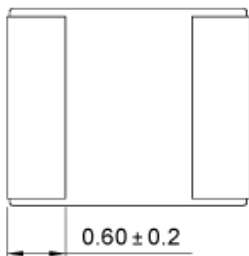
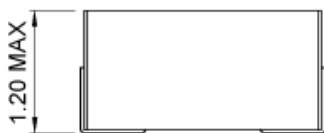
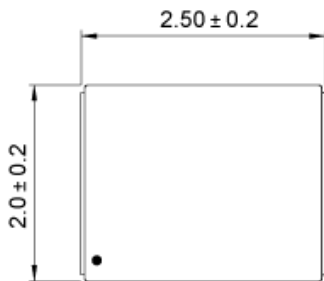
Dimensions	
A	2.0 ref.
B	1.20 ref.
C	2.80 ref. (unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

Dimensions
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(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**

<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 <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 +125°C (including temp rise) Should not exceed +125°C under worst-case operation conditions
<b>Storage Condition</b>	Tape and Reel packaging: -10°C to +40°C Humidity: <50% RH

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