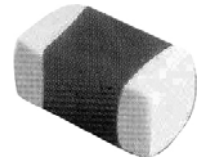


# Multilayer Chip Power Inductor – MPH Series

Operating Temp. : -55°C~+125°C



## FEATURES

- 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

## APPLICATIONS

- DC-DC converter circuits for mobile phones, wearable devices, DVCs, HDDs, etc.

## PRODUCT IDENTIFICATION

**MPH**      **201210**      **S**      **R47**      **M**      **T**      **B01**

①

②

③

④

⑤

⑥

⑦

①

| Type |                     |
|------|---------------------|
| MPH  | Chip Power Inductor |

②

| External Dimensions (L×W×H) (mm) |               |
|----------------------------------|---------------|
| 160805                           | 1.6×0.8×0.55  |
| 160809                           | 1.6×0.8×0.95  |
| 201205                           | 2.0×1.25×0.55 |
| 201206                           | 2.0×1.25×0.6  |
| 201210                           | 2.0×1.25×1.0  |
| 201214                           | 2.0×1.25×1.45 |
| 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

| Feature Type |                         |
|--------------|-------------------------|
| S            | Standard                |
| U            | Ultra Low Rdc           |
| H            | High Saturation Current |
| C            | Inner Core              |

④

| Nominal Inductance |               |
|--------------------|---------------|
| Example            | Nominal Value |
| R47                | 0.47μH        |
| 4R7                | 4.7μH         |

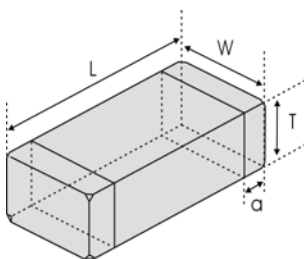
⑤

| Inductance Tolerance |      |
|----------------------|------|
| M                    | ±20% |
| N                    | ±30% |

⑥

| Packing |             |
|---------|-------------|
| T       | Tape & Reel |

## SHAPE AND DIMENSIONS



Unit: mm [inch]

| Type   | L                                       | W                       | T                       | a                      |
|--------|---|-------------------------|-------------------------|------------------------|
| 160805 | 1.60±0.15<br>[.063±.006]                | 0.8±0.15<br>[.031±.006] | 0.5±0.05<br>[.020±.002] | 0.3±0.2<br>[.012±.008] |
| 160809 | 1.60±0.15<br>[.063±.006]                | 0.8±0.15<br>[.031±.006] | 0.8±0.15<br>[.031±.006] | 0.3±0.2<br>[.012±.008] |
| 201205 | 2.0(+0.3, -0.1)<br>[.079(+.012, -.004)] | 1.25±0.2<br>[.049±.008] | 0.5±0.05<br>[.020±.004] | 0.5±0.3<br>[.020±.012] |

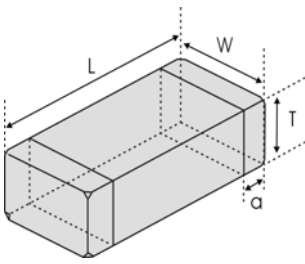
## SHAPE AND DIMENSIONS

**Sunlord**

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Unit: mm [inch]



| Type   | L                                      | W                                      | T                       | a                      |
|--------|--|--|-------------------------|------------------------|
| 201206 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 1.25±0.2<br>[.049±.008]                | 0.5±0.1<br>[.020±.004]  | 0.5±0.3<br>[.020±.012] |
| 201210 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 1.25±0.2<br>[.049±.008]                | 0.9±0.1<br>[.035±.004]  | 0.5±0.3<br>[.020±.012] |
| 201214 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 1.25±0.2<br>[.049±.008]                | 1.25±0.2<br>[.049±.008] | 0.5±0.3<br>[.020±.012] |
| 201610 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 1.6±0.2<br>[.063±.008]                 | 0.9±0.1<br>[.035±.004]  | 0.5±0.3<br>[.020±.012] |
| 201612 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 1.6±0.2<br>[.063±.008]                 | 1.1±0.1<br>[.043±.004]  | 0.5±0.3<br>[.020±.012] |
| 252010 | 2.5±0.2<br>[.098±.008]                 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 0.9±0.1<br>[.035±.004]  | 0.5±0.3<br>[.020±.012] |
| 252012 | 2.5±0.2<br>[.098±.008]                 | 2.0(+0.3,-0.1)<br>[.079(+.012, -.004)] | 1.1±0.1<br>[.043±.004]  | 0.5±0.3<br>[.020±.012] |

## SPECIFICATION

| Part Number     | Inductance | L Test Freq. L | DC Resistance |      | Min. Self-resonant Frequency | Saturation Current Typ. |      | Heat Rating Current Max. | Thickness               |
|-----------------|------------|----------------|---------------|------|------------------------------|-------------------------|------|--------------------------|-------------------------|
| Units           | μH         | MHz            | mΩ            |      | MHz                          | mA                      |      | mA                       | mm [inch]               |
| Symbol          | L          | Freq.          | DCR           |      | S.R.F                        | Isat                    |      | I <sub>rms</sub>         | T                       |
|                 |            |                | Max.          | Typ. |                              | Max.                    | Typ. |                          |                         |
| MPH160805SR22□T | 0.22       | 1              | 150           | 120  | 180                          | 1200                    | 1450 | 1200                     | 0.5±0.05<br>[.020±.002] |
| MPH160805SR33□T | 0.33       | 1              | 200           | 160  | 140                          | 1100                    | 1350 | 1100                     |                         |
| MPH160805SR47□T | 0.47       | 1              | 225           | 180  | 120                          | 850                     | 1050 | 1150                     |                         |
| MPH160805SR68□T | 0.68       | 1              | 275           | 220  | 100                          | 650                     | 800  | 900                      |                         |
| MPH160805S1R0□T | 1.0        | 1              | 400           | 320  | 90                           | 580                     | 700  | 800                      |                         |
| MPH160809SR22□T | 0.22       | 1              | 125           | 100  | 200                          | 1350                    | 1600 | 1250                     | 0.8±0.15<br>[.031±.006] |
| MPH160809SR33□T | 0.33       | 1              | 162           | 130  | 190                          | 1250                    | 1500 | 1200                     |                         |
| MPH160809SR47□T | 0.47       | 1              | 187           | 150  | 180                          | 1000                    | 1200 | 1100                     |                         |
| MPH160809SR68□T | 0.68       | 1              | 225           | 180  | 160                          | 950                     | 1100 | 1150                     |                         |
| MPH160809S1R0□T | 1.0        | 1              | 250           | 200  | 125                          | 650                     | 800  | 1000                     |                         |
| MPH160809S1R5□T | 1.5        | 1              | 285           | 230  | 100                          | 420                     | 500  | 900                      |                         |
| MPH160809S2R2□T | 2.2        | 1              | 375           | 300  | 80                           | 250                     | 300  | 850                      |                         |
| MPH160809S2R7□T | 2.7        | 1              | 425           | 340  | 90                           | 180                     | 220  | 750                      |                         |
| MPH160809S3R3□T | 3.3        | 1              | 500           | 400  | 100                          | 125                     | 150  | 700                      |                         |
| MPH160809S4R7□T | 4.7        | 1              | 500           | 400  | 65                           | 65                      | 80   | 700                      |                         |

## MPH2012 TYPE

| Part Number     | Inductance | L Test Freq. L | DC Resistance |      | Min. Self-resonant Frequency | Saturation Current Typ. |      | Heat Rating Current Max. | Thickness               |
|-----------------|------------|----------------|---------------|------|------------------------------|-------------------------|------|--------------------------|-------------------------|
| Units           | μH         | MHz            | mΩ            |      | MHz                          | mA                      |      | mA                       | mm [inch]               |
| Symbol          | L          | Freq.          | DCR           |      | S.R.F                        | Isat                    |      | I <sub>rms</sub>         | T                       |
|                 |            |                | Max.          | Typ. |                              | Max.                    | Typ. |                          |                         |
| MPH201205SR54□T | 0.54       | 1              | 150           | 120  | 120                          | 950                     | 1100 | 1200                     | 0.5±0.05<br>[.020±.002] |
| MPH201205S1R0□T | 1.0        | 1              | 225           | 180  | 40                           | 700                     | 900  | 900                      |                         |
| MPH201206SR22□T | 0.22       | 1              | 94            | 70   | 100                          | 1200                    | 1450 | 1600                     | 0.5±0.1<br>[.020±.004]  |
| MPH201206SR33□T | 0.33       | 1              | 125           | 100  | 90                           | 1200                    | 1350 | 1200                     |                         |
| MPH201206SR47□T | 0.47       | 1              | 150           | 120  | 80                           | 1100                    | 1300 | 1100                     |                         |

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# SPECIFICATION

## MPH2012 TYPE

| Part Number     | Inductance | L Test Freq. L | DC Resistance |      | Min. Self-resonant Frequency | Saturation Current Typ. |      | Heat Rating Current Max. | Thickness               |
|-----------------|------------|----------------|---------------|------|------------------------------|-------------------------|------|--------------------------|-------------------------|
| Units           | μH         | MHz            | mΩ            |      | MHz                          | mA                      |      | mA                       | mm [inch]               |
| Symbol          | L          | Freq.          | DCR           |      | S.R.F                        | Isat                    |      | I <sub>rms</sub>         | T                       |
|                 |            |                | Max.          | Typ. |                              | Max.                    | Typ. |                          |                         |
| MPH201206S1R0□T | 1.0        | 1              | 238           | 190  | 40                           | 600                     | 700  | 800                      | 0.5±0.1<br>[.020±.004]  |
| MPH201206S1R5□T | 1.5        | 1              | 325           | 260  | 35                           | 425                     | 500  | 700                      |                         |
| MPH201206S2R2□T | 2.2        | 1              | 400           | 320  | 30                           | 300                     | 350  | 600                      |                         |
| MPH201210SR47□T | 0.47       | 1              | 100           | 80   | 100                          | 1000                    | 1200 | 1500                     | 0.9±0.1<br>[.035±.004]  |
| MPH201210SR56□T | 0.56       | 1              | 135           | 110  | 70                           | 1200                    | 1500 | 1300                     |                         |
| MPH201210S1R0□T | 1.0        | 1              | 137           | 110  | 60                           | 950                     | 1150 | 1300                     |                         |
| MPH201210S1R5□T | 1.5        | 1              | 200           | 160  | 50                           | 700                     | 800  | 1100                     |                         |
| MPH201210S2R2□T | 2.2        | 1              | 250           | 200  | 40                           | 420                     | 500  | 900                      |                         |
| MPH201210H2R2□T | 2.2        | 1              | 250           | 200  | 40                           | 500                     | 600  | 900                      |                         |
| MPH201210S3R3□T | 3.3        | 1              | 250           | 200  | 30                           | 280                     | 350  | 900                      |                         |
| MPH201210S4R7□T | 4.7        | 1              | 312           | 250  | 30                           | 230                     | 280  | 800                      |                         |
| MPH201214S4R7□T | 4.7        | 1              | 500           | 400  | 20                           | 540                     | 630  | 750                      |                         |
| MPH201214S6R8□T | 6.8        | 1              | 375           | 300  | 45                           | 210                     | 250  | 1000                     |                         |
| MPH201214S100□T | 10.0       | 1              | 375           | 300  | 35                           | 110                     | 130  | 1000                     | 1.25±0.2<br>[.049±.008] |

## MPH2016 TYPE

| Part Number     | Inductance | L Test Freq. L | DC Resistance |      | Min. Self-resonant Frequency | Saturation Current Typ. |      | Heat Rating Current Max. | Thickness               |
|-----------------|------------|----------------|---------------|------|------------------------------|-------------------------|------|--------------------------|-------------------------|
| Units           | μH         | MHz            | mΩ            |      | MHz                          | mA                      |      | mA                       | mm [inch]               |
| Symbol          | L          | Freq.          | DCR           |      | S.R.F                        | Isat                    |      | I <sub>rms</sub>         | T                       |
|                 |            |                | Max.          | Typ. |                              | Max.                    | Typ. |                          |                         |
| MPH201610SR47□T | 0.47       | 1              | 100           | 80   | 100                          | 1350                    | 1600 | 1500                     | 0.9±0.1<br>[.035±.004]  |
| MPH201610S1R0□T | 1.0        | 1              | 112           | 90   | 70                           | 1000                    | 1200 | 1400                     |                         |
| MPH201610S1R5□T | 1.5        | 1              | 137           | 110  | 60                           | 600                     | 700  | 1200                     |                         |
| MPH201610S2R2□T | 2.2        | 1              | 137           | 110  | 50                           | 420                     | 500  | 1200                     |                         |
| MPH201610S3R3□T | 3.3        | 1              | 150           | 120  | 40                           | 270                     | 330  | 1200                     |                         |
| MPH201610S4R7□T | 4.7        | 1              | 175           | 140  | 30                           | 180                     | 220  | 1100                     |                         |
| MPH201612S6R8□T | 6.8        | 1              | 212           | 170  | 40                           | 180                     | 220  | 1200                     | 1.25±0.2<br>[.049±.008] |
| MPH201612S100□T | 10.0       | 1              | 312           | 250  | 35                           | 170                     | 200  | 1100                     |                         |

## MPH2520 TYPE

| Part Number     | Inductance | L Test Freq. L | DC Resistance |      | Min. Self-resonant Frequency | Saturation Current Typ. |      | Heat Rating Current Max. | Thickness              |
|-----------------|------------|----------------|---------------|------|------------------------------|-------------------------|------|--------------------------|------------------------|
| Units           | μH         | MHz            | mΩ            |      | MHz                          | mA                      |      | mA                       | mm [inch]              |
| Symbol          | L          | Freq.          | DCR           |      | S.R.F                        | Isat                    |      | I <sub>rms</sub>         | T                      |
|                 |            |                | Max.          | Typ. |                              | Max.                    | Typ. |                          |                        |
| MPH252010SR47□T | 0.47       | 1              | 50            | 40   | 105                          | 1300                    | 1500 | 1800                     | 0.9±0.1<br>[.035±.004] |
| MPH252010S1R0□T | 1.0        | 1              | 75            | 60   | 70                           | 1150                    | 1400 | 1600                     |                        |
| MPH252010S1R5□T | 1.5        | 1              | 87            | 70   | 65                           | 1000                    | 1200 | 1500                     |                        |
| MPH252010S1R8□T | 1.8        | 1              | 100           | 80   | 60                           | 700                     | 950  | 1300                     |                        |
| MPH252010S2R2□T | 2.2        | 1              | 100           | 80   | 55                           | 700                     | 850  | 1300                     |                        |
| MPH252010S3R3□T | 3.3        | 1              | 125           | 100  | 30                           | 380                     | 450  | 1200                     |                        |
| MPH252010S4R7□T | 4.7        | 1              | 137           | 110  | 25                           | 270                     | 320  | 1100                     |                        |
| MPH252010C2R2□T | 2.2        | 1              | 250           | 200  | 60                           | 1250                    | 1500 | 1200                     |                        |
| MPH252010C3R3□T | 3.3        | 1              | 312           | 250  | 55                           | 1000                    | 1200 | 1100                     |                        |

# SPECIFICATION

## MPH2520 TYPE

| Part Number     | Inductance | L Test Freq. L | DC Resistance |      | Min. Self-resonant Frequency | Saturation Current Typ. |      | Heat Rating Current Max. | Thickness              |
|-----------------|------------|----------------|---------------|------|------------------------------|-------------------------|------|--------------------------|------------------------|
| Units           | μH         | MHz            | mΩ            |      | MHz                          | mA                      |      | mA                       | mm [inch]              |
| Symbol          | L          | Freq.          | DCR           |      | S.R.F                        | Isat                    |      | Irms                     | T                      |
|                 |            |                | Max.          | Typ. |                              | Max.                    | Typ. |                          |                        |
| MPH252010C4R7□T | 4.7        | 1              | 475           | 380  | 35                           | 630                     | 750  | 900                      | 0.9±0.1<br>[.035±.004] |
| MPH252010C6R8□T | 6.8        | 1              | 562           | 450  | 30                           | 300                     | 350  | 750                      |                        |
| MPH252010C100□T | 10.0       | 1              | 625           | 500  | 25                           | 210                     | 250  | 700                      |                        |
| MPH252012S4R7□T | 4.7        | 1              | 225           | 180  | 30                           | 640                     | 750  | 1000                     | 1.1±0.1<br>[0.43±.004] |
| MPH252012C1R0□T | 1.0        | 1              | 106           | 85   | 85                           | 1750                    | 2100 | 2100                     |                        |
| MPH252012C2R2□T | 2.2        | 1              | 312           | 250  | 50                           | 1350                    | 1600 | 1100                     |                        |
| MPH252012C3R3□T | 3.3        | 1              | 312           | 250  | 50                           | 1050                    | 1250 | 1100                     |                        |
| MPH252012C4R7□T | 4.7        | 1              | 500           | 400  | 35                           | 680                     | 800  | 900                      |                        |
| MPH252012C6R8□T | 6.8        | 1              | 625           | 500  | 30                           | 630                     | 750  | 800                      |                        |
| MPH252012C100□T | 10.0       | 1              | 625           | 500  | 25                           | 420                     | 500  | 800                      |                        |

※□: Please specify the inductance tolerance code (M=±20%, N=±30%);

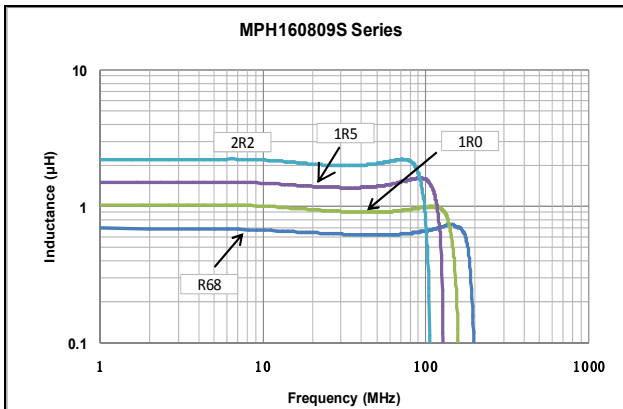
※Rated current: Isat or Irms, whichever is smaller;

※Isat: DC current at which the inductance drops approximate 30% from its value without current;

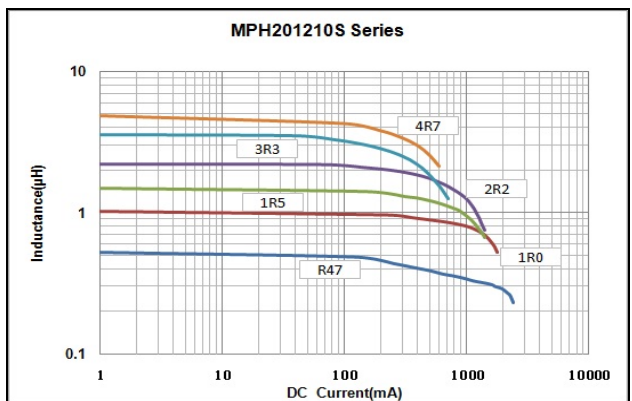
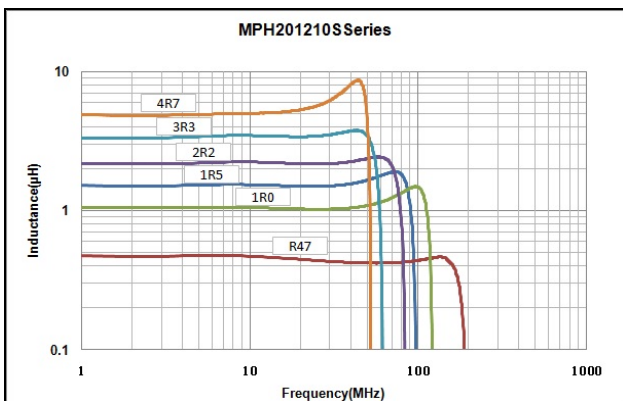
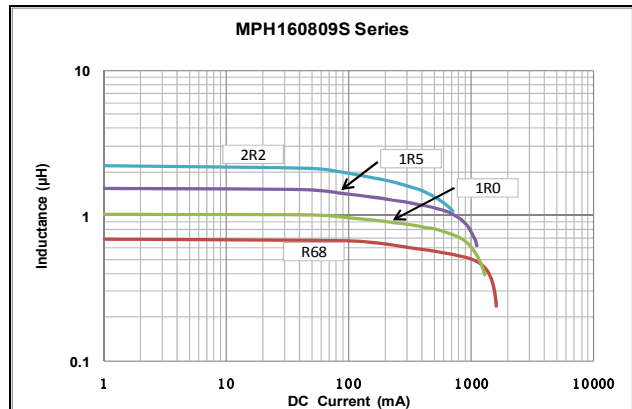
※Irms : DC current that causes the temperature rise ( $\Delta T = 40^{\circ}C$ ) from  $20^{\circ}C$  ambient.

## TYPICAL ELECTRICAL CHARACTERISTICS

Inductance vs. Frequency Characteristics

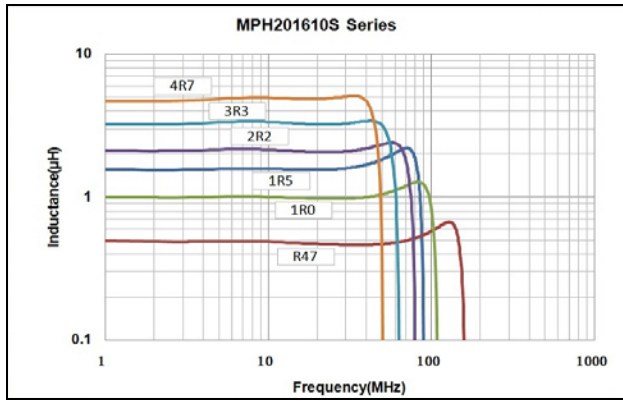


Inductance vs. DC Current Characteristics

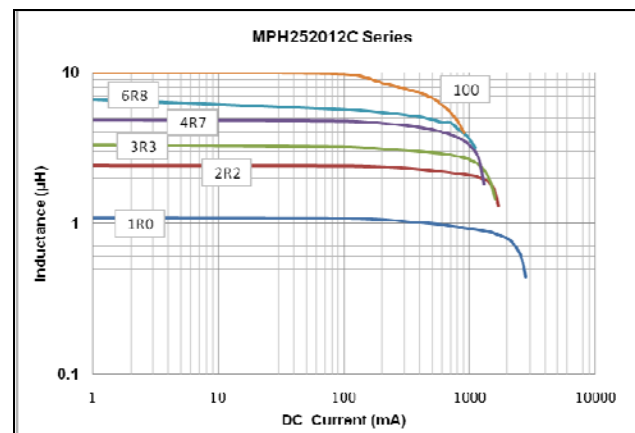
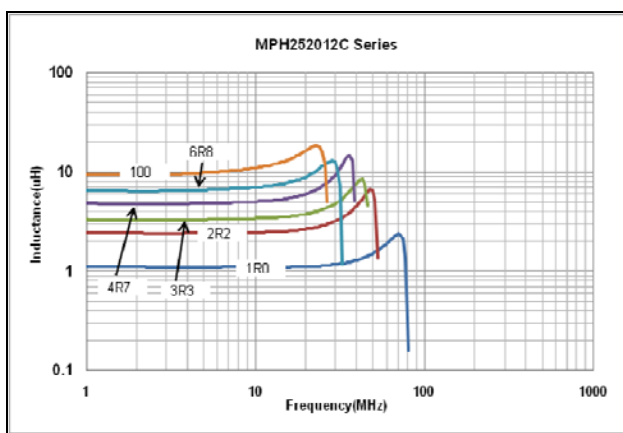
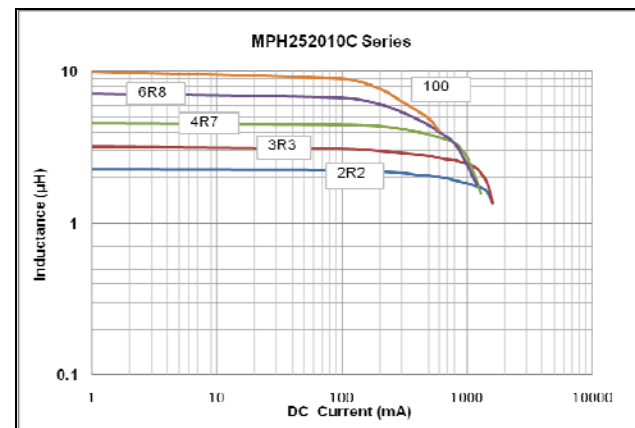
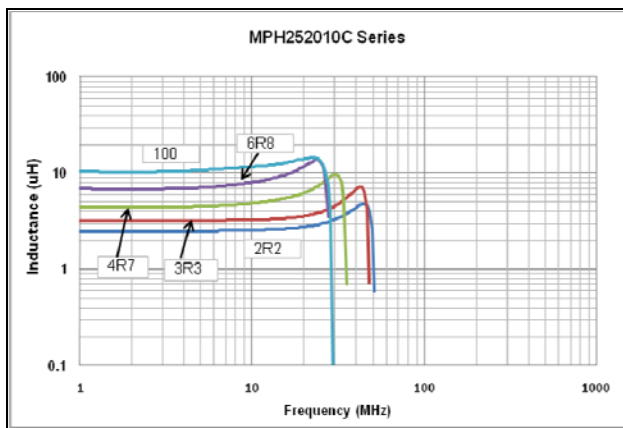
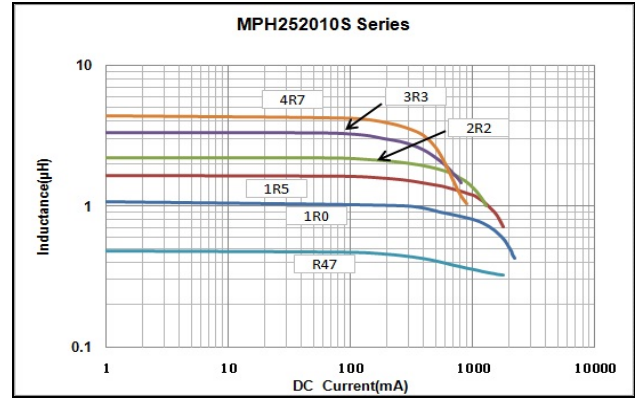
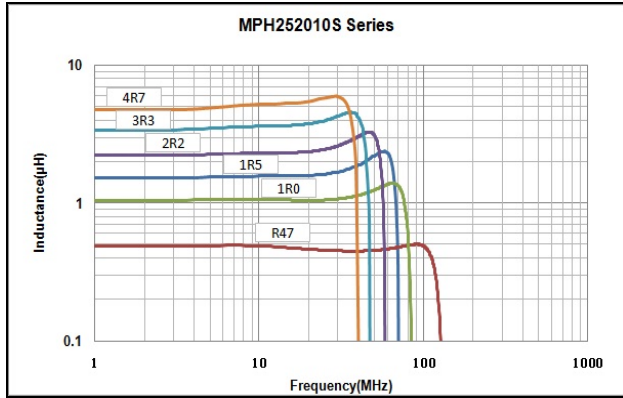
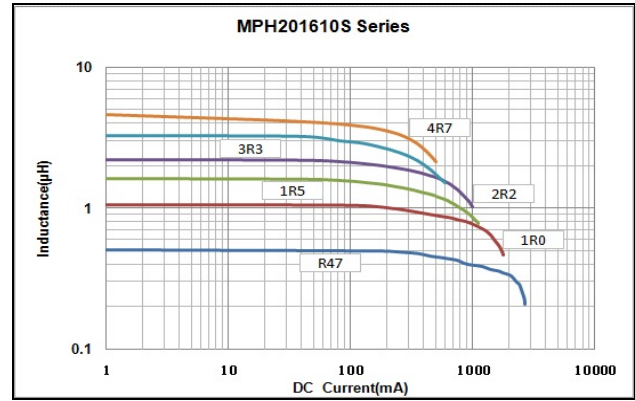


# TYPICAL ELECTRICAL CHARACTERISTICS

Inductance vs. Frequency Characteristics



Inductance vs. DC Current Characteristics



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[MLZ1608M150WTD25](#) [MLZ1608M3R3WTD25](#) [MLZ1608M3R3WT000](#) [MLZ1608M150WT000](#) [MLZ1608A1R5WT000](#)  
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