

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

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

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

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

DDY Part No.: SFE4030A-

DRAWING		
MADE	CHECKED	APPROVED
王海玲	赵万虎	肖中华
DATE: <u>2023年5月5日</u>		

CUSTOMER APPROVE



惠 州 市 德 立 电 子 有 限 公 司

HUI ZHOU DE LI ELECTRONICS CO., LTD

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### 1. Scope

This specification applies to the SFE4030 Series of wire wound SMD power inductor.

### 2.PRODUCT IDENTIFICATION

SFE 4030 □ - 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.

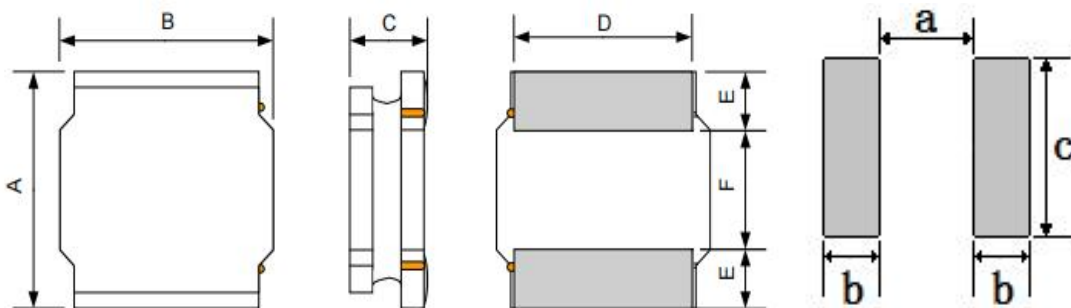
### 3. Electrical Characteristics

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(ΔT) is 40°C approximately at Irms.
- 4). Saturation DC current: Inductance drop approximately 30% of L<sub>0</sub> 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.
SFE4030A	4.0±0.2	4.0±0.2	3.0 Max.	3.3±0.2	1.2 Typ.	1.6 Typ.	1.4	1.4	3.5

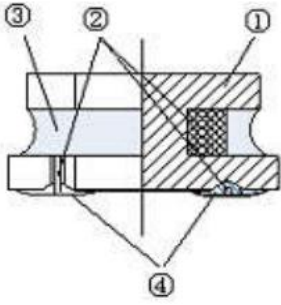


### 5. Electrical Characteristics

NO.	DDY CODE	Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
			100KHz/1.0V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
			( $\mu$ H)	$\Omega$	$\Omega$	A	A	A	A	
1		<input type="checkbox"/> SFE4030A-R47N-F-HF	0.47 $\pm$ 30%	0.016	0.011	7.80	9.80	5.20	5.90	R47
2		<input type="checkbox"/> SFE4030A-R68N-F-HF	0.68 $\pm$ 30%	0.017	0.013	6.80	8.00	4.56	5.10	R68
3		<input type="checkbox"/> SFE4030A-1R0N-F-HF	1.00 $\pm$ 30%	0.018	0.016	5.26	5.70	4.15	4.70	1R0
4		<input type="checkbox"/> SFE4030A-1R2N-F-HF	1.20 $\pm$ 30%	0.021	0.016	5.80	6.30	3.82	4.20	1R2
5		<input type="checkbox"/> SFE4030A-1R5N-F-HF	1.50 $\pm$ 30%	0.026	0.021	4.84	5.30	3.34	3.60	1R5
6		<input type="checkbox"/> SFE4030A-1R8N-F-HF	1.80 $\pm$ 30%	0.033	0.027	4.50	5.20	3.20	3.20	1R8
7		<input type="checkbox"/> SFE4030A-2R2M-F-HF	2.20 $\pm$ 20%	0.039	0.034	4.90	5.20	2.95	3.20	2R2
8		<input type="checkbox"/> SFE4030A-3R3M-F-HF	3.30 $\pm$ 20%	0.052	0.043	3.30	3.60	2.40	2.60	3R3
9		<input type="checkbox"/> SFE4030A-3R9M-F-HF	3.90 $\pm$ 20%	0.074	0.062	3.00	3.30	2.10	2.30	3R9
10		<input type="checkbox"/> SFE4030A-4R3M-F-HF	4.30 $\pm$ 20%	0.074	0.062	2.95	3.20	2.10	2.30	4R3
11		<input type="checkbox"/> SFE4030A-4R7M-F-HF	4.70 $\pm$ 20%	0.078	0.067	2.90	3.20	2.00	2.30	4R7
12		<input type="checkbox"/> SFE4030A-5R6M-F-HF	5.60 $\pm$ 20%	0.085	0.077	2.60	2.80	1.95	2.10	5R6
13		<input type="checkbox"/> SFE4030A-6R8M-F-HF	6.80 $\pm$ 20%	0.117	0.082	2.40	2.50	1.60	1.70	6R8
14		<input type="checkbox"/> SFE4030A-8R2M-F-HF	8.20 $\pm$ 20%	0.117	0.109	2.10	2.30	1.60	1.70	8R2
15		<input type="checkbox"/> SFE4030A-100M-F-HF	10.0 $\pm$ 20%	0.130	0.118	1.95	2.20	1.50	1.60	100
16		<input type="checkbox"/> SFE4030A-120M-F-HF	12.0 $\pm$ 20%	0.182	0.146	1.70	2.00	1.30	1.50	120
17		<input type="checkbox"/> SFE4030A-150M-F-HF	15.0 $\pm$ 20%	0.247	0.213	1.65	1.80	1.11	1.20	150
18		<input type="checkbox"/> SFE4030A-180M-F-HF	18.0 $\pm$ 20%	0.260	0.210	1.40	1.50	1.10	1.20	180
19		<input type="checkbox"/> SFE4030A-220M-F-HF	22.0 $\pm$ 20%	0.292	0.250	1.30	1.40	1.00	1.20	220
20		<input type="checkbox"/> SFE4030A-330M-F-HF	33.0 $\pm$ 20%	0.429	0.403	1.10	1.20	0.84	0.92	330
21		<input type="checkbox"/> SFE4030A-470M-F-HF	47.0 $\pm$ 20%	0.579	0.495	0.95	1.00	0.72	0.80	470
22		<input type="checkbox"/> SFE4030A-560M-F-HF	56.0 $\pm$ 20%	0.722	0.556	0.85	0.94	0.65	0.71	560
23		<input type="checkbox"/> SFE4030A-680M-F-HF	68.0 $\pm$ 20%	1.128	0.895	0.72	0.80	0.52	0.57	680
24		<input type="checkbox"/> SFE4030A-820M-F-HF	82.0 $\pm$ 20%	1.378	1.060	0.66	0.72	0.47	0.52	820
25		<input type="checkbox"/> SFE4030A-101M-F-HF	100.0 $\pm$ 20%	1.495	1.250	0.60	0.73	0.45	0.49	101
26		<input type="checkbox"/> SFE4030A-121M-F-HF	120.0 $\pm$ 20%	1.755	1.361	0.55	0.60	0.42	0.46	121
27		<input type="checkbox"/> SFE4030A-151M-F-HF	150.0 $\pm$ 20%	2.340	2.100	0.50	0.55	0.30	0.35	151
28		<input type="checkbox"/> SFE4030A-181M-F-HF	180.0 $\pm$ 20%	3.200	2.540	0.45	0.50	0.30	0.35	181
29		<input type="checkbox"/> SFE4030A-221M-F-HF	220.0 $\pm$ 20%	3.500	2.930	0.35	0.40	0.30	0.35	221
30		<input type="checkbox"/> SFE4030A-331M-F-HF	330.0 $\pm$ 20%	5.500	4.520	0.30	0.35	0.25	0.30	331
31		<input type="checkbox"/> SFE4030A-471M-F-HF	470.0 $\pm$ 20%	7.200	5.700	0.28	0.30	0.20	0.25	471
32		<input type="checkbox"/> SFE4030A-681M-F-HF	680.0 $\pm$ 21%	9.854	8.82	0.19	0.2	0.14	0.18	681



### 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

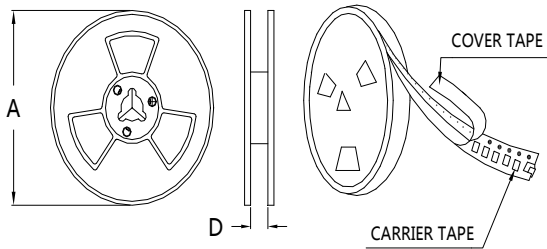
### 7. PACKAGING(unit: mm)

1.包装类型：编带装

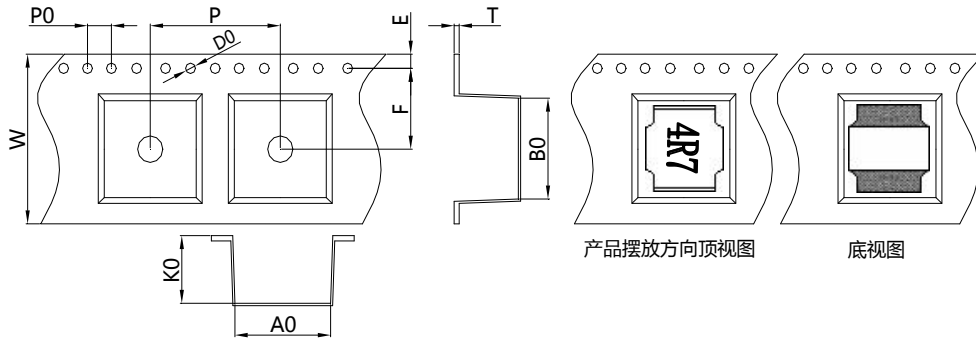
2.包装尺寸：

13" 盘

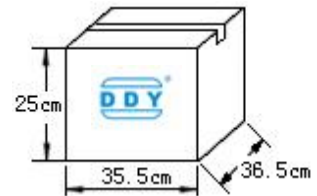
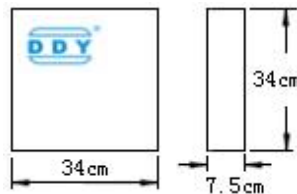
7" 盘



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



Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
4030	(mm)	12.0±0.3	4.4±0.2	4.4±0.2	3.1±0.2	8.0±0.3	0.3±0.1	1.75±0.1	5.5±0.2	1.5±0.1	4.0±0.2



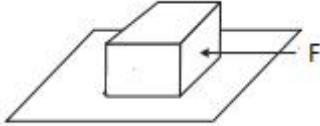
每卷	2000	Pcs
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每盒	4卷,共	8000	Pcs
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每箱	3盒,共	24000	Pcs
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**8. RELIABILITY TEST**

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 : $96 \pm 2$ 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 : $96 \pm 2$ 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 : $96 \pm 2$ 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 $245^{\circ}\text{C}$ reflow, apply a standard force on the side of the test samples for 10 seconds. 



## 9. SOLDERING CONDITIONS

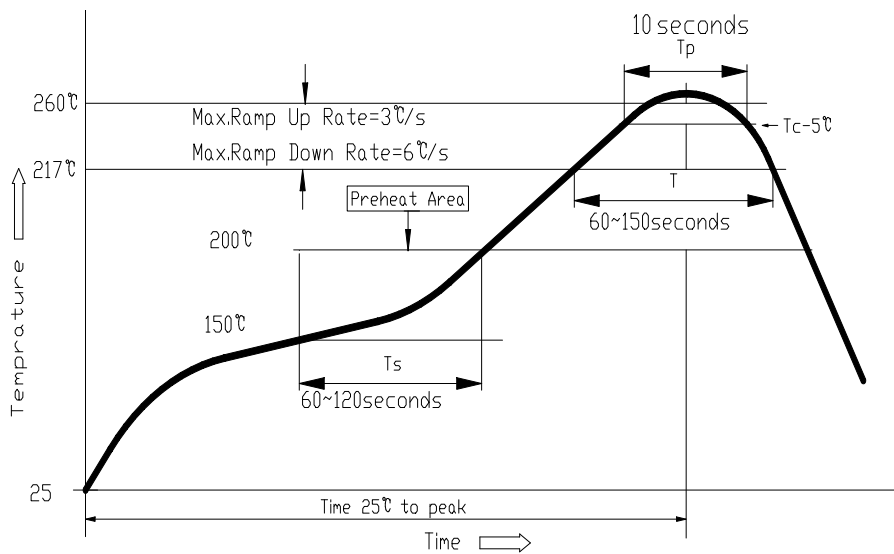
Applicable soldering process to the products is refl.

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



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