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

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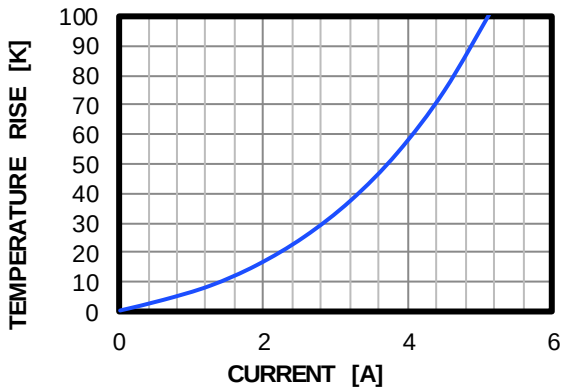
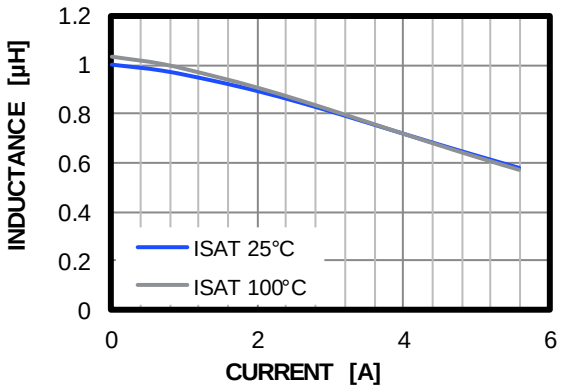
TYPICAL PERFORMANCE CURVES

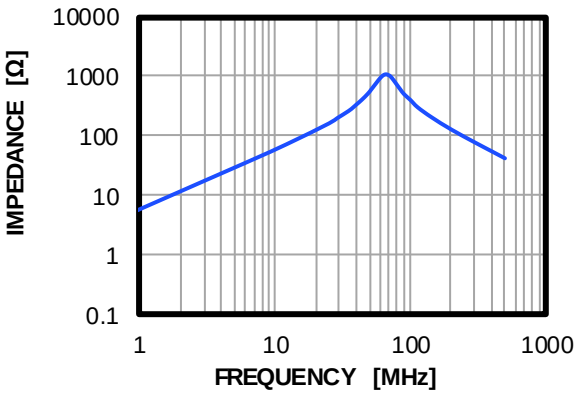
Temperature Rise vs. Current



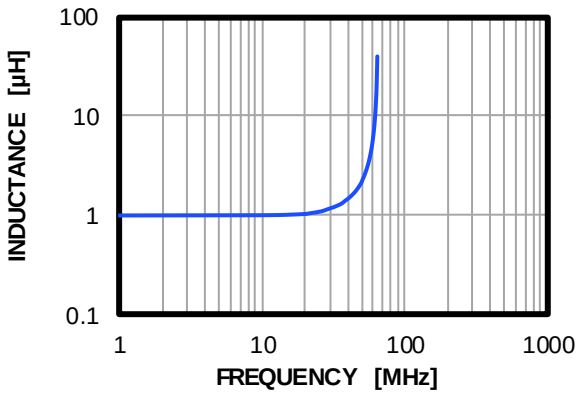
Inductance vs. Current



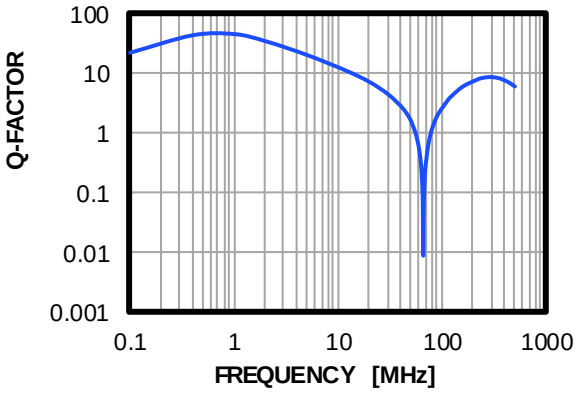
Impedance vs. Frequency



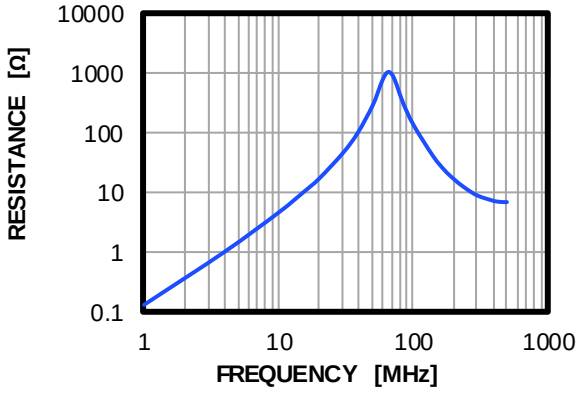
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



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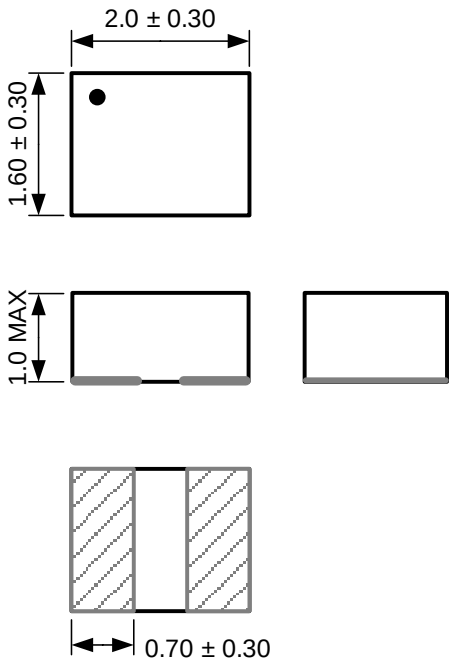
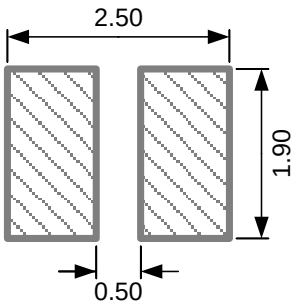
DIMENSIONS

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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