

# SPECIFICATION FOR APPROVAL

## 产品承认书

CUSTOMER: \_\_\_\_\_

CUSTOMER NO. : \_\_\_\_\_

FPE PART NO. : CL2181895470M1

DESCRIPTION: SMD Power Inductor

ATTACHMENT:

■ SPECIFICATION Rev: C

CUSTOMER APPROVAL  
(客户承认章)

FPE APPROVAL  
(公司承认章)



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| Recision Change Record |                                      |            |
|------------------------|--------------------------------------|------------|
| REV                    | Description of changes               | Date       |
| A                      | 新版制作                                 | 2024-6-22  |
| B                      | 增加绕组信息、材料清单等规格要求                     | 2024-11-14 |
| C                      | 工作温度范围由-25℃ TO +125℃变更为-25℃ TO +155℃ | 2025-2-18  |
|                        |                                      |            |
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|                        |                                      |            |

## High Current Power SMD Inductor

### 1. 规格:



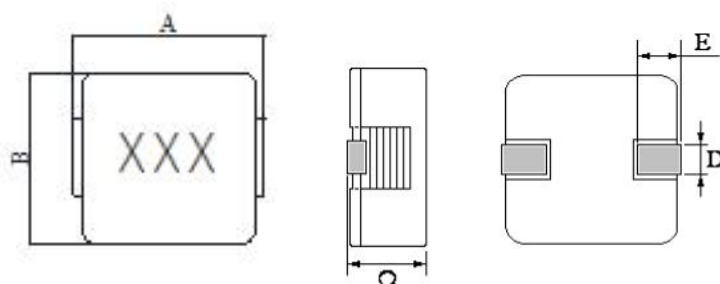
- ◆Part Number: CL2181895 - 1
- ◆Specification: Composite forming SMD inductors
- ◆Operating temp range: -25°C TO +155°C
- ◆Package: SMD

### 2. 命名方式:

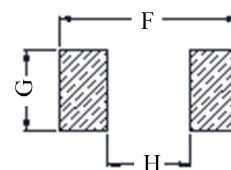
CL2      □□   □□   □□      □□□      □      □  
 Product code      L      W      HT      Inductance value      Tolerance      Serial code

### 3. 机械规格:

#### 3.1 尺寸/mm:



#### 3.2 推荐焊盘/mm



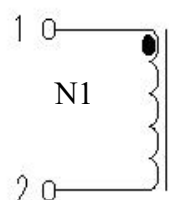
| P/N           | A       | B        | C      | D       | E     | F    | G | H   |
|---------------|---------|----------|--------|---------|-------|------|---|-----|
| CL2181895 - 1 | 19.3Max | 18.2±0.5 | 9.5max | 3.2±0.5 | 4.5±1 | 19.3 | 6 | 7.3 |

#### 3.3 标记代码:

XXX: 470



#### 3.4 原理图:



#### 3.5 绕组信息:

| 绕组名称 | 端子  | 圈数     | 规格 (线宽*线厚*内径) mm    | 备注 |
|------|-----|--------|---------------------|----|
| N1   | 1-2 | 22.5TS | SFT-AIW3.2*0.15*9.0 | 密饶 |

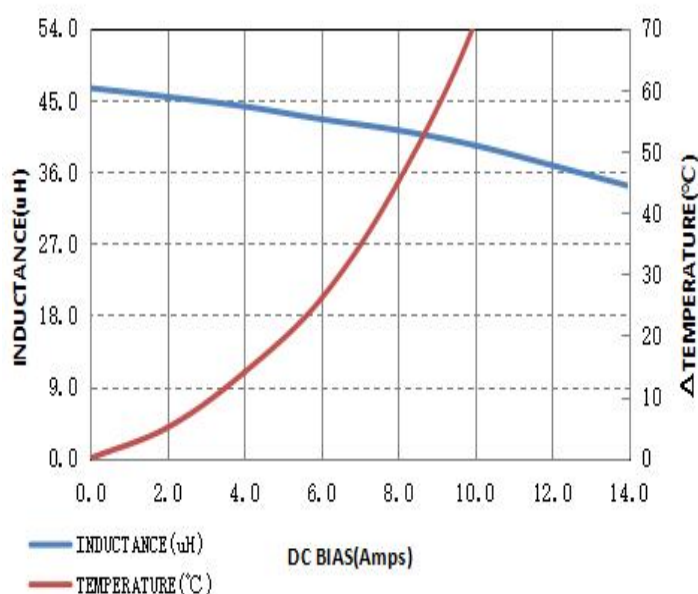
## 4. 电气规格 @25°C:

### 4.1 电性规格

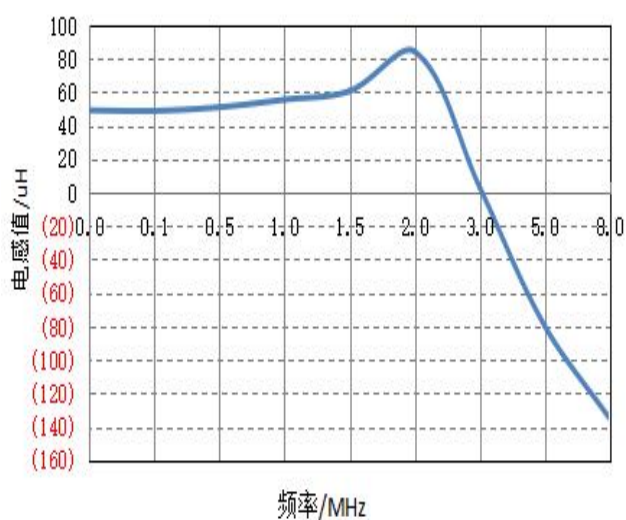
| P/N            | L0(μH) ±20%<br>'@0A | DCR (mΩ) |      | Heat Rating<br>Current | Saturation<br>Current |
|----------------|---------------------|----------|------|------------------------|-----------------------|
|                | 100KHz/ 0.1V        | Typical  | Max  | Idc (Amp)<br>Typical   | Isat (Amp)<br>Typical |
| CL2181895470M1 | 47                  | 33.7     | 38.8 | 6.8                    | 11.5                  |

- All test data is referenced to 25°C ambient.
- DC current (Idc) that will cause an approximate  $\Delta T$  of 50°C.
- DC current (Isat) that will cause Lo to drop approximately 30%.
- Operating temperature Range: - 25° C to +155° C.
- The part temperature (ambient + temp rise) should not exceed 155°C under the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

### 4.2 温升与电流曲线、感量与电流、频率与电感值曲线图



电流曲线、感量与电流曲线图



频率与电感值曲线图

## 5.材料清单及环保报告

| 项目       | 规格                                           | 材质      | 制造厂家                                             | UL NO.         | 环保报告               |
|----------|----------------------------------------------|---------|--------------------------------------------------|----------------|--------------------|
| 磁芯       | MICROMETALS IRON<br>POWDER CORE-POWER<br>CON | 铁粉芯     | MICROMETALS, INC.                                | E140098<br>(S) | ETR24302886M01     |
| 漆包线      | SFT-AIW3.2*0.15                              | SFT-AIW | WELL ASCENT<br>ELECTRONIC (GANZHOU)<br>CO., LTD  | N/A            | A2240080092101001  |
| 油漆       | 704A/B/C (三组份)                               | 环氧涂料    | 博罗县石湾镇博盛复合材料<br>有限公司                             | N/A            | A2240214399101001C |
| 粘结剂      | E-500 (SC)                                   | 环氧树脂粘接剂 | 东莞市力多电子材料有限公<br>司                                | N/A            | CANEC23015910720   |
| 无铅锡<br>条 | Sn99.3Cu0.7                                  | 无铅锡条    | DongGuan City GuangChen<br>Metal Product Co.,Ltd | N/A            | CANEC24002458106   |
| 印油       | 1350 (N)系列                                   | 丝网印刷油墨类 | 精工油墨(四会)有限公司                                     | N/A            | A2230532814101005C |

## 6.单体可靠度测试要求

| 序号 | 测试项目    | 测试要求                                | 判定标准                      | 测试设备         |
|----|---------|-------------------------------------|---------------------------|--------------|
| 1  | 高温测试    | 155±5℃, 96 小时                       | 满足电性标准<br>(电感在±10%以<br>内) | 恒温恒湿<br>箱    |
| 2  | 低温测试    | (-20)±5℃, 96 小时                     |                           |              |
| 3  | 高湿测试    | 40℃, 95%RH, 96 小时                   |                           |              |
| 4  | 高低温冲击测试 | 155±5℃, (-20)±5℃,<br>1 小时变换, 20 次循环 |                           | 高低温冲<br>击实验箱 |
| 5  | 可焊性     | 含锡 96%以上无铅焊料,<br>245±5℃, 2.5±0.5S   | 上锡面大于<br>96%              | 锡炉           |

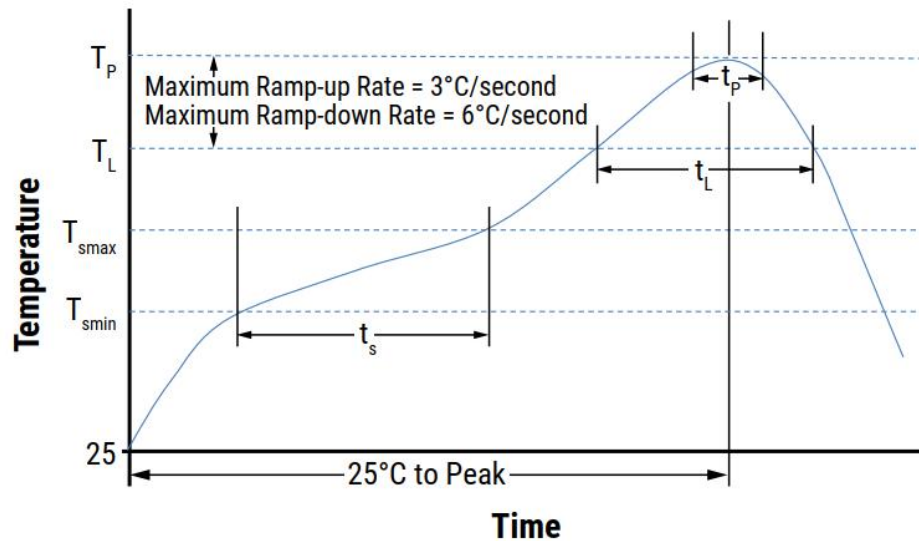
## 7. 焊接要求

### 7-1. Soldering

Mildly activated rosin fluxes are preferred. FPE terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

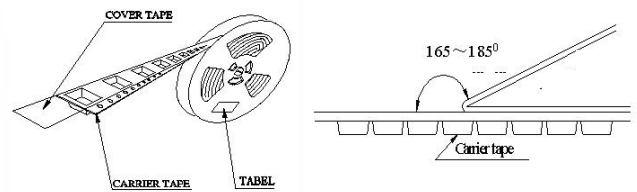
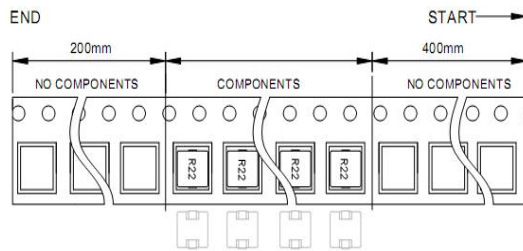
#### 7-1.1 Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

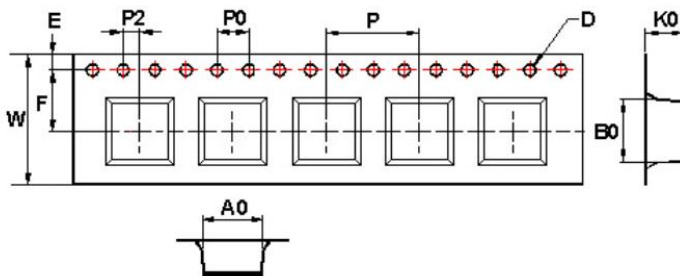


| Profile Feature                                                                                                                                 | Pb-Free Assembly                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preheat/Soak</b><br>Temperature Minimum ( $T_{Smin}$ )<br>Temperature Maximum ( $T_{Smax}$ )<br>Time ( $t_s$ ) from $T_{Smin}$ to $T_{Smax}$ | 125°C<br>200°C<br>60 – 120 seconds                                                                                                                                                                                       |
| Ramp-Up Rate ( $T_L$ to $T_P$ )                                                                                                                 | 3°C/second maximum                                                                                                                                                                                                       |
| Liquidous Temperature ( $T_L$ )                                                                                                                 | 217°C                                                                                                                                                                                                                    |
| Time Above Liquidous ( $t_L$ )                                                                                                                  | 60 – 125 seconds                                                                                                                                                                                                         |
| Peak Temperature ( $T_P$ )                                                                                                                      | 260°C for A/CL5040420,050520, 060618, 060624<br>250°C for A/CL5050530, 060630, 060650,070750,080830, 080840<br>245°C for A/CL5100040, 131335, 131350,131365, 171740,<br>171770, 221213<br><b>265±5°C for A/CL2181895</b> |
| Time within 5°C of Maximum Peak Temperature ( $t_P$ )                                                                                           | 30 seconds maximum                                                                                                                                                                                                       |
| Ramp-Down Rate ( $T_P$ to $T_L$ )                                                                                                               | 6°C/second maximum                                                                                                                                                                                                       |
| Time 25°C to Peak Temperature                                                                                                                   | 8 minutes maximum                                                                                                                                                                                                        |

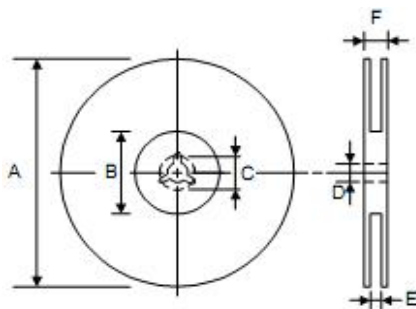
## 8. 包装信息



The force for peeling off cover tape is 30 to 130 grams in the arrow direction.



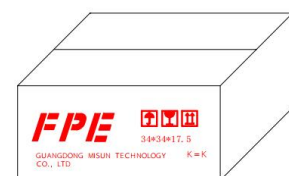
| A    | B    | W  | P  | K0  | E    | F     |
|------|------|----|----|-----|------|-------|
| 18.8 | 19.4 | 32 | 32 | 9.5 | 1.75 | 20.75 |



| A     | B     | C      | D    | E        | F    |
|-------|-------|--------|------|----------|------|
| 330±2 | 100±2 | 20±0.5 | 13±1 | 32.5±0.5 | 37±2 |

### Packaging Quantity

| Chip size | Chip/Reel | Carton |
|-----------|-----------|--------|
| 181895 系列 | 150       | 900    |



### Application Notice

#### Storage Conditions

To maintain the solderability of terminal electrodes:

1. FPE products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Less than 40°C and 60% RH.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.
5. Don't touch electrodes directly with bare hands as oil secretions may inhibit soldering. Always ensure optimum conditions for soldering.

#### Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

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