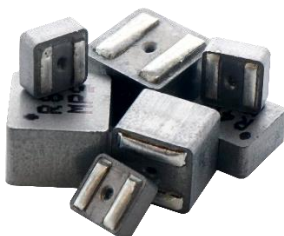


### APPLICATIONS



- 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 <sup>(1)</sup>	$L$	±20%	5.6	μH
Resistance	$R_{DC}$	typ	19	mΩ
Resistance <sub>MAX</sub>	$R_{DC\ MAX}$	max	22	mΩ
Rated Current <sup>(2)</sup>	$I_R$	typ	7	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	$I_{SAT\ 25°C}$	typ	10	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	$I_{SAT\ 100°C}$	typ	10	A
Resonance Frequency	$f_r$	typ	19	MHz

### GENERAL SPECIFICATIONS

**(1) Inductance** Measured at 100kHz, 100mA

**(2) Rated Current**

Rated current will cause the coil temperature rise  $\Delta T$  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 <sub>25°C</sub>**

Saturation current will cause L to drop from 30% at 25°C ambient temperature

**(4) Saturation Current <sub>100°C</sub>**

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**

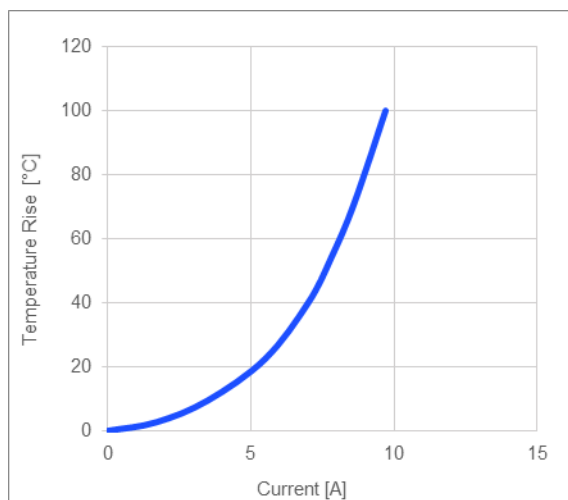
Operating temperature: -40°C to +155°C (including temp rise)  
 Should not exceed +155°C under worst-case operation conditions

**Storage Condition**

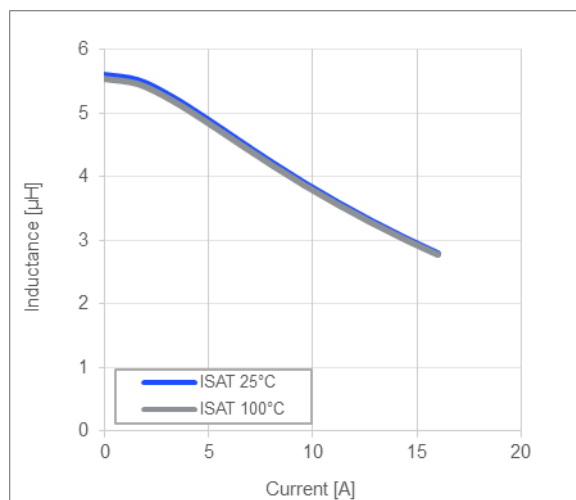
Tape and Reel packaging: -10°C to +40°C  
 Humidity: <50% RH

**TYPICAL PERFORMANCE CURVES**

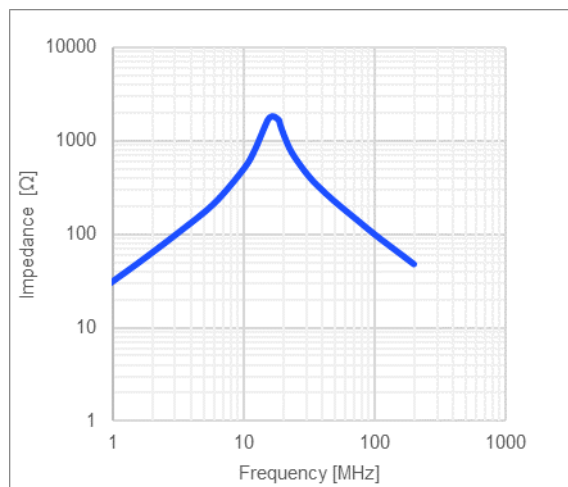
**Temperature Rise vs. Current**



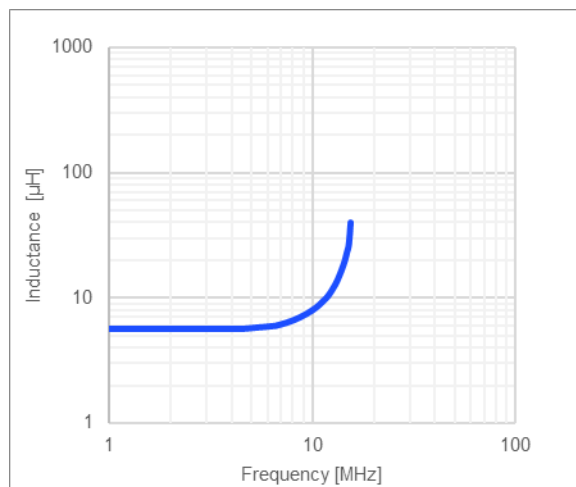
**Inductance vs. Current**



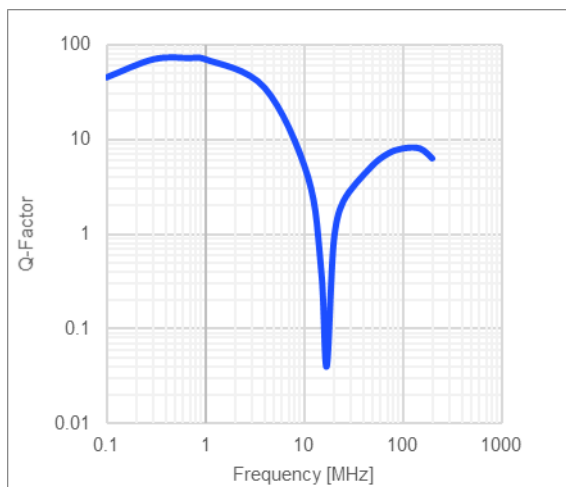
**Impedance vs. Frequency**



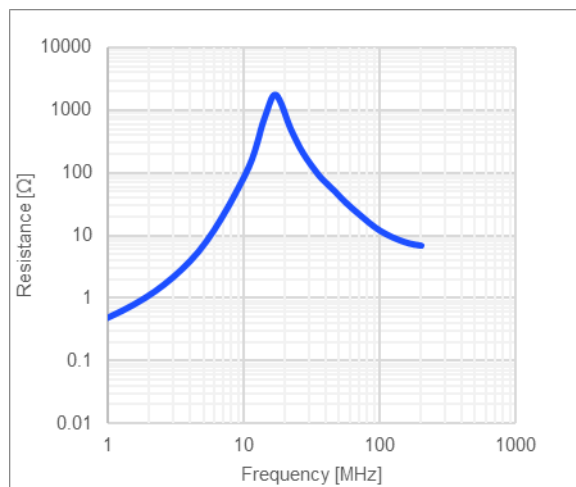
**Inductance vs. Frequency**



**Quality Factor vs. Frequency**



**AC Resistance vs. Frequency**



## LAND PATTERN

### Dimensions

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

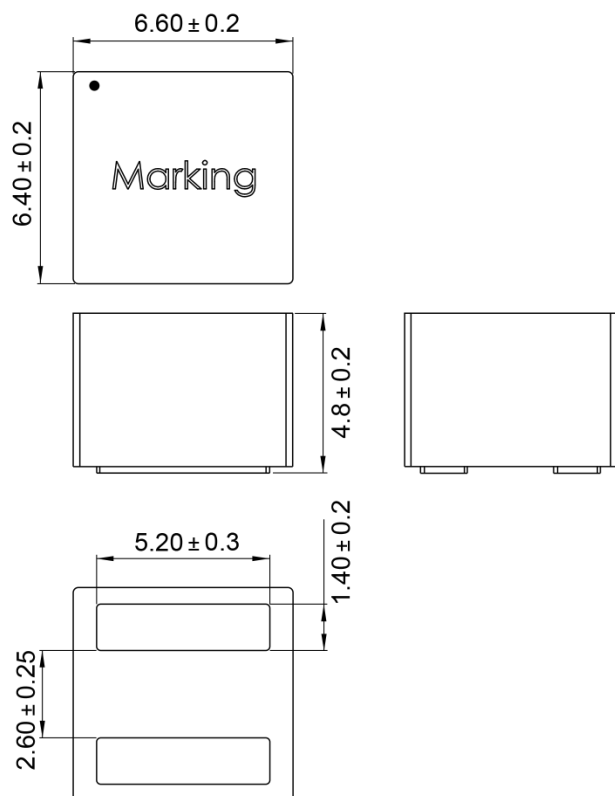
(unit in mm)



## PRODUCT PACKAGE AND DIMENSIONS

### Dimensions

(unit in mm)



## TOP MARKING

### Marking

Start of Winding	· (dot)
Inductance Code	5R6
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

<b>(1) Inductance</b>	Measured at 100kHz, 100mA
<b>(2) Rated Current</b>	Rated current will cause the coil temperature rise $\Delta T$ of 40K <i><math>I_R</math> 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>
<b>(3) Saturation Current <math>_{25^\circ C}</math></b>	Saturation current will cause L to drop from 30% at 25°C ambient temperature
<b>(4) Saturation Current <math>_{100^\circ C}</math></b>	Saturation current will cause L to drop from 30% at 100°C ambient temperature
<b>Temperature Test Condition</b>	Electrical specifications measured at 25°C, 35% RH if not given differently
<b>Operating Condition</b>	Operating temperature: -40°C to +155°C (including temp rise) Should not exceed +155°C under worst-case operation conditions
<b>Storage Condition</b>	Tape and Reel packaging: -10°C to +40°C Humidity: <50% RH

**NOTICE:** The information in this document is subject to change without notice. Please contact MPS for current specifications. Users should warrant and guarantee that third-party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Monolithic Power Systems \(MPS\):](#)

[MPL-AL6050-5R6](#)