



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%	0.68	μH
Resistance	R_{DC}	typ	1.75	mΩ
Resistance _{MAX}	$R_{DC\ MAX}$	max	1.95	mΩ
Rated Current ⁽²⁾	I_R	typ	23	A
Saturation Current _{25°C} ⁽³⁾	$I_{SAT\ 25°C}$	typ	36	A
Saturation Current _{100°C} ⁽⁴⁾	$I_{SAT\ 100°C}$	typ	36	A
Resonance Frequency	f_r	typ	58	MHz

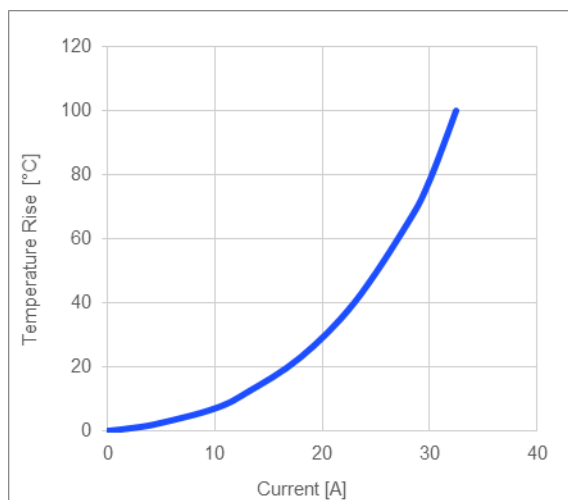
GENERAL SPECIFICATIONS

⁽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

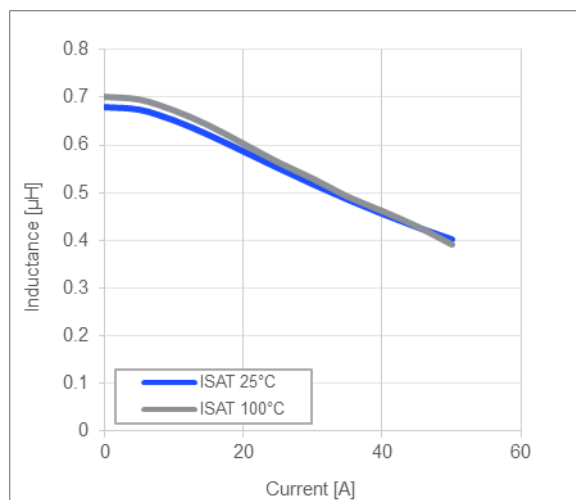
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TYPICAL PERFORMANCE CURVES

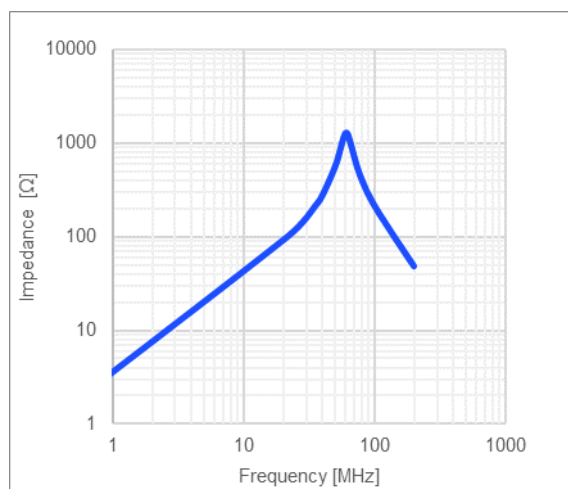
Temperature Rise vs. Current



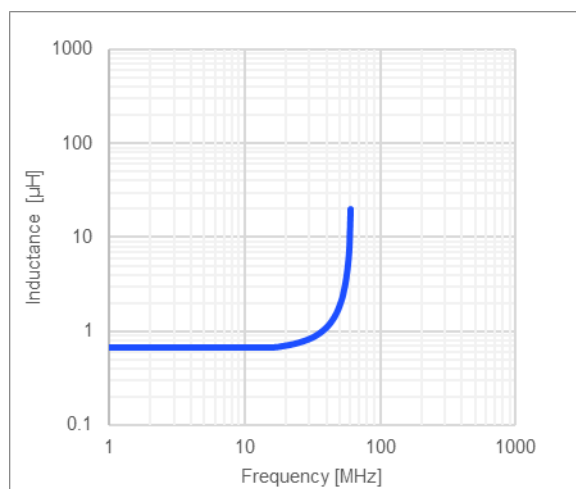
Inductance vs. Current



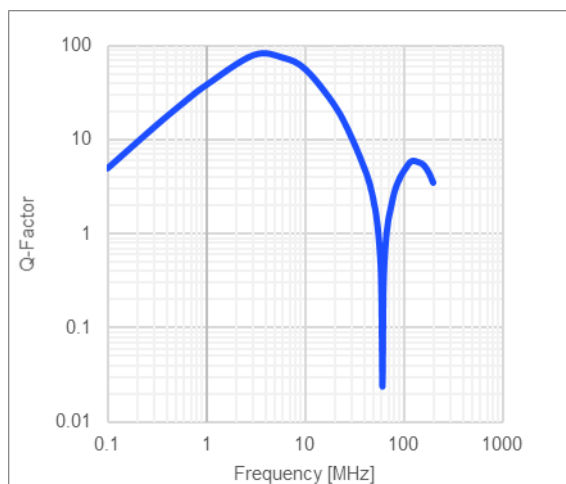
Impedance vs. Frequency



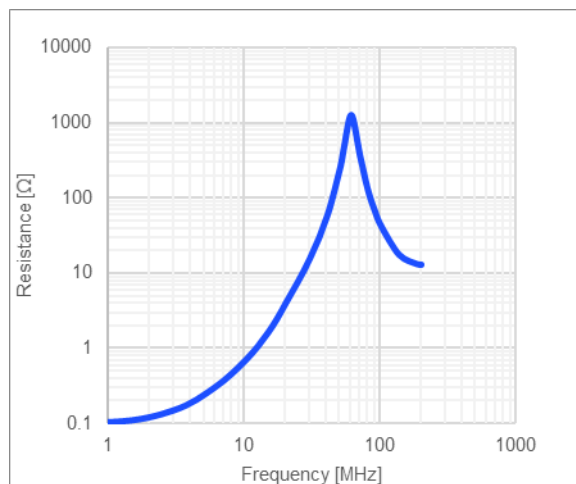
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



LAND PATTERN

Dimensions

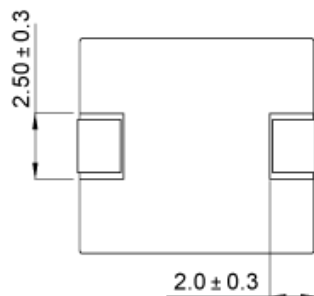
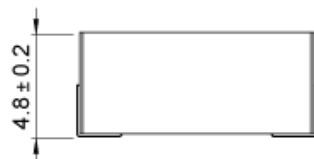
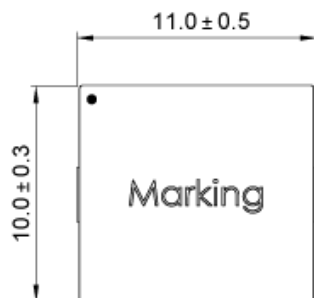
A	3.50 ref.
B	5.40 ref.
C	12.50 ref. (unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking

Start of Winding	· (dot)
Inductance Code	R68
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

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(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
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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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