

# 承認書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

Description Part No.:

Customer Part No.:

Sample No.:

DDY Part No.: SFEK252010S-

| 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

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[illegible]



## 1. Scope

This specification applies to the SFEK252010 Series of wire wound SMD power inductor.

## 2.PRODUCT IDENTIFICATION

SFEK   252010 - 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)

1R5: 1.5 $\mu$ H    221: 220 $\mu$ H

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

(5) .Environmental status (环保状态)

LF- Lead free; HF-Halogen free;

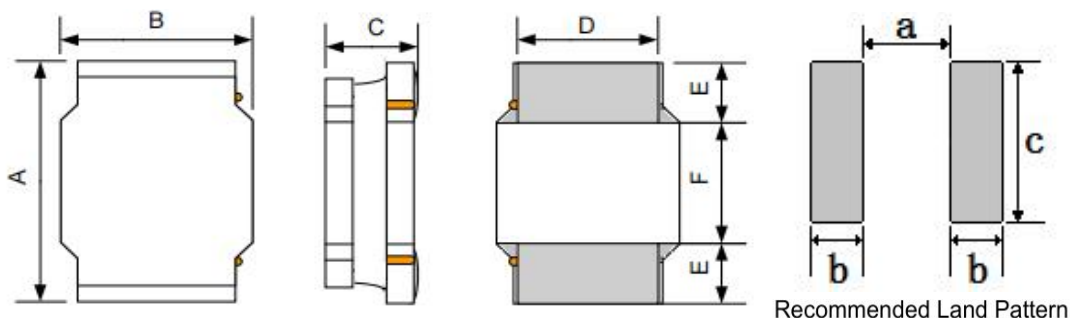
FP-Free red phosphor.

## 3. Electrical Characteristics

Please refer to Item 5.

- 1). Operating temperature range (individual chip without packing):  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  ;
- 2). Storage temperature range (packaging conditions):  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$  and RH 70% (Max.);
- 3). Irms:DC current that causes the temperature rise ( $\Delta T = 40^{\circ}\text{C}$ ) from  $20^{\circ}\text{C}$  ambient;
- 4). Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 5). All test data is referenced to  $20^{\circ}\text{C}$  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  | SFEK252010 | 2.5 $\pm 0.3$ | 2.0 $\pm 0.3$ | 1.0 Max. | 2.0 $\pm 0.2$ | 0.8 Typ. | 0.9 Typ. | 0.70   | 1.00   | 2.2    |



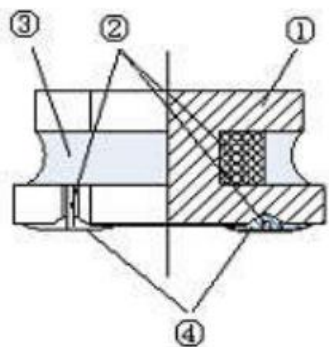
## 5. Electrical Characteristics

| NO | Part Number                                  | Inductance | DC Resistance |          | Isat(A) |      | Irms(A) |      | Marking |
|----|----------------------------------------------|------------|---------------|----------|---------|------|---------|------|---------|
|    |                                              | 1MHz/0.1V  | Max.          | Typ.     | Max.    | Typ. | Max.    | Typ. |         |
|    | Units                                        | (uH)       | $\Omega$      | $\Omega$ | A       | A    | A       | A    |         |
| 1  | <input type="checkbox"/> SFEK252010S-R24N-HF | 0.24±30%   | 0.033         | 0.025    | 6.10    | 7.10 | 3.70    | 4.50 | N/A     |
| 2  | <input type="checkbox"/> SFEK252010S-R33N-HF | 0.33±30%   | 0.039         | 0.033    | 4.80    | 5.50 | 3.50    | 4.05 | N/A     |
| 3  | <input type="checkbox"/> SFEK252010S-R47N-HF | 0.47±30%   | 0.045         | 0.040    | 4.40    | 5.20 | 3.20    | 3.60 | N/A     |
| 4  | <input type="checkbox"/> SFEK252010S-R68N-HF | 0.68±30%   | 0.059         | 0.049    | 3.20    | 3.60 | 2.75    | 3.20 | N/A     |
| 5  | <input type="checkbox"/> SFEK252010S-1R0N-HF | 1.0±30%    | 0.085         | 0.080    | 3.10    | 4.00 | 2.20    | 2.60 | N/A     |
| 6  | <input type="checkbox"/> SFEK252010S-1R5N-HF | 1.5±30%    | 0.106         | 0.090    | 2.60    | 3.00 | 2.00    | 2.30 | N/A     |
| 7  | <input type="checkbox"/> SFEK252010S-2R2M-HF | 2.2±20%    | 0.155         | 0.129    | 1.90    | 2.20 | 1.50    | 1.80 | N/A     |
| 8  | <input type="checkbox"/> SFEK252010S-3R3M-HF | 3.3±20%    | 0.252         | 0.210    | 1.60    | 1.80 | 1.20    | 1.40 | N/A     |
| 9  | <input type="checkbox"/> SFEK252010S-4R7M-HF | 4.7±20%    | 0.340         | 0.290    | 1.30    | 1.50 | 1.00    | 1.10 | N/A     |
| 10 | <input type="checkbox"/> SFEK252010S-6R8M-HF | 6.8±20%    | 0.480         | 0.380    | 1.00    | 1.15 | 0.95    | 1.00 | N/A     |
| 11 | <input type="checkbox"/> SFEK252010S-100M-HF | 10±20%     | 0.740         | 0.700    | 0.90    | 1.00 | 0.65    | 0.75 | N/A     |
| 12 |                                              |            |               |          |         |      |         |      |         |
| 13 |                                              |            |               |          |         |      |         |      |         |
| 14 |                                              |            |               |          |         |      |         |      |         |
| 15 |                                              |            |               |          |         |      |         |      |         |
| 16 |                                              |            |               |          |         |      |         |      |         |
| 17 |                                              |            |               |          |         |      |         |      |         |
| 18 |                                              |            |               |          |         |      |         |      |         |
| 19 |                                              |            |               |          |         |      |         |      |         |
| 20 |                                              |            |               |          |         |      |         |      |         |
|    |                                              |            |               |          |         |      |         |      |         |

※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              |

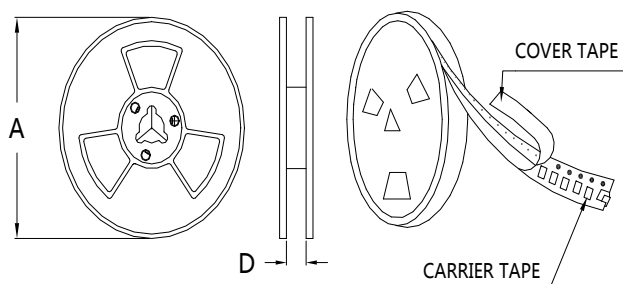
## 7. PACKAGING(unit: mm)

1.包装类型：编带装

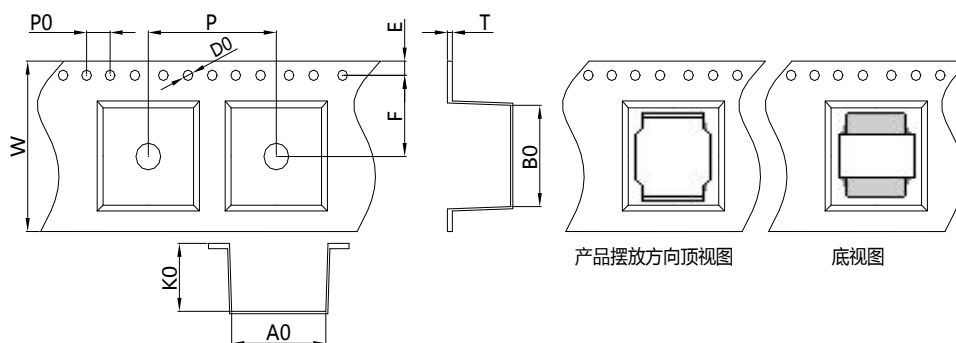
2.包装尺寸：

☐ 13" 盘

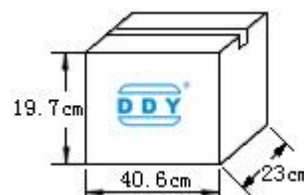
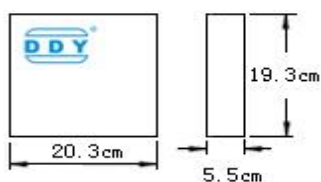
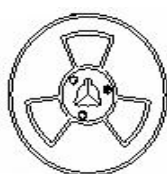
☒ 7" 盘



|   | 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             |
|--------|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 252010 | (mm) | $8.00 \pm 0.3$ | $2.35 \pm 0.2$ | $2.65 \pm 0.2$ | $1.40 \pm 0.1$ | $4.00 \pm 0.1$ | $0.25 \pm 0.1$ | $1.75 \pm 0.1$ | $3.50 \pm 0.1$ | $1.50 \pm 0.1$ | $4.00 \pm 0.2$ |



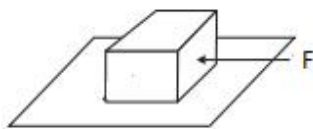
|    |      |     |
|----|------|-----|
| 每卷 | 2000 | Pcs |
|----|------|-----|

|    |      |      |     |
|----|------|------|-----|
| 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

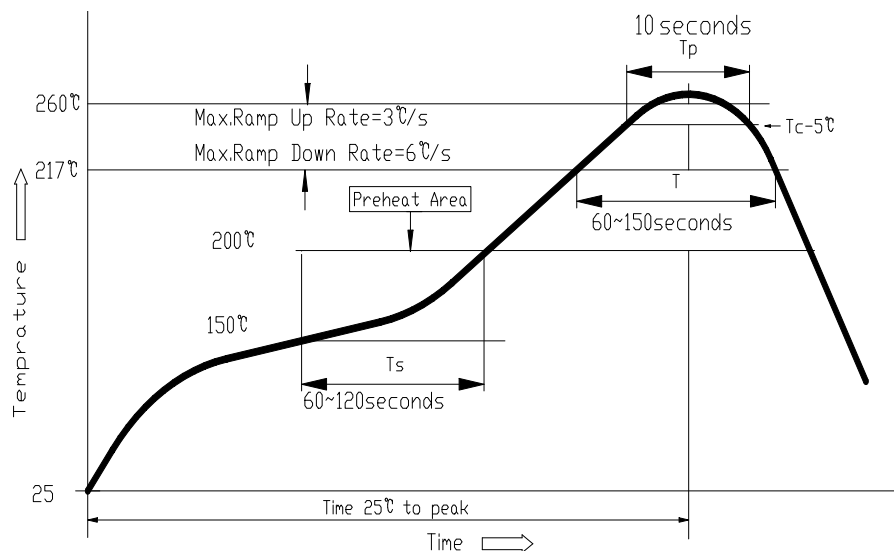
Applicable soldering process to the products is refl.

### 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: ≤30W;
- ③ Diameter of soldering iron end: ≤1.0mm;
- ④ Soldering time: <3 s

