MPL-AT2010-1R0

Low-Profile Molded Inductor 1.0µH

APPLICATIONS

- Battery-powered devices
- High switching frequency SMPS
- IoT
- Wearable
- Portable devices
- Input filters

FEATURES

- Size 2.0mmx1.6mmx1.0mm
- Low Profile
- Low Audible Noise
- Molded Construction
- Soft Saturation
- Stable Over High Temperatures
- Low DCR
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

ELECTRICAL CHARACTERISTICS

Parameter			Value	Unit
Inductance (1)	L	±20%	1.0	µH
Resistance	R_{DC}	Typ	50	mΩ
Resistance MAX	$R_{DC\ MAX}$	Max	60	mΩ
Rated Current (2)	I_R	Typ	3.3	A
Saturation Current 25°C (3)	$I_{SAT\ 25°C}$	Typ	4.2	A
Saturation Current 100°C (4)	$I_{SAT\ 100°C}$	Typ	4.2	A
Resonance Frequency	f_r	Typ	66	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) Should not exceed +125°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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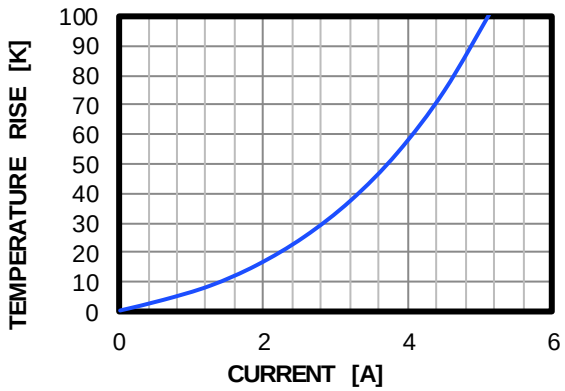
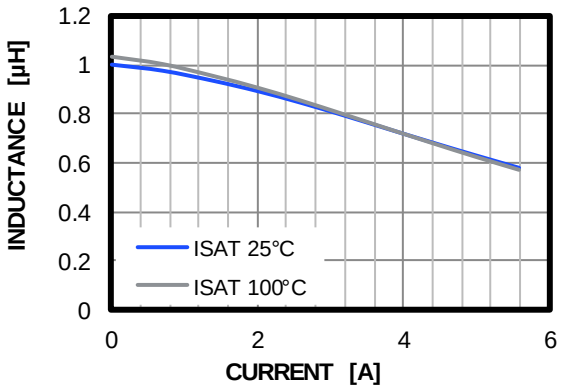
TYPICAL PERFORMANCE CURVES

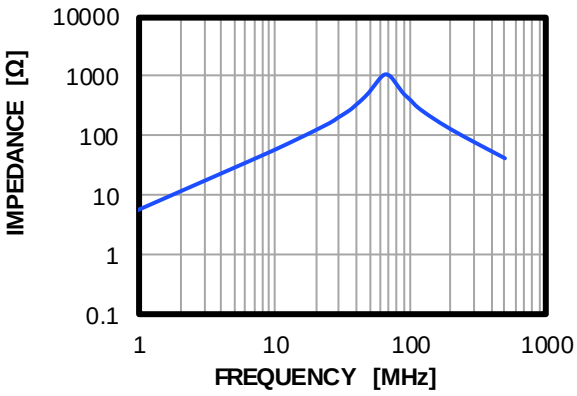
Temperature Rise vs. Current



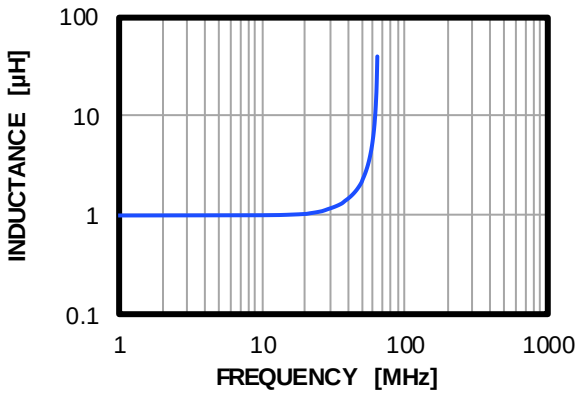
Inductance vs. Current



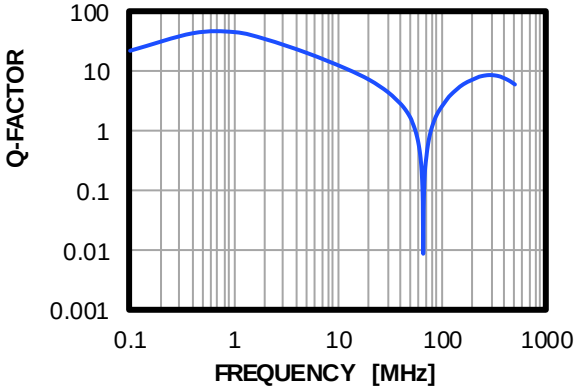
Impedance vs. Frequency



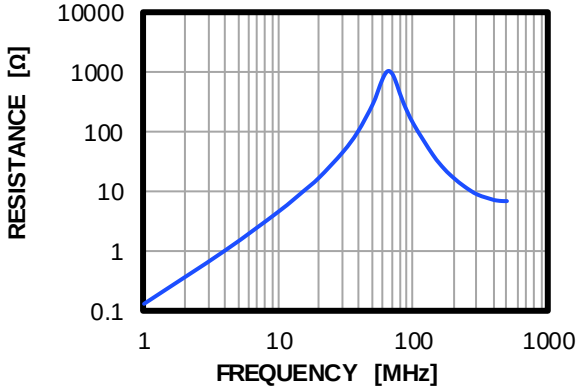
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



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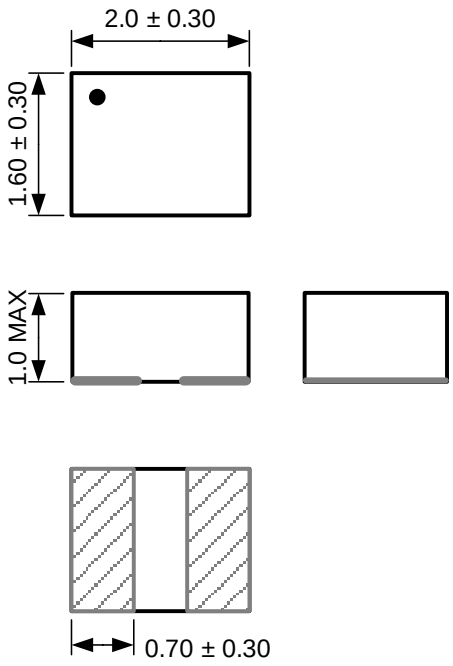
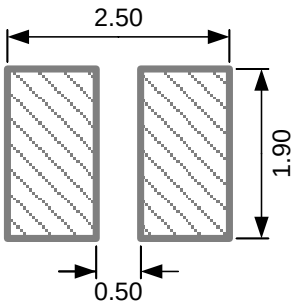
DIMENSIONS

PRODUCT PACKAGE



(units in mm)

RECOMMENDED LAND PATTERN



(units in mm)

TOP MARKING

Marking	
Start of Winding	. (dot)

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ORDERING INFORMATION

Part Number	L (1) ±20% (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-AT2010-R47	0.47	27	4.5	5.7	5.7
MPL-AT2010-R68	0.68	41	3.6	4.9	4.9
MPL-AT2010-1R0	1.0	50	3.3	4.2	4.2
MPL-AT2010-1R5	1.5	85	2.4	3.2	3.2
MPL-AT2010-2R2	2.2	125	2.0	2.6	2.6
MPL-AT2010-4R7	4.7	215	1.5	1.9	1.9

GENERAL SPECIFICATIONS

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REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	7/11/2019	Initial Release	-
1.1	8/1/2019	Updated Impedance vs. Frequency Curve	2
1.2	7/7/2023	Updated the I_R (Typ) and f_r (Typ) values, and made minor formatting edits in the Electrical Characteristics section	1
		Updated all the Typical Performance Curves	2
		Reordered the Dimensions section; updated the Product Package and Recommended Land Pattern images	3
		Updated the following values in the Ordering Information section: • MPL-AT2010-R47: Updated I_R (Typ) • MPL-AT2010-R68: Updated I_R (Typ) • MPL-AT2010-1R0: Updated I_R (Typ) • MPL-AT2010-1R5: Updated R_{DC} (Typ) • MPL-AT2010-2R2: Updated R_{DC} (Typ), I_R (Typ), $I_{SAT\ 25°C}$ (Typ), and $I_{SAT\ 100°C}$ (Typ)	4

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