MPL-AY1050-1R0

Molded Inductor 1.0µH

APPLICATIONS

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

FEATURES

- Size 11mmx10mmx4.8mm
- Molded Construction
- Low Audible Noise
- Soft Saturation
- Stable Over High Temperatures
- Max Operating Temp +155°C
- RoHS/REACH-Compliant, Halogen-Free

ELECTRICAL CHARACTERISTICS

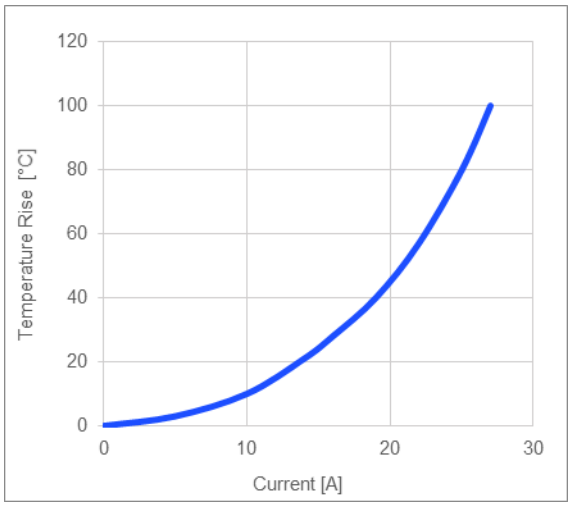
Parameter			Value	Unit
Inductance (1)	L	±20%	1.0	µH
Resistance	R_{DC}	typ	2.6	mΩ
Resistance MAX	$R_{DC\ MAX}$	max	3.1	mΩ
Rated Current (2)	I_R	typ	19	A
Saturation Current 25°C (3)	$I_{SAT\ 25°C}$	typ	33	A
Saturation Current 100°C (4)	$I_{SAT\ 100°C}$	typ	33	A
Resonance Frequency	f_r	typ	43	MHz

GENERAL SPECIFICATIONS

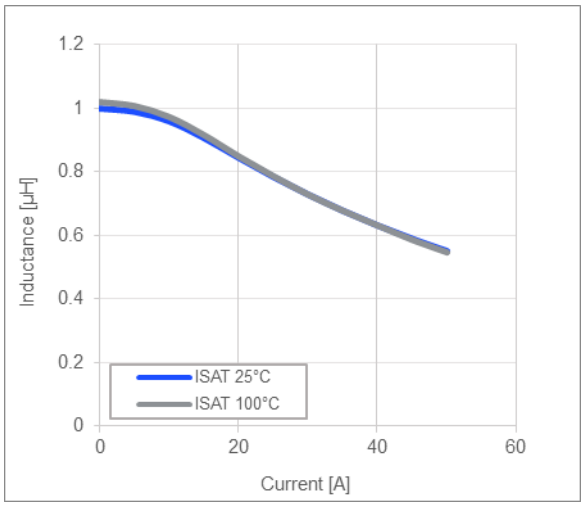
(1) Inductance	Measured at 100kHz, 100mA
(2) Rated Current	Rated current will cause the coil temperature rise ΔT of 40K *I_R measured with the inductor soldered in a single-layer PCB. Copper layer thickness 35µm Cu / PCB size 30x50mm. Temperature behavior dependent on circuit design, PCB layout, proximity 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 +155°C (including temp rise) Should not exceed +155°C under worst-case operation conditions
Storage Condition	Tape and Reel packaging: -10°C to +40°C Humidity: <50% RH

TYPICAL PERFORMANCE CURVES

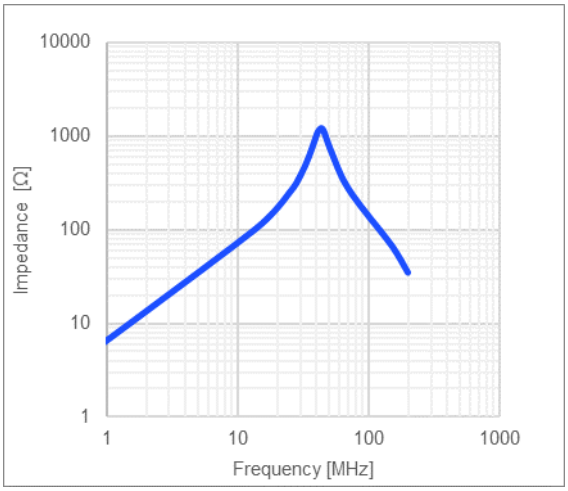
Temperature Rise vs. Current



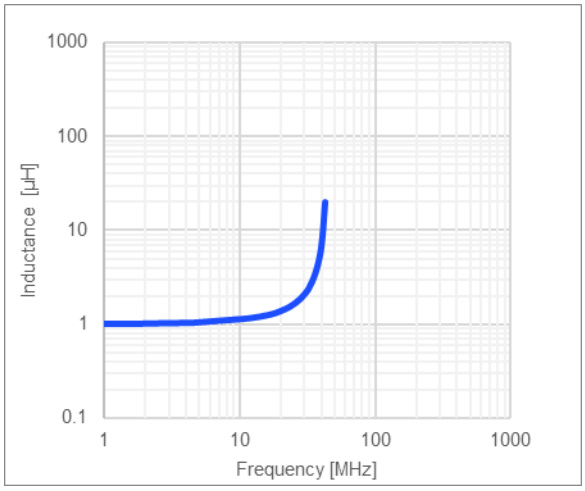
Inductance vs. Current



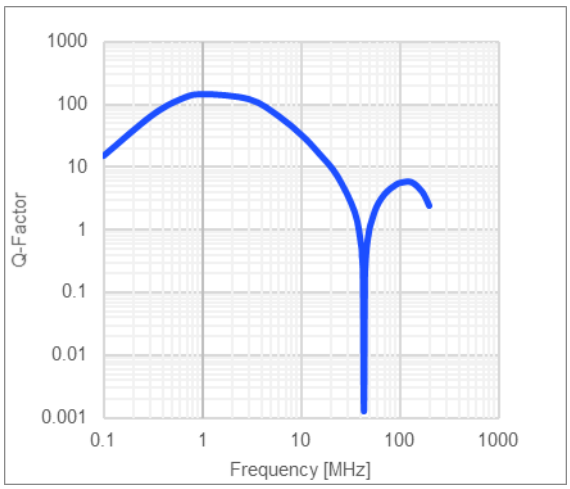
Impedance vs. Frequency



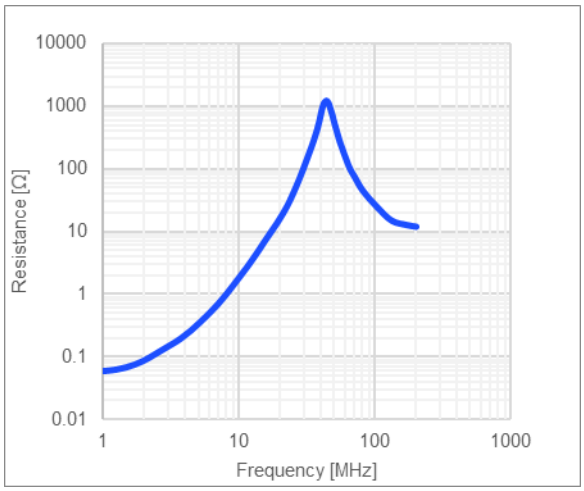
Inductance vs. Frequency



Quality Factor vs. Frequency

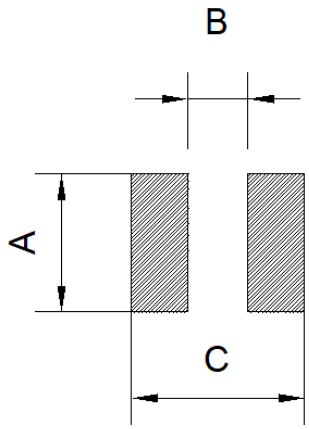


AC Resistance vs. Frequency



LAND PATTERN

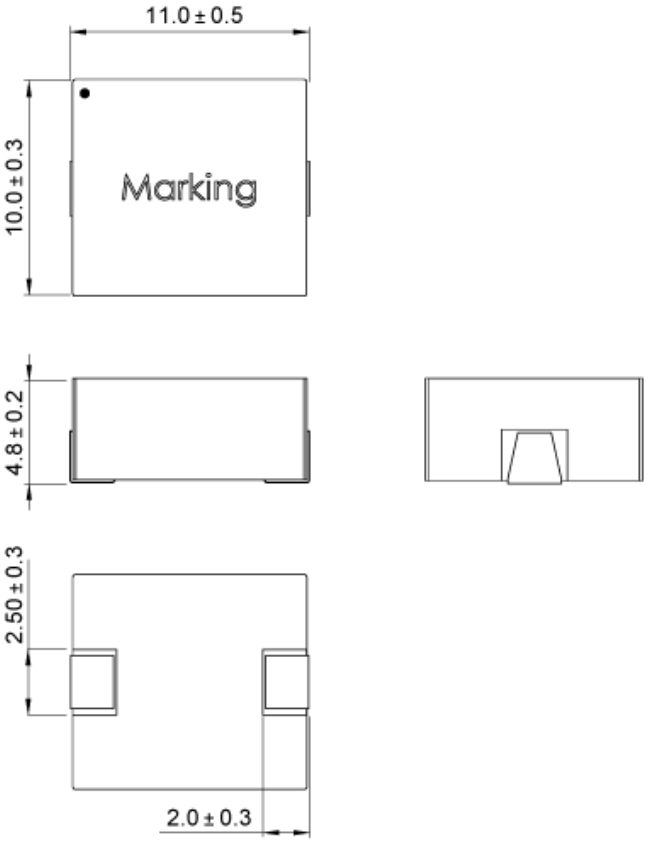
Dimensions	
A	3.50 ref.
B	5.40 ref.
C	12.50 ref.
	(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking	
Start of Winding	· (dot)
Inductance Code	1R0
MPS Code	MPS
Date Code	YYWW

ORDERING INFORMATION

Part Number	L [1] typ (µH)	R_{DC} typ (mΩ)	I_R [2] typ (A)	$I_{SAT\ 25°C}$ [3] typ (A)	$I_{SAT\ 100°C}$ [4] typ (A)
MPL-AY1050-R47	0.47	1.25	25	41	41
MPL-AY1050-R68	0.68	1.75	23	36	36
MPL-AY1050-1R0	1.0	2.6	19	33	33
MPL-AY1050-1R5	1.5	3.4	17	26.5	26.5
MPL-AY1050-2R2	2.2	4.9	15	19.5	19.5
MPL-AY1050-3R3	3.3	8	12.5	17	17
MPL-AY1050-4R7	4.7	9.5	11.5	15	15
MPL-AY1050-5R6	5.6	13	9.8	14	14
MPL-AY1050-6R8	6.8	15	9	13	13
MPL-AY1050-100	10	19	7.8	12	12

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[4] **Saturation Current** $_{100°C}$	Saturation current will cause L to drop from 30% at 100°C ambient temperature
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