

APPLICATIONS



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

FEATURES

- Size 6.6mmx6.4mmx4.8mm
- Low DCR
- Low AC Losses
- Low Audible Noise
- Molded Construction
- 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%	1.0	μH
Resistance	R_{DC}	typ	4.3	mΩ
Resistance _{MAX}	$R_{DC\ MAX}$	max	4.6	mΩ
Rated Current ⁽²⁾	I_R	typ	16.2	A
Saturation Current _{25°C} ⁽³⁾	$I_{SAT\ 25°C}$	typ	21	A
Saturation Current _{100°C} ⁽⁴⁾	$I_{SAT\ 100°C}$	typ	21	A
Resonance Frequency	f_r	typ	44	MHz

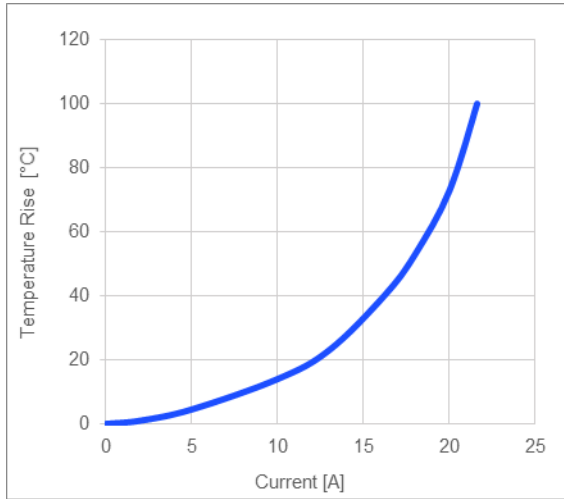
GENERAL SPECIFICATIONS

⁽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

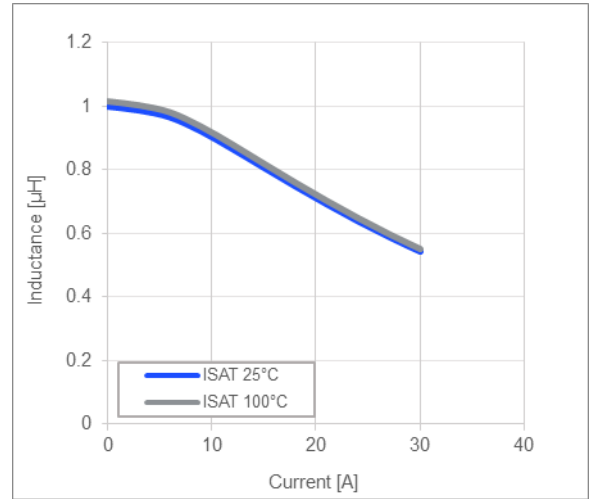
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TYPICAL PERFORMANCE CURVES

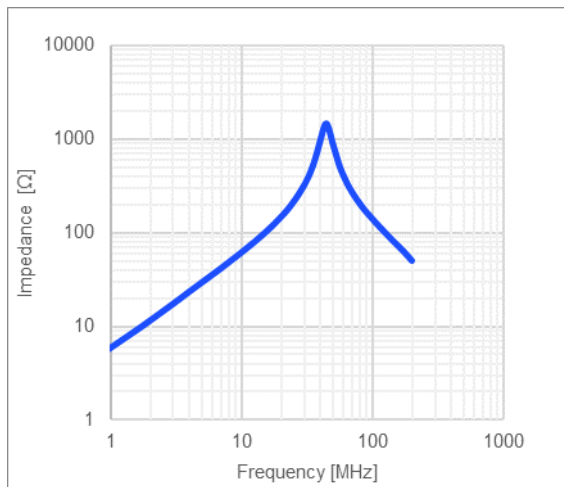
Temperature Rise vs. Current



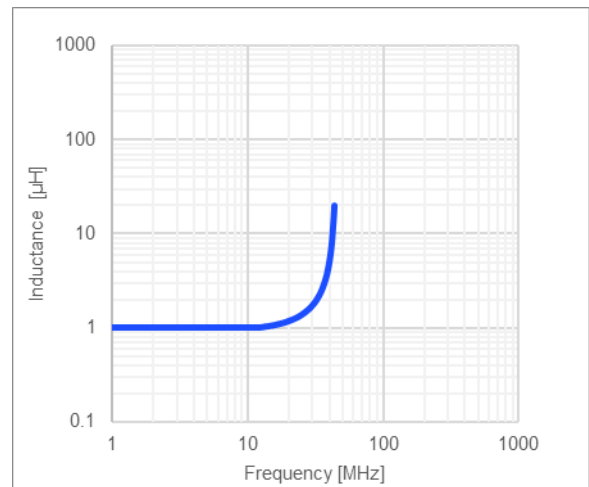
Inductance vs. Current



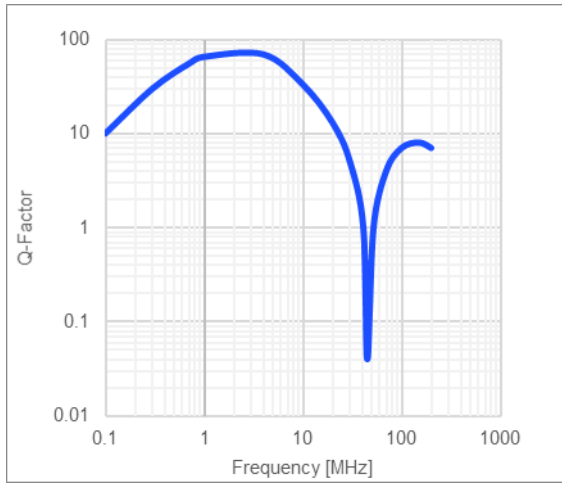
Impedance vs. Frequency



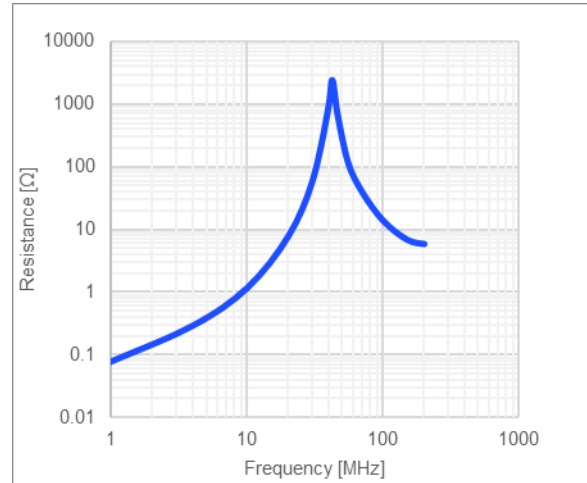
Inductance vs. Frequency



Quality Factor vs. Frequency



AC Resistance vs. Frequency



LAND PATTERN

Dimensions	
A	5.60 ref.
B	2.50 ref.
C	5.60 ref.

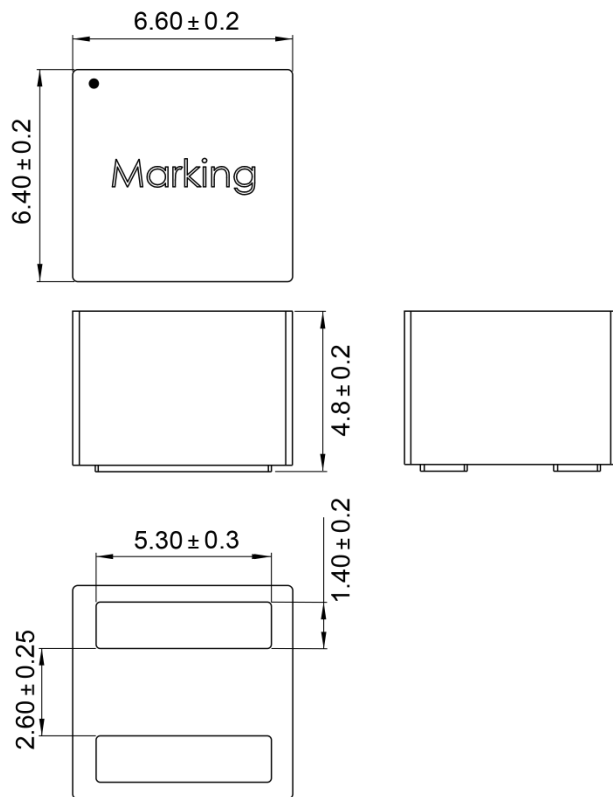
(unit in mm)



PRODUCT PACKAGE AND DIMENSIONS

Dimensions

(unit in mm)



TOP MARKING

Marking	
Start of Winding	· (dot)
Inductance Code	1R0
MPS Code	MPS

ORDERING INFORMATION

Part Number	$L^{(1)}$	R_{DC}	$I_R^{(2)}$	$I_{SAT\ 25^\circ C}^{(3)}$	$I_{SAT\ 100^\circ C}^{(4)}$
	typ (μH)	typ (mΩ)	typ (A)	typ (A)	typ (A)
MPL-AL6050-R82	0.82	3.9	16.9	24	24
MPL-AL6050-1R0	1.0	4.3	16.2	21	21
MPL-AL6050-1R2	1.2	5.3	14.6	20	20
MPL-AL6050-1R5	1.5	6.0	13.3	18	18
MPL-AL6050-2R2	2.2	8.3	12.0	15	15
MPL-AL6050-3R3	3.3	11.5	10.1	12	12
MPL-AL6050-4R7	4.7	16.5	7.5	11	11
MPL-AL6050-5R6	5.6	19	7	10	10

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°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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