

Wire Wound SMD Power Inductors – FHD Series

Operating temperature range : -40°C~+125°C
(Including self-heating)



FEATURES

- Fe base metal material core provides large saturation current
- Metallization on ferrite core results in excellent shock resistance and damage-free durability
- Closed magnetic circuit design reduces leakage flux and Electro Magnetic Interference (EMI)
- Low DCR decreases power loss, small and slim take up less PCB real estate
- Automatic production ensures high quality and consistency

特征

- 采用金屬鐵磁芯，具有更高的飽和電流
- 直接在磁芯上金屬化電極，抗跌落沖擊強，經久耐用
- 閉合磁路結構設計，漏磁少，抗EMI能力強
- 低直流電阻降低能量損耗，省電省空間
- 世界一流的自動化生產設備、領先的高精度，一致性好

APPLICATIONS

- Smart phone, set top box, VR, AR
- Notebooks, desktop computers, servers
- Portable gaming devices, personal navigation systems, personal multimedia devices
- SSD, Bluetooth, Wi-Fi module
- NB-IOT, Bluetooth headset, Smart speakers

用途

- 智能手機、機頂盒、虛擬現實、增強現實
- 筆記本電腦、臺式電腦、服務器
- 便攜式遊戲設備、個人導航系統、多媒體設備
- 固態硬盤、藍牙、WIFI 模塊
- 物聯網模塊、藍牙耳機、智能音箱

PRODUCT IDENTIFICATION

FHD 201610 S -1R0 M T
① ② ③ ④ ⑤ ⑥

| ① Type | |
|--------|-------------------------------|
| FHD | Wire Wound SMD Power Inductor |

| ③ Feature Type | |
|----------------|--------|
| S | S Type |

| ④ Nominal Inductance | |
|----------------------|---------------|
| Example | Nominal Value |
| R47 | 0.47μH |
| 1R0 | 1.0μH |

| ⑥ Packing | |
|-----------|-------------|
| T | Tape & Reel |

| ② External Dimensions (L×W×H) [mm] | |
|------------------------------------|-------------|
| 201610 | 2.0×1.6×1.0 |
| 252010 | 2.5×2.0×1.0 |
| 252012 | 2.5×2.0×1.2 |
| 3012 | 3.0×3.0×1.2 |
| 3020 | 3.0×3.0×2.0 |
| 4012 | 4.0×4.0×1.2 |
| 4020 | 4.0×4.0×2.0 |

| ⑤ Inductance Tolerance | |
|------------------------|------|
| M | ±20% |
| N | ±30% |

SHAPE AND DIMENSIONS

Fig.1

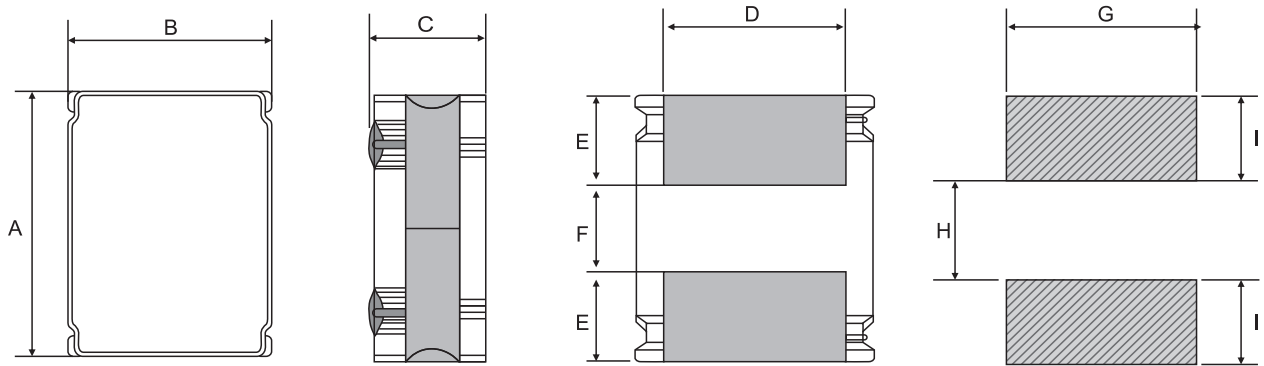
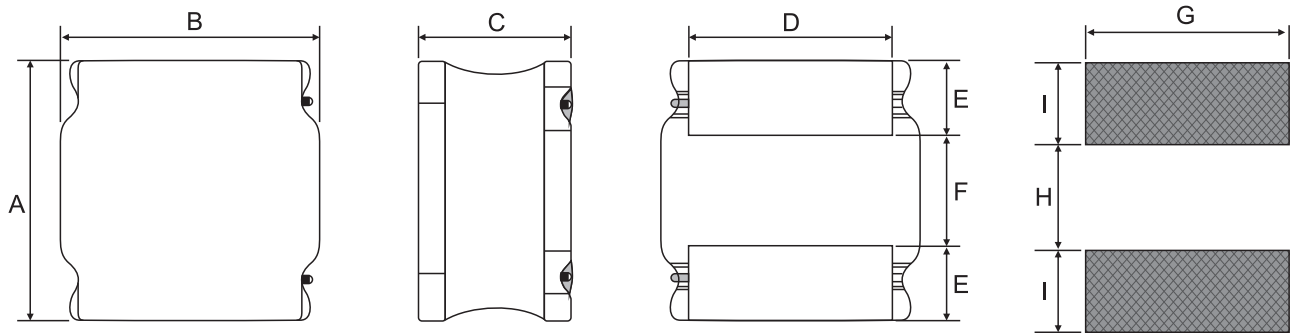


Fig.2



Unit: mm

| Series | Shape | A | B | C | D | E | F | a Typ. | b Typ. | c Typ. |
|-----------|-------|---------|---------|-----------|----------|----------|---------|--------|--------|--------|
| FHD201610 | Fig.1 | 2.0±0.2 | 1.6±0.2 | 1.08 Max. | 1.5±0.2 | 0.6±0.2 | 0.8±0.2 | 0.7 | 0.7 | 1.7 |
| FHD252010 | Fig.1 | 2.5±0.2 | 2.0±0.2 | 1.05 Max. | 1.65±0.2 | 0.8±0.2 | 0.8±0.2 | 0.8 | 0.85 | 2.0 |
| FHD252012 | Fig.1 | 2.5±0.2 | 2.0±0.2 | 1.26 Max. | 1.65±0.2 | 0.8±0.2 | 0.8±0.2 | 0.8 | 0.85 | 2.0 |
| FHD3012 | Fig.2 | 3.0±0.2 | 3.0±0.2 | 1.2 Max. | 2.6±0.2 | 0.75±0.2 | 1.5±0.2 | 1.5 | 0.80 | 3.2 |
| FHD3020 | Fig.2 | 3.0±0.2 | 3.0±0.2 | 2.0 Max. | 2.6±0.2 | 0.75±0.2 | 1.5±0.2 | 1.5 | 0.80 | 3.2 |
| FHD4012 | Fig.2 | 4.0±0.2 | 4.0±0.2 | 1.2 Max. | 3.1±0.2 | 0.95±0.2 | 2.1±0.2 | 1.9 | 1.10 | 3.7 |
| FHD4020 | Fig.2 | 4.0±0.2 | 4.0±0.2 | 2.0 Max. | 3.1±0.2 | 0.95±0.2 | 2.1±0.2 | 1.9 | 1.10 | 3.7 |

SPECIFICATIONS

FHD201610S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|------------------|---------------|---------------|----------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD201610S-R24MT | 0.24±20% | 0.040 | 0.033 | 4.50 | 5.50 | 3.00 | 3.45 |
| FHD201610S-R33MT | 0.33±20% | 0.049 | 0.041 | 4.40 | 5.20 | 2.70 | 3.10 |
| FHD201610S-R47MT | 0.47±20% | 0.049 | 0.041 | 4.06 | 4.70 | 2.70 | 3.10 |
| FHD201610S-R56MT | 0.56±20% | 0.053 | 0.043 | 3.80 | 4.50 | 2.60 | 2.80 |
| FHD201610S-R68MT | 0.68±20% | 0.065 | 0.057 | 3.50 | 4.00 | 2.50 | 2.80 |
| FHD201610S-1R0MT | 1.0±20% | 0.095 | 0.078 | 3.30 | 3.80 | 2.00 | 2.30 |
| FHD201610S-1R5MT | 1.5±20% | 0.130 | 0.110 | 1.95 | 2.30 | 1.70 | 2.00 |
| FHD201610S-2R2MT | 2.2±20% | 0.180 | 0.160 | 1.90 | 2.15 | 1.40 | 1.60 |
| FHD201610S-3R3MT | 3.3±20% | 0.307 | 0.245 | 1.40 | 1.60 | 1.10 | 1.30 |
| FHD201610S-4R7MT | 4.7±20% | 0.425 | 0.370 | 1.10 | 1.40 | 0.90 | 1.00 |
| FHD201610S-6R8MT | 6.8±20% | 0.620 | 0.500 | 0.95 | 1.10 | 0.70 | 0.82 |
| FHD201610S-8R2MT | 8.2±20% | 0.870 | 0.670 | 0.86 | 1.00 | 0.66 | 0.76 |
| FHD201610S-100MT | 10±20% | 0.875 | 0.700 | 0.80 | 0.95 | 0.60 | 0.70 |

FHD252010S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|------------------|---------------|---------------|----------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD252010S-R24MT | 0.24±20% | 0.033 | 0.025 | 6.10 | 7.10 | 3.70 | 4.50 |
| FHD252010S-R33MT | 0.33±20% | 0.039 | 0.033 | 4.80 | 5.50 | 3.50 | 4.05 |
| FHD252010S-R47MT | 0.47±20% | 0.045 | 0.040 | 4.40 | 5.20 | 3.20 | 3.60 |
| FHD252010S-R68MT | 0.68±20% | 0.059 | 0.049 | 3.20 | 3.60 | 2.75 | 3.20 |
| FHD252010S-1R0MT | 1.0±20% | 0.085 | 0.071 | 3.10 | 3.50 | 2.20 | 2.50 |
| FHD252010S-1R5MT | 1.5±20% | 0.106 | 0.090 | 2.60 | 3.00 | 2.00 | 2.30 |
| FHD252010S-2R2MT | 2.2±20% | 0.155 | 0.129 | 1.90 | 2.20 | 1.50 | 1.80 |
| FHD252010S-3R3MT | 3.3±20% | 0.235 | 0.196 | 1.60 | 1.80 | 1.20 | 1.40 |
| FHD252010S-4R7MT | 4.7±20% | 0.290 | 0.255 | 1.30 | 1.50 | 1.00 | 1.10 |
| FHD252010S-6R8MT | 6.8±20% | 0.480 | 0.380 | 1.00 | 1.15 | 0.95 | 1.00 |
| FHD252010S-100MT | 10±20% | 0.740 | 0.630 | 0.90 | 1.00 | 0.65 | 0.75 |

SPECIFICATIONS

FHD252012S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|------------------|------------|---------------|-------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD252012S-R24MT | 0.24±20% | 0.023 | 0.019 | 6.50 | 7.80 | 4.05 | 4.70 |
| FHD252012S-R33MT | 0.33±20% | 0.028 | 0.023 | 5.35 | 6.30 | 3.70 | 4.30 |
| FHD252012S-R47MT | 0.47±20% | 0.035 | 0.029 | 4.90 | 5.60 | 3.45 | 4.00 |
| FHD252012S-R68MT | 0.68±20% | 0.045 | 0.039 | 3.80 | 4.50 | 3.15 | 3.60 |
| FHD252012S-1R0MT | 1.0±20% | 0.054 | 0.048 | 3.60 | 4.20 | 3.00 | 3.40 |
| FHD252012S-1R5MT | 1.5±20% | 0.072 | 0.060 | 2.90 | 3.50 | 2.40 | 2.80 |
| FHD252012S-2R2MT | 2.2±20% | 0.120 | 0.100 | 2.60 | 3.00 | 1.90 | 2.15 |
| FHD252012S-3R3MT | 3.3±20% | 0.215 | 0.175 | 1.70 | 2.10 | 1.50 | 1.80 |
| FHD252012S-4R7MT | 4.7±20% | 0.260 | 0.225 | 1.60 | 1.90 | 1.25 | 1.45 |
| FHD252012S-6R8MT | 6.8±20% | 0.366 | 0.305 | 1.20 | 1.40 | 0.95 | 1.10 |
| FHD252012S-100MT | 10±20% | 0.480 | 0.435 | 1.10 | 1.35 | 0.85 | 1.00 |

FHD3012S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|----------------|------------|---------------|-------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD3012S-R33MT | 0.33±20% | 0.032 | 0.024 | 7.20 | 8.90 | 4.10 | 4.80 |
| FHD3012S-R47MT | 0.47±20% | 0.040 | 0.031 | 6.80 | 8.00 | 3.80 | 4.20 |
| FHD3012S-1R0MT | 1.0±20% | 0.054 | 0.046 | 4.20 | 5.40 | 2.70 | 3.10 |
| FHD3012S-1R5MT | 1.5±20% | 0.074 | 0.062 | 3.40 | 4.10 | 2.50 | 2.90 |
| FHD3012S-2R2MT | 2.2±20% | 0.108 | 0.090 | 2.80 | 3.35 | 2.05 | 2.35 |
| FHD3012S-3R3MT | 3.3±20% | 0.185 | 0.144 | 2.20 | 2.60 | 1.50 | 1.80 |
| FHD3012S-4R7MT | 4.7±20% | 0.255 | 0.215 | 2.00 | 2.50 | 1.15 | 1.35 |
| FHD3012S-6R8MT | 6.8±20% | 0.340 | 0.290 | 1.60 | 1.90 | 1.10 | 1.25 |
| FHD3012S-100MT | 10±20% | 0.474 | 0.395 | 1.20 | 1.45 | 1.00 | 1.15 |

SPECIFICATIONS

FHD3020S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|----------------|------------|---------------|-------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD3020S-R24MT | 0.24±20% | 0.020 | 0.016 | 12.5 | 14.5 | 6.0 | 7.1 |
| FHD3020S-R47MT | 0.47±20% | 0.024 | 0.019 | 11.0 | 12.5 | 5.8 | 7.0 |
| FHD3020S-1R0MT | 1.0±20% | 0.045 | 0.036 | 8.00 | 10.0 | 4.5 | 5.2 |
| FHD3020S-3R3MT | 3.3±20% | 0.124 | 0.098 | 4.60 | 5.50 | 2.5 | 3.0 |

FHD4012S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|----------------|------------|---------------|-------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD4012S-R56MT | 0.56±20% | 0.050 | 0.040 | 6.00 | 7.00 | 3.20 | 3.80 |
| FHD4012S-R68MT | 0.68±20% | 0.055 | 0.042 | 5.20 | 6.20 | 3.25 | 3.80 |
| FHD4012S-1R0MT | 1.0±20% | 0.059 | 0.049 | 3.80 | 4.60 | 3.00 | 3.50 |
| FHD4012S-2R2MT | 2.2±20% | 0.090 | 0.075 | 2.80 | 3.30 | 2.50 | 3.00 |
| FHD4012S-3R3MT | 3.3±20% | 0.130 | 0.106 | 2.80 | 3.30 | 2.00 | 2.50 |
| FHD4012S-4R7MT | 4.7±20% | 0.175 | 0.145 | 2.30 | 2.60 | 1.80 | 2.10 |
| FHD4012S-6R8MT | 6.8±20% | 0.230 | 0.190 | 1.60 | 2.20 | 1.50 | 1.75 |
| FHD4012S-8R2MT | 8.2±20% | 0.273 | 0.210 | 1.58 | 1.95 | 1.46 | 1.68 |
| FHD4012S-100MT | 10±20% | 0.360 | 0.300 | 1.55 | 1.85 | 0.85 | 1.00 |

SPECIFICATIONS

FHD4020S Series

| Part Number | Inductance | DC Resistance | | Saturation Current | | Heat Rating Current | |
|----------------|------------|---------------|--------|--------------------|------|---------------------|------|
| | 1MHz/1V | Max. | Typ. | Max. | Typ. | Max. | Typ. |
| Units | μH | Ω | Ω | A | A | A | A |
| Symbol | L | DCR | | Isat | | Irms | |
| FHD4020S-R24MT | 0.24±20% | 0.017 | 0.013 | 14.0 | 17.0 | 6.00 | 7.00 |
| FHD4020S-R33MT | 0.33±20% | 0.020 | 0.015 | 13.0 | 16.0 | 5.90 | 6.80 |
| FHD4020S-R47MT | 0.47±20% | 0.022 | 0.016 | 11.0 | 12.0 | 5.90 | 6.80 |
| FHD4020S-R68MT | 0.68±20% | 0.0245 | 0.0192 | 9.00 | 11.5 | 5.80 | 6.70 |
| FHD4020S-1R0MT | 1.0±20% | 0.028 | 0.023 | 8.70 | 11.0 | 5.80 | 6.70 |
| FHD4020S-1R5MT | 1.5±20% | 0.038 | 0.032 | 7.70 | 9.60 | 5.20 | 6.00 |
| FHD4020S-2R2MT | 2.2±20% | 0.056 | 0.046 | 6.00 | 7.50 | 4.00 | 4.80 |
| FHD4020S-3R3MT | 3.3±20% | 0.088 | 0.073 | 4.70 | 5.90 | 3.40 | 4.00 |
| FHD4020S-4R7MT | 4.7±20% | 0.115 | 0.095 | 4.00 | 4.90 | 2.85 | 3.30 |
| FHD4020S-6R8MT | 6.8±20% | 0.160 | 0.130 | 3.00 | 4.20 | 2.40 | 2.80 |
| FHD4020S-8R2MT | 8.2±20% | 0.220 | 0.175 | 2.90 | 3.80 | 2.10 | 2.40 |
| FHD4020S-100MT | 10±20% | 0.220 | 0.190 | 2.80 | 3.50 | 2.00 | 2.35 |
| FHD4020S-150MT | 15±20% | 0.400 | 0.305 | 2.10 | 2.80 | 1.00 | 1.20 |
| FHD4020S-220MT | 22±20% | 0.545 | 0.415 | 1.30 | 1.50 | 0.95 | 1.10 |
| FHD4020S-330MT | 33±20% | 0.850 | 0.650 | 1.20 | 1.40 | 0.70 | 0.86 |
| FHD4020S-470MT | 47±20% | 1.200 | 0.950 | 1.10 | 1.30 | 0.56 | 0.66 |

Note: ※1: Rated current: Isat(max.) or Irms(max.), whichever is smaller;

※2: Isat: Max. Value, DC current at which the inductance drops less than 30% from its value without current; Typ. Value, DC current at which the inductance drops 30% from its value without current;

※3: Irms: DC current that causes the temperature rise (ΔT) from 20°C ambient. For Max. Value, $\Delta T < 40^\circ\text{C}$; for Typ. Value, ΔT is approximate 40°C.

The part temperature (ambient + temp. rise) should not exceed 125°C under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application

※4: For FHD2016 & FHD2520 size inductors, absolute maximum voltage: DC 25V; For FHD30 & FHD40 size inductors, absolute maximum voltage: DC 40V;

Typical Electrical Characteristics: Please refer to appendix

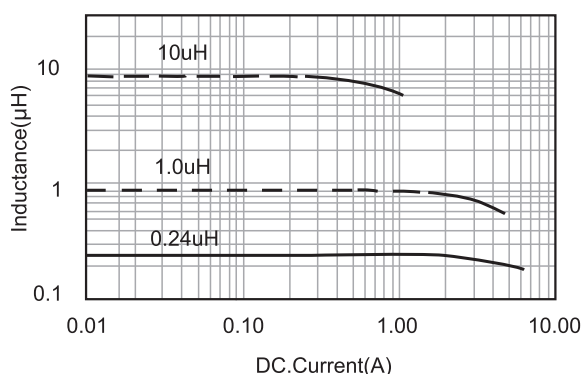
TYPICAL ELECTRICAL CHARACTERISTICS

FHD201610S Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics

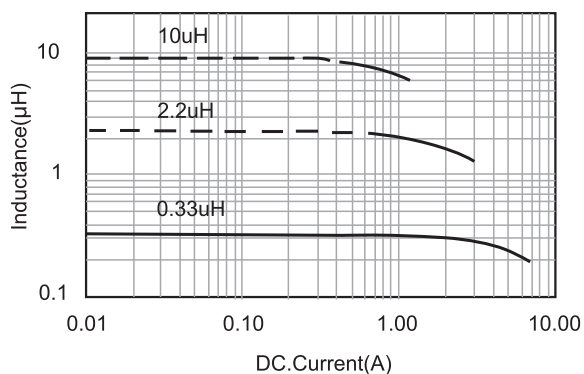


FHD252010S Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics

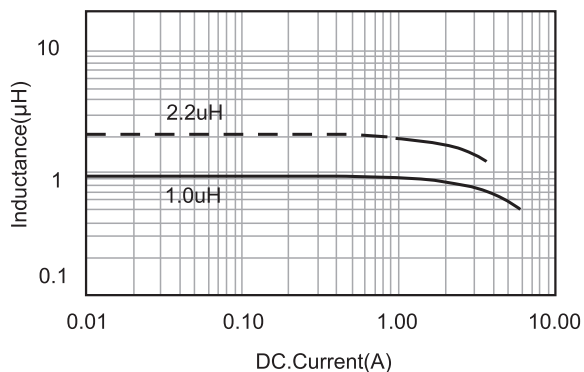


FHD252012S Series

Temperature vs. DC Current Characteristics

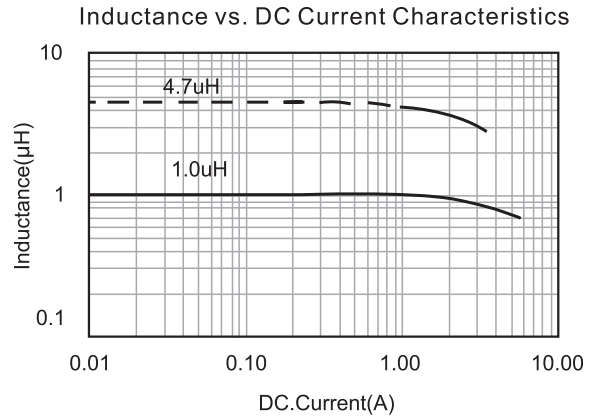


Inductance vs. DC Current Characteristics

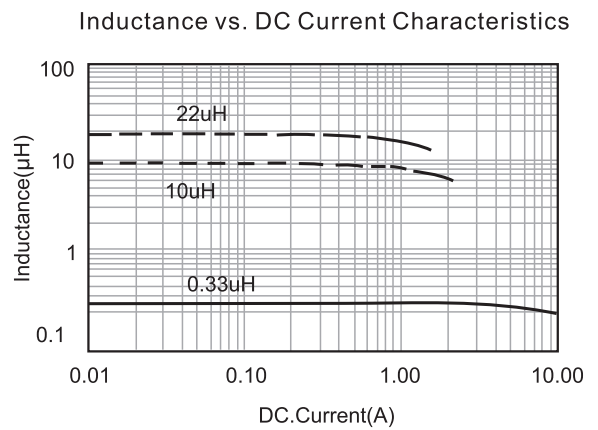


TYPICAL ELECTRICAL CHARACTERISTICS

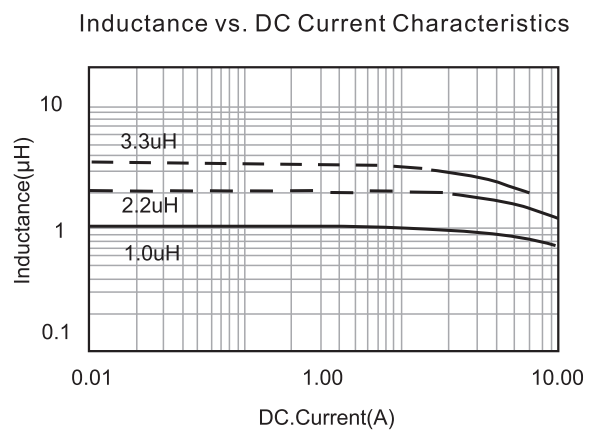
FHD3012S Series



FHD4012S Series



FHD4020S Series



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