



### APPLICATIONS

- Battery-powered devices
- High-efficiency SMPS
- Embedded computing
- Input filters

### FEATURES

- Size 4.9mmx4.9mmx4mm
- 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>	$L$	$\pm 20\%$	10	$\mu\text{H}$
Resistance	$R_{DC}$	typ	56	m $\Omega$
Resistance <sub>MAX</sub>	$R_{DC\ MAX}$	max	64	m $\Omega$
Rated Current <sup>(2)</sup>	$I_R$	typ	3.2	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	$I_{SAT\ 25^\circ\text{C}}$	typ	3.6	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	$I_{SAT\ 100^\circ\text{C}}$	typ	3	A
Resonance Frequency	$f_r$	typ	22	MHz

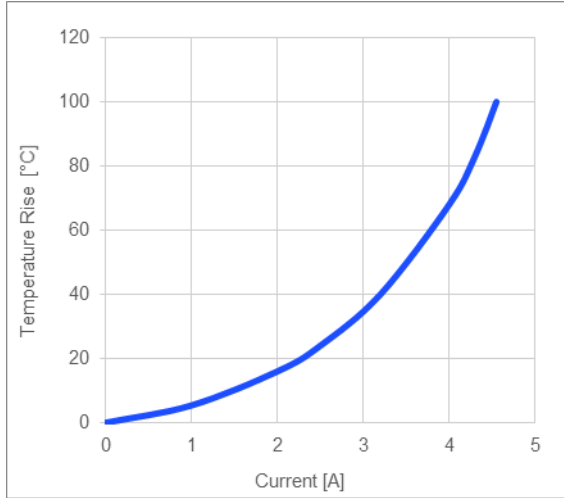
### GENERAL SPECIFICATIONS

<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 35 $\mu\text{m}$ 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

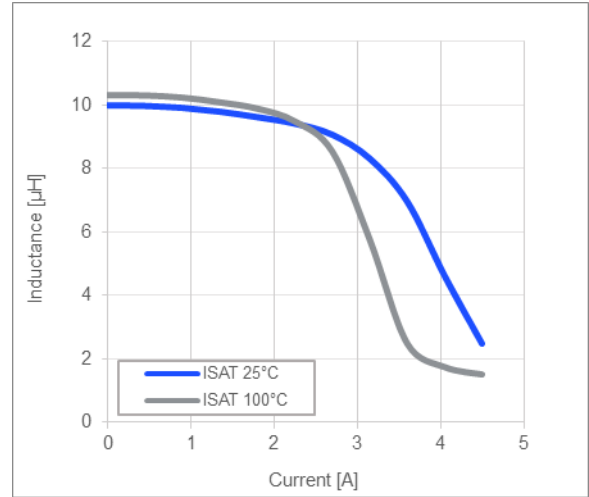
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**TYPICAL PERFORMANCE CURVES**

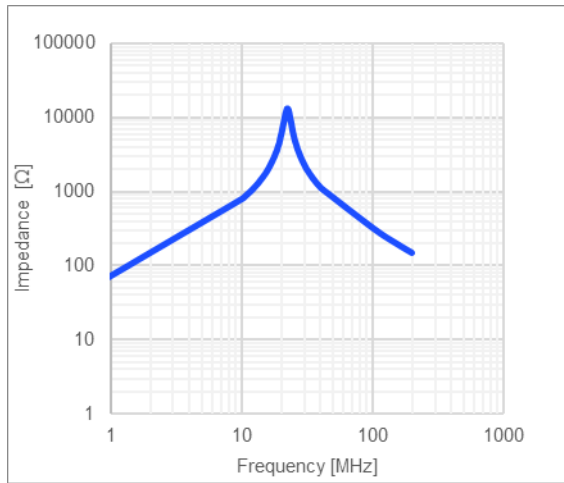
**Temperature Rise vs. Current**



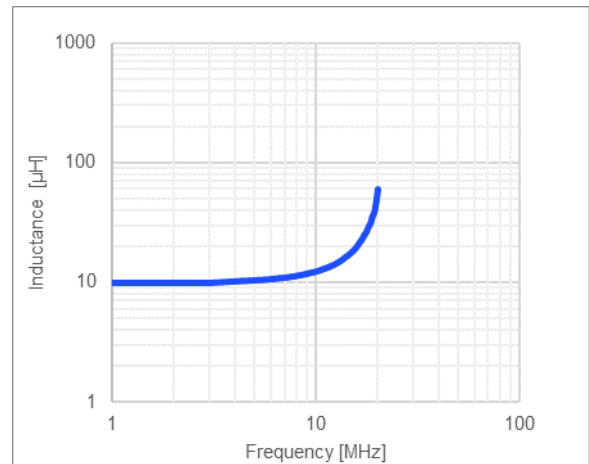
**Inductance vs. Current**



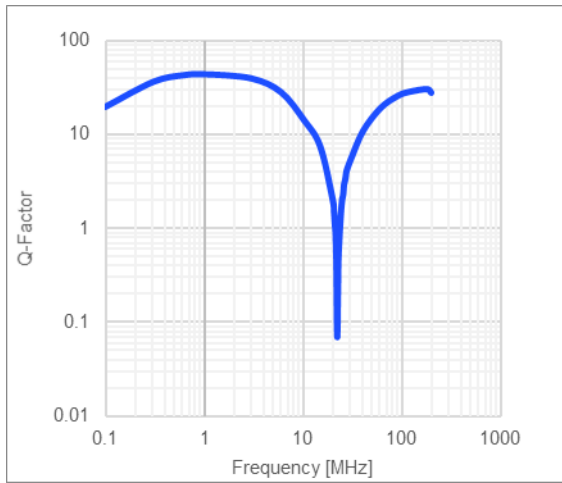
**Impedance vs. Frequency**



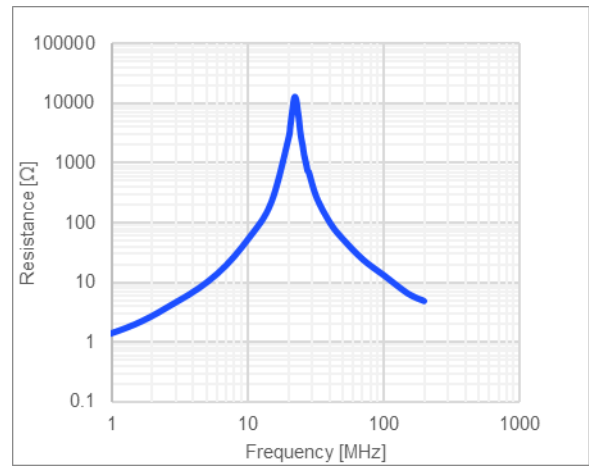
**Inductance vs. Frequency**



Quality Factor vs. Frequency



AC Resistance vs. Frequency



**LAND PATTERN**

**Dimensions**

A	4.0 ref.
B	2.10 ref.
C	5.10 ref.

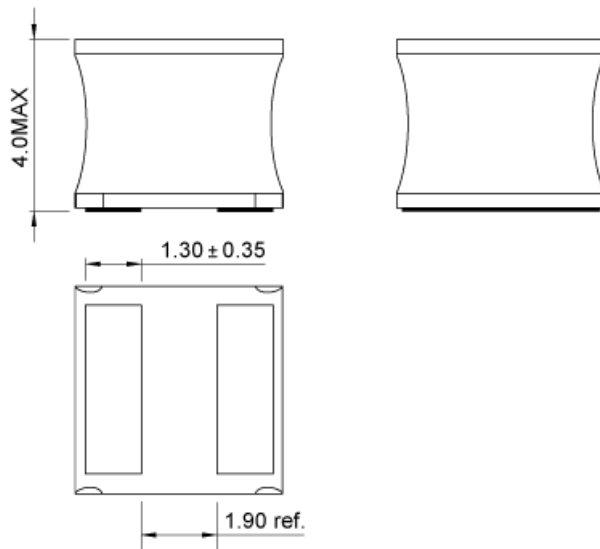
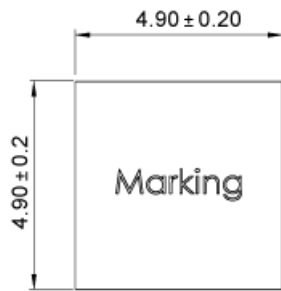
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(unit in mm)



**TOP MARKING**

**Marking**

Inductance Code	100
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**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-SE5040-R47	0.47	7.3	8.0	16	13.5
MPL-SE5040-1R0	1.0	9.4	7.6	10.5	9
MPL-SE5040-1R5	1.5	14	6.2	9.3	8.4
MPL-SE5040-2R2	2.2	16	5.4	7.9	7.3
MPL-SE5040-3R3	3.3	22	5.2	6.4	5.2
MPL-SE5040-4R7	4.7	33	4.3	5	4.6
MPL-SE5040-6R8	6.8	45	3.5	4.6	4
MPL-SE5040-100	10	56	3.2	3.6	3
MPL-SE5040-150	15	83	2.5	2.9	2.6
MPL-SE5040-220	22	124	2.1	2.4	2.15

**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 given differently

**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: &lt;50% RH

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