

APPLICATIONS



- Battery-powered devices
- Portable devices
- Embedded computing
- High-current SMPS
- High-frequency SMPS
- POL converters
- FPGA

FEATURES

- Size 11mmx10mmx4.8mm
- Molded Construction
- Low Audible Noise
- Soft Saturation
- Stable Over High Temperatures
- Max Operating Temp +155°C
- RoHS/REACH-Compliant, Halogen-Free

ELECTRICAL CHARACTERISTICS

Parameter			Value	Unit
Inductance ⁽¹⁾	L	±20%	5.6	μH
Resistance	R_{DC}	typ	13	mΩ
Resistance _{MAX}	$R_{DC\ MAX}$	max	14.5	mΩ
Rated Current ⁽²⁾	I_R	typ	9.8	A
Saturation Current _{25°C} ⁽³⁾	$I_{SAT\ 25°C}$	typ	14	A
Saturation Current _{100°C} ⁽⁴⁾	$I_{SAT\ 100°C}$	typ	14	A
Resonance Frequency	f_r	typ	13	MHz

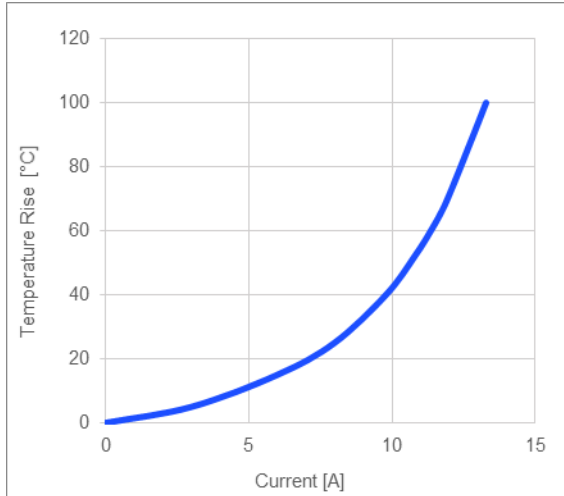
GENERAL SPECIFICATIONS

(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 +155°C (including temp rise) Should not exceed +155°C under worst-case operation conditions
Storage Condition	Tape and Reel packaging: -10°C to +40°C Humidity: <50% RH

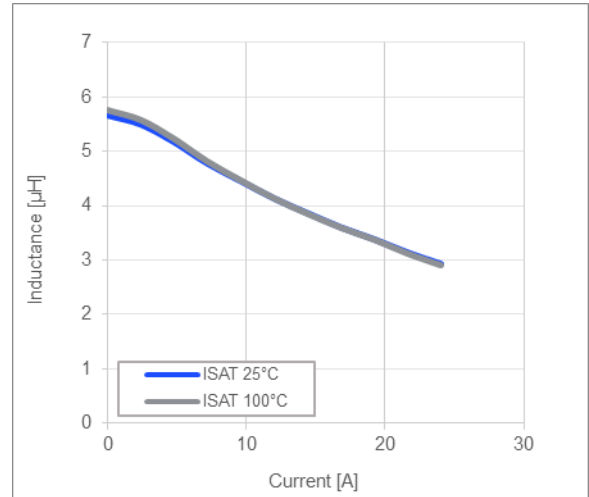
All MPS parts are lead-free, halogen-free, and adhere to the RoHS directive. For MPS green status, please visit the MPS website under Quality Assurance. "MPS", the MPS logo, and "Simple, Easy Solutions" are registered trademarks of Monolithic Power Systems, Inc. or its subsidiaries.

TYPICAL PERFORMANCE CURVES

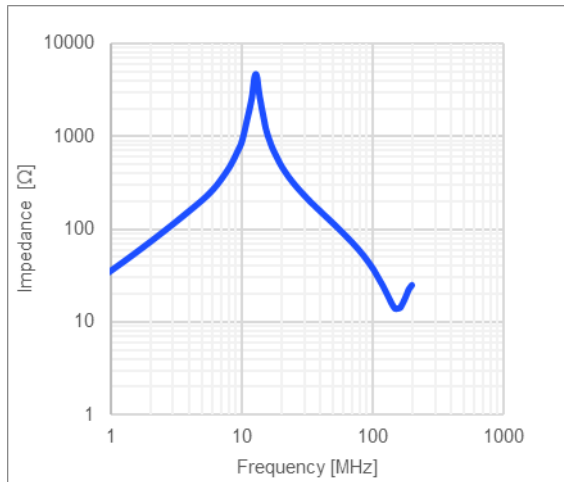
Temperature Rise vs. Current



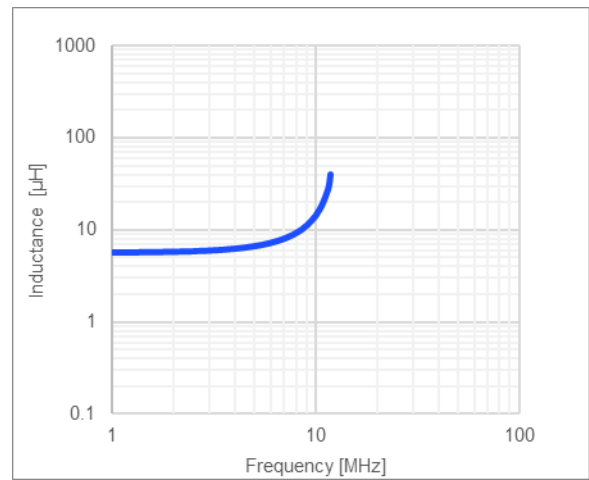
Inductance vs. Current



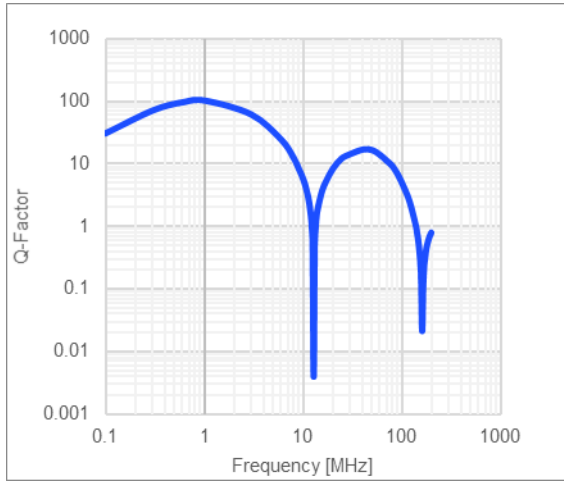
Impedance vs. Frequency



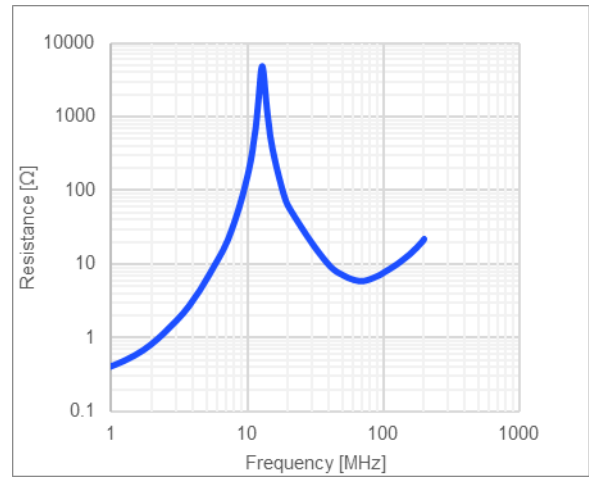
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



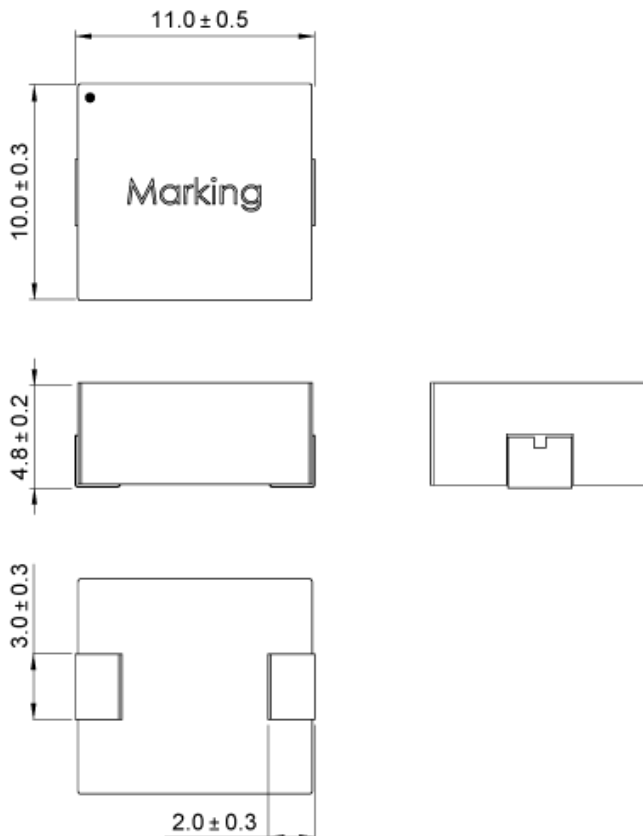
LAND PATTERN
Dimensions

A	3.50 ref.
B	5.40 ref.
C	12.50 ref.

(unit in mm)


PRODUCT PACKAGE AND DIMENSIONS
Dimensions

(unit in mm)


TOP MARKING
Marking

Start of Winding	· (dot)
Inductance Code	5R6
MPS Code	MPS
Date Code	YYWW

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-AY1050-R47	0.47	1.25	25	41	41
MPL-AY1050-R68	0.68	1.75	23	36	36
MPL-AY1050-1R0	1.0	2.6	19	33	33
MPL-AY1050-1R5	1.5	3.4	17	26.5	26.5
MPL-AY1050-2R2	2.2	4.9	15	19.5	19.5
MPL-AY1050-3R3	3.3	8	12.5	17	17
MPL-AY1050-4R7	4.7	9.5	11.5	15	15
MPL-AY1050-5R6	5.6	13	9.8	14	14
MPL-AY1050-6R8	6.8	15	9	13	13
MPL-AY1050-100	10	19	7.8	12	12

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 $_{25^{\circ}C}$

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 +155°C (including temp rise)

Should not exceed +155°C under worst-case operation conditions

Storage Condition

Tape and Reel packaging: -10°C to +40°C

Humidity: <50% RH

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