

编号: H0001

承认书

APPROVAL SHEET

客户名称 天河星

Customer: _____

产品名称 贴片功率电感器

Part name: _____ SMD Power Inductors

规格

Specification: _____ PFM322512-6R8MTS10

版本 A0

Version: _____

日期 2025-1-14

Date of issue: _____

制造 Manufacturer			客户 Customer		
拟制 Design	审核 Check	批准 Approval	检验 Inspector	审核 Check	批准 Approval
徐雪枫	冯东梅	张惠霞			

■ PFM 系列功率电感

PFM Series SMD Power Inductors

◆特征 Feature

- *大电流、低直流电阻 Large current and low DCR.
- *小尺寸、超薄 Small size, Low profile.
- * 磁屏蔽结构 Magnetic shield construction.
- * 适合表面贴装 SMT type.

◆应用 Application

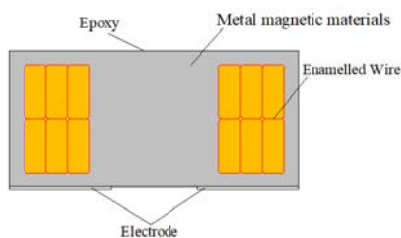
*智能手机、平板终端、数码相机、摄像机、硬盘、电源模块等；用于手机、可穿戴设备、DVCs、HDDs 等 DC-DC 转换电路。

*Smartphones, tablet terminals, digital cameras, camcorders, hard disks, power modules, etc; for DC-DC conversion circuits in mobile phones, wearable devices, DVCs, HDDs, etc.

◆型号表示法 Part Number

PFM	322512	-	6R8	M	T	S10
产品代号 Product Code	尺寸(L×W×T) Dimensions (mm)		电感量(μH) Inductance	公差 Tolerance	包装方式 Packaging Style	内部代码 Internal code
一体成型功率电感 power Inductors of molded	1.4×1.2×0.8 1.6×0.8×0.8 2.0×1.2×0.8 2.0×1.6×1.0 2.5×2.0×1.0 2.5×2.0×1.2 3.2×2.5×1.2		R33→0.33μH 1R0→1.0 μH 100→10 μH	M→±20% N→±30%	T--卷带盘装 Tape & Reel	

◆产品结构 Product Structure

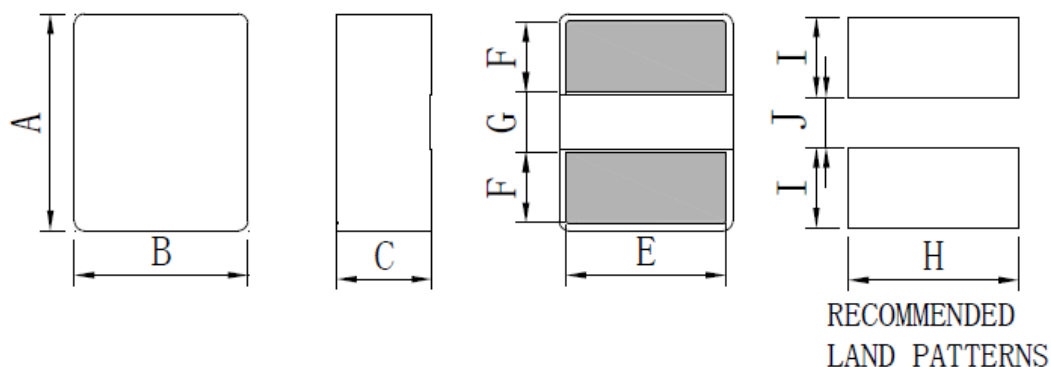


No.	部位 Component	材料 Material
①	本体 Body	金属磁性材料 Metal magnetic materials
②	线圈 Winding	漆包线 Enamelled wire
③	涂层 Shield	环氧树脂 Epoxy
④	电极 Electrode	底层—铜层 Base plating—Cu 镀层—镍层 Base plating—Ni 镀层—锡层 Base plating—Sn

◆规格尺寸 Dimension

单位 Unit:mm

Part No.	A	B	C MAX	E Typical	F Typical	G Typical	H Typical	I Typical	J Typical
141208	1.4±0.2	1.2±0.2	0.80	1.20	0.50	0.45	1.30	0.60	0.40
160808	1.6±0.2	0.8±0.2	0.80	0.80	0.55	0.50	0.90	0.65	0.40
201208	2.0±0.2	1.2±0.2	0.80	1.20	0.65	0.60	1.40	0.80	0.50
201610	2.0±0.2	1.6±0.2	1.00	1.60	0.65	0.60	1.80	0.80	0.50
252010	2.5±0.2	2.0±0.2	1.00	2.00	0.90	0.70	2.10	1.00	0.60
252012	2.5±0.2	2.0±0.2	1.20	2.00	0.90	0.70	2.10	1.00	0.60
322512	3.2±0.2	2.5±0.2	1.20	2.50	1.15	0.90	2.60	1.30	0.90


◆工作温度范围 Operating Temperature Range

*工作温度范围(包括自身发热): (-40~+125) °C。

*Operating Temperature Range(Including self-heating): (-40~+125) °C.

◆测试条件 Testing Conditions

*除非另有规定, 否则在以下条件下测试. Unless otherwise specified

温度: 常温 Temperature : Ordinary Temperature	(20±15) °C
湿度: 常湿 Humidity: Ordinary Humidity	(65±20) %RH

当对测量结果有疑问时 In case of doubt

温度 Temperature	(20±2)°C
湿度 Humidity	(65±5)% RH
大气压 Atmospheric Pressure	(86~106)kPa

◆电性能参数 Electrical Characteristics

型号 Part No.	电感量 Ls(μH)		直流电阻 RDC (mΩ)		饱和电流 Isat (A)		温升电流 Irms (A)	
	Nominal	Tol.	Max.	Typ.	Max.	Typ.	Max.	Typ.
PFM322512-6R8MTS10	6.80	±20%	210	177	2.40	2.80	1.90	2.10

注：可根据客户需求做定制产品。 Note: Customized products can be made according to customer needs.

Isat 饱和电流：指使电感量比初始值下降约 30%的电流值，加载电流的时间 1 秒以内。

Isat:The DC current at which the inductance drops approximate 30% from its value without current, Load current time within 1 s.

Irms 温升电流：指使电感器表面温度上升 40℃的电流值。

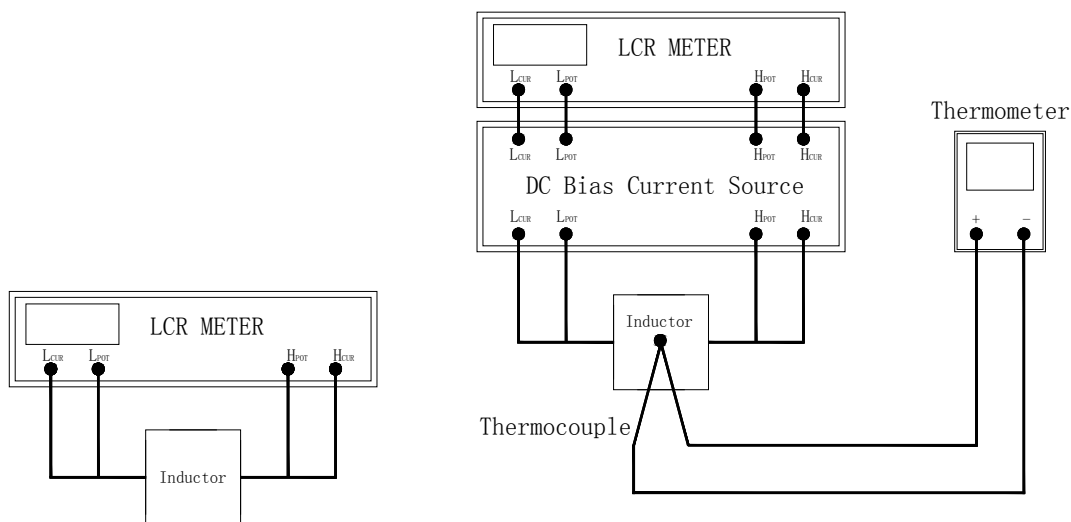
Irms:The DC current is inductor surface temperature to rise by 40℃.

额定电压： DC 40V Max.

Rated Voltage: DC 40V Max.

***测试条件与仪器 Test Condition &Equipment:**

符号 Symbols	项目 Item	测试条件 Test condition	测试仪器 Test equipment
Ls	电感量 Inductance	1MHz/1V	HIOKI IM3536 LCR METER or equivalent
RDC	直流电阻 Direct Current Resistance	Direct-Current	HIOKI RM3545 RESISTANCE MATER or equivalent
Isat	饱和电流 Saturation Current	1MHz/1V	Wayne Kerr 3260B & 3265B or equivalent
Irms	温升电流 Temperature Rise Current	/	Wayne Kerr 3260B & 3265B or equivalent

***测试示意图 Test Schematic Diagram.**


Ls & RDC test schematic diagram Isat & Irms test schematic diagram

◆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	绝缘电阻 Insulation Resistance	≥100MΩ	在电感器线圈和本体顶面中间施加 100 V 直流电压保持 60 s。 100 V DC applied between the inductor coil and the middle of the top surface of the body for 60 seconds.														
2	可焊性 Solderability	电极面 90%以上覆盖新的焊料。 90% or more of electrode area shall be coated by new solder.	在(245±5) ℃熔融的焊锡（96.5Sn/3.0Ag/0.5Cu）中浸(5±1) s。 Dip pads in flux and dip in solder pot(96.5Sn/3.0Ag/0.5Cu)at (245±5) ℃ for (5±1) seconds.														
3	耐焊接热 Resistance to Soldering Heat	外观无可见机械损伤； 电感量变化率：±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	回流焊峰值温度(260±5) ℃峰值时间(15±5) s，过炉两次，在 室温下放置 1 小时后测试。 Reflow soldering peak temperature (260 ± 5) ℃ time (15 ± 5) s, twice cycling, test after being kept at room temperature for 1 hour.														
4	端子强度 Adhesion of terminal electrode	元件的端子与本体结合无松动、无脱落。 Strong bond between the pad and the core, without dropping	将电感器焊在的基板上，然后用治具垂直电极面方向施加 力，(10±1) s。 Inductors shall be soldered to board. And then apply a force perpendicular to the direction of the electrode surface using a metallurgical tool for (10 ± 1) seconds <table><tr><td>Size</td><td>Force(N)</td></tr><tr><td>141208</td><td>5</td></tr><tr><td>160808</td><td>5</td></tr><tr><td>201208</td><td>8</td></tr><tr><td>201610</td><td>10</td></tr><tr><td>252010/252012</td><td>10</td></tr><tr><td>322512</td><td>25</td></tr></table>	Size	Force(N)	141208	5	160808	5	201208	8	201610	10	252010/252012	10	322512	25
Size	Force(N)																
141208	5																
160808	5																
201208	8																
201610	10																
252010/252012	10																
322512	25																
5	耐高温 High temperature	外观无可见机械损伤； 电感量变化率：±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	温度(+125 ± 2)℃,时间(1000±24) h； Temperature is (+125±2)℃ and keep (1000±24) hours.														
6	耐低温 Low temperature	外观无可见机械损伤； 电感量变化率：±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	温度(-40 ±2) ℃，时间(1000±24) h； Temperature is (-40±2)℃ andkeep (1000±24) hours.														

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
7	温度变化 Thermal shock	外观无可见机械损伤；电感量变化率： ±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	(-40±3)℃,时间(30±3) min ↔ (125±2)℃/(30±3) min, 转换时间≤3 min,循环1000次； 在室温下放置 2 小时后、48 小时内测试。 The test sample shall be placed at (-40±3)℃ for(30±3) min and convert to (125±2)℃ for (30±3) min, the conversion time is ≤3 minutes. The temperature cycle shall be repeated 1000 cycles. Placed at room temperature for 2 hours, within 48 hours of testing.
8	恒定湿热 Static Humidity	外观无可见机械损伤； 电感量变化率：±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	将电感器放置在于湿度(90~95)%RH,温度(60±2)℃的环境中存放(1000±24) h, 在室温下放置 2 小时后、48 小时内测试。 Inductors shall be subjected to (90~95)%RH . at (60±2)℃ for (1000±24) h .Placed at room temperature for 2 hours, within 48 hours of testing.
9	耐久性 (寿命) Life	外观无可见机械损伤；电感量变化率： ±10%以内。 No visible mechanical damage. Inductance change: Within ±10%	温度(85 ±2)℃，时间(1000±24) h,施加 Irms, 在室温下放置 2 小时后、48 小时内测试。 Inductors shall be store at (85±2)℃ for (1000±24) hours with Irms applied. Placed at room temperature for 2 hours, within 48 hours of testing. 注：加载电流时零件表面温度超过 125℃的，需要对电流降额到零件表面温度不超过 125℃。 Note: If the surface temperature of the part over 125℃ when the current is loaded, the current need to reduce until the surface temperature of the part less than 125℃.
注：以上要求测试电性能的项目，应试验后在标准条件下放置 24 小时后测试。 Note: When there are questions concerning, measurement shall be made after 24hrs of recovery under the standard condition.			

#

#

#

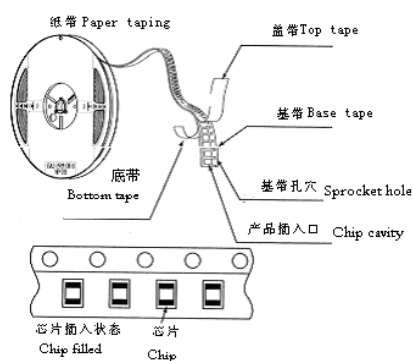
#

#

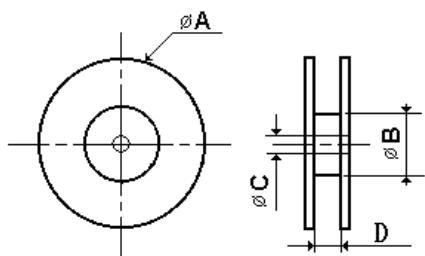
#

◆包装 Packaging

*编带图 Taping drawings

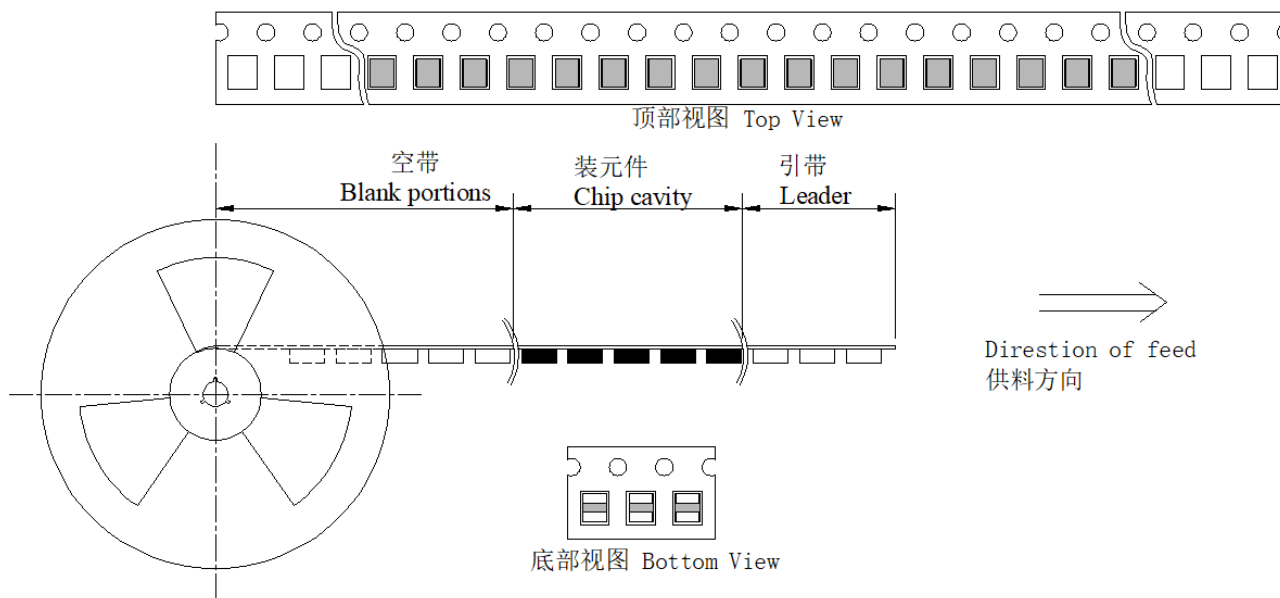


*卷盘尺寸 Reel dimensions (Unit:mm)

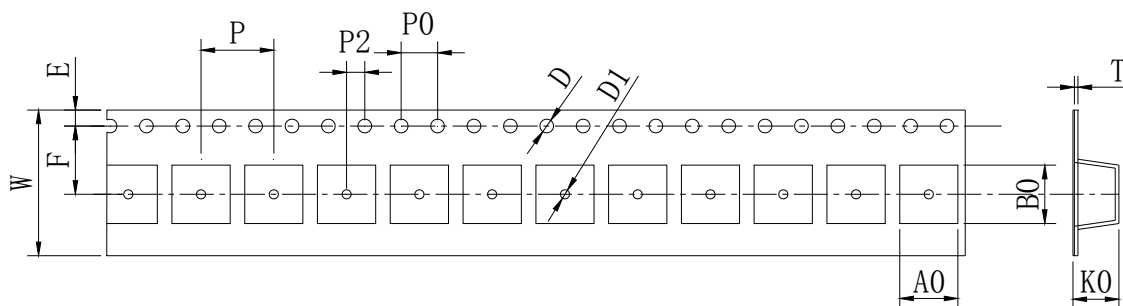


型号 Part No.	A	B	C	N	G typ.
7 inch	178±2.0	58 typ	13.5±1.0	57±2.0	8.4 typ.

*导带及空格部分 Leader and blank portion

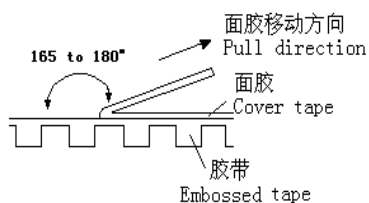


*编带尺寸 Taping dimensions (Unit: mm)



Size	W	A0	B0	D	D1	E	F	K0	P0	P2	P	T
141208	8±0.3	1.5±0.1	1.7±0.1	1.5 ±0.1	1.0MIN	1.75 ±0.1	3.5 ±0.1	1.0±0.1	4.0 ±0.3	2.0 ±0.3	4.0 ±0.3	0.23
160808		1.05±0.1	1.85±0.1					1.0±0.1				±0.05
201208		1.45±0.1	2.25±0.1					1.0±0.1				0.25 ±0.05
201610		1.85±0.1	2.25±0.1					1.15±0.1				
252010		2.2±0.1	2.7±0.1					1.15±0.1				
252012		2.2±0.1	2.7±0.1					1.35±0.1				
322512		2.9±0.1	3.5±0.1					1.4±0.1				

* 剥离力检验 Peeling off force



盖带的剥离力要求 Peeling required(10~130) g

测试条件 Test condition

盖带剥离速度: 300mm/min±10%

Speed of peeling off :300mm/min±10%

盖带剥离角度: 165°~180°

Angle of peeling off: 165°~180°

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

每卷数量 Reel	3000	
每盒数量 Box	15,000	30,000
每箱数量 Case	150,000	180,000

◆推荐焊接条件 Recommended Soldering Conditions

*本产品建议使用回流焊接法。

Applicable soldering process to the products is reflow soldering.

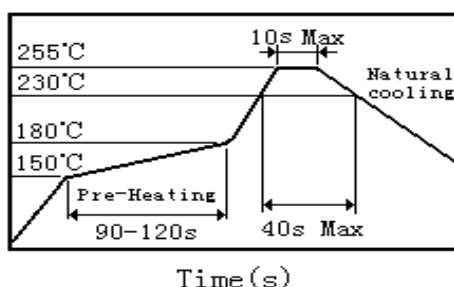
*焊接材料 Soldering Materials

焊料 Solder: Sn-3.0Ag-0.5Cu

助焊剂: 使用松香基助焊剂, 禁止使用卤化物含量超过 0.2wt%的强酸性助焊剂和水溶性助焊剂。

Flux: Use rosin-based flux, but prohibition of use acidic flux and water-soluble flux(with chlorine exceeding 0.2 wt%).

*焊接曲线 Soldering Profile



*烙铁焊接 Soldering Iron

使用烙铁进行返修时要求在 150°C 下预热至少 1 分钟，不能直接用焊头接触磁体，返修焊接条件如下：
 Reworking with electric soldering iron must preheating at 150°C for 1 minute is required, and do not directly touch the core with the tip of the soldering iron. The reworking soldering conditions are as follows:

烙铁头温度 Temperature of soldering iron tip: 350°C;

烙铁输出功率 Soldering iron power output: ≤30W;

烙铁头直径 Diameter of soldering iron end: ≤1.0mm;

焊接时间 Soldering time: <3 s



◆贮存方法 Storage Methods

*存储期限 Storage Period

为保证端子电极的焊接特性和包装材料处于良好状态，请于本公司发货后 1 年内使用本产品。同时，由于端子电极的焊接特性会随时间发生变化，如果贮存时间超过 1 年，请首先确认其焊接特性后再安装使用。

To maintain the solderability of terminal electrodes and keep the packing material in good condition, product should be used within 1 year since the manufacturing date. The solderability of products electrodes may decrease as time passes, so in case of storage period over 1 year, solderability shall be checked before actual use.

*存储条件 Storage Conditions

存放货物的仓库应满足以下条件：The warehouse must meet with the following condition:

温度(Temperature): Inductors (product with taping) : (-10 ~ +40) °C;

Inductors body: (-40~+85) °C.

相对湿度(Humidity): (30~70) %RH.

*不要使产品遭受温度和湿度的快速变化。Do not make the products suffering rapid changes in temperature and humidity.

*不要将产品存放在化学环境中，如硫酸气体或碱性气体中，否则会降低电极端子的焊接特性和使电感器腐蚀。
 Do not store the products in chemical atmosphere such as one containing sulfurous acid gas or alkaline gas, that will causes poor solderability and corrosion of inductors.

*不要以散包装的形式存放产品以防止电感器间的相互碰撞造成磁芯破裂或断线。Do not store products in bulk packaging to prevent collision among inductors which causes core chipping and wire breakage.

*为了避免受潮气、灰尘等物质的影响，产品应保管于货架上。Store products on pallets to protect from humidity, dust, etc.

*产品应避免热冲击、振动以及直接光照等等。Avoid heat shock, vibration, direct sunlight, etc.

*产品应密封包装。Products should be stored under the airtight packaged condition.

◆使用注意事项 Precautions For Use

*本公司产品适用于 AV 设备、OA 设备、家电、信息服务等一般电子设备中。Our products are designed and promoted for use in general electronic devices such as AV equipment, OA equipment, household appliance and information service.

*当本公司的产品使用在一般电子设备以外的领域时，对于此所引发的设备失效我司将不承担任何法律责任。In case of using the product for the purpose other than general electronics devices, we shall not be held liable for any dysfunctions in or damage to the equipment with which the product is used.

*本承诺书只保证我司产品作为一个单体时的质量情况，当我司产品被安装到贵司产品上时，请贵司对使用在贵司电路上的产品情况进行了有效评价和确认。Our specification limits the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.

*不要对产品施加过大的振动或机械冲击；Do not apply excessive vibration or mechanical shock to products. 为防止断线，请不要使用锋利的物体接触线圈，如镊子；Do not touch wire with sharp objects such as tweezers to prevent wire breakage.

*在产品贴装时不要使用过大的压力，避免磁芯断裂。Do not apply excessive stress to products mounted on boards to prevent core breakage.

[illegible]

Note: The above content is the specification of products, Fenghua reserves the right to modify this content without prior notice, and any product changes will be notified to customers via PCN.