

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

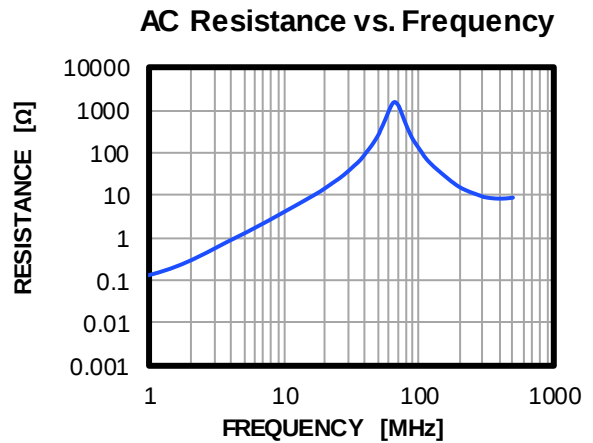
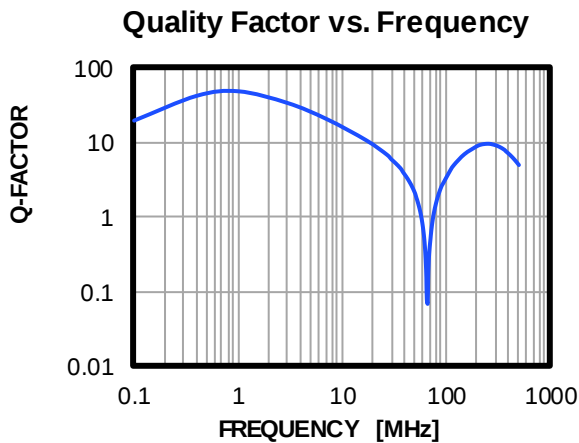
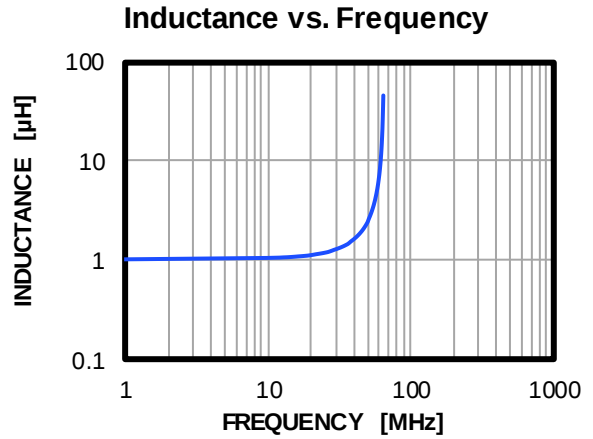
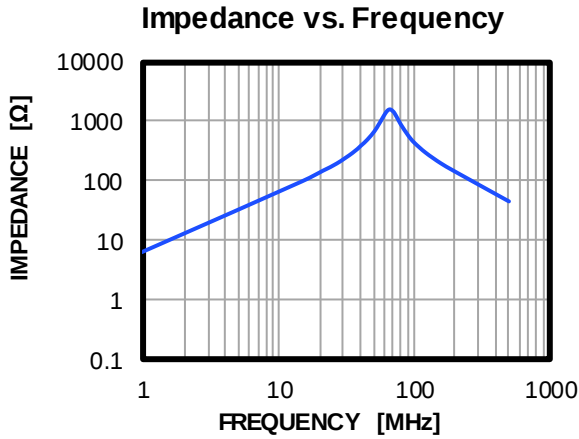
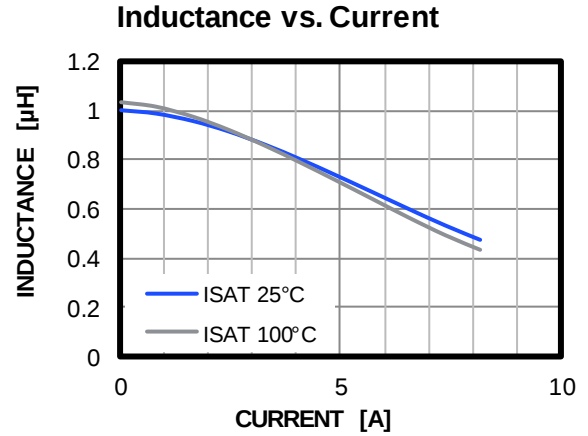
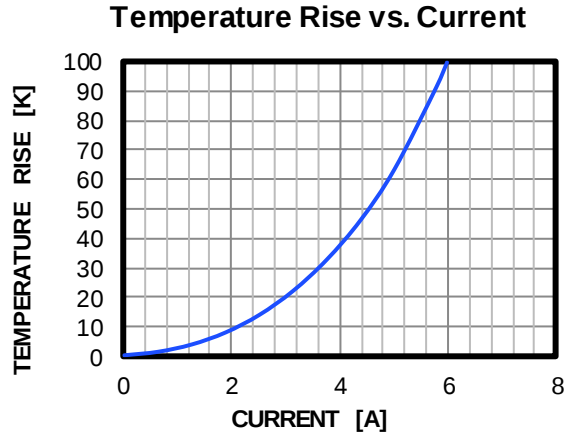
Parameter			Value	Unit
Inductance ⁽¹⁾	<i>L</i>	±20%	1	μH
Resistance	<i>R_{DC}</i>	Typ	33	mΩ
Resistance _{MAX}	<i>R_{DC MAX}</i>	Max	40	mΩ
Rated Current ⁽²⁾	<i>I_R</i>	Typ	4.1	A
Saturation Current _{25°C} ⁽³⁾	<i>I_{SAT 25°C}</i>	Typ	5.2	A
Saturation Current _{100°C} ⁽⁴⁾	<i>I_{SAT 100°C}</i>	Typ	5.2	A
Resonance Frequency	<i>f_r</i>	Typ	65	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</i> 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

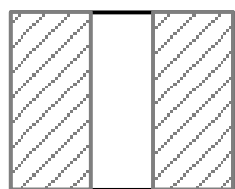
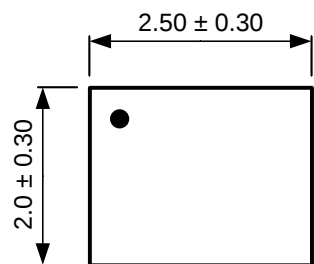
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TYPICAL PERFORMANCE CURVES



DIMENSIONS

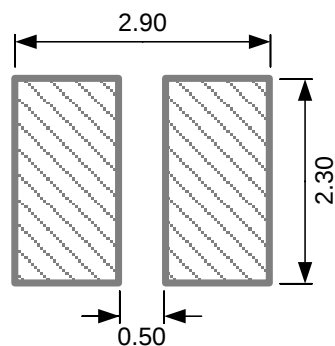
PRODUCT PACKAGE



0.90 ± 0.30

(units in mm)

RECOMMENDED LAND PATTERN



(units in mm)

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-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

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 $_{25^\circ C}$	Saturation current will cause L to drop from 30% at 25°C ambient temperature
(4) Saturation Current $_{100^\circ C}$	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	7/6/2023	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), $I_{SAT\ 25^{\circ}C}$ (Typ), and $I_{SAT\ 100^{\circ}C}$ (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), $I_{SAT\ 25^{\circ}C}$ (Typ), and $I_{SAT\ 100^{\circ}C}$ (Typ)	4

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