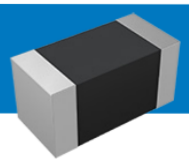
# 叠层片式功率电感—MPH 系列
# Multilayer Chip Power Inductor – MPH Series



## 工作温度 Operating Temp

- -55℃ ~+125℃ (Including self-heating)

## 特征 Features

- 采用沟槽工艺，提高了偏置电流，降低了直流电阻
- 小尺寸，薄型
- 迭层独石结构、高度可靠性
- 良好的可焊性和耐焊性
- 良好的磁屏蔽，无交叉耦合
- Higher DC bias current and lower DC resistance due to trench technology
- Low profile and thin thickness
- Monolithic structure for high reliability
- Excellent solderability and high heat resistance
- No cross coupling due to magnetic shield

## 用途 Applications

- 移动电话、移动 PC、可穿戴设备、安防监控等设备用 DC-DC 转换器电路
- Mobile phones, mobile PC, wearable devices, security monitoring DC-DC converter for other

## 产品型号 Product Identification

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| MPH | 201210 | S | R47 | M | T |

**1**

| 分类 Type | |
|---|---|
| MPH | 片式功率电感 Chip Power Inductor |

**2**

| 外形尺寸 (L×W×H) (mm) External Dimensions (L×W×H) (mm) | |
|---|---|
| 160805 | 1.6×0.8×0.55 |
| 160806 | 1.6×0.8×0.65 |
| 160809 | 1.6×0.8×0.95 |
| 201205 | 2.0×1.25×0.55 |
| 201206 | 2.0×1.25×0.6 |
| 201209 | 2.0×1.25×0.9 |
| 201210 | 2.0×1.25×1.0 |
| 201214 | 2.0×1.2×1.4 |
| 201610 | 2.0×1.6×1.0 |
| 201612 | 2.0×1.6×1.2 |
| 252010 | 2.5×2.0×1.0 |
| 252012 | 2.5×2.0×1.2 |

**3**

| 特性类别 Feature Type | |
|---|---|
| S | 标准型 Standard |
| U | 低直流电阻型 Ultra Low Rdc |
| H | 大饱和电流型 High Saturation Current |
| C | 内部代码 Inner Core |

**4**

| 公称电感量 Nominal Inductance | |
|---|---|
| Example | Nominal Value |
| R47 | 0.47μH |
| 4R7 | 4.7μH |

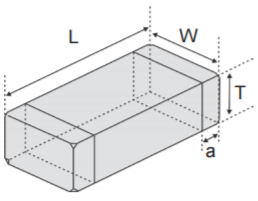
**5**

| 电感公差 Inductance Tolerance | |
|---|---|
| M | ±20% |
| N | ±30% |

**6**

| 包装 Packing | |
|---|---|
| T | 编带 Tape & Reel |

## 外观尺寸 Shape and Dimensions




Unit:mm[inch]

| Type | L | W | T | a |
|---|---|---|---|---|
| 160805 | 1.60±0.15 [.063±.006] | 0.8±0.15 [.031±.006] | 0.5±0.05 [.020±.002] | 0.3±0.2 [.012±.008] |
| 160806 | 1.60±0.15 [.063±.006] | 0.8±0.15 [.031±.006] | 0.55±0.10 [.022±.04] | 0.35±0.15 [.014±.06] |
| 160809 | 1.60±0.15 [.063±.006] | 0.8±0.15 [.031±.006] | 0.8±0.15 [.031±.006] | 0.3±0.2 [.012±.008] |
| 201205 | 2.0(+0.3, -0.1) [.079(+.012, -.004)] | 1.25±0.2 [.049±.008] | 0.5±0.05 [.020±.004] | 0.5±0.3 [.020±.012] |
| 201206 | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 1.25±0.2 [.049±.008] | 0.5±0.1 [.020±.004] | 0.5±0.3 [.020±.012] |
| 201209 | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 1.25±0.2 [.049±.008] | 0.8±0.1 [.031±.004] | 0.5±0.3 [.020±.012] |
| 201210 | 2.0 (+0.3,-0.1) [.079(+.012, -.004)] | 1.25±0.2 [.049±.008] | 0.9±0.1 [.035±.004] | 0.5±0.3 [.020±.012] |
| 201214 | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 1.25±0.2 [.049±.008] | 1.2±0.2 [.047±.008] | 0.5±0.3 [.020±.012] |
| 201610 | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 1.6±0.2 [.063±.008] | 0.9±0.1 [.035±.004] | 0.5±0.3 [.020±.012] |
| 201612 | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 1.6±0.2 [.063±.008] | 1.1±0.1 [.043±.004] | 0.5±0.3 [.020±.012] |
| 252010 | 2.5±0.2 [.098±.008] | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 0.9±0.1 [.035±.004] | 0.5±0.3 [.020±.012] |
| 252012 | 2.5±0.2 [.098±.008] | 2.0(+0.3,-0.1) [.079(+.012, -.004)] | 1.1±0.1 [0.43±.004] | 0.5±0.3 [.020±.012] |

## 规格特性
**Specifications**

MPH1608 TYPE

| 型号 Part Number | 电感量 Inductance | L 测试频率 L Test Freq. | 直流电阻 DC Resistance | | 自谐频率 Min. Self-resonant Frequency | 饱和电流 Saturation Current | | 温升电流 Heat Rating Current Max. | 厚度 Thickness |
|---|---|---|---|---|---|---|---|---|---|
| 单位 Units | μH | MHz | Ω | | MHz | A | | A | mm [inch] |
| 符号 Symbol | L | Freq. | DCR | | S.R.F | Isat | | Irms | T |
| | | | Max. | Typ. | | Max. | Typ. | | |
| MPH160805SR22 □ T | 0.22 | 1 | 0.15 | 0.12 | 180 | 1.20 | 1.45 | 1.20 | 0.5±0.05 [.020±.002] |
| MPH160805SR33 □ T | 0.33 | 1 | 0.20 | 0.16 | 140 | 1.10 | 1.35 | 1.10 | |
| MPH160805SR47 □ T | 0.47 | 1 | 0.225 | 0.18 | 120 | 0.85 | 1.05 | 1.15 | |
| MPH160805SR68 □ T | 0.68 | 1 | 0.275 | 0.22 | 100 | 0.65 | 0.80 | 0.90 | |
| MPH160805S1R0 □ T | 1.0 | 1 | 0.40 | 0.32 | 90 | 0.58 | 0.70 | 0.80 | |
| MPH160805S1R5 □ T | 1.5 | 1 | 0.475 | 0.38 | 80 | 0.30 | 0.40 | 0.65 | |
| MPH160805S2R2 □ T | 2.2 | 1 | 0.525 | 0.42 | 60 | 0.18 | 0.25 | 0.60 | |
| MPH160806S1R0 □ T | 1.0 | 1 | 0.275 | 0.22 | 90 | 0.50 | 0.70 | 1.00 | 0.55±0.10 [.022±.004] |
| MPH160806S2R2 □ T | 2.2 | 1 | 0.50 | 0.40 | 30 | 0.20 | 0.30 | 0.65 | |
| MPH160809SR22 □ T | 0.22 | 1 | 0.125 | 0.10 | 200 | 1.35 | 1.60 | 1.25 | 0.8±0.15 [.031±.006] |
| MPH160809SR33 □ T | 0.33 | 1 | 0.1625 | 0.13 | 190 | 1.25 | 1.50 | 1.20 | |
| MPH160809SR47 □ T | 0.47 | 1 | 0.1875 | 0.15 | 180 | 1.00 | 1.20 | 1.10 | |
| MPH160809SR68 □ T | 0.68 | 1 | 0.225 | 0.18 | 160 | 0.95 | 1.10 | 1.15 | |
| MPH160809S1R0 □ T | 1.0 | 1 | 0.25 | 0.20 | 125 | 0.65 | 0.80 | 1.00 | |
| MPH160809S1R5 □ T | 1.5 | 1 | 0.287 | 0.23 | 100 | 0.42 | 0.50 | 0.90 | |
| MPH160809S1R8 □ T | 1.8 | 1 | 0.325 | 0.26 | 100 | 0.30 | 0.50 | 0.80 | |
| MPH160809S2R2 □ T | 2.2 | 1 | 0.375 | 0.30 | 80 | 0.25 | 0.30 | 0.85 | |
| MPH160809S2R7 □ T | 2.7 | 1 | 0.425 | 0.34 | 90 | 0.18 | 0.22 | 0.75 | |
| MPH160809S3R3 □ T | 3.3 | 1 | 0.50 | 0.40 | 100 | 0.125 | 0.15 | 0.70 | |
| MPH160809S4R7 □ T | 4.7 | 1 | 0.50 | 0.40 | 65 | 0.065 | 0.08 | 0.70 | |
| MPH160809S6R8 □ T | 6.8 | 1 | 0.70 | 0.56 | 45 | 0.13 | 0.15 | 0.50 | |
| MPH160809S100 □ T | 10 | 1 | 0.468 | 0.36 | 35 | 0.06 | 0.08 | 0.50 | |

MPH2012 TYPE

| 型号 Part Number | 电感量 Inductance | L 测试频率 L Test Freq. | 直流电阻 DC Resistance | | 自谐频率 Min. Self-resonant Frequency | 饱和电流 Saturation Current | | 温升电流 Heat Rating Current Max. | 厚度 Thickness |
|---|---|---|---|---|---|---|---|---|---|
| 单位 Units | μH | MHz | Ω | | MHz | A | | A | mm [inch] |
| 符号 Symbol | L | Freq. | DCR | | S.R.F | Isat | | Irms | T |
| | | | Max. | Typ. | | Max. | Typ. | | |
| MPH201205SR54 □ T | 0.54 | 1 | 0.15 | 0.12 | 120 | 0.95 | 1.10 | 1.20 | 0.5±0.05 [.020±.002] |
| MPH201205S1R0 □ T | 1.0 | 1 | 0.225 | 0.18 | 40 | 0.70 | 0.90 | 0.90 | |
| MPH201206SR22 □ T | 0.22 | 1 | 0.087 | 0.07 | 100 | 1.20 | 1.45 | 1.60 | 0.5±0.1 [.020±.004] |
| MPH201206SR33 □ T | 0.33 | 1 | 0.125 | 0.10 | 90 | 1.20 | 1.35 | 1.20 | |
| MPH201206SR47 □ T | 0.47 | 1 | 0.15 | 0.12 | 80 | 1.10 | 1.30 | 1.10 | |
| MPH201206S1R0 □ T | 1.0 | 1 | 0.237 | 0.19 | 40 | 0.60 | 0.70 | 0.80 | |
| MPH201206S1R5 □ T | 1.5 | 1 | 0.325 | 0.26 | 35 | 0.425 | 0.50 | 0.70 | |
| MPH201206S2R2 □ T | 2.2 | 1 | 0.40 | 0.32 | 30 | 0.30 | 0.35 | 0.60 | |
| MPH201209S1R0 □ T | 1.0 | 1 | 0.15 | 0.12 | 60 | 0.80 | 1.05 | 1.30 | 0.8±0.1 [.031±.004] |
| MPH201209S1R5 □ T | 1.5 | 1 | 0.20 | 0.16 | 50 | 0.50 | 0.70 | 1.10 | |
| MPH201209S2R2 □ T | 2.2 | 1 | 0.225 | 0.18 | 40 | 0.25 | 0.28 | 1.00 | |
| MPH201209S3R3 □ T | 3.3 | 1 | 0.25 | 0.20 | 30 | 0.18 | 0.22 | 0.90 | |
| MPH201209S4R7 □ T | 4.7 | 1 | 0.312 | 0.25 | 30 | 0.125 | 0.15 | 0.75 | |
| MPH201210SR47 □ T | 0.47 | 1 | 0.10 | 0.08 | 100 | 1.00 | 1.20 | 1.50 | 0.9±0.1 [.035±.004] |
| MPH201210SR56 □ T | 0.56 | 1 | 0.135 | 0.11 | 70 | 1.20 | 1.50 | 1.30 | |
| MPH201210S1R0 □ T | 1.0 | 1 | 0.1375 | 0.11 | 60 | 0.95 | 1.15 | 1.30 | |
| MPH201210S1R5 □ T | 1.5 | 1 | 0.20 | 0.16 | 50 | 0.70 | 0.80 | 1.10 | |
| MPH201210S2R2 □ T | 2.2 | 1 | 0.25 | 0.20 | 40 | 0.42 | 0.50 | 0.90 | |
| MPH201210S2R7 □ T | 2.7 | 1 | 0.25 | 0.20 | 35 | 0.35 | 0.42 | 0.90 | |
| MPH201210S3R3 □ T | 3.3 | 1 | 0.25 | 0.20 | 30 | 0.28 | 0.35 | 0.90 | |
| MPH201210S4R7 □ T | 4.7 | 1 | 0.3125 | 0.25 | 30 | 0.23 | 0.28 | 0.80 | |
| MPH201214S2R2 □ T | 2.2 | 1 | 0.437 | 0.35 | 35 | 0.60 | 0.80 | 0.80 | 1.2±0.2 [.047±.008] |
| MPH201214S3R3 □ T | 3.3 | 1 | 0.50 | 0.40 | 25 | 0.57 | 0.63 | 0.75 | |
| MPH201214S4R7 □ T | 4.7 | 1 | 0.50 | 0.40 | 20 | 0.54 | 0.63 | 0.75 | |
| MPH201214S6R8 □ T | 6.8 | 1 | 0.375 | 0.30 | 45 | 0.21 | 0.25 | 1.00 | |
| MPH201214S100 □ T | 10 | 1 | 0.375 | 0.30 | 35 | 0.11 | 0.13 | 1.00 | |
| MPH201214H100 □ T | 10 | 1 | 0.70 | 0.56 | 20 | 0.20 | 0.23 | 0.20 | |

## 规格特性
**Specifications**

MPH2016 TYPE

| 型号 Part Number | 电感量 Inductance | L 测试频率 L Test Freq. | 直流电阻 DC Resistance | | 自谐频率 Min. Self-resonant Frequency | 饱和电流 Saturation Current | | 温升电流 Heat Rating Current Max. | 厚度 Thickness |
|---|---|---|---|---|---|---|---|---|---|
| 单位 Units | μH | MHz | Ω | | MHz | A | | A | mm [inch] |
| 符号 Symbol | L | Freq. | DCR | | S.R.F | Isat | | Irms | T |
| | | | Max. | Typ. | | Max. | Typ. | | |
| MPH201610SR47 ☐ T | 0.47 | 1 | 0.10 | 0.08 | 100 | 1.35 | 1.60 | 1.50 | 0.9±0.1 [.035±.004] |
| MPH201610S1R0 ☐ T | 1.0 | 1 | 0.1125 | 0.09 | 70 | 1.00 | 1.20 | 1.40 | |
| MPH201610S1R5 ☐ T | 1.5 | 1 | 0.1375 | 0.11 | 60 | 0.60 | 0.70 | 1.20 | |
| MPH201610S2R2 ☐ T | 2.2 | 1 | 0.1375 | 0.11 | 50 | 0.42 | 0.50 | 1.20 | |
| MPH201610S3R3 ☐ T | 3.3 | 1 | 0.15 | 0.12 | 40 | 0.27 | 0.33 | 1.20 | |
| MPH201610S4R7 ☐ T | 4.7 | 1 | 0.175 | 0.14 | 30 | 0.18 | 0.22 | 1.10 | |
| MPH201612S6R8 ☐ T | 6.8 | 1 | 0.212 | 0.17 | 40 | 0.18 | 0.22 | 1.20 | 1.1±0.1 [.043±.004] |
| MPH201612S100 ☐ T | 10 | 1 | 0.312 | 0.25 | 35 | 0.17 | 0.20 | 1.10 | |

MPH2520 TYPE

| 型号 Part Number | 电感量 Inductance | L 测试频率 L Test Freq. | 直流电阻 DC Resistance | | 自谐频率 Min. Self-resonant Frequency | 饱和电流 Saturation Current | | 温升电流 Heat Rating Current Max. | 厚度 Thickness |
|---|---|---|---|---|---|---|---|---|---|
| 单位 Units | μH | MHz | Ω | | MHz | A | | A | mm [inch] |
| 符号 Symbol | L | Freq. | DCR | | S.R.F | Isat | | Irms | T |
| | | | Max. | Typ. | | Max. | Typ. | | |
| MPH252010SR47 ☐ T | 0.47 | 1 | 0.05 | 0.04 | 105 | 1.30 | 1.50 | 1.80 | 0.9±0.1 [.035±.004] |
| MPH252010S1R0 ☐ T | 1.0 | 1 | 0.075 | 0.06 | 70 | 1.15 | 1.40 | 1.60 | |
| MPH252010S1R5 ☐ T | 1.5 | 1 | 0.0875 | 0.07 | 65 | 1.00 | 1.20 | 1.50 | |
| MPH252010S1R8 ☐ T | 1.8 | 1 | 0.10 | 0.08 | 60 | 0.70 | 0.95 | 1.30 | |
| MPH252010S2R2 ☐ T | 2.2 | 1 | 0.10 | 0.08 | 55 | 0.70 | 0.85 | 1.30 | |
| MPH252010S3R3 ☐ T | 3.3 | 1 | 0.125 | 0.10 | 30 | 0.38 | 0.45 | 1.20 | |
| MPH252010S4R7 ☐ T | 4.7 | 1 | 0.1375 | 0.11 | 25 | 0.27 | 0.32 | 1.10 | |
| MPH252010C2R2 ☐ T | 2.2 | 1 | 0.25 | 0.20 | 60 | 1.25 | 1.50 | 1.20 | |
| MPH252010C3R3 ☐ T | 3.3 | 1 | 0.312 | 0.25 | 50 | 1.00 | 1.20 | 1.10 | |
| MPH252010C4R7 ☐ T | 4.7 | 1 | 0.475 | 0.38 | 35 | 0.63 | 0.75 | 0.90 | |
| MPH252010C6R8 ☐ T | 6.8 | 1 | 0.562 | 0.45 | 30 | 0.30 | 0.35 | 0.75 | |
| MPH252010C100 ☐ T | 10 | 1 | 0.625 | 0.50 | 25 | 0.21 | 0.25 | 0.70 | |
| MPH252012S4R7 ☐ T | 4.7 | 1 | 0.225 | 0.18 | 30 | 0.64 | 0.75 | 1.00 | 1.1±0.1 [0.43±.004] |
| MPH252012C1R0 ☐ T | 1.0 | 1 | 0.106 | 0.085 | 85 | 1.75 | 2.10 | 2.10 | |
| MPH252012C2R2 ☐ T | 2.2 | 1 | 0.312 | 0.25 | 50 | 1.35 | 1.60 | 1.10 | |
| MPH252012C3R3 ☐ T | 3.3 | 1 | 0.312 | 0.25 | 50 | 1.05 | 1.25 | 1.10 | |
| MPH252012C4R7 ☐ T | 4.7 | 1 | 0.50 | 0.40 | 40 | 0.68 | 0.80 | 0.90 | |
| MPH252012C6R8 ☐ T | 6.8 | 1 | 0.625 | 0.50 | 30 | 0.63 | 0.75 | 0.80 | |
| MPH252012C100 ☐ T | 10 | 1 | 0.625 | 0.50 | 25 | 0.42 | 0.50 | 0.80 | |

※:请注明电感公差代码 (M=±20%, N=±30%);
※:Please specify the inductance tolerance code (M=±20%, N=±30%);

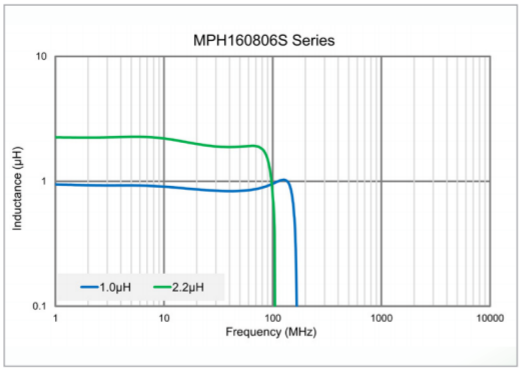
※额定电流：以饱和电流和温升电流中较小者为标准;
※Rated current: Isat or Irms, whichever is smaller;

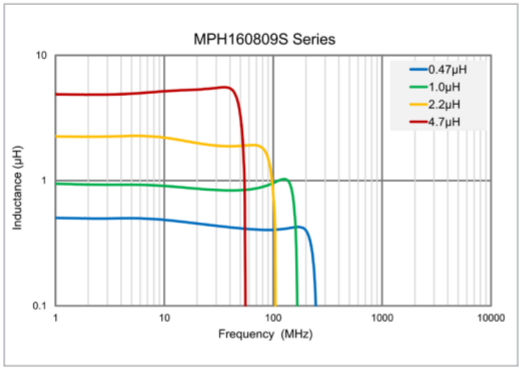
※饱和电流：使电感值从初始状态下下降约30%的直流电流值;
※Isat: DC current at which the inductance drops approximate 30% from its value without current;

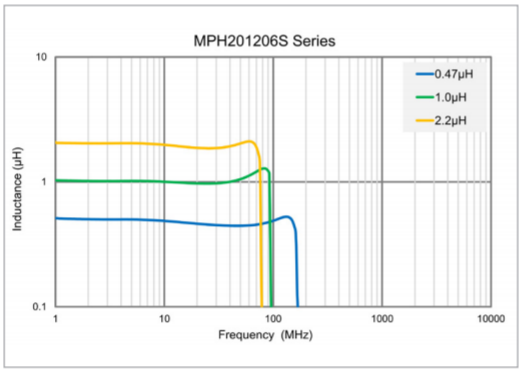
※温升电流：使产品表面温度从20℃升高 (△T=40℃) 的直流电流值。
※Irms: DC current that causes the temperature rise ( △ T=40℃ ) from 20℃ ambient.

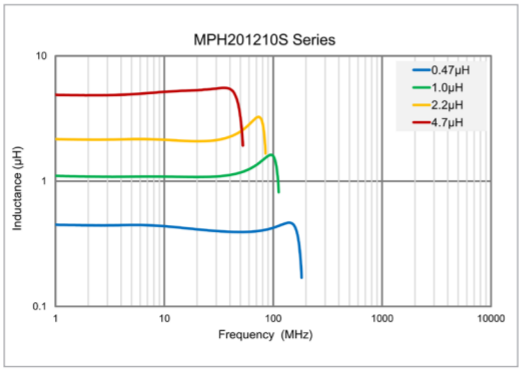
## 电气特性
**Typical Electrical Characteristics**

### Inductance vs. Frequency Characteristics

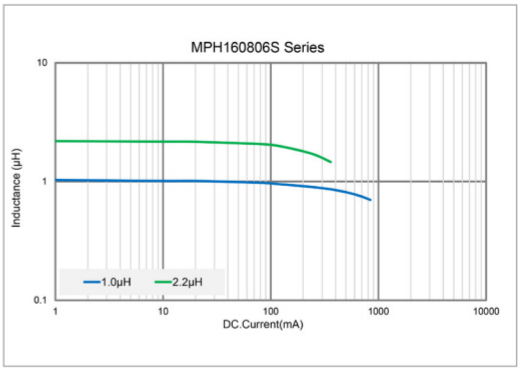


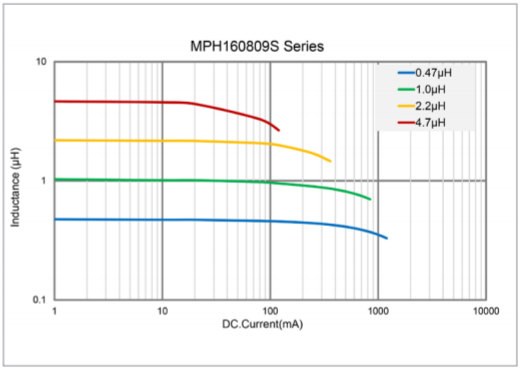



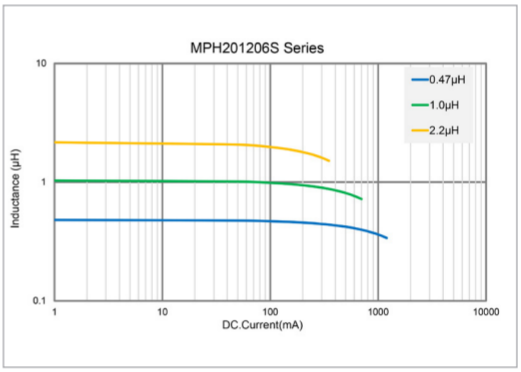



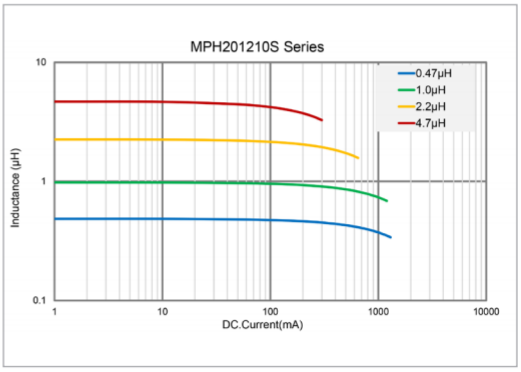




### Inductance vs. DC Current Characteristics



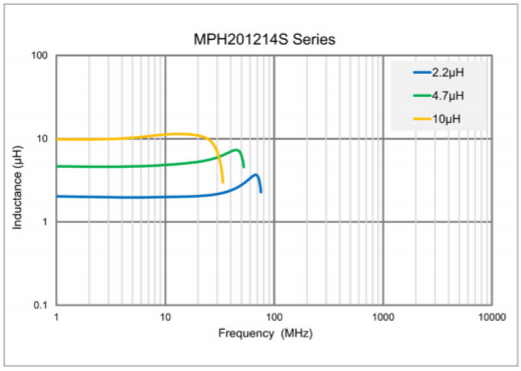



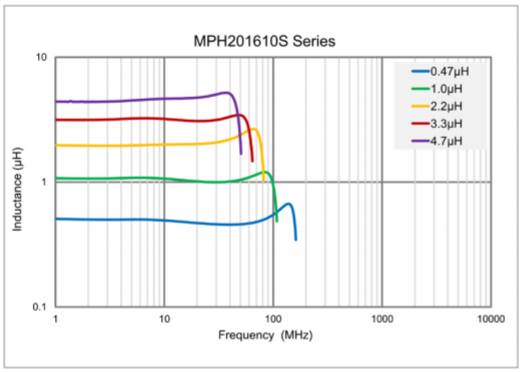



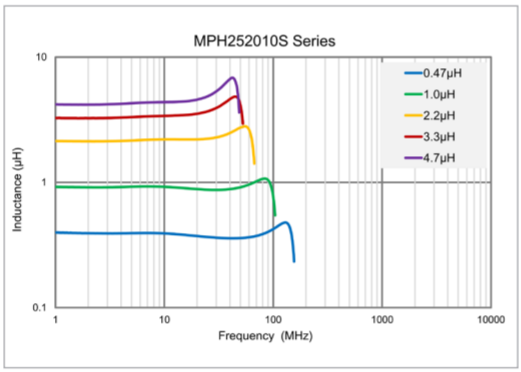



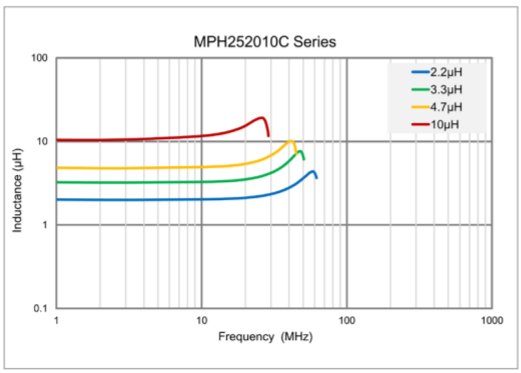
## 电气特性
**Typical Electrical Characteristics**

### Inductance vs. Frequency Characteristics

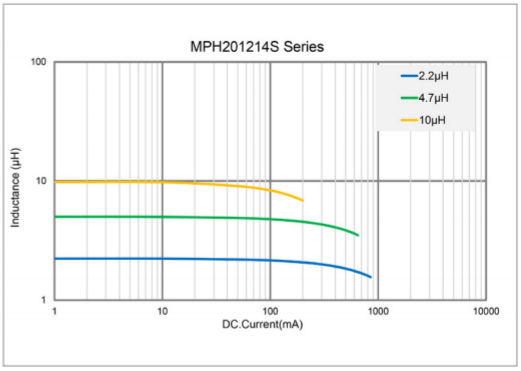


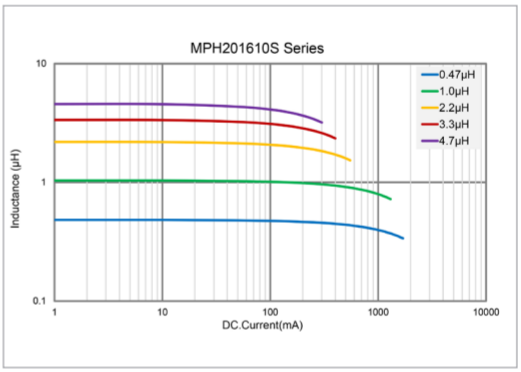



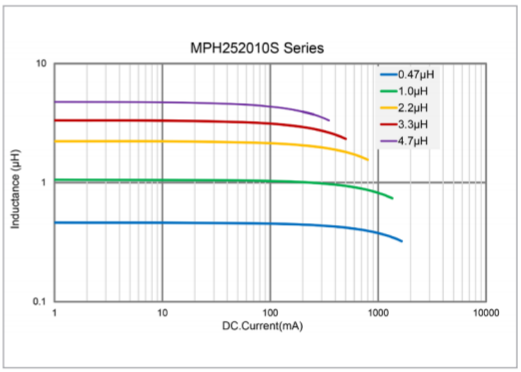



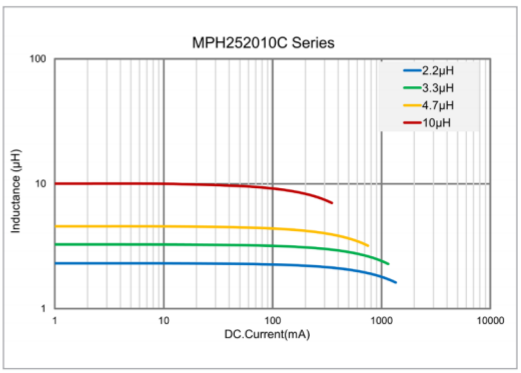




### Inductance vs. DC Current Characteristics



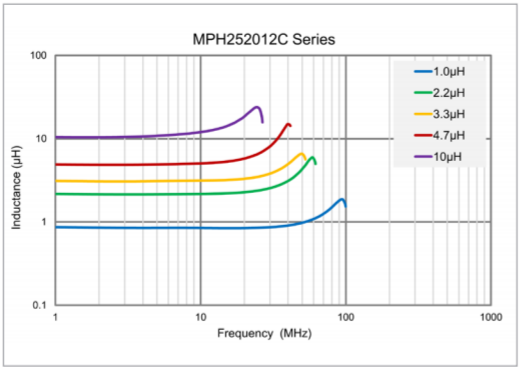



## 电气特性
**Typical Electrical Characteristics**

Inductance vs. Frequency Characteristics




Inductance vs. DC Current Characteristics