MPL-AL6050-1R0

Low-Resistance Molded Inductor 1.0µH

APPLICATIONS

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

FEATURES

- Size 6.6mmx6.4mmx4.8mm
- Low DCR
- Low AC Losses
- Low Audible Noise
- Molded Construction
- 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	4.3	mΩ
Resistance MAX	$R_{DC\ MAX}$	max	4.6	mΩ
Rated Current (2)	I_R	typ	16.2	A
Saturation Current 25°C (3)	$I_{SAT\ 25°C}$	typ	21	A
Saturation Current 100°C (4)	$I_{SAT\ 100°C}$	typ	21	A
Resonance Frequency	f_r	typ	44	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

All MPS parts are lead-free, halogen-free, and adhere to the RoHS directive. For MPS green status, please visit the MPS website under Quality Assurance. “MPS”, the MPS logo, and “Simple, Easy Solutions” are registered trademarks of Monolithic Power Systems, Inc. or its subsidiaries.

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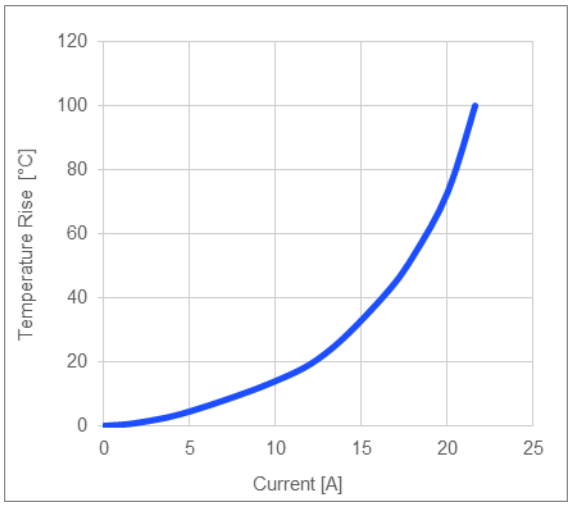
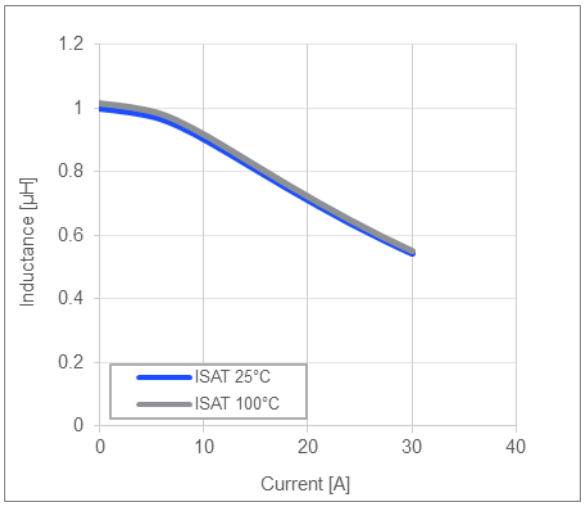
TYPICAL PERFORMANCE CURVES

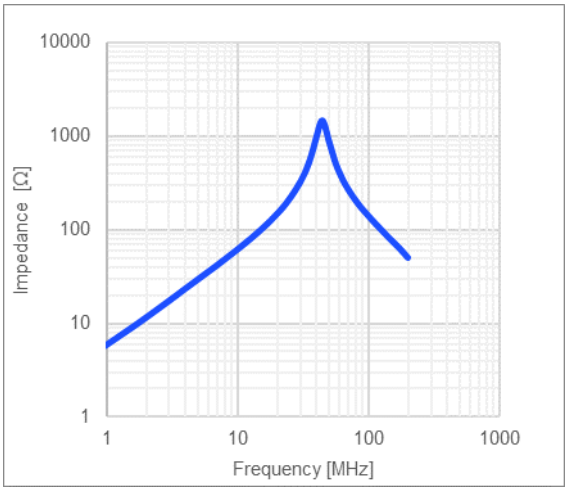
Temperature Rise vs. Current



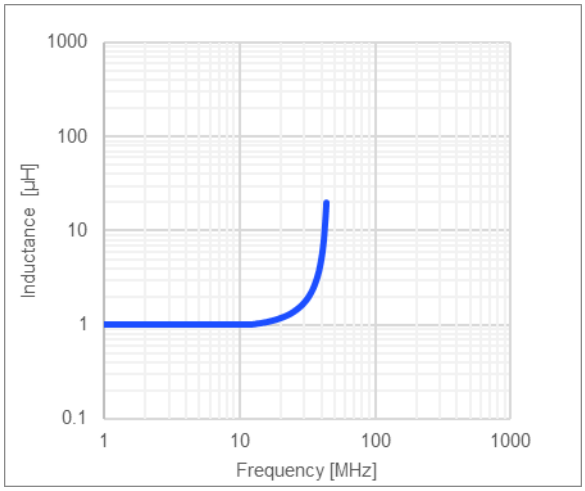
Inductance vs. Current



Impedance vs. Frequency



Inductance vs. Frequency



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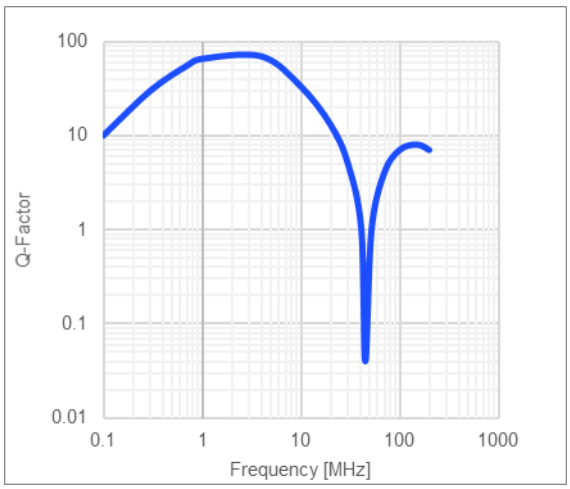
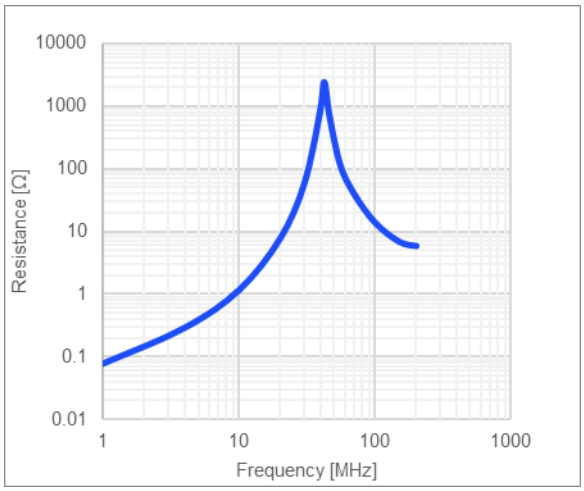
Quality Factor vs. Frequency



AC Resistance vs. Frequency



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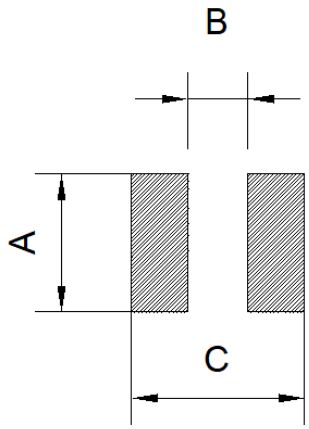
LAND PATTERN

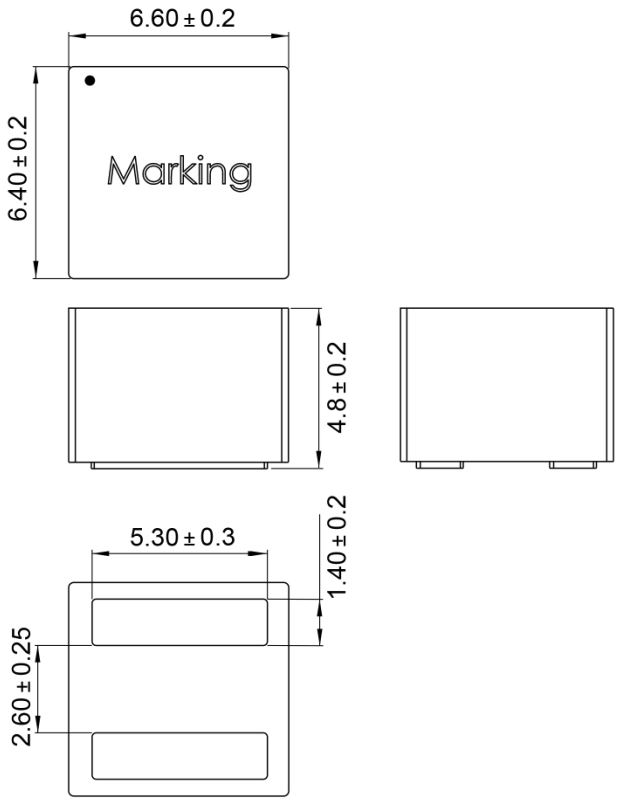
Dimensions	
A	5.60 ref.
B	2.50 ref.
C	5.60 ref.
	(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

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

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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-AL6050-R82	0.82	3.9	16.9	24	24
MPL-AL6050-1R0	1.0	4.3	16.2	21	21
MPL-AL6050-1R2	1.2	5.3	14.6	20	20
MPL-AL6050-1R5	1.5	6.0	13.3	18	18
MPL-AL6050-2R2	2.2	8.3	12.0	15	15
MPL-AL6050-3R3	3.3	11.5	10.1	12	12
MPL-AL6050-4R7	4.7	16.5	7.5	11	11
MPL-AL6050-5R6	5.6	19	7	10	10

GENERAL SPECIFICATIONS

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