

承 認 書

SPECIFICATION FOR APPROVAL

Customer Name: 2144

Description Part No.: _____

Customer Part No.: _____

Sample No.: _____

DDY Part No.: SFE8040A-

| DRAWING | | |
|------------------|---------|----------|
| MADE | CHECKED | APPROVED |
| 王海玲 | 赵万虎 | 肖中华 |
| DATE: 2023年3月30日 | | |

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



惠 州 市 德 立 电 子 有 限 公 司

HUI ZHOU DE LI ELECTRONICS CO., LTD

廣 東 省 博 羅 縣 洲 際 工 業 園 梅 園 三 路

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惠州市德立电子有限公司

HUI ZHOU DE LI ELECTRONICS CO., LTD

Version of Changed Record

| DATE | REV | CHANGED CONTENTS | DRAFT | APPROVED |
|-----------|-----|------------------|-------|----------|
| 2023/3/30 | 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 SFE8040 Series of wire wound SMD power inductor.

2. PRODUCT IDENTIFICATION

SFE 8040 □ - 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: 1.5 μ H 221: 220 μ H

(5) Tolerance (误差值)

(6) .Identification code (标识码)

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

(7) .Environmental status (环保状态)

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

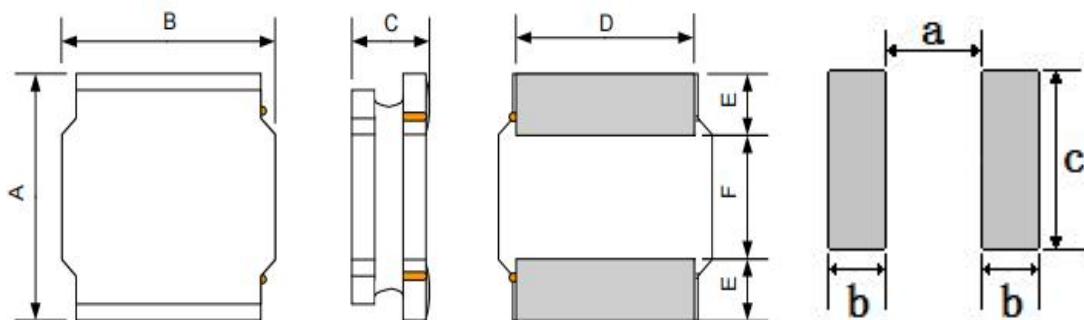
3. Electrical Characteristics

Please refer to Item 5.

- 1). Operating temperature range (individual chip without packing): $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$.
- 2). Storage temperature range (packaging conditions): $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ and RH 70% (Max.).
- 3). Rating DC current: Temperature rise(ΔT) 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. |
|----------|---------------|---------------|----------|---------------|----------|----------|--------|--------|--------|
| SFE8040A | 8.0 \pm 0.3 | 8.0 \pm 0.3 | 4.2 Max. | 6.3 \pm 0.3 | 2.0 Typ. | 4.0 Typ. | 3.8 | 2.2 | 6.5 |



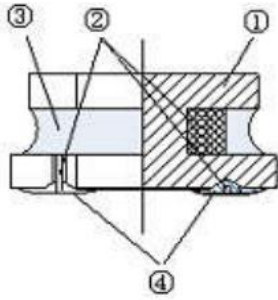
5. Electrical Characteristics

| NO. | Part Number | Inductance | DC Resistance | | Isat(A) | | Irms(A) | | Marking |
|-----|----------------------|-------------|---------------|----------|---------|-------|---------|-------|---------|
| | | 100KHz/1.0V | Max. | Typ. | Max. | Typ. | Max. | Typ. | |
| | Units | (uH) | Ω | Ω | A | A | A | A | |
| 1 | □ SFE8040A-R47N-F-HF | 0.47±30% | 0.008 | 0.006 | 14.00 | 16.00 | 8.00 | 10.00 | R47 |
| 2 | □ SFE8040A-1R0N-F-HF | 1.0±30% | 0.010 | 0.008 | 9.85 | 14.00 | 6.30 | 6.90 | 1R0 |
| 3 | □ SFE8040A-1R5N-F-HF | 1.5±30% | 0.013 | 0.010 | 8.15 | 11.00 | 5.65 | 6.20 | 1R5 |
| 4 | □ SFE8040A-1R8N-F-HF | 1.8±30% | 0.013 | 0.010 | 8.15 | 11.00 | 5.65 | 6.20 | 1R8 |
| 5 | □ SFE8040A-2R2M-F-HF | 2.2±20% | 0.016 | 0.013 | 7.10 | 8.00 | 5.15 | 5.60 | 2R2 |
| 6 | □ SFE8040A-3R3M-F-HF | 3.3±20% | 0.022 | 0.015 | 6.50 | 7.00 | 4.40 | 4.80 | 3R3 |
| 7 | □ SFE8040A-4R7M-F-HF | 4.7±20% | 0.025 | 0.021 | 5.90 | 6.50 | 4.10 | 4.50 | 4R7 |
| 8 | □ SFE8040A-5R6M-F-HF | 5.6±20% | 0.027 | 0.025 | 6.00 | 6.50 | 3.85 | 4.50 | 5R6 |
| 9 | □ SFE8040A-6R8M-F-HF | 6.8±20% | 0.034 | 0.030 | 4.55 | 5.20 | 3.60 | 4.00 | 6R8 |
| 10 | □ SFE8040A-8R2M-F-HF | 8.2±20% | 0.039 | 0.035 | 4.20 | 4.80 | 3.45 | 3.80 | 8R2 |
| 11 | □ SFE8040A-100M-F-HF | 10.0±20% | 0.043 | 0.037 | 3.60 | 4.10 | 3.30 | 3.60 | 100 |
| 12 | □ SFE8040A-150M-F-HF | 15.0±20% | 0.065 | 0.053 | 2.95 | 3.60 | 2.60 | 2.80 | 150 |
| 13 | □ SFE8040A-220M-F-HF | 22.0±20% | 0.090 | 0.081 | 2.40 | 2.70 | 2.10 | 2.30 | 220 |
| 14 | □ SFE8040A-330M-F-HF | 33.0±20% | 0.126 | 0.097 | 2.05 | 2.40 | 1.80 | 2.00 | 330 |
| 15 | □ SFE8040A-470M-F-HF | 47.0±20% | 0.200 | 0.164 | 1.75 | 2.00 | 1.55 | 1.70 | 470 |
| 16 | □ SFE8040A-560M-F-HF | 56.0±20% | 0.230 | 0.205 | 1.55 | 1.70 | 1.45 | 1.60 | 560 |
| 17 | □ SFE8040A-680M-F-HF | 68.0±20% | 0.255 | 0.235 | 1.45 | 1.60 | 1.25 | 1.40 | 680 |
| 18 | □ SFE8040A-820M-F-HF | 82.0±20% | 0.293 | 0.263 | 1.30 | 1.40 | 1.15 | 1.20 | 820 |
| 19 | □ SFE8040A-910M-F-HF | 91.0±20% | 0.354 | 0.296 | 1.20 | 1.30 | 1.05 | 1.10 | 910 |
| 20 | □ SFE8040A-101M-F-HF | 100.0±20% | 0.377 | 0.338 | 1.15 | 1.30 | 1.00 | 1.10 | 101 |
| 21 | □ SFE8040A-121M-F-HF | 120.0±20% | 0.434 | 0.382 | 1.05 | 1.10 | 0.95 | 1.00 | 121 |
| 22 | □ SFE8040A-151M-F-HF | 150.0±20% | 0.533 | 0.475 | 1.10 | 1.20 | 0.85 | 0.94 | 151 |
| 23 | □ SFE8040A-221M-F-HF | 220.0±20% | 0.850 | 0.790 | 0.85 | 0.94 | 0.80 | 0.88 | 221 |
| 24 | □ SFE8040A-331M-F-HF | 330.0±20% | 1.156 | 1.050 | 0.68 | 0.75 | 0.64 | 0.70 | 331 |
| 25 | □ SFE8040A-471M-F-HF | 470.0±20% | 2.100 | 1.750 | 0.60 | 0.70 | 0.50 | 0.60 | 471 |
| 26 | □ SFE8040A-561M-F-HF | 560.0±20% | 2.370 | 2.100 | 0.55 | 0.65 | 0.50 | 0.60 | 561 |
| 27 | □ SFE8040A-681M-F-HF | 680.0±20% | 2.370 | 2.100 | 0.52 | 0.60 | 0.50 | 0.65 | 681 |
| 28 | □ SFE8040A-102M-F-HF | 1000.0±20% | 3.900 | 3.150 | 0.40 | 0.45 | 0.36 | 0.42 | 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

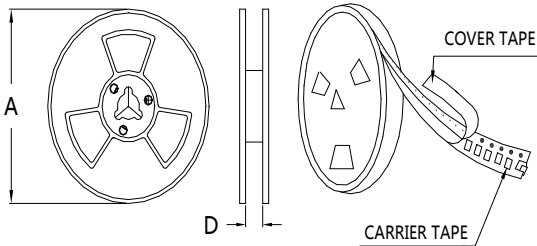
2.包装尺寸：



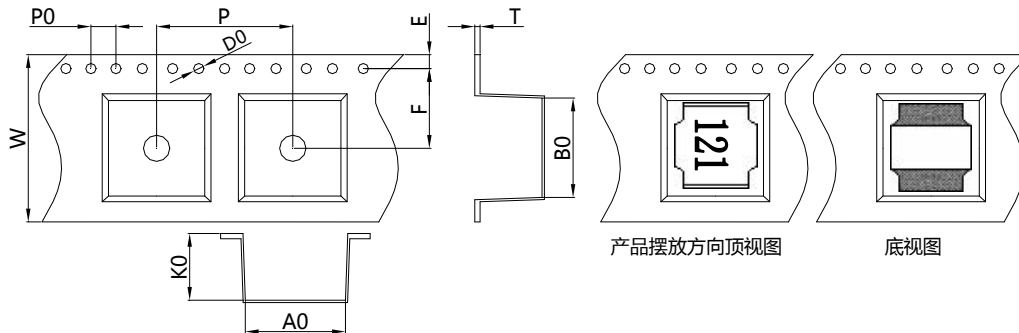
13" 盘



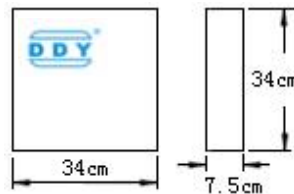
7" 盘



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

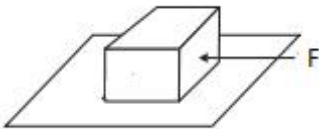


| Size | Item | W | A0 | B0 | K0 | P | T | E | F | D0 | P0 |
|------|------|--------------|---------------|---------------|---------------|--------------|---------------|----------------|---------------|---------------|---------------|
| 8040 | (mm) | 16 ± 0.3 | 8.4 ± 0.1 | 8.4 ± 0.1 | 4.4 ± 0.1 | 12 ± 0.1 | 0.4 ± 0.1 | 1.75 ± 0.1 | 7.5 ± 0.1 | 1.5 ± 0.1 | 4.0 ± 0.1 |



| | | | | | | | | | | | | |
|----|------|-----|--|----|------|------|-----|--|----|------|------|-----|
| 每卷 | 1000 | Pcs | | 每盒 | 3卷,共 | 3000 | Pcs | | 每箱 | 3盒,共 | 9000 | Pcs |
|----|------|-----|--|----|------|------|-----|--|----|------|------|-----|



| 8. RELIABILITY TEST | | | |
|----------------------------|----------------------------------|--|---|
| No. | TEST ITEM | SPECIFICATION | TEST CONDITION |
| 1 | High temperature Storage test | 1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ | Temperature: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (N: Follow the product specification for the setting.) Time : 96 ± 2 hours 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. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ | Temperature: $-40^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (M: Follow the product specification for the setting) Time : 96 ± 2 hours Place the samples for one hour at room temperature and test them within two hours. |
| 3 | Humidity test | 1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ | Temperature: $40 \pm 2^{\circ}\text{C}$, Humidity: $93 \pm 3\% \text{RH}$ Time : 96 ± 2 hours 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. 2. Solder: lead free 3. Flux: rosin flux |
| 5 | Heat endurance of flow soldering | 1. No significant defects in appearance. 2. $\Delta L/L \leq 10\%$ 3. $\Delta DCR/DCR \leq 10\%$ | 1. Refer to the above reflow curve and go through the reflow for twice. 2. The peak temperature : $260 + 0 / - 5^{\circ}\text{C}$ |
| 6 | Vibration test | 1. No significant defects in appearance. 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 2. Solder paste thickness: 0.12mm 3. Meet the above requirements without any loose termina | Solder the test samples to the PCB through 245°C reflow, apply a standard force on the side of the test samples for 10 seconds.  |



9. SOLDERING CONDITIONS

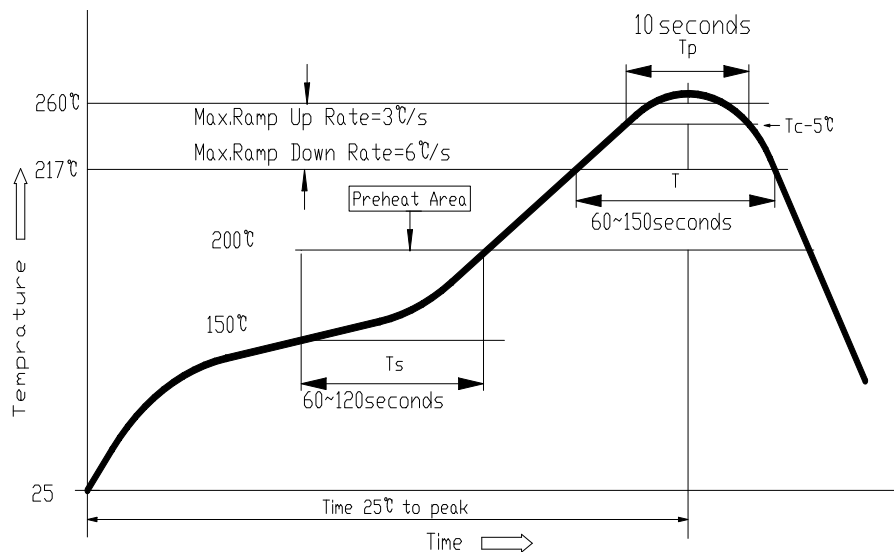
Applicable soldering process to the products is refl.

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



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[HCR15JTRF](#) [NIN-HCR33JTRF](#) [NIN-HDR22JTRF](#) [NIN-HDR82JTRF](#) [NIN-HK2N7STRF](#) [NIN-PA150KTR370F](#) [NIN-PB100KTR550F](#)