



### APPLICATIONS

- Battery-powered devices
- High-efficiency SMPS
- Embedded computing
- Input filters

### FEATURES

- Size 6mmx6mmx4mm
- Semi-Shielded Construction
- Low DCR
- Low Stray Field
- Max Operating Temp +125°C
- RoHS/REACH-Compliant, Halogen-Free

### ELECTRICAL CHARACTERISTICS

Parameter			Value	Unit
Inductance <sup>(1)</sup>	<i>L</i>	±20%	6.8	μH
Resistance	<i>R<sub>DC</sub></i>	typ	33	mΩ
Resistance <sub>MAX</sub>	<i>R<sub>DC MAX</sub></i>	max	40	mΩ
Rated Current <sup>(2)</sup>	<i>I<sub>R</sub></i>	typ	4.4	A
Saturation Current <sub>25°C</sub> <sup>(3)</sup>	<i>I<sub>SAT 25°C</sub></i>	typ	4.1	A
Saturation Current <sub>100°C</sub> <sup>(4)</sup>	<i>I<sub>SAT 100°C</sub></i>	typ	3.7	A
Resonance Frequency	<i>f<sub>r</sub></i>	typ	25	MHz

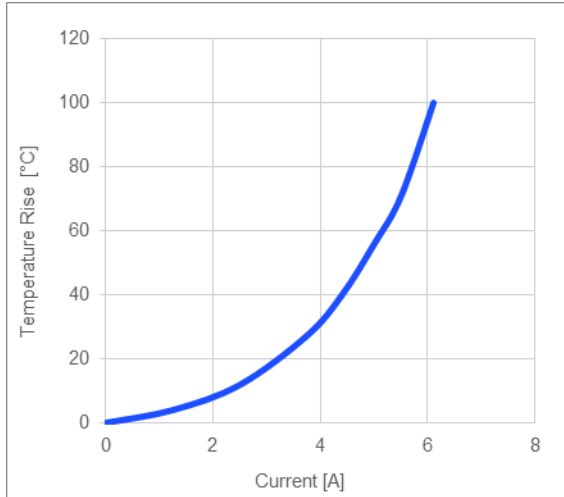
### GENERAL SPECIFICATIONS

<sup>(1)</sup> Inductance	Measured at 100kHz, 100mA
<sup>(2)</sup> Rated Current	Rated current will cause the coil temperature rise ΔT of 40K <i>I<sub>R</sub></i> 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.
<sup>(3)</sup> Saturation Current <sub>25°C</sub>	Saturation current will cause L to drop from 30% at 25°C ambient temperature
<sup>(4)</sup> 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 +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

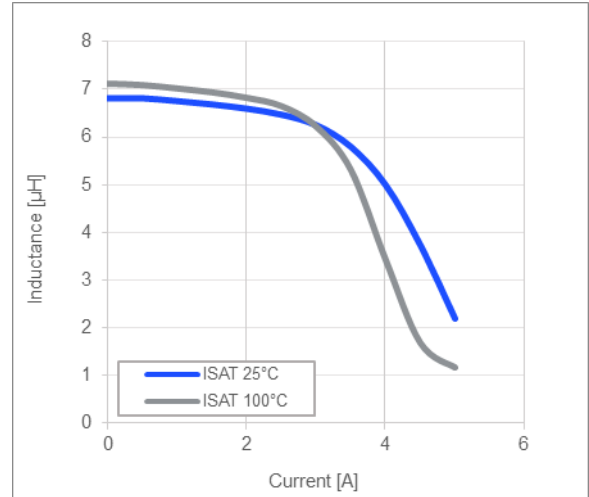
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**TYPICAL PERFORMANCE CURVES**

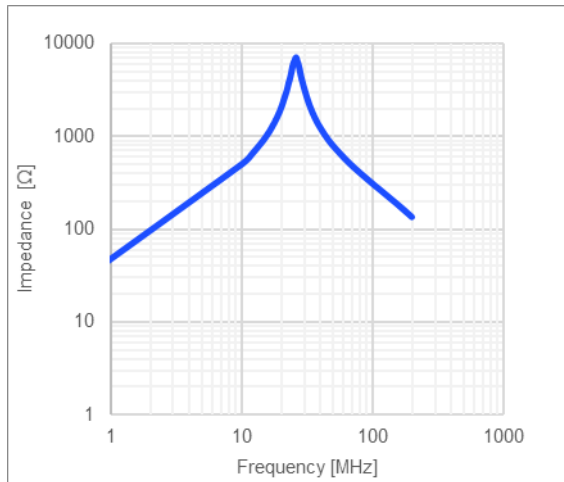
**Temperature Rise vs. Current**



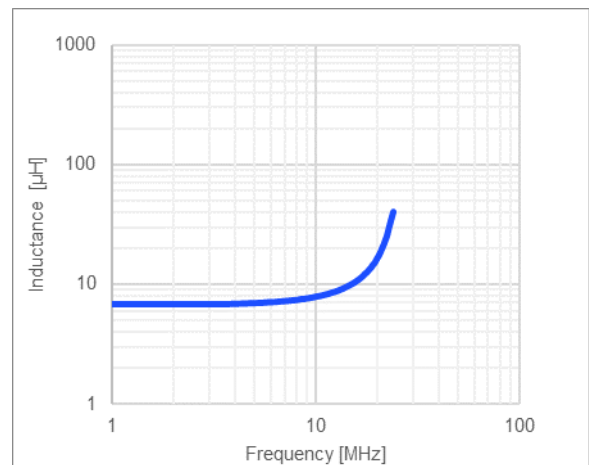
**Inductance vs. Current**



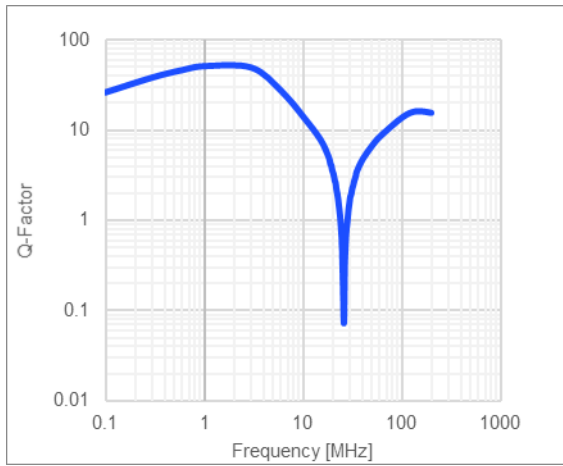
**Impedance vs. Frequency**



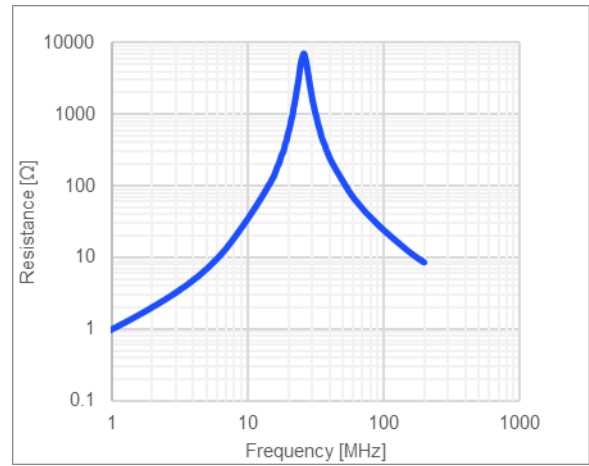
**Inductance vs. Frequency**



Quality Factor vs. Frequency



AC Resistance vs. Frequency



**LAND PATTERN**

**Dimensions**

A	4.50 ref.
B	2.20 ref.
C	6.50 ref.

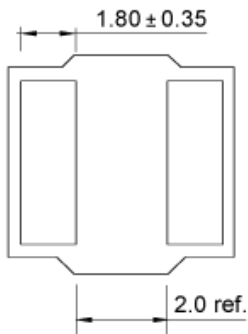
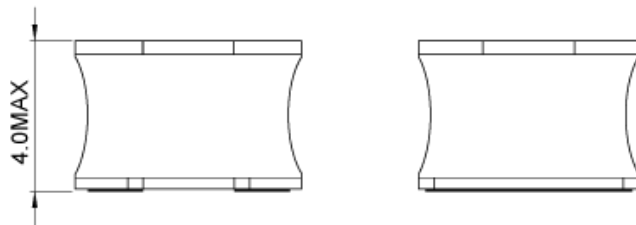
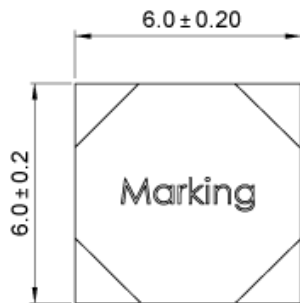
(unit in mm)



**PRODUCT PACKAGE AND DIMENSIONS**

**Dimensions**

(unit in mm)



**TOP MARKING**

**Marking**

Inductance Code	6R8
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**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-SE6040-1R5	1.5	11.5	6.8	8.9	7.8
MPL-SE6040-2R2	2.2	14.5	6.3	7.2	6.7
MPL-SE6040-3R3	3.3	19.5	5.6	5.6	4.9
MPL-SE6040-4R7	4.7	23	5.2	5	4.5
MPL-SE6040-6R8	6.8	33	4.4	4.1	3.7
MPL-SE6040-8R2	8.2	39	4.0	3.6	3.2
MPL-SE6040-100	10	41	3.8	3.4	2.8
MPL-SE6040-150	15	70	2.8	2.7	2.4
MPL-SE6040-220	22	97	2.35	2.25	2

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

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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