

● 产品特征 Features

符合环保要求
 RoHS compliant, REACH Compliant, HF
 扁平线绕线结构, 超低内阻
 Flat wire structure, ultra-low resistance
 超大电流承载能力, 优异的热稳定性
 High current carrying capacity; Excellent thermal stability.
 安装方式灵活, 兼容PCB内嵌元件工艺
 Versatile mounting configurations compatible with PCB-embedded component integration processes.

● 产品应用 Applications

高电流要求驱动电路滤波
 Drive circuit filtering of high currents require
 升压或降压电源电路转换器
 DC-DC conversion for Buck or Boost Converter



● 命名方式 Naming method

GPQ F 280170 SE M B 150

类型/Type

GPQ 产品系列
 Product Type

铜线形状/Conductor Geometry

F 扁平/Flat

封装尺寸/Dimension

280170 请参考系列产品尺寸
 Refer to the dimensions of the series

外观代码/Visual identification

SE 内嵌工艺
 PCB-embedded
 SB 高抗震底座设计
 High shock resistance with base
 ST 高抗震辅助引脚工艺
 High shock resistance with auxiliary electrodes

电感公差/Acceptable tolerance

M $\pm 20\%$ N $\pm 30\%$

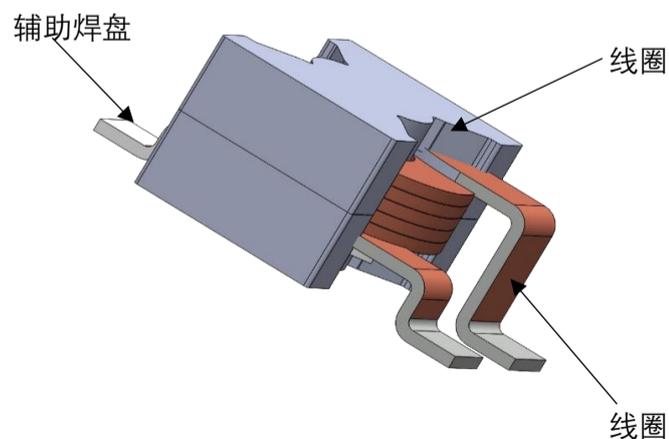
包装方式/Packaging Code

B Bulk

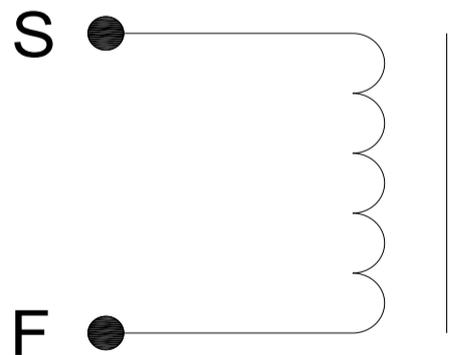
标称电感/Nominal inductance value

R80	0.80 μ H	100	10.0 μ H
2R2	2.20 μ H		

● 产品结构 Structure



● 电气原理 Schematic diagram



●外观尺寸Mechanical Dimensions

(Units:mm)

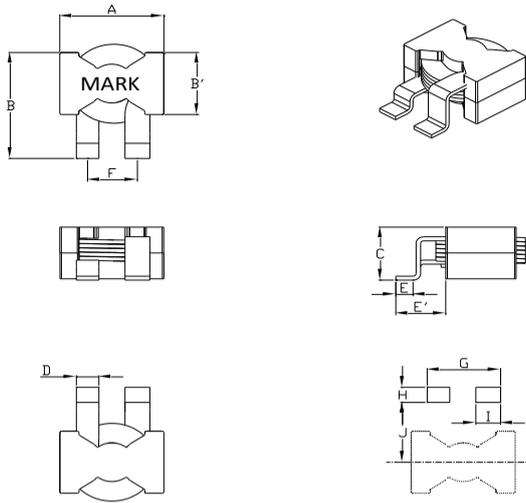


Fig1: Lacks both base and auxiliary electrodes
GPQF280170SE

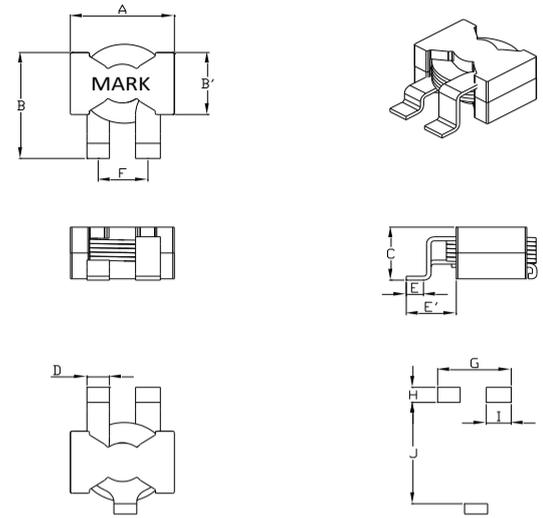


Fig2: Equipped with auxiliary electrodes
GPQF290150ST、GPQF290180ST

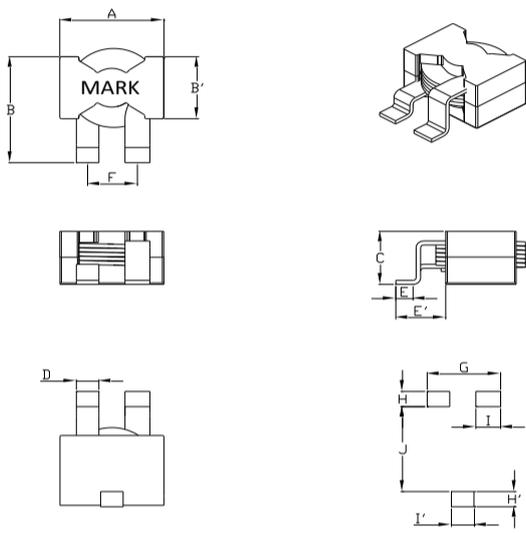


Fig3: Equipped with base
GPQF290150SB、GPQF290180SB

项目Item	A	B	B'	C	D	D'	E	E'	F	G	H	H'	I	I'	J
产品系列Part No.	Max.	Max.	Max.	Max.	Ref.	Ref.	Ref.	Ref.	±0.5	Typ.	Typ.	Typ.	Typ.	Typ.	Typ.
GPQF280170SE	27.9	28.0	19.5	17.0	3.80	/	3.80	/	10.4	15.8	/	/	5.50	/	11.6
GPQF290150SB	27.9	28.5	19.7	15.5	3.80	4.50	3.80	3.80	10.4	15.8	6.00	5.50	5.50	6.35	16.6
GPQF290150ST	27.9	28.0	19.5	15.5	3.80	4.50	3.80	3.80	10.4	15.8	6.00	5.50	5.50	6.35	16.6
GPQF290180SB	27.9	28.0	19.7	18.5	3.80	4.50	3.80	3.80	10.4	15.8	6.00	5.50	5.50	6.35	16.6
GPQF290180ST	27.9	28.0	19.5	17.8	3.80	4.50	3.80	3.80	10.4	15.8	6.00	5.50	5.50	6.35	16.6

● 产品特性Electrical Specifications

说明Illustrate

1.所有参数均在 $25 \pm 3^{\circ}\text{C}$ 条件下测得，电感值测试频率100KHz/0.1V

All of the electrical specifications are test at 25°C , inductance test at 100KHz/0.1V.

2.温升电流是指在 25°C 环境下，导致器件表面温度上升约 50°C 时加载的直流电流值

I_{rms} is the current that caused a approximate 50°C temperature rise from 25°C ambient.

3.饱和电流Isat-1是指导致初始电感量下降约20%时的直流电流值；饱和电流Isat-2是指导致初始电感量下降约30%时的直流电流值

Isat-1 is the DC current at which inductance drop approximately 20% from its value without current; Isat-2 is the DC current at which inductance drop approximately 30% from its value without current.

4.在最严苛条件下，器件温度（含自身温升）不应超过 $+125^{\circ}\text{C}$ 。电路设计、元件布局、PCB走线尺寸和厚度、空气流动以及其他散热措施都会影响部件温度，应在最终应用中验证部件温度。

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.

5.由于产品改进，产品规格可能会不定期更改，恕不另行通知。

Due to product improvement, the specifications may be changed discontinuously without advance notice.

GPQF280170SE SERIES

规格型号 Part Number	初始电感 L(μH)	DCR(m Ω)		温升电流 I _{rms} (A)	饱和电流		自谐振频率 SRF(MHz)
		典型值Typ.	最大值Max.		Isat-1(A)	Isat-2(A)	
GPQF280170SEMB4R7	4.70 \pm 20%	2.45	2.80	28.0	61.2	62.4	30.0Typ.
GPQF280170SEMB6R8	6.80 \pm 20%	2.45	2.80	28.0	45.0	45.9	25.0Typ.
GPQF280170SEMB100	10.0 \pm 20%	2.45	2.80	28.0	31.2	32.1	20.0Typ.
GPQF280170SEMB150	15.0 \pm 20%	2.45	2.80	28.0	21.2	21.9	16.0Typ.
GPQF280170SEMB220	22.0 \pm 20%	2.45	2.80	28.0	14.0	15.0	15.0Typ.
GPQF280170SEMB330	33.0 \pm 20%	2.45	2.80	28.0	8.70	9.60	10.0Typ.

GPQF290150SB SERIES

规格型号 Part Number	初始电感 L(μH)	DCR(m Ω)		温升电流 I _{rms} (A)	饱和电流		自谐振频率 SRF(MHz)
		典型值Typ.	最大值Max.		Isat-1(A)	Isat-2(A)	
GPQF290150SBMB1R5	1.50 \pm 20%	1.58	1.80	30.0	>100	>100	50.0Typ.
GPQF290150SBMB2R2	2.20 \pm 20%	1.58	1.80	30.0	>100	>100	40.0Typ.
GPQF290150SBMB3R3	3.30 \pm 20%	1.58	1.80	30.0	66.9	68.4	30.0Typ.
GPQF290150SBMB4R7	4.70 \pm 20%	1.58	1.80	30.0	48.0	50.1	25.0Typ.
GPQF290150SBMB6R8	6.80 \pm 20%	1.58	1.80	30.0	34.5	36.2	20.0Typ.
GPQF290150SBMB100	10.0 \pm 20%	1.58	1.80	30.0	21.5	23.4	15.0Typ.

GPQF290150ST SERIES

规格型号 Part Number	初始电感 L(μH)	DCR(m Ω)		温升电流 I _{rms} (A)	饱和电流		自谐振频率 SRF(MHz)
		典型值Typ.	最大值Max.		Isat-1(A)	Isat-2(A)	
GPQF290150STMB1R5	1.50 \pm 20%	1.50	1.65	30.0	>100	>100	60.0Typ.
GPQF290150STMB2R2	2.20 \pm 20%	1.50	1.65	30.0	84.0	84.8	50.0Typ.
GPQF290150STMB3R3	3.30 \pm 20%	1.50	1.65	30.0	54.0	57.0	40.0Typ.
GPQF290150STMB4R7	4.70 \pm 20%	1.50	1.65	30.0	36.9	39.0	30.0Typ.
GPQF290150STMB6R8	6.80 \pm 20%	1.50	1.65	30.0	26.0	27.8	25.0Typ.
GPQF290150STMB100	10.0 \pm 20%	1.50	1.65	30.0	16.2	17.6	20.0Typ.
GPQF290150STMB150	15.0 \pm 20%	1.50	1.65	30.0	9.80	11.0	15.0Typ.
GPQF290150STMB220	22.0 \pm 20%	1.50	1.65	30.0	6.00	6.80	10.0Typ.
GPQF290150STMB330	33.0 \pm 20%	1.50	1.65	30.0	2.60	3.30	7.00Typ.

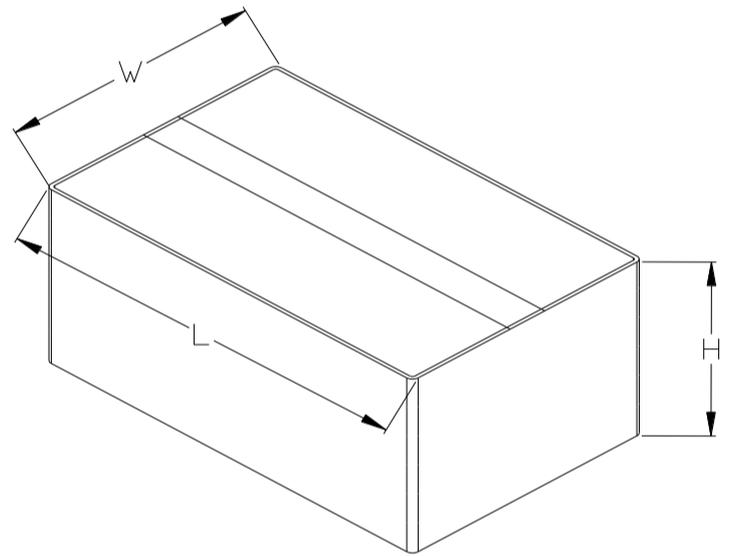
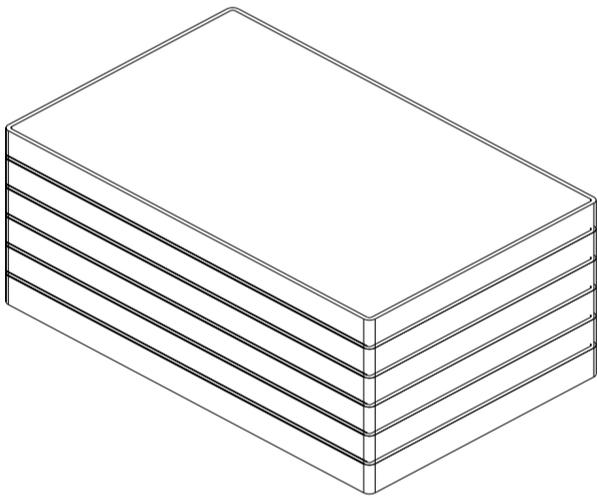
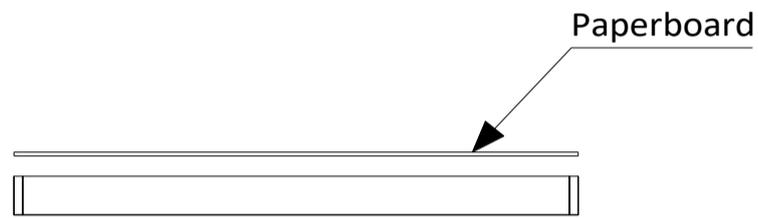
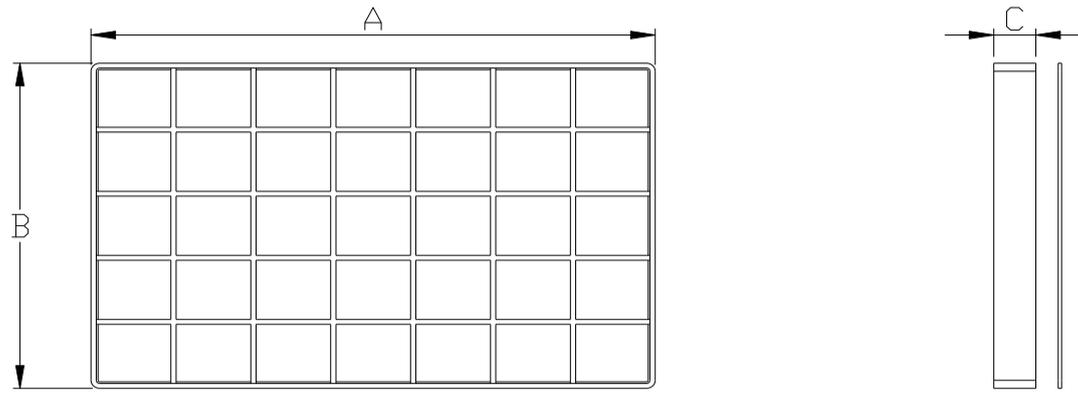
GPQF290180SB SERIES

规格型号 Part Number	初始电感 L(μ H)	DCR(m Ω)		温升电流 I _{rms} (A)	饱和电流		自谐振频率 SRF(MHz)
		典型值Typ.	最大值Max.		I _{sat-1} (A)	I _{sat-2} (A)	
GPQF290180SBMB3R3	3.30 \pm 20%	2.45	2.80	28.0	92.5	93.6	40.0Typ.
GPQF290180SBMB4R7	4.70 \pm 20%	2.45	2.80	28.0	61.2	62.4	30.0Typ.
GPQF290180SBMB6R8	6.80 \pm 20%	2.45	2.80	28.0	45.0	45.9	25.0Typ.
GPQF290180SBMB100	10.0 \pm 20%	2.45	2.80	28.0	31.2	32.1	20.0Typ.
GPQF290180SBMB150	15.0 \pm 20%	2.45	2.80	28.0	21.2	21.9	16.0Typ.
GPQF290180SBMB220	22.0 \pm 20%	2.45	2.80	28.0	14.0	15.0	15.0Typ.
GPQF290180SBMB330	33.0 \pm 20%	2.45	2.80	28.0	8.70	9.60	10.0Typ.

GPQF290180ST SERIES

规格型号 Part Number	初始电感 L(μ H)	DCR(m Ω)		温升电流 I _{rms} (A)	饱和电流		自谐振频率 SRF(MHz)
		典型值Typ.	最大值Max.		I _{sat-1} (A)	I _{sat-2} (A)	
GPQF290180STMB3R3	3.30 \pm 20%	2.45	2.80	28.0	92.5	93.6	40.0Typ.
GPQF290180STMB4R7	4.70 \pm 20%	2.45	2.80	28.0	61.2	62.4	30.0Typ.
GPQF290180STMB6R8	6.80 \pm 20%	2.45	2.80	28.0	45.0	45.9	25.0Typ.
GPQF290180STMB100	10.0 \pm 20%	2.45	2.80	28.0	31.2	32.1	20.0Typ.
GPQF290180STMB150	15.0 \pm 20%	2.45	2.80	28.0	21.2	21.9	16.0Typ.
GPQF290180STMB220	22.0 \pm 20%	2.45	2.80	28.0	14.0	15.0	15.0Typ.
GPQF290180STMB330	33.0 \pm 20%	2.45	2.80	28.0	8.70	9.60	10.0Typ.

● 包装规范 Package Specification



项目Item 产品系列Part No.	A (mm)	B (mm)	C (mm)	L (mm)	W (mm)	H (mm)	QTY.	
							Tray	Box
GPQF280170SE	322	202	24.0	340	215	220	35	280
GPQF290150SB	322	202	24.0	340	215	220	35	280
GPQF290150ST	322	202	24.0	340	215	220	35	280
GPQF290180SB	322	202	24.0	340	215	220	35	280
GPQF290180ST	322	202	24.0	340	215	220	35	280

●可靠性测试要求 Reliability test requirements

序号 No.	试验项目 Test Item	参考标准 Reference Standard	试验方法 Test Method	测试数量 Quantity
1	试验前后电气特性测试 Measure electrical characteristics before and after test	产品规格书 Specification	参照产品规格书 Refer to the specification	所有认证的产品 All of certified products
2	外观尺寸 External dimension	/	参照产品规格书 Refer to the specification	10Pcs
3	预处理 Pretreatment	/	3次模拟回流焊, 外观和电气性能符合规格书要求。 After 3 times reflow, external and electrical characteristics also meet to the specification	30Pcs
4	印字检查 Check the printing	/	3M 胶纸进行粘附试验, 粘 5 次后再进行检查, 无外观不良, 产品印字无掉缺、清晰可读 Use 3M adhesive paper adhesion test, stick 5 times and then check, no bad appearance, product printing without missing, clear and readable	10Pcs
5	寿命试验 Operating life test	MIL-STD-202G method 108	85°C环境下, 加载额定电流, 持续1000 小时, 产品外观、电性符合规格要求 At 85°C, the rated current is loaded for 1000 hours, the appearance and electrical characteristics meet the specifications	30Pcs
6	恒定湿热试验 Humidity Bias	MIL-STD-202G method 103	温度: 85°C/湿度: 85% RH, 持续1000 小时, 累计腐蚀面积小于10%, 产品外观、电性符合规格要求 85°C&85%RH, lasting 1000 hours, cumulative corrosion area is less than 10%, the appearance and electrical characteristics meet the specifications	30Pcs
7	冷热冲击试验 Temperature shock	MIL-STD-202G method 107	低温: -40°C/高温: 125°C, 停留时间: 15 分钟, 转换时间: 10 秒钟, 冲击次数: 100 次, 产品外观、电性符合规格要求 -40°C&125°C, residence time: 15 minutes, conversion time: 10 seconds, impact times: 100 times, product appearance, electrical characteristics meet to the specifications	30Pcs
8	高温存储 High temperature storage	MIL-STD-202G method 108	125°C or 产品最高工作温度, 1000 小时, 产品外观、电性符合规格要求 At 125°C or the maximum working temperature of the product, 1000 hours, the appearance and electrical characteristics meet the specifications	30Pcs
9	低温储存 Low temperature storage	IEC68-2-1	-40°C or 产品最低工作温度, 1000 小时, 产品外观、电性符合规格要求 At -40°C or the minimum working temperature of the product, 1000 hours, the appearance and electrical characteristics meet the specifications	30Pcs
10	振动试验 Vibration	MIL-STD-202, method 204	加速度: 10 G, 频率: 10 ~ 55 ~ 10 Hz, X、Y、Z 三个方向振动, 每个方向 12次, 每个方向振动时间: 20 分钟, 产品外观、电性符合规格要求 Acceleration: 10 G, frequency: 10 ~ 55 ~ 10 Hz, X, Y, Z three directions vibration, each direction 12 times, each direction vibration time: 20 minutes, the product appearance, electrical requirements meet the specifications	10Pcs
11	可焊性试验 Solderability	J-STD-002	蒸汽老化试验 8 小时, 助焊剂活性: 0 级, 温度: 245°C ± 5 °C, 50 倍放大镜下观察, 上锡面积大于等于95% Steam aging test for 8 hours, flux activity: 0, temperature: 245 °C ± 5°C, observation under 50 times magnifying glass, tin area greater than or equal to 95%	10Pcs

● 可靠性测试要求 Reliability test requirements

序号 No.	试验项目 Test Item	参考标准 Reference Standard	试验方法 Test Method	测试数量 Quantity
12	端子强度试验 Terminal strength	EIA-945	1.大于 0805 封装尺寸 (20.32mm*12.7mm) , 1.0kgf/60±5s Larger than 0805 package size (20.32mm*12.7mm), 1.0kgf/60±5s 2.小于 0805 封装尺寸 (20.32mm*12.7mm) , 0.5kgf/60±5s Less than 0805 package size (20.32mm*12.7mm), 0.5kgf/60±5s	10Pcs
13	盐雾试验 Salt spray test	EIA-364-26B ITEM B GB/T6461-2002	盐雾浓度: 5%±1%, 试验温度: 35°C±2°C, PH 值: 6.5~7.2, 时间:24、48 小时各 1 组, 产品取出后, 在温水洗去盐渍, 常温下自然风干 1 小时, 再进行检查: 24 小时后, 按GB/T6461-2002 标准A~B 级外观允收; 48 小时后, 按GB/T6461-2002 标准A~E 级外观允收 Salt spray concentration: 5%±1%, test temperature: 35°C±2°C, PH: 6.5~7.2, time :24/48 hours each group, after taking out the product, wash the salt in warm water, natural air dry for 1 hour at normal temperature, and then check: After 24 hours, according to GB/T6461-2002 standard A ~ B appearance acceptable; After 48 hours, according to GB/T6461-2002 standard A to E appearance acceptable	10Pcs
14	包装跌落试验 Package drop test	ISTA 2A	试验条件: 1~9kg→76cm 9~18kg→61cm 18~27kg→46cm 27~45kg→30cm 试验方法: 外观、电性合格的一整箱产品按要求包装好, 根据重量相对应的高度按一角三棱六面自由落地的方式跌落 10 次。 试验要求: 包装有无破损; 产品外观、电性符合规格要求 Test method: A whole box of products with qualified appearance and electrical properties should be packed according to the requirements and dropped 10 times according to the height corresponding to the weight by the way of free fall on one corner, three edges and six sides. Test requirements: whether the packaging is damaged; The appearance and electrical properties of the product meet the specifications	1Carton