



### APPLICATIONS

- Battery-powered devices
- Portable devices
- Embedded computing
- High-current SMPS
- High-frequency SMPS
- POL converters
- FPGA

### FEATURES

- Size 3.5mmx3.2mmx1.8mm
- Molded Construction
- Low Audible Noise
- Soft Saturation
- Stable Over High Temperatures
- 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	173	mΩ
Resistance <sub>MAX</sub>	$R_{DC\ MAX}$	max	200	mΩ
Rated Current <sup>(2)</sup>	$I_R$	typ	2.0	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	$I_{SAT\ 25°C}$	typ	3.1	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	$I_{SAT\ 100°C}$	typ	3.1	A
Resonance Frequency	$f_r$	typ	31	MHz

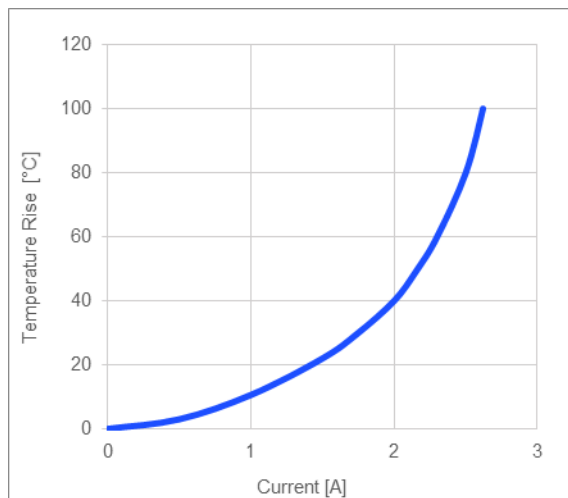
### GENERAL SPECIFICATIONS

<sup>(1)</sup> Inductance	Measured at 100kHz, 100mA
<sup>(2)</sup> Rated Current	Rated current will cause the coil temperature rise ΔT 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

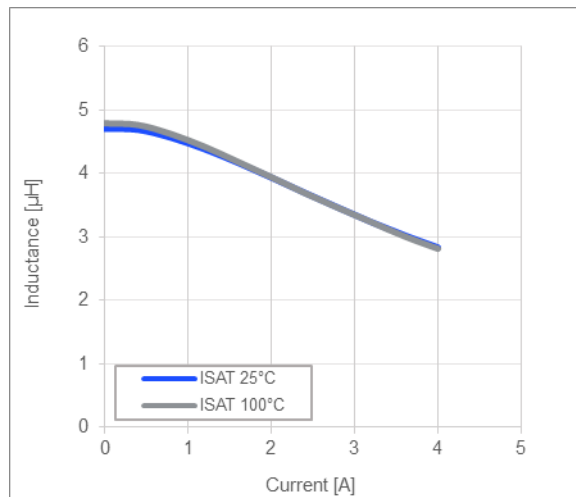
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**TYPICAL PERFORMANCE CURVES**

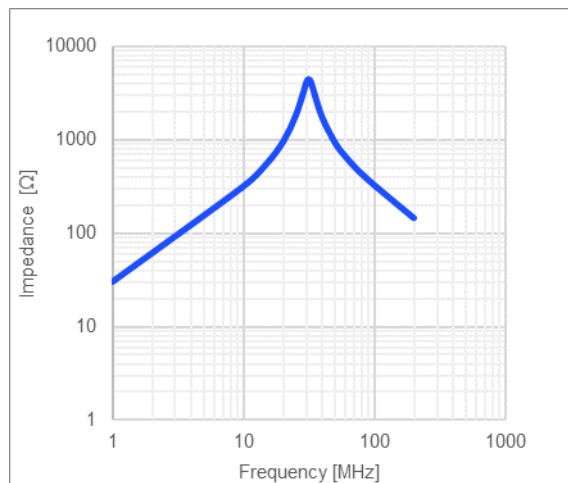
**Temperature Rise vs. Current**



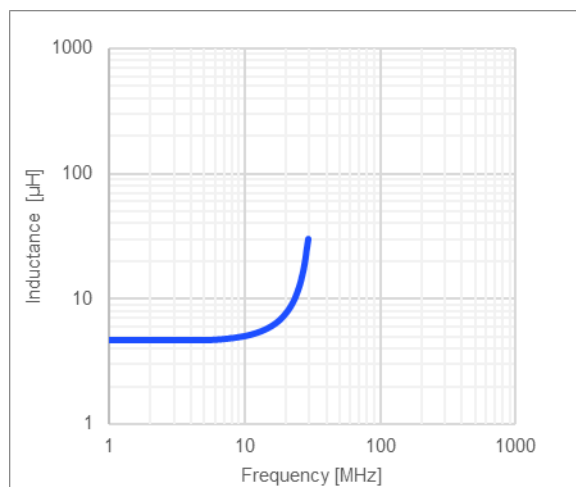
**Inductance vs. Current**



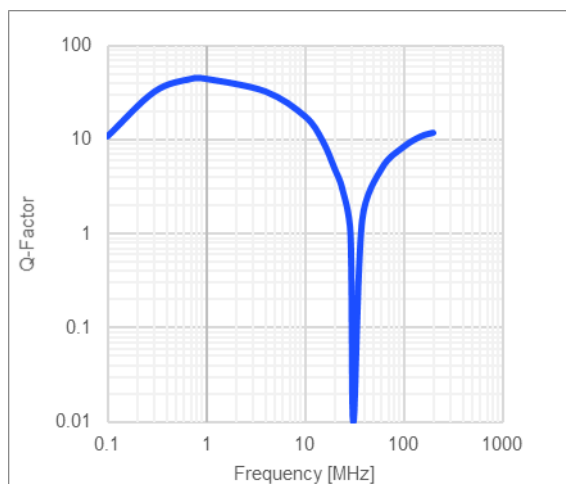
**Impedance vs. Frequency**



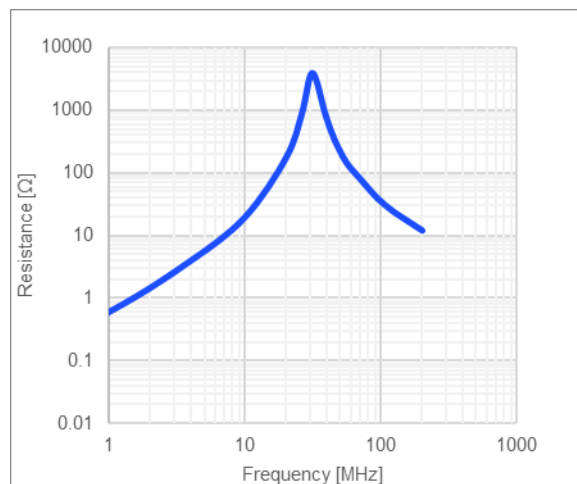
**Inductance vs. Frequency**



**Quality Factor vs. Frequency**



**AC Resistance vs. Frequency**



# LAND PATTERN

## Dimensions

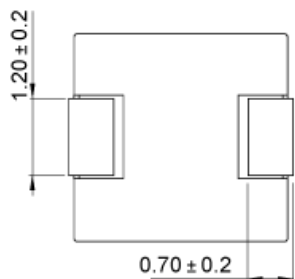
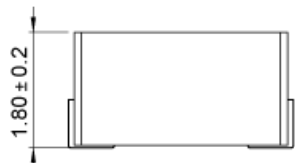
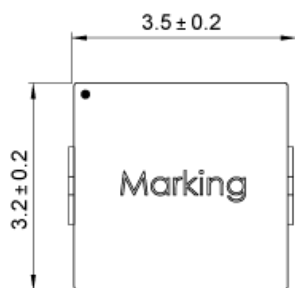
A	1.45 ref.
B	1.90 ref.
C	4.10 ref. (unit in mm)



# PRODUCT PACKAGE AND DIMENSIONS

## Dimensions

(unit in mm)



# TOP MARKING

## Marking

Start of Winding	· (dot)
Inductance Code	4.7

## ORDERING INFORMATION

Part Number	$L^{(1)}$ typ (μH)	$R_{DC}$ typ (mΩ)	$I_R^{(2)}$ typ (A)	$I_{SAT\ 25^{\circ}C}^{(3)}$ typ (A)	$I_{SAT\ 100^{\circ}C}^{(4)}$ typ (A)
MPL-AY3020-R47	0.47	19.5	6.3	9	9
MPL-AY3020-R68	0.68	26	5.15	8.6	8.6
MPL-AY3020-R82	0.82	28	4.7	8	8
MPL-AY3020-1R0	1.0	30	4.3	6.2	6.2
MPL-AY3020-1R5	1.5	35	3.4	5.9	5.9
MPL-AY3020-2R2	2.2	64	3.0	5.3	5.3
MPL-AY3020-3R3	3.3	121	2.5	3.7	3.7
MPL-AY3020-4R7	4.7	173	2.0	3.1	3.1
MPL-AY3020-5R6	5.6	209	1.8	2.8	2.8
MPL-AY3020-6R8	6.8	250	1.65	2.6	2.6
MPL-AY3020-8R2	8.2	345	1.4	1.95	1.95
MPL-AY3020-100	10	370	1.3	1.75	1.75

## GENERAL SPECIFICATIONS

<b>(1) Inductance</b>	Measured at 100kHz, 100mA
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<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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