

Molded Inductor 1.0µH



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

Parameter			Value	Unit
Inductance ⁽¹⁾	L	±20%	1.0	μH
Resistance	R _{DC}	typ	30	mΩ
Resistance MAX	R DC MAX	max	39	mΩ
Rated Current ⁽²⁾	I _R	typ	4.3	Α
Saturation Current _{25°C} ⁽³⁾	ISAT 25°C	typ	6.2	Α
Saturation Current 100°C (4)	ISAT 100°C	typ	6.2	Α
Resonance Frequency	f _r	typ	68	MHz

GENERAL SPECIFICATIONS

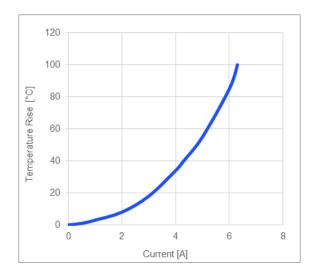
⁽¹⁾ Inductance	Measured at 100kHz, 100mA
(2) Rated Current	Rated current will cause the coil temperature rise ΔT of 40K I_R measured with the inductor soldered in a single-layer PCB. Copper layer thickness 35µm Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity to other components, and trace dimensions and thickness.
(3) Saturation Current 25°C	Saturation current will cause L to drop from 30% at 25°C ambient temperature
(4) Saturation Current 100°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)
Operating Condition	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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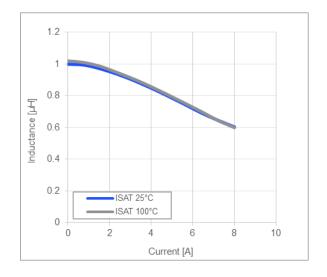


TYPICAL PERFORMANCE CURVES

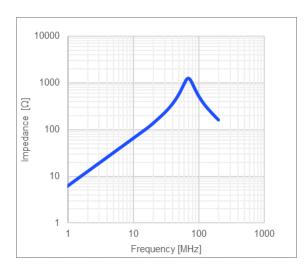




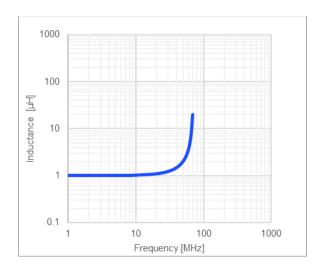
Inductance vs. Current



Impedance vs. Frequency



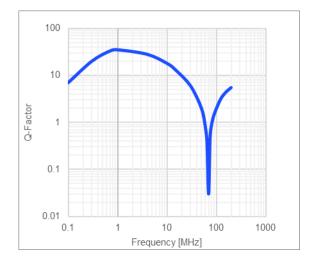
Inductance vs. Frequency

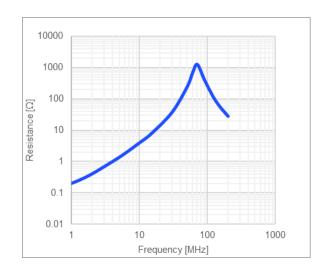




Quality Factor vs. Frequency

AC Resistance vs. Frequency

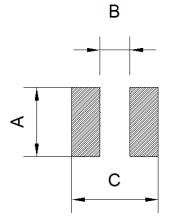






	PATTERN
LAND	FALLERIN

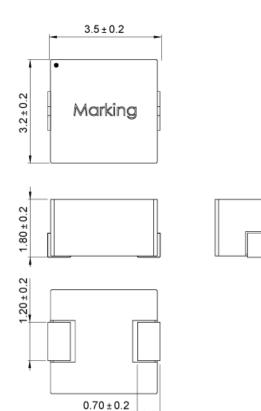
Dime	nsions
А	1.45 ref.
В	1.90 ref.
С	4.10 ref.
	(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING			
Marking			
Start of Winding	· (dot)		
Inductance Code	1.0		



ORDERING INFORMATION

Part Number	L ⁽¹⁾	R _D c	I _R ⁽²⁾	I _{SAT 25°C} ⁽³⁾	ISAT 100°C ⁽⁴⁾
	typ (µH)	typ (mΩ)	typ (A)	typ (A)	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 ⁽¹⁾ Inductance Measured at 100kHz, 100mA Rated current will cause the coil temperature rise ΔT of 40K IR measured with the inductor soldered in a single-layer PCB. Copper layer thickness (2) Rated Current 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°C Saturation current will cause L to drop from 30% at 25°C ambient temperature (4) Saturation Current 100°C Saturation current will cause L to drop from 30% at 100°C ambient temperature Electrical specifications measured at 25°C, 35% RH if not given differently **Temperature Test Condition** Operating temperature: -40°C to +125°C (including temp rise) **Operating Condition** Should not exceed +125°C under worst-case operation conditions Tape and Reel packaging: -10°C to +40°C **Storage Condition** Humidity: <50% RH

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