

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

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

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

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

DDY Part No.: SFEK4020A-

| DRAWING          |         |          |
|------------------|---------|----------|
| MADE             | CHECKED | APPROVED |
| 王海玲              | 赵万虎     | 肖中华      |
| DATE: 2023年9月14日 |         |          |

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



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### 1. Scope

This specification applies to the SFEK4020 Series of wire wound SMD power inductor.

### 2. PRODUCT IDENTIFICATION

SFEK 4020 □ - 1R5 □ - □

(1) (2) (3) (4) (5) (6)

- |  |  |
|--|--|
| (1) .Series name (产品品名)  | (2) .Dimensions (产品尺寸)   |
| (3) .Appearance shape (产品形状)<br>A: dodecagon (十二边形) ; B: octagon (八边形) | (4) .Inductance value (电感值)<br>1R5: 1.5μH 221: 220μH   |
| (5) Tolerance (误差值)<br>M: ±20%; N: ±30%                                | (7) .Environmental status (环保状态)<br>LF- Lead free; HF-Halogen free;<br>FP-Free red phosphor. |

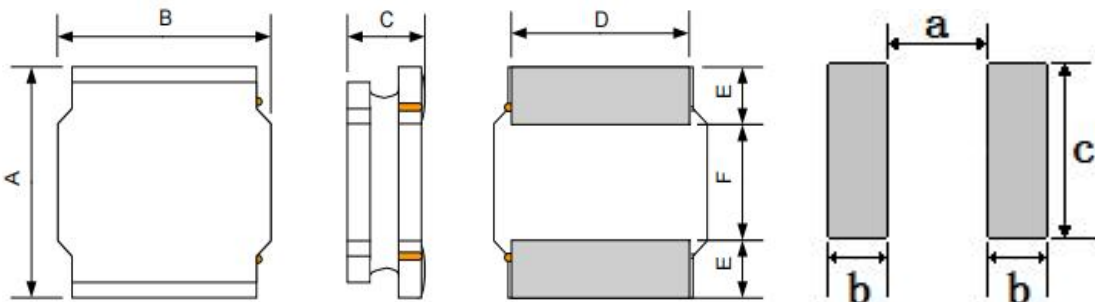
### 3. Electrical Characteristics

Please refer to Item 5.

- 1). Operating temperature range (individual chip without packing): -40°C ~ +125°C ;
- 2). Storage temperature range (packaging conditions): -40°C ~ +85°C and RH 70% (Max.);
- 3). Irms:DC current that causes the temperature rise ( $\Delta T = 40^\circ C$ ) from 20°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°C ambient;
- 6). Rated current: Isat or Irms, whichever is smaller;
- 7). Absolute maximum voltage: DC 25V;

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

shape: A



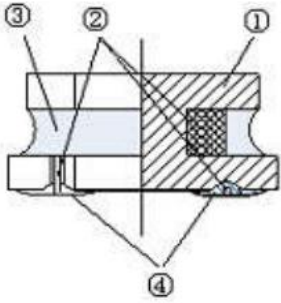
Recommended Land Pattern

| Series    | A       | B       | C        | D       | E        | F        | a Typ. | b Typ. | c Typ. |
|-----------|---------|---------|----------|---------|----------|----------|--------|--------|--------|
| SFEK4020A | 4.0±0.2 | 4.0±0.2 | 2.0 Max. | 3.3±0.2 | 1.0 Typ. | 2.0 Ttp. | 1.8    | 1.2    | 3.5    |





6. Structure (The structure of product.)



|   | 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              |

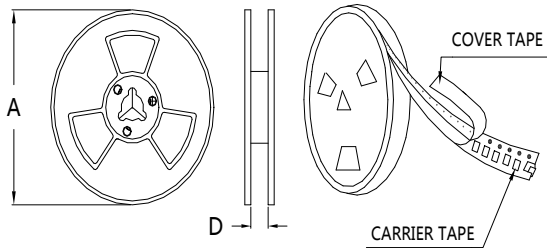
7. PACKAGING(unit: mm)

1.包装类型：编带装

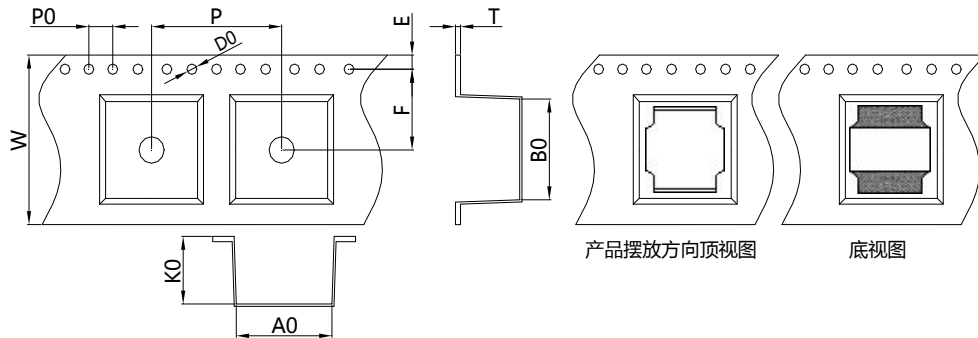
2.包装尺寸：

13" 盘

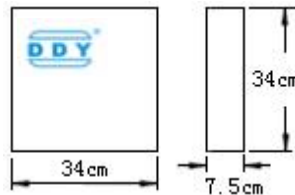
7" 盘



|   | 13" 盘              | 7" 盘               |
|---|--------------------|--------------------|
| A | $\Phi 330 \pm 2.0$ | $\Phi 178 \pm 2.0$ |
| D | 12.5               |                    |



| Size | Item | W              | A0            | B0            | K0            | P             | T             | E              | F             | D0            | P0            |
|------|------|----------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|
| 4020 | (mm) | $12.0 \pm 0.3$ | $4.4 \pm 0.2$ | $4.4 \pm 0.2$ | $2.1 \pm 0.2$ | $8.0 \pm 0.3$ | $0.3 \pm 0.1$ | $1.75 \pm 0.1$ | $5.5 \pm 0.2$ | $1.5 \pm 0.1$ | $4.0 \pm 0.2$ |



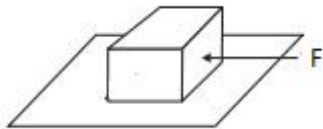
|    |      |     |
|----|------|-----|
| 每卷 | 3000 | Pcs |
|----|------|-----|

|    |      |       |     |
|----|------|-------|-----|
| 每盒 | 4卷,共 | 12000 | Pcs |
|----|------|-------|-----|

|    |      |       |     |
|----|------|-------|-----|
| 每箱 | 3盒,共 | 36000 | 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 : $260 + 0 / - 5^{\circ}\text{C}$  |
| 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

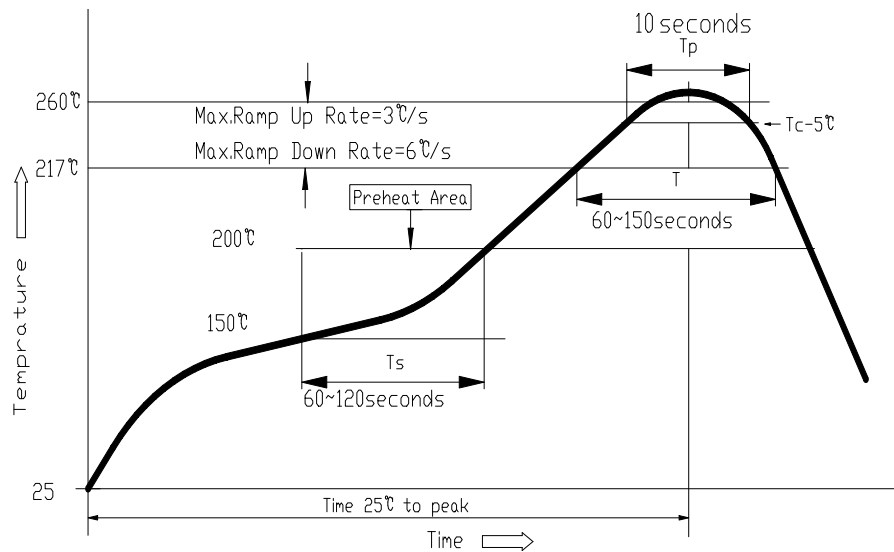
Applicable soldering process to the products is refl.

### 9.1 Soldering Materials

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

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

### 9.2 Reflow Soldering Profile SFEK4020A-



### 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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