

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%	4.7	μH
Resistance	R_{DC}	typ	215	mΩ
Resistance _{MAX}	$R_{DC\ MAX}$	max	252	mΩ
Rated Current ⁽²⁾	I_R	typ	1.5	A
Saturation Current _{25°C} ⁽³⁾	$I_{SAT\ 25°C}$	typ	1.9	A
Saturation Current _{100°C} ⁽⁴⁾	$I_{SAT\ 100°C}$	typ	1.9	A
Resonance Frequency	f_r	typ	29	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

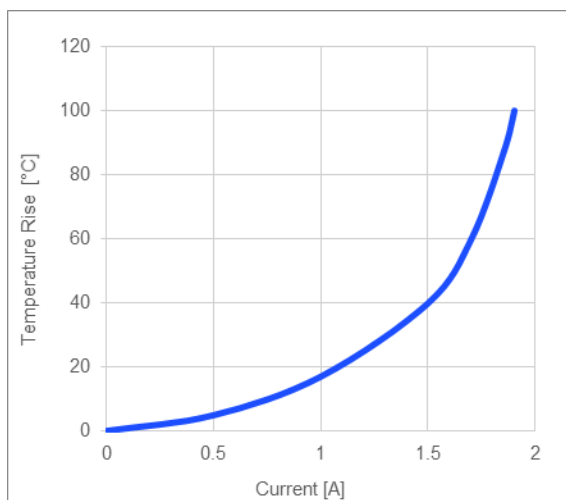
Operating temperature: -40°C to +125°C (including temp rise)
 Should not exceed +125°C under worst-case operation conditions

Storage Condition

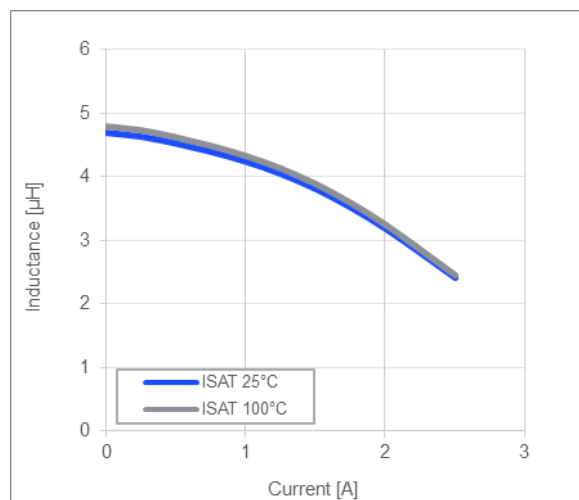
Tape and Reel packaging: -10°C to +40°C
 Humidity: <50% RH

TYPICAL PERFORMANCE CURVES

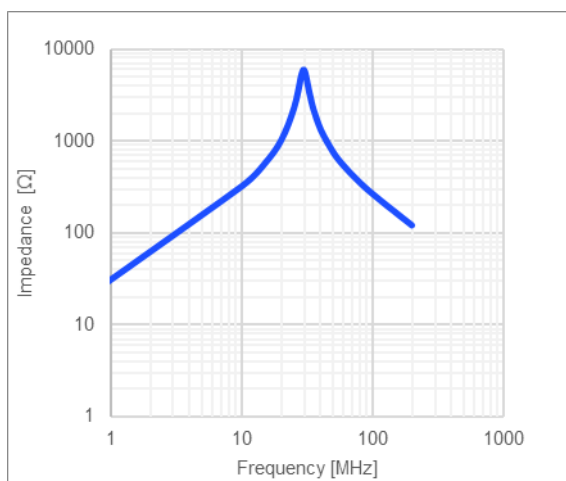
Temperature Rise vs. Current



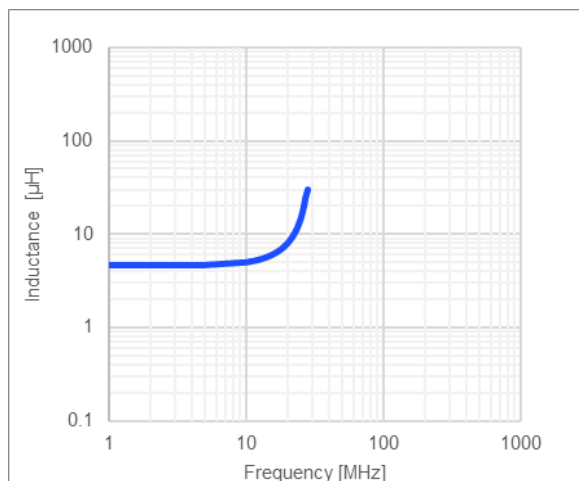
Inductance vs. Current



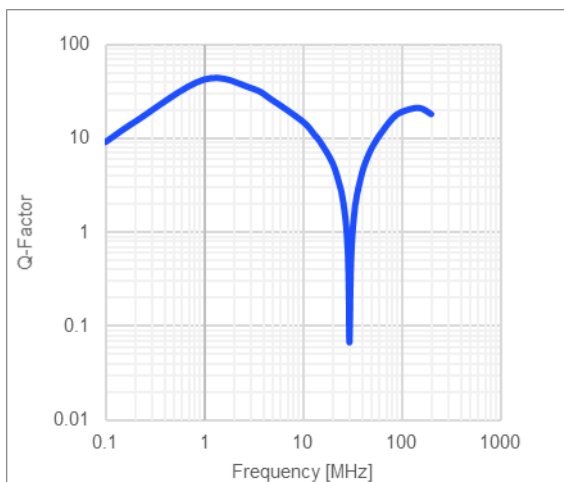
Impedance vs. Frequency



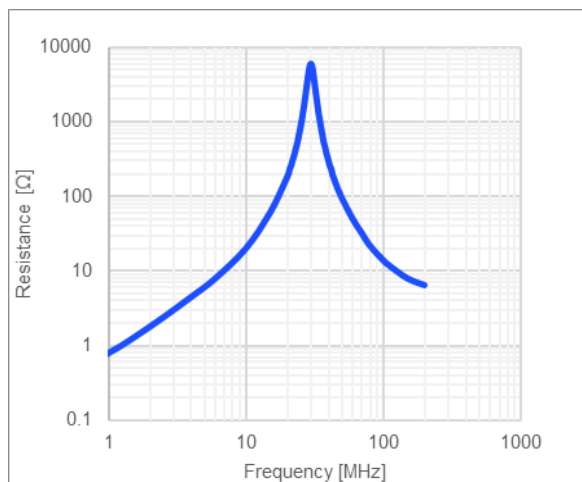
Inductance vs. Frequency



Quality Factor vs. Frequency



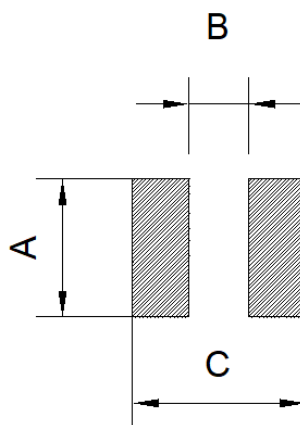
AC Resistance vs. Frequency



LAND PATTERN

Dimensions

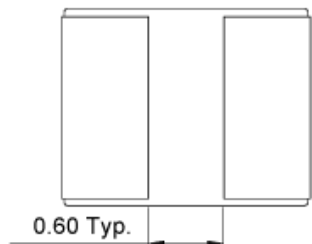
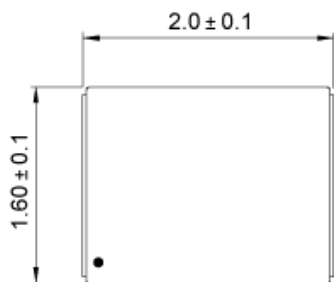
A	1.6 ref.
B	0.50 ref.
C	2.0 ref. (unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking

Start of Winding · (dot)

ORDERING INFORMATION

Part Number	$L^{(1)}$ typ (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	4.4	5.7	5.7
MPL-AT2010-R68	0.68	41	3.5	4.9	4.9
MPL-AT2010-1R0	1.0	50	3.2	4.2	4.2
MPL-AT2010-1R5	1.5	97	2.4	3.2	3.2
MPL-AT2010-2R2	2.2	137	2.2	2.7	2.7
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 $_{25^\circ C}$	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

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