

■ 绕线型片式铁氧体电感

Wire Wound Chip Ferrite Inductors



◆ 特征 Feature

- * 体积小, 适合高密度表面贴装
Minature Size, Suitable For SMT.
- * 采用端电极结构, 很好地抑制了引线引起的寄生元件效应, 具有高可靠性
Using Terminal Electrode Structure To Restrain The Parasitic Component Effect Quite Caused By Lead.
- * 精度高、Q 值高
Low DC Resistance , High Current And High Inductance.
- * 优良的焊接性和耐焊性
Excellent In Solderability And Heat Resistance.

◆ 应用 Application

- * 视听设备、无线通讯设备和各类通用电子设备
Wireless Communication Equipment And Various Types Of General Electronic Equipment.
- * 蓝牙模块, 音频电路
Bluetooth, Audio Circuit.
- * 其它电子设备
Other Electronic Equipment.

◆ 型号表示法 Part Number

FHD	0402	UF	R68	J	S	T
①	②	③	④	⑤	⑥	⑦

① 产品类型 Product Type:

FHW: 绕线型片式电感器系列

FHW: Wire Wound Inductor Series

② 尺寸 Dimensions: 0402(1.0×0.5mm)、0603(1.6×0.8mm)

③ 材料代号 Material Code: PF/IF---铁氧体芯 Ferrite core

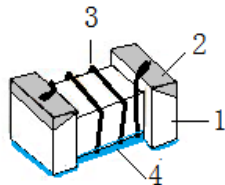
④ 标称电感量 Inductance: 010=10nH、R10=100nH、1R0=1.0μH、100=10μH

⑤ 标称电感值偏差 Tolerance: J---±5%; K---±10%; M---±20%

⑥ 电极表面镀层材料 Terminal: S---锡端头 Tin

⑦ 包装 Packaging: T: 编带包装 Tape & Reel B: 散装 Bulk

◆ 产品结构 Product Structure



1. 磁芯 Core

2. 电极 Electrode

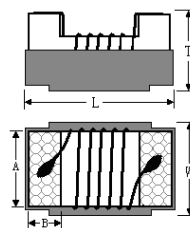
3. 漆包线 Wire

4. 封装层 Encapsulation Layer

规格尺寸 Dimension

单位 Unit: mm (inch)

Size	L (Max)	W (Max)	T (Max)	A	B
1005 (0402)	1.19 (0.047)	0.66 (0.026)	0.60 (0.024)	0.50 (0.020)	0.23 (0.009)
1608 (0603)	1.80 (0.071)	1.20 (0.047)	1.10 (0.043)	0.90 (0.035)	0.35 (0.014)


电性能参数 ELECTRICAL CHARACTERISTICS

0402IF Type

型号 Part NO	电感量 Inductance (nH)	偏差范围 Tolerance	自谐振频率 SRF (MHZ) Min	最大直流电阻 Rdc (Ω) Max	额定电流 Idc(A) Max
FHD0402IFR16□ST	160@100MHz	J,K	900	0.33	480
FHD0402IFR18□ST	180@100MHz	J,K	1000	0.312	560
FHD0402IFR22□ST	220@100MHz	J,K	1400	0.47	450
FHD0402IFR27□ST	270@100MHz	J,K	730	0.52	420
FHD0402IFR33□ST	330@100MHz	J,K	520	0.56	390
FHD0402IFR39□ST	390@100MHz	J,K	450	0.62	370
FHD0402IFR47□ST	470@10MHz	J,K	380	0.66	350
FHD0402IFR56□ST	560@10MHz	J,K	300	0.71	300

0603PF Type

型号 Part NO	电感量 Inductance (μH)	偏差范围 Tolerance	自谐振频率 SRF (MHZ) Min	最大直流电阻 Rdc (Ω) Max	额定电流 Idc(A) Max
FHD0603PF1R0□ST	1.0@7.9MHz	K,M	200	0.32	860
FHD0603PF1R5□ST	1.5@7.9MHz	K,M	100	0.4	720
FHD0603PF1R8□ST	1.8@7.9MHz	K,M	95	0.56	640
FHD0603PF2R2□ST	2.2@7.9MHz	K,M	80	0.73	600
FHD0603PF4R7□ST	4.7@7.9MHz	K,M	40	1.26	400
FHD0603PF5R6□ST	5.6@7.9MHz	K,M	37	1.7	380
FHD0603PF6R8□ST	6.8@7.9MHz	K,M	34	1.95	340
FHD0603PF100□ST	10@2.5MHz	K,M	25	2.4	280
FHD0603PF150□ST	15@2.5MHz	K,M	23	3.4	240
FHD0603PF220□ST	22@2.5MHz	K,M	19	4.7	200

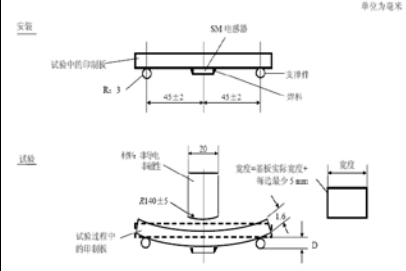
0603IFType

型号 Part NO	电感量 Inductance (μH)	偏差范围 Tolerance	Q 值 Q (Min)	自谐振频率 SRF (MHZ) Min	最大直流电阻 Rdc (Ω) Max	额定电流 Idc(A) Max
FHD0603IF2R2□ST	2.2@7.9MHz	J,K	12	180	2	280
FHD0603IF4R7□ST	4.7@7.9MHz	J,K	12	80	4	200
FHD0603IF6R8□ST	6.8@7.9MHz	J,K	10	28	4	200
FHD0603IF100□ST	10@2.5MHz	J,K	10	25	5	180
FHD0603IF150□ST	15@2.5MHz	J,K	9	18	9	150
FHD0603IF220□ST	22@2.5MHz	J,K	9	10	12	100

◆可靠性测试方法 Reliability Test Method

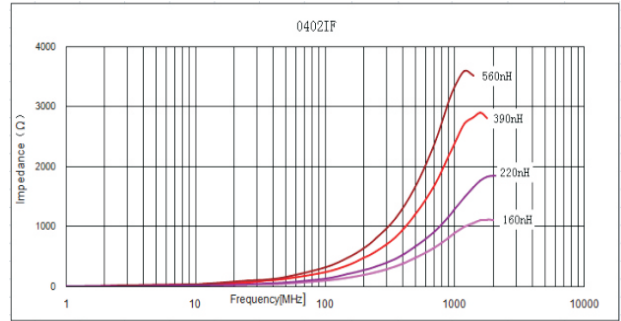
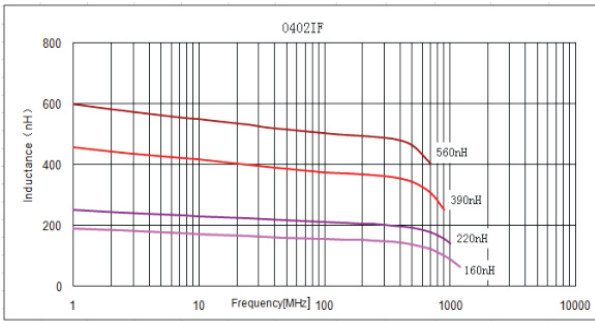
序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks										
1	可焊性 Solder ability	①外观无可见损伤痕迹; No visible mechanical damage. ②端电极表面焊锡覆盖率。 Electrode surface solder coverage. FHW-UC/HC series: $\geq 80\%$ 。	在 $245\pm 5^{\circ}\text{C}$ 熔融的焊锡 (96.5%Sn/3.0%Ag/0.5%Cu) 中浸置 $5\pm 1\text{s}$ 。 Dip pads in flux and dip in solder pot(96.5Sn/3.0Ag/0.5Cu)at $245\pm 5^{\circ}\text{C}$ for $5\pm 1\text{s}$.										
2	耐焊接热 Resistance to Soldering	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过 $\pm 5\%$; Inductance shall not change more than $\pm 5\%$; ③Q 值变化不超过 $\pm 10\%$ 。 Q shall not change more than $\pm 10\%$ 。	在 $260\pm 5^{\circ}\text{C}$ 熔融的焊锡 (96.5%Sn/3.0%Ag/0.5%Cu) 中浸置 $10\pm 1\text{s}$ 。 Dip pads in flux and dip in solder pot(96.5Sn/3.0Ag/0.5Cu)at $260\pm 5^{\circ}\text{C}$ for $10\pm 1\text{s}$.										
3	振动 Vibration	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过 $\pm 5\%$; Inductance shall not change more than $\pm 5\%$; ③Q 值变化不超过 $\pm 10\%$ 。 Q shall not change more than $\pm 10\%$ 。	振幅 1.5mm, 频率 10~55Hz, 每个方向(X、Y、Z)保持 2 小时。Inductors shall be subjected to vibration of 1.5mm amplitude frequency 10~55Hz (10Hz to 55Hz to 10Hz in a period of 1 minute) for 2h in each of three(X、Y、Z) axes.										
4	端电极强度 Adhesion of electrode	①试验后端电极无脱落; The end electrode did not fall off after the test. ②外观无可见损伤痕迹。 No visible mechanical damage.	将产品焊在 PCB 板上, 按下图、表所示方向及要求施加作用力。Weld the product on the PCB board, and apply force as shown in the diagram, direction and requirement.  <table border="1" data-bbox="986 1617 1455 1863"> <thead> <tr> <th>尺寸规格 Size</th> <th>施加力要求</th> </tr> </thead> <tbody> <tr> <td>0402IF Series</td> <td>3 N</td> </tr> <tr> <td>0603PF/IF Series</td> <td>7 N</td> </tr> <tr> <td colspan="2">Keep time: (10\pm1)s</td> </tr> <tr> <td colspan="2">Speed: 1.0 mm/s.</td> </tr> </tbody> </table>	尺寸规格 Size	施加力要求	0402IF Series	3 N	0603PF/IF Series	7 N	Keep time: (10 \pm 1)s		Speed: 1.0 mm/s.	
尺寸规格 Size	施加力要求												
0402IF Series	3 N												
0603PF/IF Series	7 N												
Keep time: (10 \pm 1)s													
Speed: 1.0 mm/s.													

5	耐低温 Low temperature resistance	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过±5%; Inductance shall not change more than ±5%; ③Q 值变化不超过±10%。 Q shall not change more than±10%.	①FHD-PF/IF 系列产品放置于温度-40±2℃的环境中存放 +24 1000 —0 h FHD-PF/IF series shall be subjected to-40±2℃ for 1000 +24 —0 h
6	耐高温 High temperature resistance	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过±5%; Inductance shall not change more than ±5%; ③Q 值变化不超过±10%。 Q shall not change more than±10%.	①FHD-PF/IF 系列产品放置于温度+85±5℃的环境中存放 +24 1000 —0 h FHD-PF/IF series shall be subjected to +85±5℃ for1000 +24 —0 h
7	温度冲击 Temperature Shock	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过±5%; Inductance shall not change more than ±5%; ③Q 值变化不超过±10%。 Q shall not change more than±10%.	①FHD-PF/IF 系列: +85℃ 30分钟 ↔ -40℃ 30分钟, 循环 100 次; FHD-PF/IF series : +85℃ 30minutes ↔ -40℃ 30minutes 100 Cycles.
8	高温负载 High temperature load	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过±5%; Inductance shall not change more than ±5%; ③Q 值变化不超过±10%。 Q shall not change more than±10%.	①FHD-PF/IF 系列产品加额定电流在 85±2℃温度条件下 +24 存放 1000 —0 h FHD-PF/IF series shall be store at 85±2℃ for 1000 —0 +24 h with rated current applied.
9	恒定湿热 Static Humidity	①外观无可见损伤痕迹; No visible mechanical damage. ②感量变化不超过±5%; Inductance shall not change more than ±5%; ③Q 值变化不超过±10%。 Q shall not change more than±10%.	将电感器放置于湿度 90%~95%,温度 60±2℃的环境中 +24 存放 1000 —0 h Inductors shall be subjected to 90%~95%RH. at 60±2℃ +24 for 1000 —0 h
10	抗弯强度 Bending strength	外观无可见损伤痕迹; No visible mechanical damage.	①将电感器安装于试验基板上; 在垂直方向施加力(如下图 所示)。Install the inductor on the test substrate; Apply force in the vertical direction (as shown below). ②该板应在(1±0.5) mm/s 的弯曲速率向下弯曲(2±0.2) mm, 保持时间(20±1) s。The epoxy plate should bend down to (2±0.2) mm at the bending rate of (1±0.5)

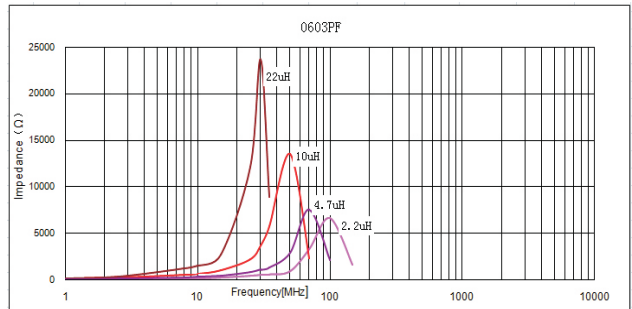
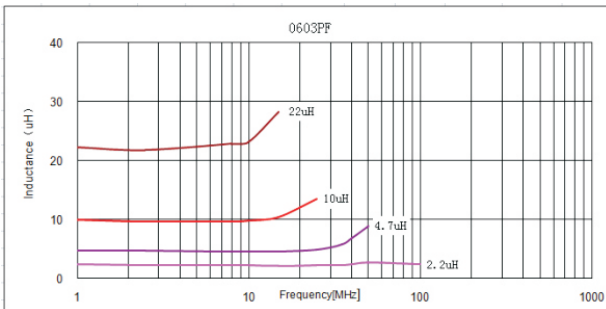
			<p>mm/s, Keep time (20±1) sec.</p> 
11	耐溶剂性 Solvent Resistance	<p>①外观无可见损伤痕迹; No visible mechanical damage.</p> <p>②感量变化不超过±5%; Inductance shall not change more than ±5%;</p> <p>③Q 值变化不超过±10%. Q shall not change more than±10%.</p>	<p>将元件浸泡在 23±5°C 的异丙醇溶液中, 保持 5±0.5 分钟。 Soak in the element 23±5°C in isopropyl alcohol solution, keep 5±0.5 min.</p>

◆产品特性曲线图 Product Characteristic Curve

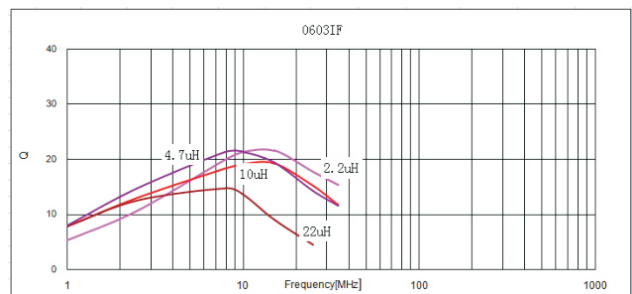
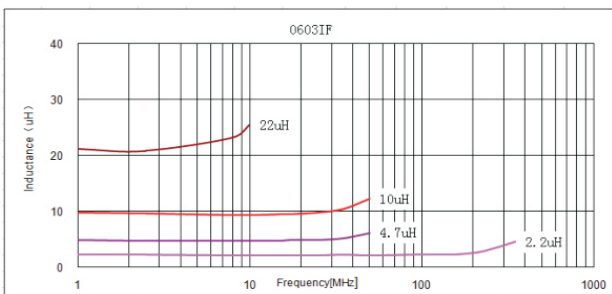
FHD0402 Type.



FHD0603PF Type.

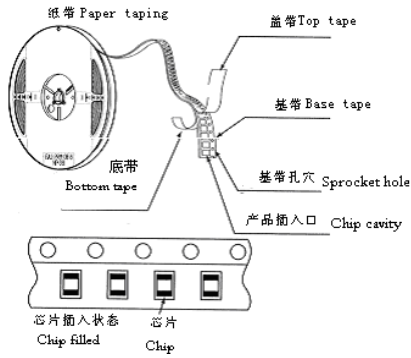


FHD0603IF Type.

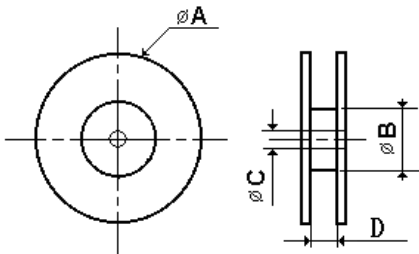


◆包装 Packaging

*编带图 Taping drawings

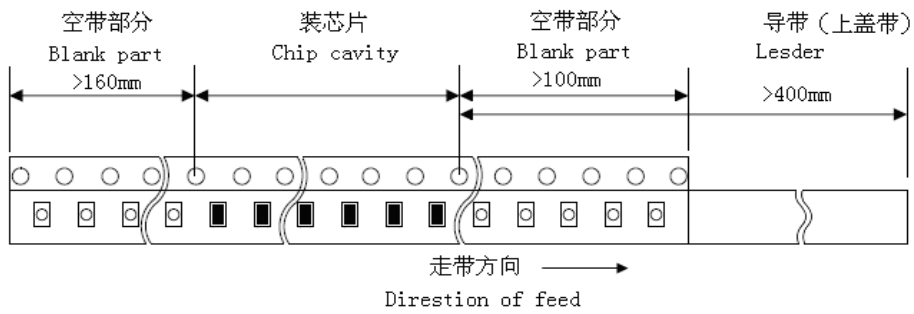


*卷盘尺寸 Reel dimensions (Unit:mm)



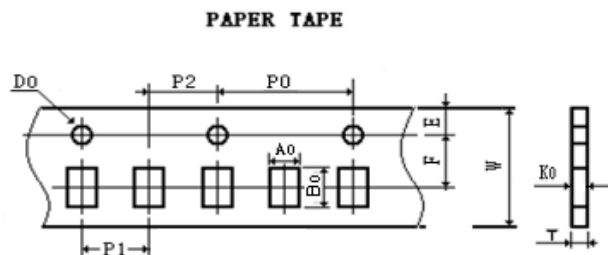
Part NO.	ϕA typ.	ϕB typ.	ϕC typ.	D typ.
0402-0603	178	60	13	8.4

*导带及空格部分 Leader and blank portion



*编带尺寸 Taping dimensions (Unit: mm)

纸带 Paper tape



Part NO.	W	E	F	D0	P0	P1	P2	P0x10	A0	B0	K0	T
0402	8.00	1.75	3.50	1.55	4	2	2	40	0.66	1.20	0.60	0.75
0603	8.00	1.75	3.50	1.55	4	4	2	40	1.20	1.90	1.05	1.15

*包装数量 (单位: 粒) Packaging number (Unit: Pcs)

尺寸 Size		0402	0603
每卷数量 Per Reel		5000	4000
每盒数量 Per Box	3 卷盒	15000	12000
	5 卷盒	25000	20000
	10 卷盒	50000	40000
每箱数量 Per Case	1.5 盒箱	75000	60000
	3 盒箱	150000	120000
	4 盒箱	200000	160000
	5 盒箱	300000	240000