



### APPLICATIONS

- Battery-Powered Devices
- IoT
- Wearable
- Portable Devices
- Input Filters

### FEATURES

- Size 2mmx2.5mmx1.2mm
- Semi-Shielded Construction
- Low DCR
- Low Profile
- Low Stray Field
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

### ELECTRICAL CHARACTERISTICS

Parameter			Value	Unit
Inductance <sup>(1)</sup>	$L$	±20%	4.7	μH
Resistance	$R_{DC}$	Typ	165	mΩ
Resistance <sub>MAX</sub>	$R_{DC\ MAX}$	Max	195	mΩ
Rated Current <sup>(2)</sup>	$I_R$	Typ	1.6	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	$I_{SAT\ 25°C}$	Typ	1.9	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	$I_{SAT\ 100°C}$	Typ	1.9	A
Resonance Frequency	$f_r$	Typ	31	MHz

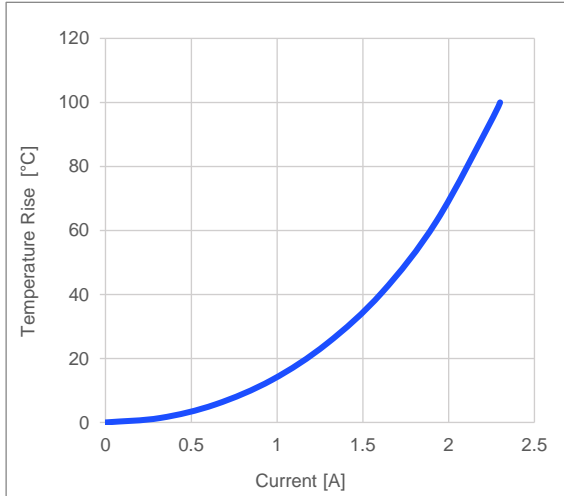
### GENERAL SPECIFICATIONS

<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 otherwise noted
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

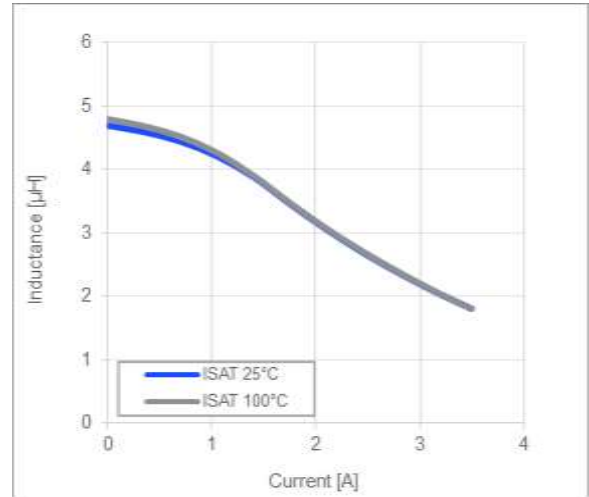
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TYPICAL PERFORMANCE CURVES

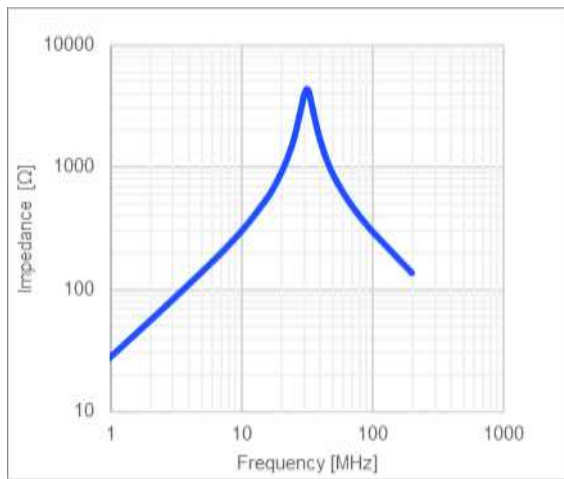
Temperature Rise vs. Current



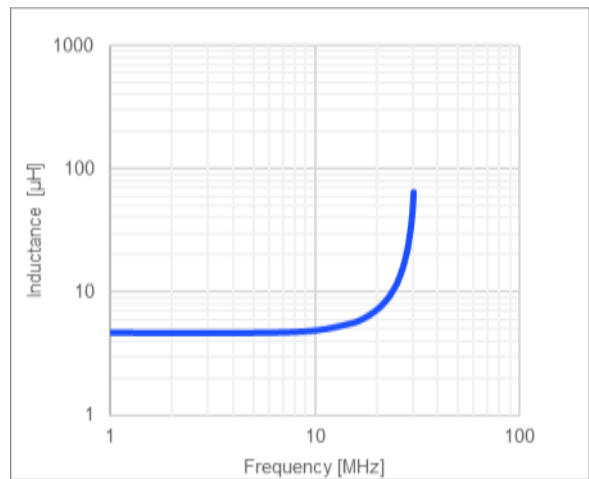
Inductance vs. Current



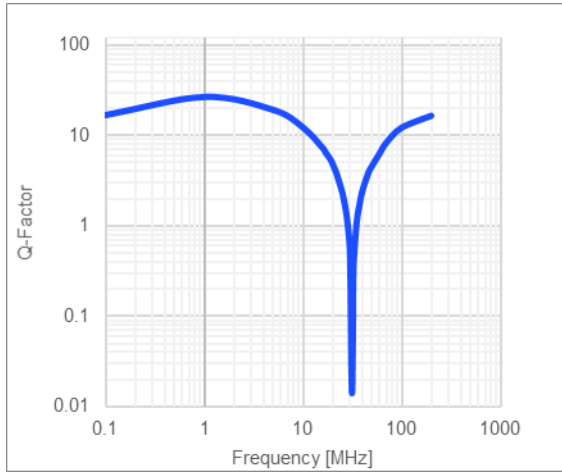
Impedance vs. Frequency



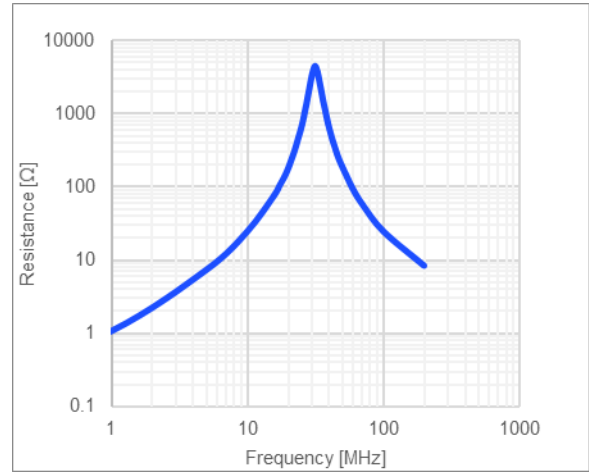
Inductance vs. Frequency



**Quality Factor vs. Frequency**



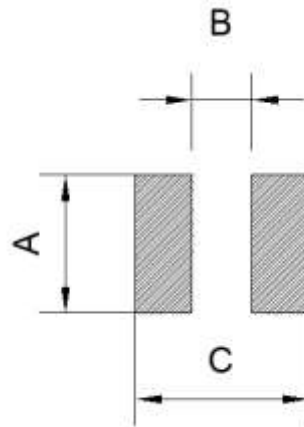
**AC Resistance vs. Frequency**



**LAND PATTERN**

Dimensions	
A	2.40 ref.
B	1.00 ref.
C	2.90 ref.

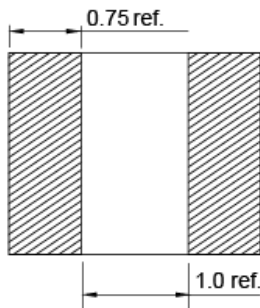
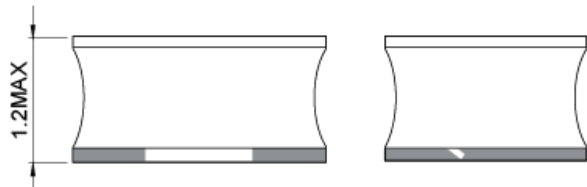
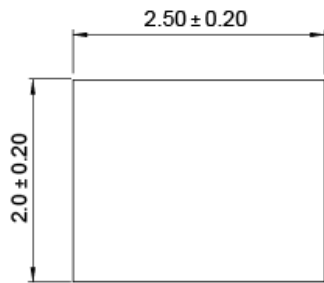
(units in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

Dimensions	
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(units in mm)



**ORDERING INFORMATION**

Part Number	$L^{(1)}$	$R_{DC}$	$I_R^{(2)}$	$I_{SAT\ 25^\circ C}^{(3)}$	$I_{SAT\ 100^\circ C}^{(4)}$
	Typ ( $\mu$ H)	Typ (m $\Omega$ )	Typ (A)	Typ (A)	Typ (A)
MPL-SE2512-R47	0.47	20	4.5	6.5	6.5
MPL-SE2512-R68	0.68	28	3.9	5	5
MPL-SE2512-1R0	1	35	3.4	4.2	4.2
MPL-SE2512-1R5	1.5	50	2.9	3.2	3.2
MPL-SE2512-2R2	2.2	72	2.5	2.7	2.7
MPL-SE2512-3R3	3.3	90	2.1	2.4	2.4
MPL-SE2512-4R7	4.7	165	1.6	1.9	1.9
MPL-SE2512-6R8	6.8	305	1.2	1.6	1.6
MPL-SE2512-100	10	410	1.1	1.3	1.3
MPL-SE2512-150	15	620	0.85	0.9	0.9
MPL-SE2512-220	22	885	0.7	0.8	0.8

**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 35 $\mu$ m 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 $^\circ$ C ambient temperature

**(4) 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 otherwise noted

**Operating Condition**

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

**Storage Condition**

Tape and Reel packaging: -10 $^\circ$ C to +40 $^\circ$ C  
 Humidity: <50% RH

## REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	7/26/2019	Initial Release	-
1.1	8/2/2019	Updated Impedance vs. Frequency Curve	2
1.2	1/19/2022	Updated Electrical Characteristics	1
		Updated Typical Performance Curves	2-3
		Updated Land Pattern and Product Package Dimensions	4
		Updated Ordering Information	5
		Grammar and formatting updates	All

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