



### APPLICATIONS

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

### FEATURES

- Size 4mmx4mmx3mm
- 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>	$L$	±20%	22	μH
Resistance	$R_{DC}$	typ	219	mΩ
Resistance <sub>MAX</sub>	$R_{DC MAX}$	max	283	mΩ
Rated Current <sup>(2)</sup>	$I_R$	typ	1.5	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	$I_{SAT 25°C}$	typ	1.65	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	$I_{SAT 100°C}$	typ	1.5	A
Resonance Frequency	$f_r$	typ	16	MHz

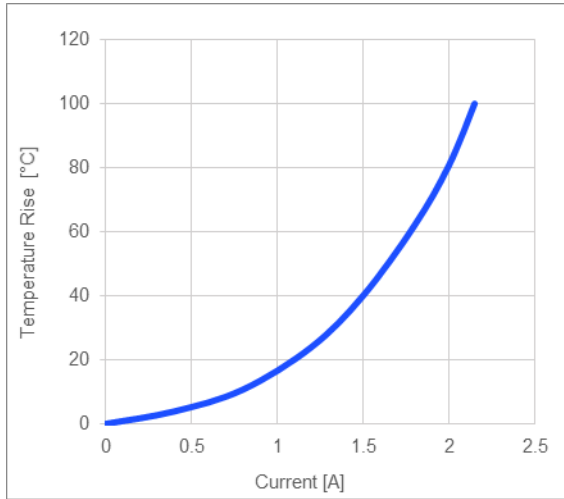
### GENERAL SPECIFICATIONS

<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 <sub>25°C</sub></b>	Saturation current will cause L to drop from 30% at 25°C ambient temperature
<b>(4) Saturation Current <sub>100°C</sub></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

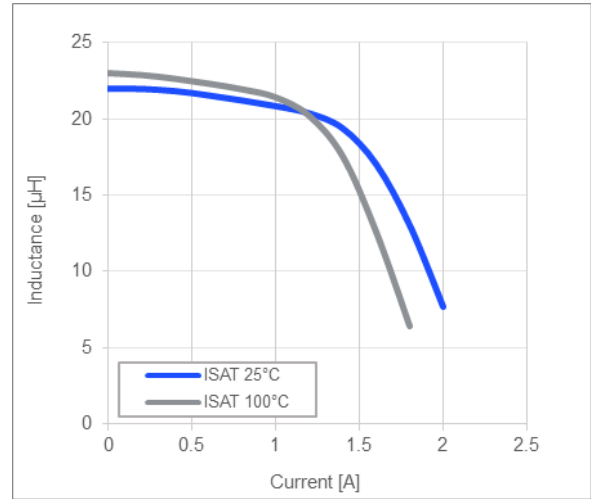
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TYPICAL PERFORMANCE CURVES

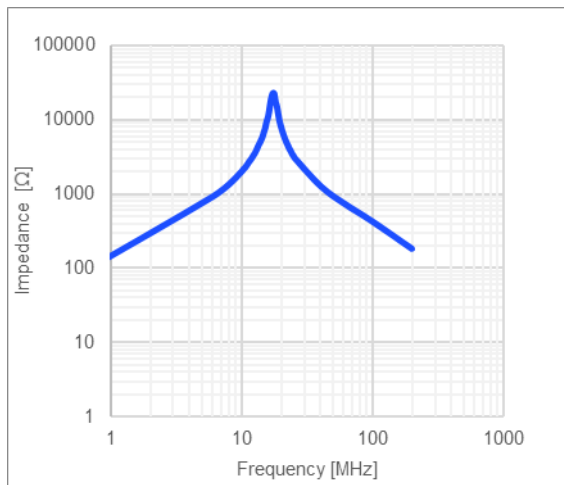
Temperature Rise vs. Current



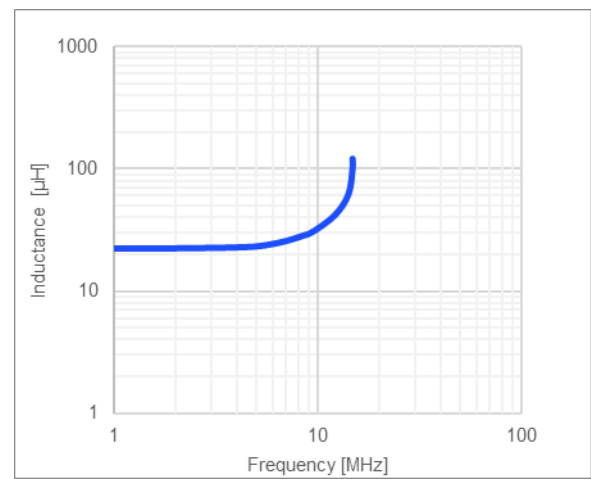
Inductance vs. Current



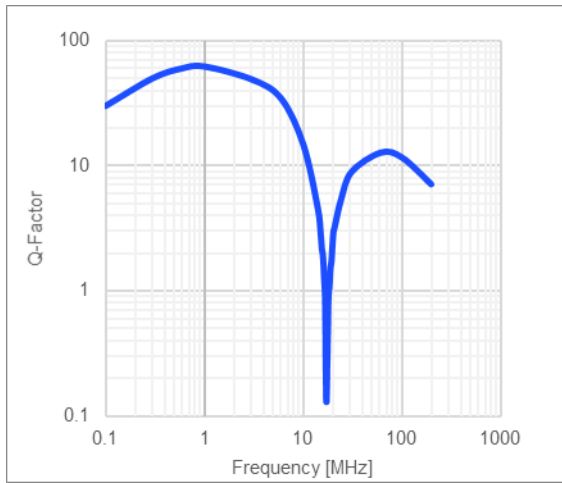
Impedance vs. Frequency



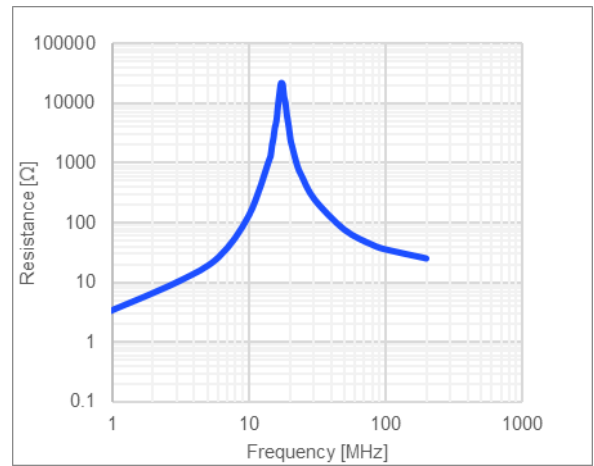
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



**LAND PATTERN**

**Dimensions**

A	3.60 ref.
B	1.80 ref.
C	4.10 ref.

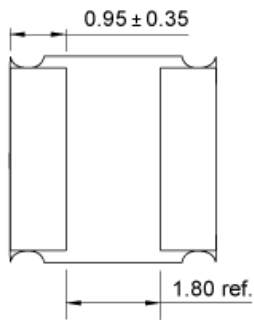
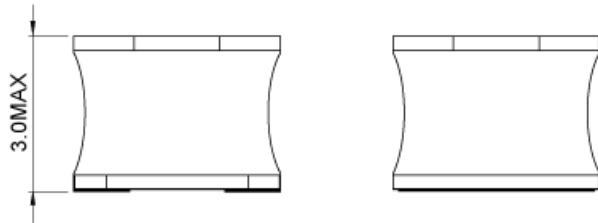
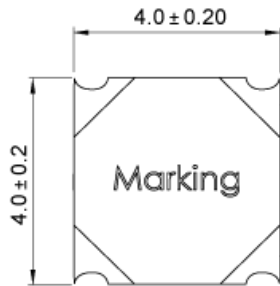
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(unit in mm)



**TOP MARKING**

**Marking**

Inductance Code                      220

**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-SE4030-1R0	1.0	12.5	6.3	7.5	7.2
MPL-SE4030-2R2	2.2	30	3.9	5.5	5.1
MPL-SE4030-3R3	3.3	39.8	3.45	4.1	3.7
MPL-SE4030-4R7	4.7	63	2.6	3.7	3.4
MPL-SE4030-6R8	6.8	83	2.4	3.3	3.1
MPL-SE4030-100	10	97	2.2	2.4	2
MPL-SE4030-150	15	185	1.6	1.95	1.85
MPL-SE4030-220	22	219	1.5	1.65	1.5

**GENERAL SPECIFICATIONS**

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<b>(3) Saturation Current <math>_{25^\circ C}</math></b>	Saturation current will cause L to drop from 30% at 25 $^\circ$ C ambient temperature
<b>(4) Saturation Current <math>_{100^\circ C}</math></b>	Saturation current will cause L to drop from 30% at 100 $^\circ$ C ambient temperature
<b>Temperature Test Condition</b>	Electrical specifications measured at 25 $^\circ$ C, 35% RH if not given differently
<b>Operating Condition</b>	Operating temperature: -40 $^\circ$ C to +125 $^\circ$ C (including temp rise) Should not exceed +125 $^\circ$ C under worst-case operation conditions
<b>Storage Condition</b>	Tape and Reel packaging: -10 $^\circ$ C to +40 $^\circ$ C Humidity: <50% RH



**REVISION HISTORY**

Revision #	Revision Date	Description	Pages Updated
1.2	3/15/2021	1. Corrected RDC MAX from 28 mOhm to 283 mOhm. 2. Modified Temperature Rise vs. Current and Inductance vs. Frequency curves to show a clean curve	1-2

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