

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

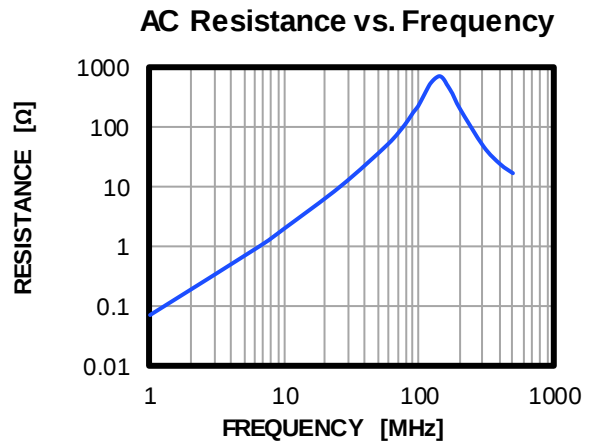
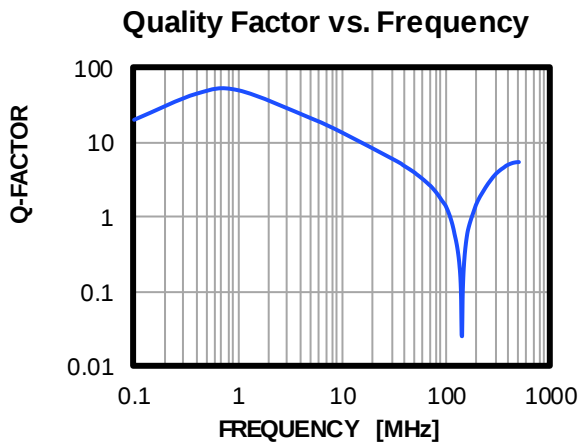
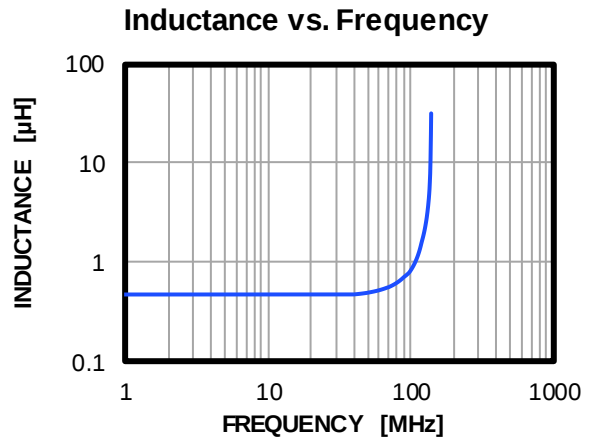
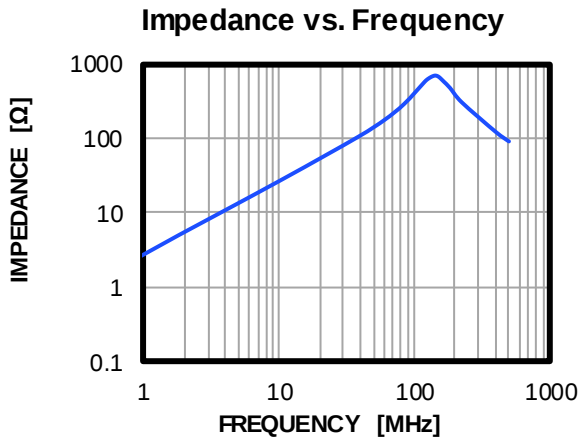
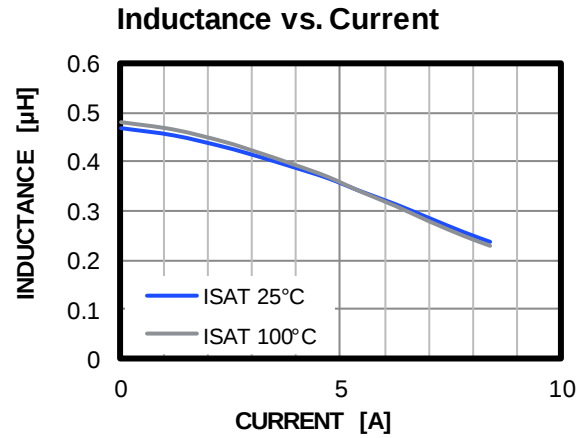
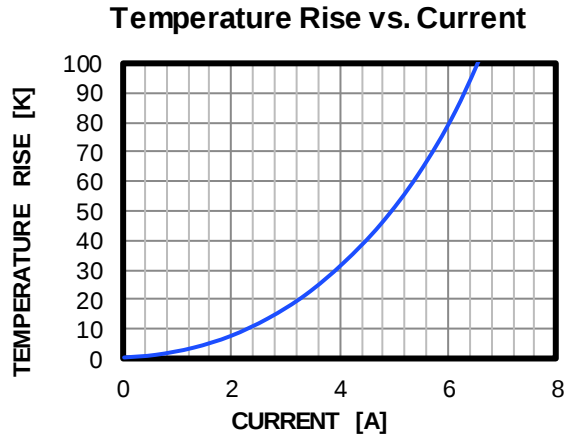
Parameter			Value	Unit
Inductance ⁽¹⁾	<i>L</i>	±20%	0.47	μH
Resistance	<i>R_{DC}</i>	Typ	27	mΩ
Resistance _{MAX}	<i>R_{DC MAX}</i>	Max	32	mΩ
Rated Current ⁽²⁾	<i>I_R</i>	Typ	4.5	A
Saturation Current _{25°C} ⁽³⁾	<i>I_{SAT 25°C}</i>	Typ	5.7	A
Saturation Current _{100°C} ⁽⁴⁾	<i>I_{SAT 100°C}</i>	Typ	5.7	A
Resonance Frequency	<i>f_r</i>	Typ	142	MHz

GENERAL SPECIFICATIONS

⁽¹⁾ Inductance	Measured at 100kHz, 100mA
⁽²⁾ Rated Current	Rated current will cause the coil temperature rise ΔT of 40K <i>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.</i>
⁽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

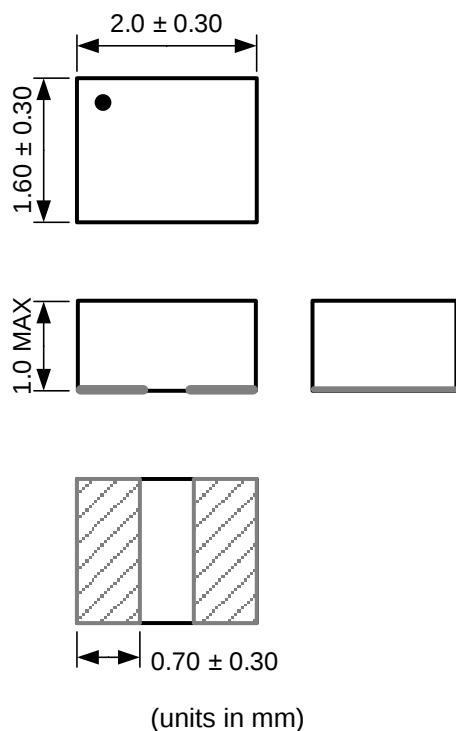
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TYPICAL PERFORMANCE CURVES

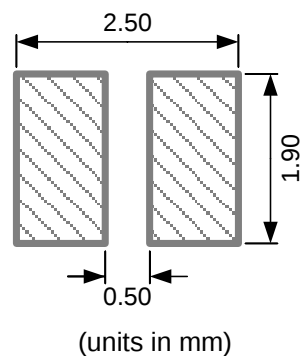


DIMENSIONS

PRODUCT PACKAGE



RECOMMENDED LAND PATTERN



TOP MARKING

Marking

Start of Winding . (dot)

ORDERING INFORMATION

Part Number	$L^{(1)}$ ±20% (μH)	R_{DC} Typ (mΩ)	$I_R^{(2)}$ Typ (A)	$I_{SAT\ 25^\circ C}^{(3)}$ Typ (A)	$I_{SAT\ 100^\circ C}^{(4)}$ 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

(1) Inductance	Measured at 100kHz, 100mA
(2) Rated Current	Rated current will cause the coil temperature rise ΔT of 40K <i>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.</i>
(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

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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