

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

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

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

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

DDY Part No.: SFE6045A-

| DRAWING          |         |          |
|------------------|---------|----------|
| MADE             | CHECKED | APPROVED |
| 王海玲              | 赵万虎     | 肖中华      |
| DATE: 2023年5月12日 |         |          |

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



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### 1. Scope

This specification applies to the SFE6045 Series of wire wound SMD power inductor.

### 2.PRODUCT IDENTIFICATION

SFE 6045 □ - 1R5 □ - □

(1) (2) (3) (4) (5) (6) (7)

(1) .Series name (产品品名) (2) .Dimensions (产品尺寸)

(3) .Appearance shape (产品形状) (4) .Inductance value (电感值)

A: dodecagon (十二边形) : B: octagon (八边形) 1R5: 1.5μH 221: 220μH

(5) Tolerance (误差值) (6) .Identification code (标识码)

M: ±20%; N: ±30%

(7) .Environmental status (环保状态)

LF- Lead free; HF-Halogen free; FP-Free red phosphor.

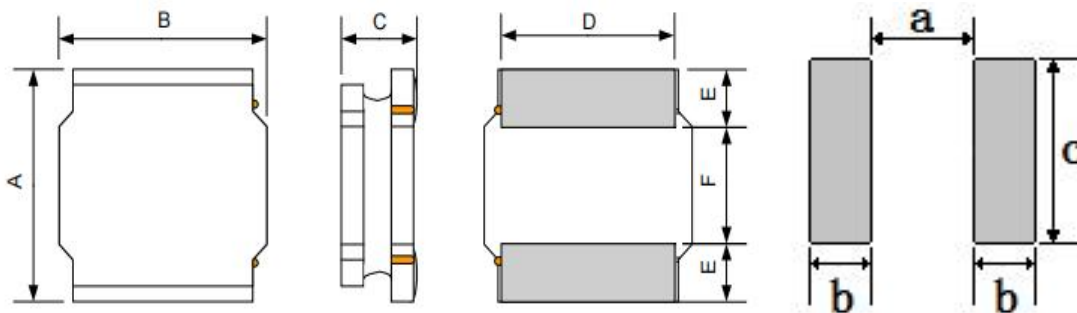
### 3. Electrical Characteristics

Please refer to Item 5.

- 1). Operating temperature range (individual chip without packing): -40°C ~ +125°C .
- 2). Storage temperature range (packaging conditions): -40°C ~ +85°C and RH 70% (Max.).
- 3). Rating DC current: Temperature rise( $\Delta T$ ) is 40°C approximately at Irms.
- 4). Saturation DC current: Inductance drop approximately 30% of  $L_0$  at Isat.

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

shape: A



Recommended Land Pattern

| Series   | A       | B       | C        | D       | E         | F        | a Typ. | b Typ. | c Typ. |
|----------|---------|---------|----------|---------|-----------|----------|--------|--------|--------|
| SFE6045A | 6.0±0.3 | 6.0±0.3 | 4.5 Max. | 4.9±0.3 | 1.65 Typ. | 2.2 Typ. | 2.0    | 2.1    | 5.1    |



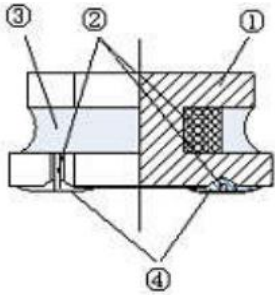
### 5. Electrical Characteristics

| NO | DDY CODE | Part Number                                 | Inductance  | DC Resistance |          | Isat(A) |       | Irms(A) |      | Marking |
|----|----------|---------------------------------------------|-------------|---------------|----------|---------|-------|---------|------|---------|
|    |          |                                             | 100KHz/1.0V | Max.          | Typ.     | Max.    | Typ.  | Max.    | Typ. |         |
|    |          |                                             | Units       | $\Omega$      | $\Omega$ | A       | A     | A       | A    |         |
| 1  |          | <input type="checkbox"/> SFE6045A-R47N-F-HF | 0.47±30%    | 0.011         | 0.009    | 15.00   | 16.50 | 6.50    | 6.50 | R47     |
| 2  |          | <input type="checkbox"/> SFE6045A-R56N-F-HF | 0.56±30%    | 0.011         | 0.009    | 14.00   | 15.00 | 6.30    | 6.30 | R56     |
| 3  |          | <input type="checkbox"/> SFE6045A-1R0N-F-HF | 1.0±30%     | 0.014         | 0.011    | 9.50    | 10.00 | 5.50    | 6.00 | 1R0     |
| 4  |          | <input type="checkbox"/> SFE6045A-1R2N-F-HF | 1.2±30%     | 0.016         | 0.013    | 9.00    | 9.50  | 5.00    | 5.40 | 1R2     |
| 5  |          | <input type="checkbox"/> SFE6045A-1R5N-F-HF | 1.5±30%     | 0.016         | 0.013    | 8.80    | 9.50  | 4.95    | 5.40 | 1R5     |
| 6  |          | <input type="checkbox"/> SFE6045A-2R2M-F-HF | 2.2±20%     | 0.023         | 0.018    | 6.75    | 7.40  | 4.60    | 5.00 | 2R2     |
| 7  |          | <input type="checkbox"/> SFE6045A-3R3M-F-HF | 3.3±20%     | 0.027         | 0.022    | 5.90    | 6.20  | 3.70    | 4.00 | 3R3     |
| 8  |          | <input type="checkbox"/> SFE6045A-4R7M-F-HF | 4.7±20%     | 0.034         | 0.027    | 4.97    | 5.50  | 3.30    | 3.60 | 4R7     |
| 9  |          | <input type="checkbox"/> SFE6045A-5R6M-F-HF | 5.6±20%     | 0.038         | 0.032    | 4.15    | 4.60  | 3.15    | 3.40 | 5R6     |
| 10 |          | <input type="checkbox"/> SFE6045A-6R2M-F-HF | 6.2±20%     | 0.040         | 0.035    | 4.00    | 4.30  | 3.00    | 3.30 | 6R2     |
| 11 |          | <input type="checkbox"/> SFE6045A-6R8M-F-HF | 6.8±20%     | 0.040         | 0.035    | 3.90    | 4.30  | 3.00    | 3.30 | 6R8     |
| 12 |          | <input type="checkbox"/> SFE6045A-8R2M-F-HF | 8.2±20%     | 0.060         | 0.053    | 3.90    | 4.30  | 2.60    | 2.80 | 8R2     |
| 13 |          | <input type="checkbox"/> SFE6045A-100M-F-HF | 10.0±20%    | 0.062         | 0.051    | 3.20    | 3.50  | 2.45    | 2.70 | 100     |
| 14 |          | <input type="checkbox"/> SFE6045A-120M-F-HF | 12.0±20%    | 0.075         | 0.063    | 2.80    | 3.00  | 2.20    | 2.40 | 120     |
| 15 |          | <input type="checkbox"/> SFE6045A-150M-F-HF | 15.0±20%    | 0.088         | 0.073    | 2.50    | 2.70  | 2.05    | 2.20 | 150     |
| 16 |          | <input type="checkbox"/> SFE6045A-180M-F-HF | 18.0±20%    | 0.105         | 0.089    | 2.20    | 2.40  | 1.85    | 2.00 | 180     |
| 17 |          | <input type="checkbox"/> SFE6045A-220M-F-HF | 22.0±20%    | 0.116         | 0.095    | 2.05    | 2.20  | 1.80    | 2.00 | 220     |
| 18 |          | <input type="checkbox"/> SFE6045A-270M-F-HF | 27.0±20%    | 0.133         | 0.114    | 1.90    | 2.10  | 1.65    | 1.80 | 270     |
| 19 |          | <input type="checkbox"/> SFE6045A-300M-F-HF | 30.0±20%    | 0.172         | 0.141    | 1.70    | 1.80  | 1.50    | 1.60 | 300     |
| 20 |          | <input type="checkbox"/> SFE6045A-330M-F-HF | 33.0±20%    | 0.178         | 0.147    | 1.75    | 2.00  | 1.45    | 1.70 | 330     |
| 21 |          | <input type="checkbox"/> SFE6045A-470M-F-HF | 47.0±20%    | 0.260         | 0.230    | 1.40    | 1.50  | 1.30    | 1.40 | 470     |
| 22 |          | <input type="checkbox"/> SFE6045A-560M-F-HF | 56.0±20%    | 0.287         | 0.254    | 1.30    | 1.40  | 1.10    | 1.20 | 560     |
| 23 |          | <input type="checkbox"/> SFE6045A-680M-F-HF | 68.0±20%    | 0.376         | 0.340    | 1.20    | 1.30  | 1.00    | 1.10 | 680     |
| 24 |          | <input type="checkbox"/> SFE6045A-820M-F-HF | 82.0±20%    | 0.500         | 0.430    | 1.00    | 1.10  | 1.00    | 1.10 | 820     |
| 25 |          | <input type="checkbox"/> SFE6045A-101M-F-HF | 100.0±20%   | 0.563         | 0.510    | 0.95    | 1.00  | 0.80    | 0.88 | 101     |
| 26 |          | <input type="checkbox"/> SFE6045A-151M-F-HF | 150.0±20%   | 0.754         | 0.690    | 0.80    | 0.88  | 0.70    | 0.77 | 151     |
| 27 |          | <input type="checkbox"/> SFE6045A-221M-F-HF | 220.0±20%   | 1.084         | 0.900    | 0.70    | 0.75  | 0.57    | 0.60 | 221     |
| 28 |          | <input type="checkbox"/> SFE6045A-331M-F-HF | 330.0±20%   | 1.651         | 1.530    | 0.57    | 0.60  | 0.55    | 0.57 | 331     |
| 29 |          | <input type="checkbox"/> SFE6045A-471M-F-HF | 470.0±20%   | 2.340         | 2.150    | 0.45    | 0.48  | 0.40    | 0.42 | 471     |
| 30 |          | <input type="checkbox"/> SFE6045A-561M-F-HF | 560.0±20%   | 3.250         | 2.750    | 0.42    | 0.46  | 0.42    | 0.42 | 561     |
| 31 |          | <input type="checkbox"/> SFE6045A-681M-F-HF | 680.0±20%   | 3.250         | 2.750    | 0.40    | 0.42  | 0.33    | 0.35 | 681     |
| 32 |          | <input type="checkbox"/> SFE6045A-821M-F-HF | 820.0±20%   | 5.560         | 4.450    | 0.36    | 0.40  | 0.33    | 0.35 | 821     |
| 33 |          | <input type="checkbox"/> SFE6045A-102M-F-HF | 1000.0±20%  | 5.850         | 5.120    | 0.30    | 0.35  | 0.30    | 0.35 | 102     |

※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          | Ni-Zn Ferrite                            |
| ②  | Wire          | Polyurethane system enameled copper wire |
| ③  | Magnetic Glue | Epoxy resin and magnetic powder          |
| ④  | Plating       | AgNiSn or FeNiCu + Sn Alloy              |

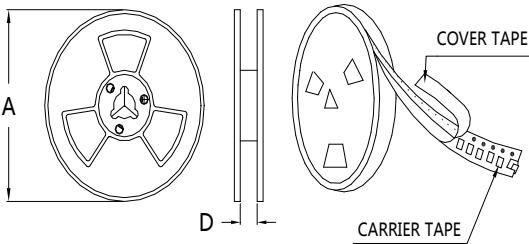
### 7. PACKAGING(unit: mm)

1.包装类型：编带装

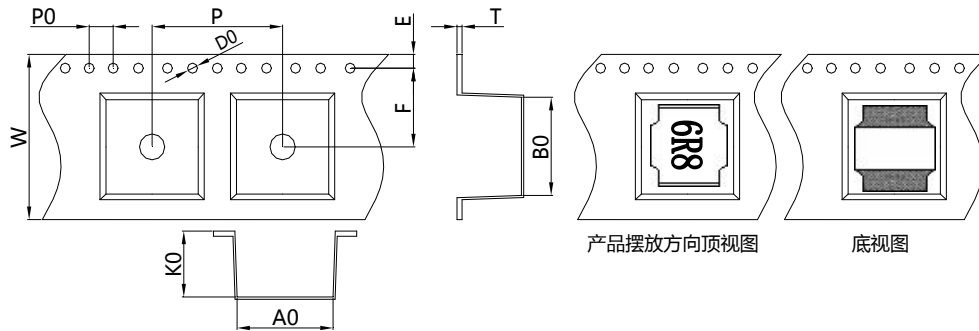
2.包装尺寸：

13" 盘

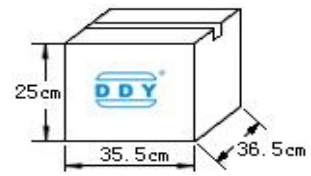
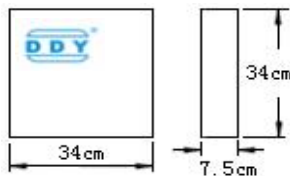
7" 盘



|   | 13" 盘              | 7" 盘               |
|---|--------------------|--------------------|
| A | $\Phi 330 \pm 2.0$ | $\Phi 178 \pm 2.0$ |
| D | 12.5/16.5          |                    |



| Size | Item      | W        | A0       | B0       | K0      | P       | T       | E        | F       | D0      | P0      |
|------|-----------|----------|----------|----------|---------|---------|---------|----------|---------|---------|---------|
| √    | 6045 (mm) | 12.0±0.3 | 6.5±0.15 | 6.5±0.15 | 4.7±0.2 | 8.0±0.3 | 0.4±0.1 | 1.75±0.1 | 5.5±0.1 | 1.5±0.1 | 4.0±0.1 |
|      | 6045 (mm) | 16.0±0.3 | 6.5±0.15 | 6.5±0.15 | 4.7±0.2 | 8.0±0.3 | 0.4±0.1 | 1.75±0.1 | 7.5±0.1 | 1.5±0.1 | 4.0±0.1 |



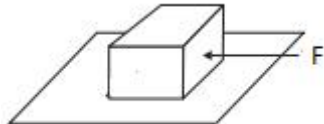
|    |      |     |
|----|------|-----|
| 每卷 | 1500 | Pcs |
|----|------|-----|

|    |      |      |     |
|----|------|------|-----|
| 每盒 | 4卷,共 | 6000 | Pcs |
|----|------|------|-----|

|    |      |       |     |
|----|------|-------|-----|
| 每箱 | 3盒,共 | 18000 | 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

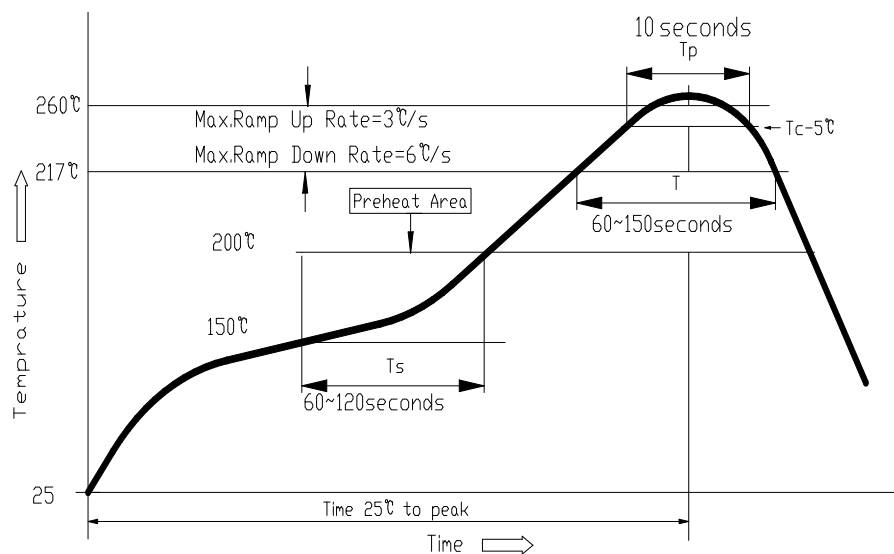
Applicable soldering process to the products is refl.

### 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



### 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



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[PE-53601NL](#) [PE-53602NL](#) [PG0936.113NLT](#) [9220-20](#) [9310-16](#) [PM06-2N7](#) [PM06-39NJ](#) [A01TK](#) [1206CS-471XJ](#) [HC2-R47-R](#) [HC8-1R2-R](#)  
[HCF1305-3R3-R](#) [1206CS-151XG](#) [RCH664NP-4R7M](#) [RCP1317NP-391L](#) [DH2280-4R7M](#) [DS1608C-106](#) [B10TJ](#) [B82498B3101J000](#) [ELJ-](#)  
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