

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

Description Part No.: \_\_\_\_\_

Customer Part No.: \_\_\_\_\_

Sample No.: \_\_\_\_\_

DDY Part No.: SFEK252012S-

| DRAWING          |         |          |
|------------------|---------|----------|
| MADE             | CHECKED | APPROVED |
| 王海玲              | 赵万虎     | 肖中华      |
| DATE: 2023年8月24日 |         |          |

| CUSTOMER APPROVE |
|------------------|
|                  |



惠 州 市 德 立 电 子 有 限 公 司

HUI ZHOU DE LI ELECTRONICS CO., LTD

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惠州市德立电子有限公司  
HUI ZHOU DE LI ELECTRONICS CO., LTD

| DATE      | REV | CHANGED CONTENTS | DRAFT | APPROVED |
|-----------|-----|------------------|-------|----------|
| 2023/8/24 | A   | 新版发行             | 王海玲   | 肖中华      |
|           |     |                  |       |          |
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**\* Special notes:  
This product is non-vehicle certified.**



### 1. Scope

This specification applies to the SFEK252012 Series of wire wound SMD power inductor.

### 2. PRODUCT IDENTIFICATION

SFEK 252012 - 1R5 □ - □  
(1) (2) (3) (4) (5)

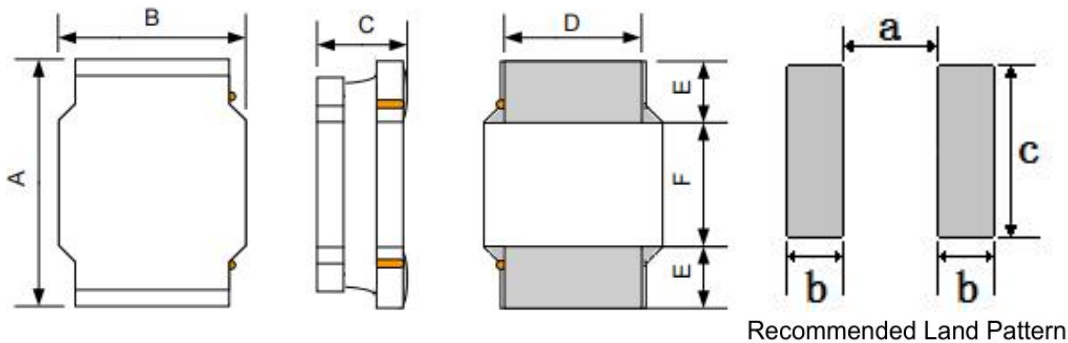
- (1) .Series name (产品品名)
  - (2) .Dimensions (产品尺寸)
  - (3) .Inductance value (电感值)
  - (4) .Tolerance (误差值)
  - (5) .Environmental status (环保状态)
- 1R5: 1.5 $\mu$ H 221: 220 $\mu$ H M:  $\pm$ 20%; N:  $\pm$ 30%
- LF- Lead free; HF-Halogen free;  
FP-Free red phosphor.

### 3. Electrical Characteristics

Please refer to Item 5.

- 1). Operating temperature range (individual chip without packing): -40 $^{\circ}$ C ~ +125 $^{\circ}$ C ;
- 2). Storage temperature range (packaging conditions): -40 $^{\circ}$ C ~ +85 $^{\circ}$ C and RH 70% (Max.);
- 3). Irms:DC current that causes the temperature rise ( $\Delta T = 40^{\circ}$ C ) from 20 $^{\circ}$ C ambient;
- 4). Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 5). All test data is referenced to 20 $^{\circ}$ C ambient;
- 6). Rated current: Isat or Irms, whichever is smaller;
- 7). Absolute maximum voltage: DC 25V;

### 4. Shape and Dimensions (Unit:mm)



| NO | Series     | A             | B             | C        | D             | E        | F        | a Typ. | b Typ. | c Typ. |
|----|------------|---------------|---------------|----------|---------------|----------|----------|--------|--------|--------|
| 1  | SFEK252012 | 2.5 $\pm$ 0.3 | 2.0 $\pm$ 0.3 | 1.2 Max. | 2.0 $\pm$ 0.2 | 0.8 Typ. | 0.9 Typ. | 0.70   | 1.00   | 2.2    |



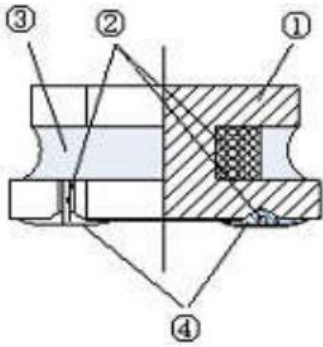
### 5. Electrical Characteristics

| NO | Part Number                                  | Inductance     | DC Resistance |          | Isat(A) |      | Irms(A) |      | Marking |
|----|--|----------------|---------------|----------|---------|------|---------|------|---------|
|    |  | 1MHz/0.1V      | Max.          | Typ.     | Max.    | Typ. | Max.    | Typ. |         |
|    | Units  | ( $\mu$ H)     | $\Omega$      | $\Omega$ | A       | A    | A       | A    |         |
| 1  | <input type="checkbox"/> SFEK252012S-R24N-HF | 0.24 $\pm$ 30% | 0.023         | 0.019    | 6.50    | 7.80 | 4.05    | 4.70 | N/A     |
| 2  | <input type="checkbox"/> SFEK252012S-R33N-HF | 0.33 $\pm$ 30% | 0.035         | 0.028    | 5.35    | 6.30 | 3.70    | 4.30 | N/A     |
| 3  | <input type="checkbox"/> SFEK252012S-R47N-HF | 0.47 $\pm$ 30% | 0.035         | 0.029    | 4.90    | 5.60 | 3.45    | 4.00 | N/A     |
| 4  | <input type="checkbox"/> SFEK252012S-R68N-HF | 0.68 $\pm$ 30% | 0.045         | 0.039    | 3.80    | 4.50 | 3.10    | 3.60 | N/A     |
| 5  | <input type="checkbox"/> SFEK252012S-1R0N-HF | 1.0 $\pm$ 30%  | 0.054         | 0.048    | 3.60    | 4.00 | 3.00    | 3.40 | N/A     |
| 6  | <input type="checkbox"/> SFEK252012S-1R5N-HF | 1.5 $\pm$ 30%  | 0.100         | 0.090    | 2.90    | 3.50 | 2.40    | 2.80 | N/A     |
| 7  | <input type="checkbox"/> SFEK252012S-2R2M-HF | 2.2 $\pm$ 20%  | 0.120         | 0.100    | 2.60    | 3.00 | 1.90    | 2.15 | N/A     |
| 8  | <input type="checkbox"/> SFEK252012S-3R3M-HF | 3.3 $\pm$ 20%  | 0.215         | 0.175    | 1.70    | 2.10 | 1.50    | 1.80 | N/A     |
| 9  | <input type="checkbox"/> SFEK252012S-4R7M-HF | 4.7 $\pm$ 20%  | 0.260         | 0.240    | 1.60    | 1.90 | 1.25    | 1.45 | N/A     |
| 10 | <input type="checkbox"/> SFEK252012S-5R6M-HF | 5.6 $\pm$ 20%  | 0.336         | 0.313    | 1.30    | 1.40 | 1.10    | 1.20 | N/A     |
| 11 | <input type="checkbox"/> SFEK252012S-6R8M-HF | 6.8 $\pm$ 20%  | 0.366         | 0.335    | 1.20    | 1.40 | 0.95    | 1.10 | N/A     |
| 12 | <input type="checkbox"/> SFEK252012S-8R2M-HF | 8.2 $\pm$ 21%  | 0.460         | 0.405    | 1.15    | 1.36 | 0.88    | 1.06 | N/A     |
| 13 | <input type="checkbox"/> SFEK252012S-100M-HF | 10 $\pm$ 20%   | 0.480         | 0.465    | 1.10    | 1.35 | 0.85    | 1.00 | N/A     |
| 14 | <input type="checkbox"/> SFEK252012S-150M-HF | 15.0 $\pm$ 20% | 1.000         | 0.820    | 0.77    | 0.90 | 0.60    | 0.70 | N/A     |
| 15 | <input type="checkbox"/> SFEK252012S-220M-HF | 22.0 $\pm$ 20% | 1.090         | 0.955    | 0.60    | 0.75 | 0.55    | 0.65 | N/A     |
|    |  |                |               |          |         |      |         |      |         |
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|    |  |                |               |          |         |      |         |      |         |

※Design as Customer's Requested Specifications. (可按顾客的特殊需求设计)



### 6. Structure (The structure of product.)



| NO | Components    | Material                                 |
|----|---------------|--|
| ①  | Core          | soft magnetic metal                      |
| ②  | Wire          | Polyurethane system enameled copper wire |
| ③  | Magnetic Glue | Epoxy resin and magnetic powder          |
| ④  | Plating       | AgNiSn or FeNiCu + Sn Alloy              |

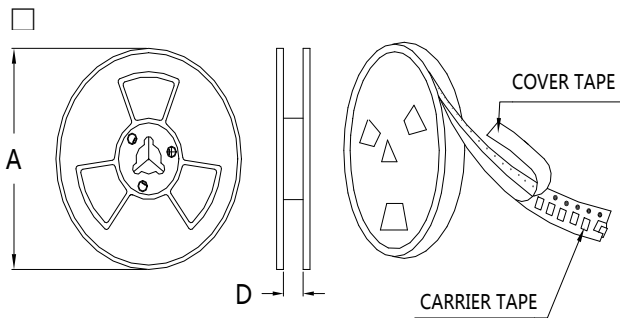
### 7. PACKAGING(unit: mm)

1.包装类型：编带装

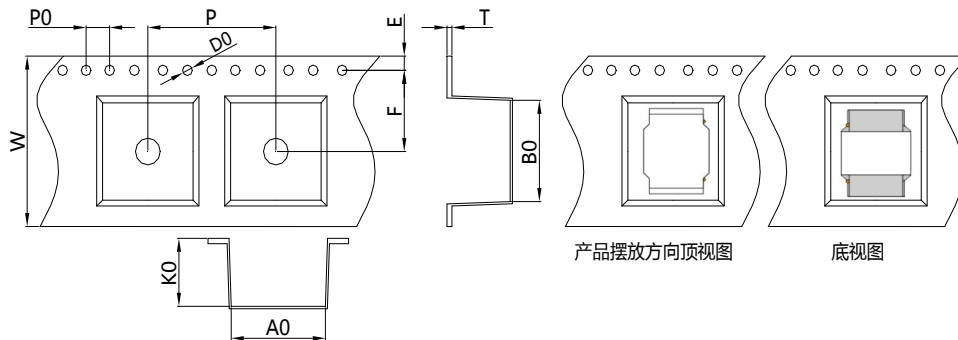
2.包装尺寸：

13" 盘

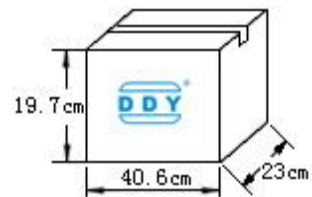
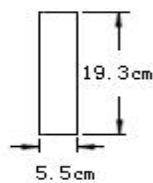
7" 盘



|   | 13" 盘              | 7" 盘               |
|---|--------------------|--------------------|
| A | $\Phi 330 \pm 2.0$ | $\Phi 178 \pm 2.0$ |
| D | 8.5                |                    |



| Size   | Item | W              | A0             | B0             | K0             | P              | T              | E              | F              | D0             | P0             |
|--------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 252012 | (mm) | $8.00 \pm 0.3$ | $2.35 \pm 0.2$ | $2.65 \pm 0.2$ | $1.40 \pm 0.1$ | $4.00 \pm 0.1$ | $0.25 \pm 0.1$ | $1.75 \pm 0.1$ | $3.50 \pm 0.1$ | $1.50 \pm 0.1$ | $4.00 \pm 0.2$ |



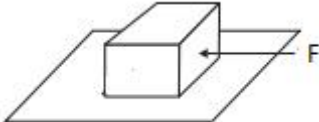
每卷 2000 Pcs

每盒 4卷,共 8000 Pcs

每箱 6盒,共 48000 Pcs



**8. RELIABILITY TEST**

| No. | TEST ITEM                        | SPECIFICATION  | TEST CONDITION  |
|-----|----------------------------------|--|---|
| 1   | High temperature Storage test    | 1. No significant defects in appearance.<br>2. $\Delta L/L \leq 10\%$<br>3. $\Delta DCR/DCR \leq 10\%$                                 | Temperature: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (N: Follow the product specification for the setting.)<br>Time : $96 \pm 2$ hours<br>Place the samples for one hour at room temperature and test them within two hours         |
| 2   | Low temperature Storage test     | 1. No significant defects in appearance.<br>2. $\Delta L/L \leq 10\%$<br>3. $\Delta DCR/DCR \leq 10\%$                                 | Temperature: $-40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (M: Follow the product specification for the setting)<br>Time : $96 \pm 2$ hours<br>Place the samples for one hour at room temperature and test them within two hours.         |
| 3   | Humidity test                    | 1. No significant defects in appearance.<br>2. $\Delta L/L \leq 10\%$<br>3. $\Delta DCR/DCR \leq 10\%$                                 | Temperature: $40 \pm 2^{\circ}\text{C}$ , Humidity: $93 \pm 3\% \text{RH}$<br>Time : $96 \pm 2$ hours<br>Place the samples for one hour at room temperature and test them within two hours  |
| 4   | Solderability test               | Terminals must have 95% minimum solder coverage  | 1. Dip pads in flux then dip in solder pot at $245 \pm 5^{\circ}\text{C}$ for 5 second.<br>2. Solder: lead free<br>3. Flux: rosin flux  |
| 5   | Heat endurance of flow soldering | 1. No significant defects in appearance.<br>2. $\Delta L/L \leq 10\%$<br>3. $\Delta DCR/DCR \leq 10\%$                                 | 1. Refer to the above reflow curve and go through the reflow for twice.<br>2. The peak temperature : $260 \pm 0/-5^{\circ}\text{C}$   |
| 6   | Vibration test                   | 1. No significant defects in appearance.<br>2. No short and no open.   | Apply frequency 10~55~10Hz and amplitude 1.5mm, 1 min/cycle in X Y and Z direction for 2 hours each. (total 6 hours)  |
| 7   | Terminal strength push test      | 1. Applied force: 10N Duration: 10sec<br>2. Solder paste thickness: 0.12mm<br>3. Meet the above requirements without any loose termina | Solder the test samples to the PCB through $245^{\circ}\text{C}$ reflow, apply a standard force on the side of the test samples for 10 seconds.<br> |



## 9. SOLDERING CONDITIONS

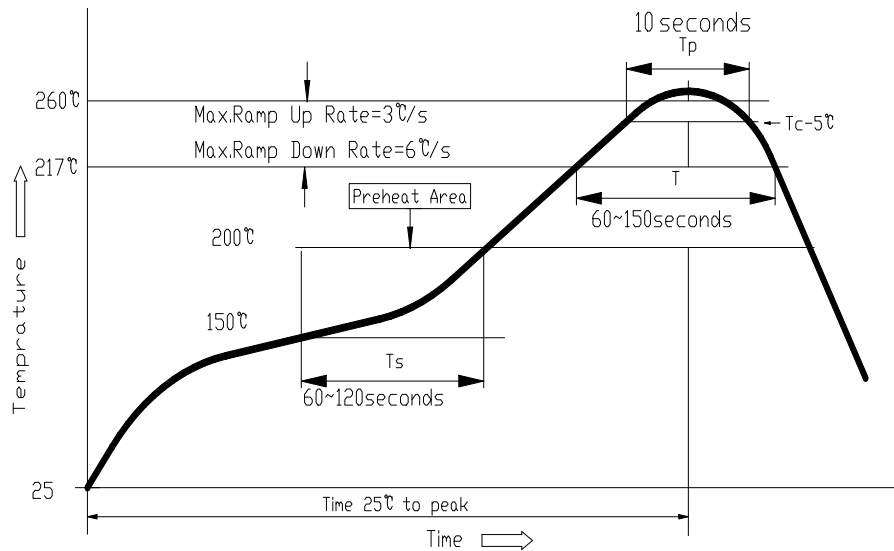
Applicable soldering process to the products is refl.

### 9.1 Soldering Materials

(1) Solder: Sn-3.0Ag-0.5Cu

(2) Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine exceeding 0.2wt%). Do not use water-soluble flux.

### 9.2 Reflow Soldering Profile



### 9.3 Soldering Iron

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.

- ① Temperature of soldering iron tip: 350°C;
- ② Soldering iron power output:  $\leq 30\text{W}$ ;
- ③ Diameter of soldering iron end:  $\leq 1.0\text{mm}$ ;
- ④ Soldering time:  $< 3\text{ s}$



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[HCF1305-3R3-R](#) [1206CS-151XG](#) [RCH664NP-4R7M](#) [RCP1317NP-391L](#) [DH2280-4R7M](#) [DS1608C-106](#) [B10TJ](#) [B82498B3101J000](#) [ELJ-](#)  
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