

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer's Part No: 2144

Customer's Part Name: \_\_\_\_\_

Customer's Part No: \_\_\_\_\_

Customer's Part Name: \_\_\_\_\_

Customer's Part No: UHG6242C/

DRAWING		
MADE	CHECKED	APPROVED
王海玲	赵万虎	肖中华
DATE: 2023年4月27日		

CUSTOMER APPROVE



惠州市德立电子有限公司

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**Version of Changed Record**

DATE	REV	CHANGED CONTENTS	DRAFT	APPROVED
2023/4/27	A	新版发行	王海玲	肖中华

\* Special notes:  
This product is non-vehicle certified.



### 1. Scope

This specification applies to the SFE4020 Series of wire wound SMD power inductor.

### 2.PRODUCT IDENTIFICATION

SFE 4020 □ - 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.

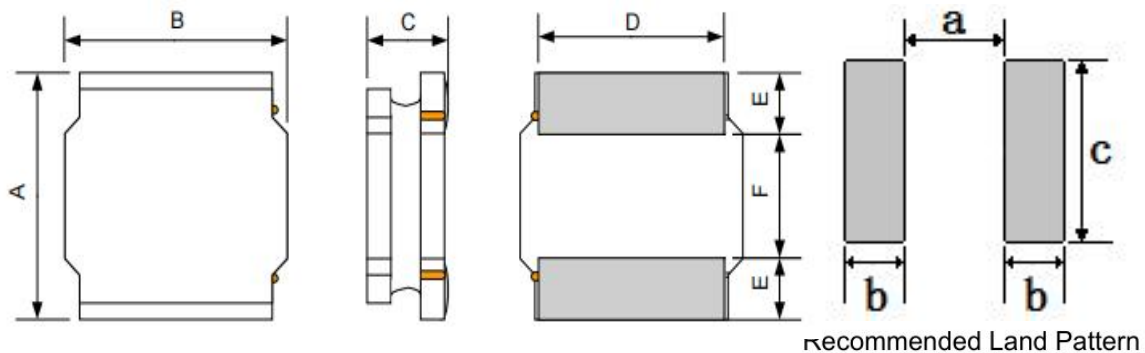
### 3. Electrical Characteristics

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



Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
SFE4020A	4.0±0.2	4.0±0.2	2.0 Max.	3.3±0.2	1.2 Typ.	1.6 Typ.	1.4	1.4	3.5



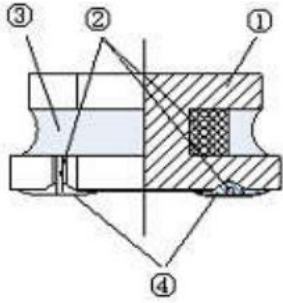
### 5. Electrical Characteristics

NO.	DDY CODE	Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
			100KHz/1.0V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
		Units	( $\mu$ H)	$\Omega$	$\Omega$	A	A	A	A	
1		<input type="checkbox"/> SFE4020A-R24N-F-HF	0.24 $\pm$ 30%	0.014	0.010	10.50	12.50	4.50	5.20	R24
2		<input type="checkbox"/> SFE4020A-R47N-F-HF	0.47 $\pm$ 30%	0.018	0.012	7.00	7.50	4.00	4.50	R47
3		<input type="checkbox"/> SFE4020A-R68N-F-HF	0.68 $\pm$ 30%	0.022	0.017	6.40	6.80	2.80	3.30	R68
4		<input type="checkbox"/> SFE4020A-1R0N-F-HF	1.00 $\pm$ 30%	0.038	0.029	4.80	5.20	2.50	3.20	1R0
5		<input type="checkbox"/> SFE4020A-1R2N-F-HF	1.20 $\pm$ 30%	0.042	0.032	4.80	5.10	2.15	3.00	1R2
6		<input type="checkbox"/> SFE4020A-1R5M-F-HF	1.50 $\pm$ 30%	0.046	0.035	4.45	4.90	2.20	3.00	1R5
7		<input type="checkbox"/> SFE4020A-2R2M-F-HF	2.20 $\pm$ 20%	0.052	0.045	3.40	3.50	2.00	2.80	2R2
8		<input type="checkbox"/> SFE4020A-3R3M-F-HF	3.30 $\pm$ 20%	0.091	0.075	3.20	3.50	1.80	2.50	3R3
9		<input type="checkbox"/> SFE4020A-3R6M-F-HF	3.60 $\pm$ 20%	0.098	0.084	2.80	3.00	1.54	2.30	3R6
10		<input type="checkbox"/> SFE4020A-4R7M-F-HF	4.70 $\pm$ 20%	0.098	0.084	2.35	2.50	1.50	2.00	4R7
11		<input type="checkbox"/> SFE4020A-5R6M-F-HF	5.60 $\pm$ 20%	0.117	0.102	2.20	2.40	1.22	1.80	5R6
12		<input type="checkbox"/> SFE4020A-6R2M-F-HF	6.20 $\pm$ 20%	0.150	0.129	2.15	2.30	1.08	1.60	6R2
13		<input type="checkbox"/> SFE4020A-6R8M-F-HF	6.80 $\pm$ 20%	0.163	0.141	2.20	2.40	1.10	1.60	6R8
14		<input type="checkbox"/> SFE4020A-8R2M-F-HF	8.20 $\pm$ 20%	0.189	0.168	1.75	1.90	0.95	1.35	8R2
15		<input type="checkbox"/> SFE4020A-100M-F-HF	10.0 $\pm$ 20%	0.215	0.184	1.60	1.70	0.90	1.20	100
16		<input type="checkbox"/> SFE4020A-120M-F-HF	12.0 $\pm$ 20%	0.228	0.197	1.50	1.60	0.88	1.20	120
17		<input type="checkbox"/> SFE4020A-150M-F-HF	15.0 $\pm$ 20%	0.299	0.240	1.35	1.50	0.77	1.10	150
18		<input type="checkbox"/> SFE4020A-220M-F-HF	22.0 $\pm$ 20%	0.455	0.360	1.05	1.10	0.62	0.87	220
19		<input type="checkbox"/> SFE4020A-270M-F-HF	27.0 $\pm$ 20%	0.709	0.545	1.02	1.10	0.50	0.70	270
20		<input type="checkbox"/> SFE4020A-330M-F-HF	33.0 $\pm$ 20%	0.715	0.490	0.85	1.00	0.50	0.60	330
21		<input type="checkbox"/> SFE4020A-470M-F-HF	47.0 $\pm$ 20%	0.923	0.795	0.70	0.75	0.44	0.60	470
22		<input type="checkbox"/> SFE4020A-560M-F-HF	56.0 $\pm$ 20%	1.152	0.988	0.66	0.72	0.41	0.57	560
23		<input type="checkbox"/> SFE4020A-680M-F-HF	68.0 $\pm$ 20%	1.380	1.130	0.61	0.67	0.36	0.50	680
24		<input type="checkbox"/> SFE4020A-750M-F-HF	75.0 $\pm$ 20%	1.510	1.310	0.70	0.77	0.35	0.49	750
25		<input type="checkbox"/> SFE4020A-820M-F-HF	82.0 $\pm$ 20%	1.520	1.410	0.50	0.55	0.34	0.47	820
26		<input type="checkbox"/> SFE4020A-101M-F-HF	100.0 $\pm$ 20%	2.020	1.810	0.48	0.53	0.31	0.43	101

※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

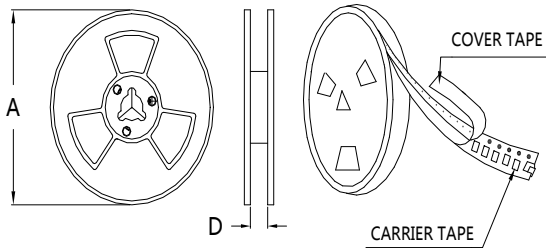
7. PACKAGING(unit: mm)

1.包装类型：编带装

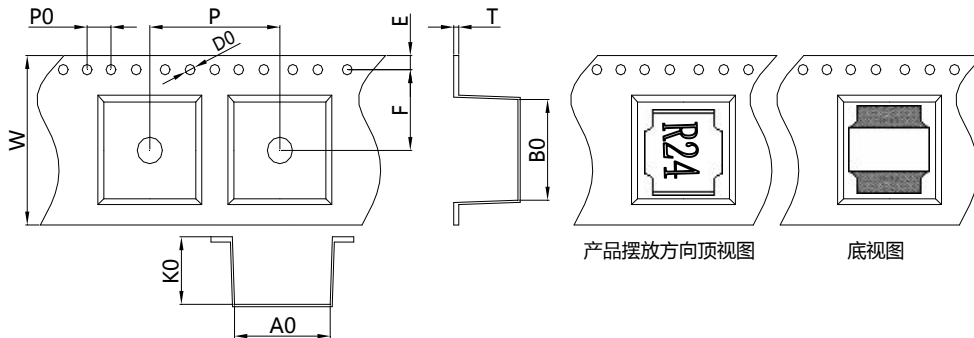
2.包装尺寸：

13" 盘

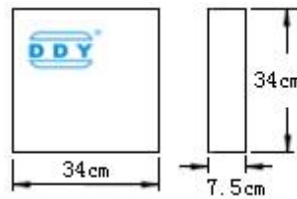
7" 盘



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



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



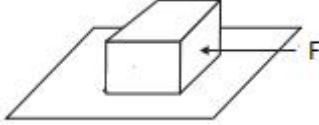
每卷	3000	Pcs
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每盒	4卷,共	12000	Pcs
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每箱	3盒,共	36000	Pcs
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**8. RELIABILITY TEST**

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 : $260 \pm 0/-5^{\circ}\text{C}$
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

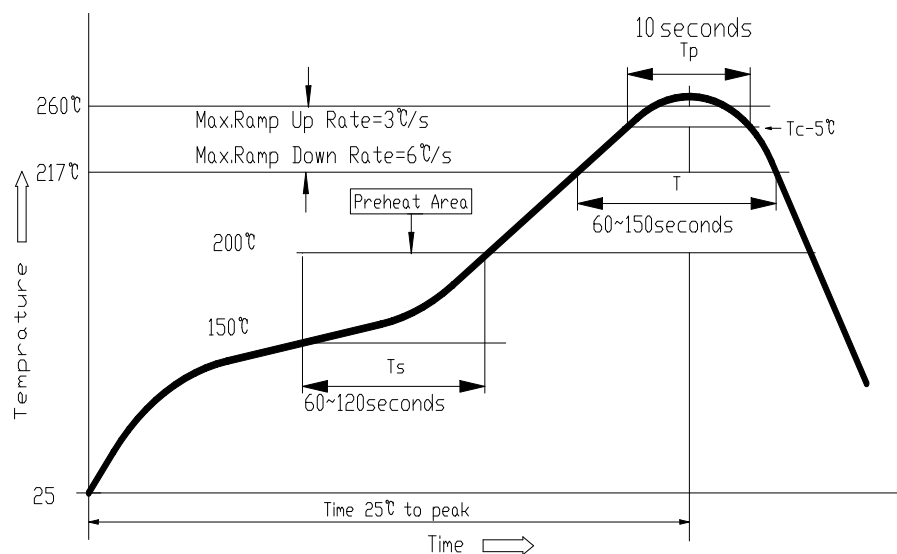
Applicable soldering process to the products is refl.

### 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: ≤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](#)