MPL-AT2512-R47

Low-Profile Molded Inductor 0.47µH

APPLICATIONS

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

FEATURES

- Size 2.5mmx2.0mmx1.2mm
- 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%	0.47	µH
Resistance	R_{DC}	Typ	14	mΩ
Resistance MAX	$R_{DC\ MAX}$	Max	18	mΩ
Rated Current (2)	I_R	Typ	5.8	A
Saturation Current 25°C (3)	$I_{SAT\ 25°C}$	Typ	6.4	A
Saturation Current 100°C (4)	$I_{SAT\ 100°C}$	Typ	6.4	A
Resonance Frequency	f_r	Typ	102	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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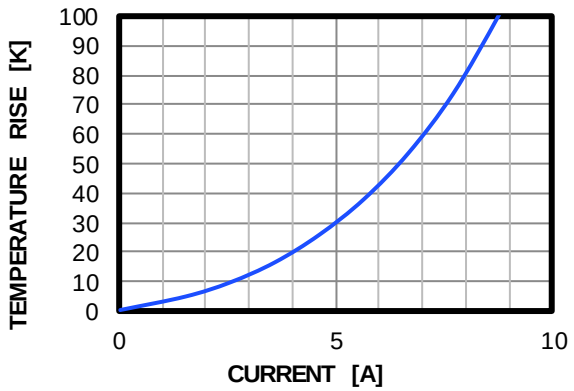
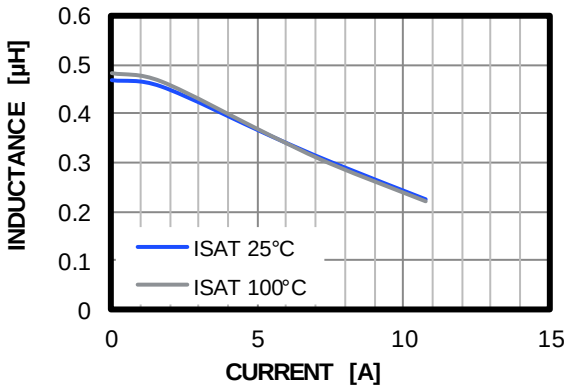
TYPICAL PERFORMANCE CURVES

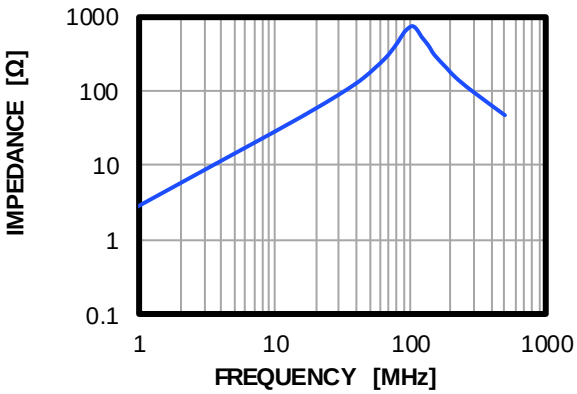
Temperature Rise vs. Current



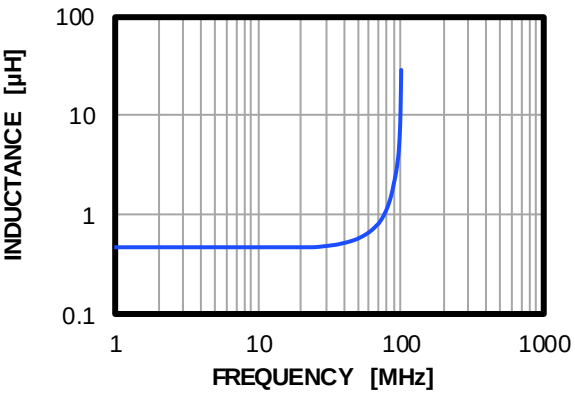
Inductance vs. Current



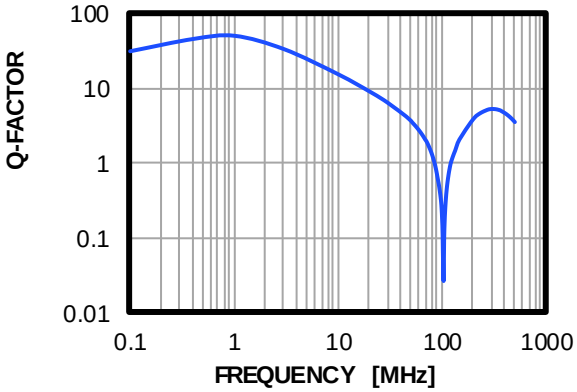
Impedance vs. Frequency



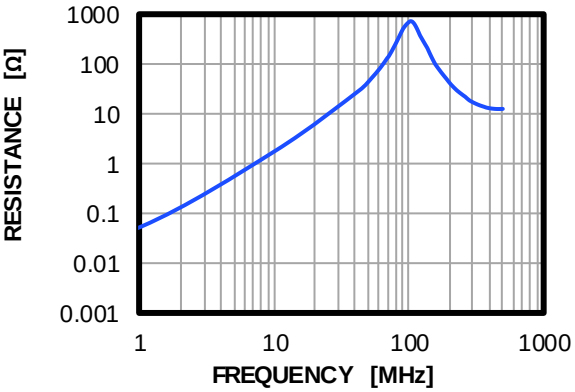
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



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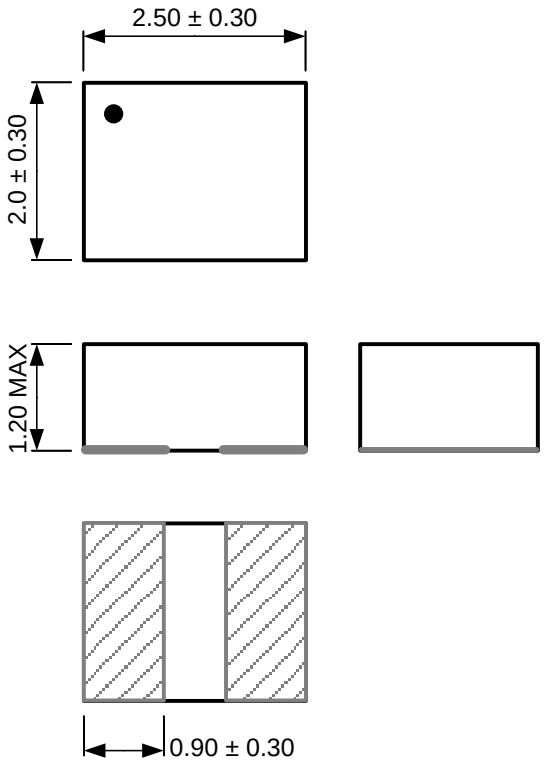
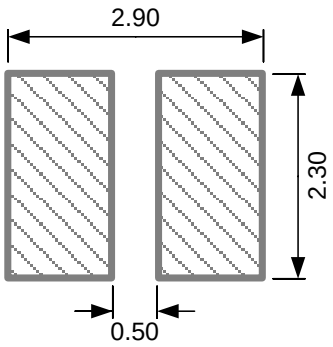
DIMENSIONS

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-AT2512-R33	0.33	13	6.4	7.8	7.8
MPL-AT2512-R47	0.47	14	5.8	6.4	6.4
MPL-AT2512-R68	0.68	23	4.8	6	6
MPL-AT2512-1R0	1	33	4.1	5.2	5.2
MPL-AT2512-1R5	1.5	43	3.4	4.2	4.2
MPL-AT2512-2R2	2.2	68	2.8	3.4	3.4
MPL-AT2512-3R3	3.3	116	2.2	3	3
MPL-AT2512-4R7	4.7	170	1.8	2.4	2.4
MPL-AT2512-6R8	6.8	280	1.4	2.2	2.2
MPL-AT2512-100	10	355	1.2	1.7	1.7

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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	7/6/2023	Updated the R_{DC} (Typ), $R_{DC\ MAX}$, 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
		Made minor formatting edits and updated the following values in the Ordering Information section: • Replaced the MPL-AT2514-2R2 and MPL-AT2514-4R7 with the MPL-AT2512-2R2 and MPL-AT2512-4R7, respectively • MPL-AT2512-R33: Updated R_{DC} (Typ), $I_{SAT\ 25°C}$ (Typ), and $I_{SAT\ 100°C}$ (Typ) • MPL-AT2512-R47: Updated R_{DC} (Typ) and I_R (Typ) • MPL-AT2512-R68: Updated R_{DC} (Typ) and I_R (Typ) • MPL-AT2512-1R0: Updated R_{DC} (Typ) and I_R (Typ) • MPL-AT2512-1R5: Updated R_{DC} (Typ) and I_R (Typ) • MPL-AT2512-3R3: Updated R_{DC} (Typ), I_R (Typ), $I_{SAT\ 25°C}$ (Typ), and $I_{SAT\ 100°C}$ (Typ)	4

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