

### 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

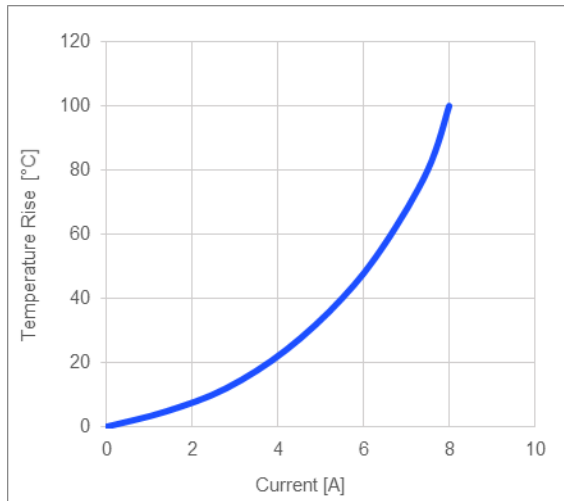
Temperature Test Condition Electrical specifications measured at 25°C, 35% RH if not given differently

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

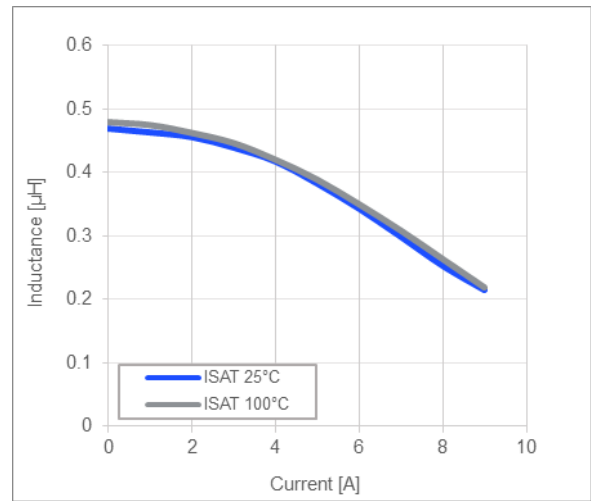
Storage Condition Tape and Reel packaging: -10°C to +40°C  
 Humidity: <50% RH

TYPICAL PERFORMANCE CURVES

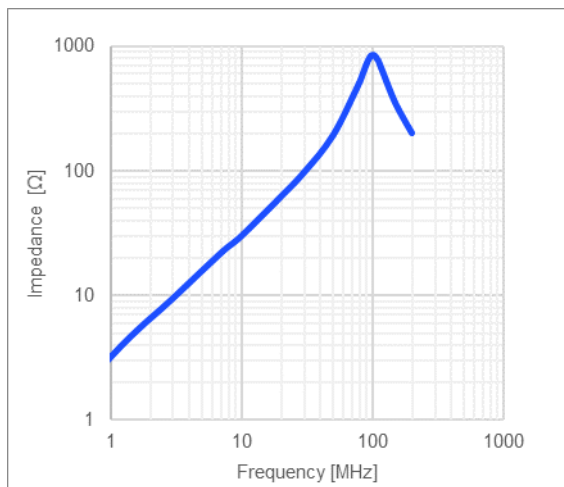
Temperature Rise vs. Current



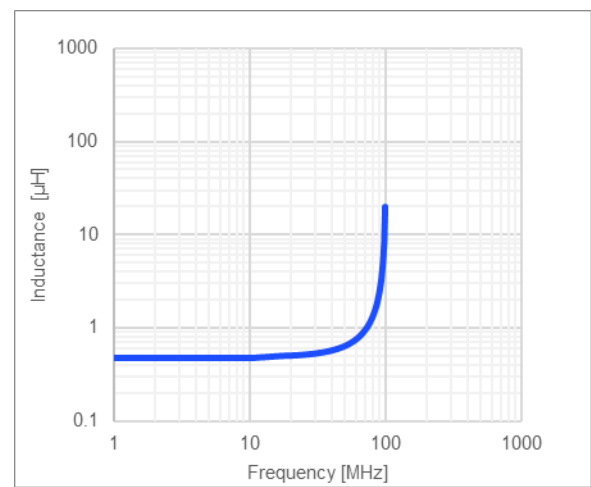
Inductance vs. Current



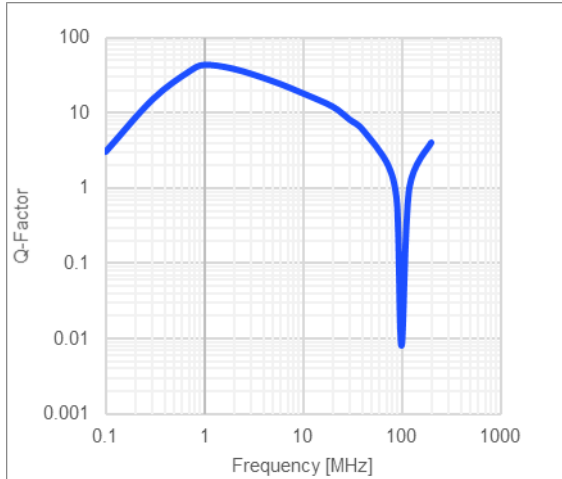
Impedance vs. Frequency



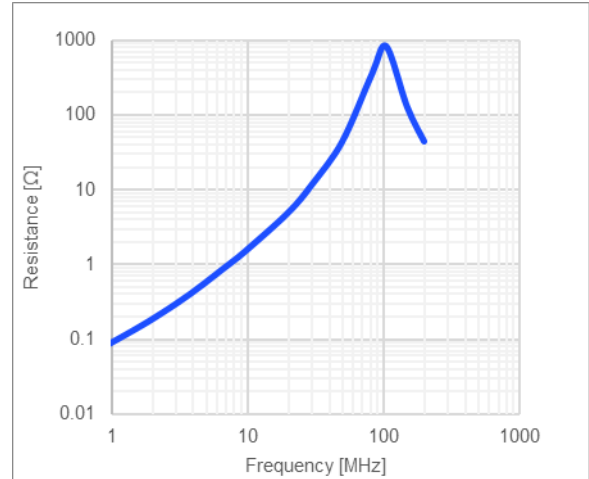
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency

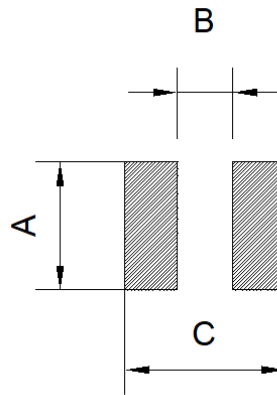


**LAND PATTERN**

**Dimensions**

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

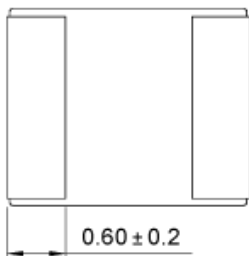
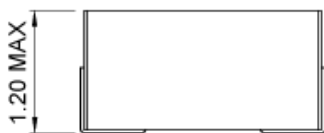
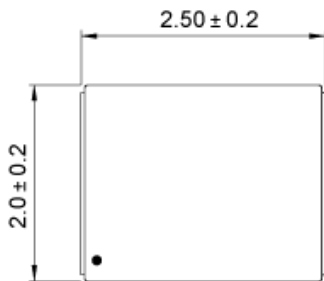
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(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  $\Delta T$  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

**NOTICE:** The information in this document is subject to change without notice. Please contact MPS for current specifications. Users should warrant and guarantee that third-party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.