

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

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

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

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

DDY Part No.: SFE6020A-

DRAWING		
MADE	CHECKED	APPROVED
王海玲	赵万虎	肖中华
DATE: 2023年5月21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

NO.3 MEI YUAN ROAD,ZHOU JI INDUSTRIAL AREA,BOLUO COUNTY GUANGDONG

電話：15970768093 13640935893

傳真：0752-6207969

郵編：516100

Http: [www.ddycoils.com](http://www.ddycoils.com)





### 1. Scope

This specification applies to the SFE6020 Series of wire wound SMD power inductor.

### 2. PRODUCT IDENTIFICATION

SFE 6020 □ - 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)
- (5) Tolerance (误差值)
- (6) .Identification code (标识码)
- (7) .Environmental status (环保状态)

A: dodecagon (十二边形) : B: octagon (八边形)

1R5: 1.5μH 221: 220μH

M: ±20%; N: ±30%

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

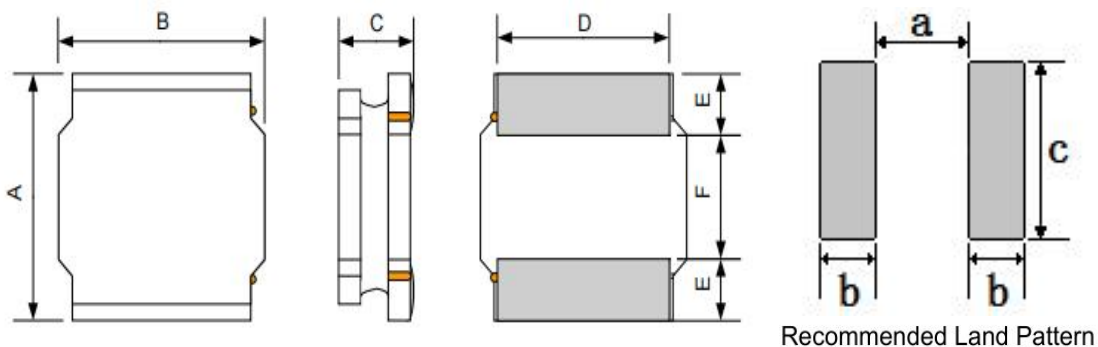
### 3. Electrical Characteristics

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.
SFE6020A	6.0±0.3	6.0±0.3	2.0 Max.	4.9±0.3	1.9 Typ.	2.2 Typ.	2.0	2.1	5.1



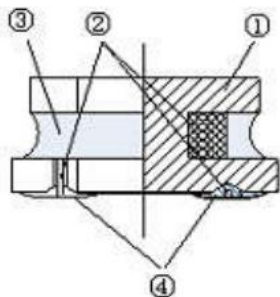
### 5. Electrical Characteristics

NO.	DDY CODE	Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
			100KHz/1.0V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
		Units	(uH)	Ω	Ω	A	A	A	A	
1		<input type="checkbox"/> SFE6020A-1R0N-F-HF	1.0±30%	0.026	0.021	4.15	5.00	3.50	4.40	1R0
2		<input type="checkbox"/> SFE6020A-1R5N-F-HF	1.5±30%	0.029	0.022	4.25	5.10	3.20	4.00	1R5
3		<input type="checkbox"/> SFE6020A-2R2M-F-HF	2.2±20%	0.037	0.029	3.75	4.50	2.75	3.50	2R2
4		<input type="checkbox"/> SFE6020A-3R3M-F-HF	3.3±20%	0.046	0.039	3.15	3.70	2.60	3.30	3R3
5		<input type="checkbox"/> SFE6020A-4R7M-F-HF	4.7±20%	0.075	0.062	3.00	3.60	2.00	2.50	4R7
6		<input type="checkbox"/> SFE6020A-5R6M-F-HF	5.6±20%	0.103	0.083	2.40	2.90	1.90	2.40	5R6
7		<input type="checkbox"/> SFE6020A-6R8M-F-HF	6.8±20%	0.103	0.083	2.20	2.60	1.80	2.30	6R8
8		<input type="checkbox"/> SFE6020A-8R2M-F-HF	8.2±20%	0.137	0.113	2.10	2.50	1.40	1.80	8R2
9		<input type="checkbox"/> SFE6020A-100M-F-HF	10.0±20%	0.137	0.113	1.75	2.10	1.40	1.80	100
10		<input type="checkbox"/> SFE6020A-150M-F-HF	15.0±20%	0.189	0.157	1.20	1.40	1.20	1.50	150
11		<input type="checkbox"/> SFE6020A-220M-F-HF	22.0±20%	0.265	0.223	1.05	1.20	1.00	1.30	220
12		<input type="checkbox"/> SFE6020A-330M-F-HF	33.0±20%	0.390	0.351	0.95	1.10	0.84	1.05	330
13		<input type="checkbox"/> SFE6020A-470M-F-HF	47.0±20%	0.559	0.472	0.70	0.90	0.80	0.90	470
14		<input type="checkbox"/> SFE6020A-680M-F-HF	68.0±20%	1.070	0.825	0.65	0.85	0.75	0.85	680
15		<input type="checkbox"/> SFE6020A-101M-F-HF	100.0±20%	1.450	1.375	0.50	0.60	0.35	0.40	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

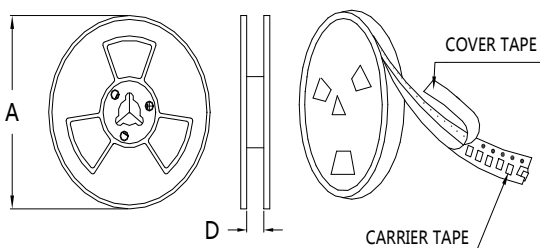
2.包装尺寸：



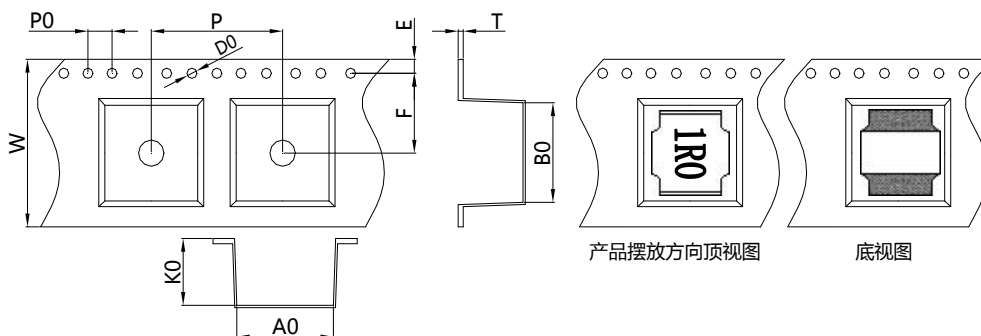
13" 盘



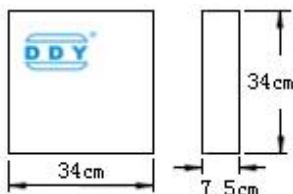
7" 盘



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



Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
√	6020 (mm)	12.0±0.3	6.5±0.15	6.5±0.15	3.0±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
	6020 (mm)	16.0±0.3	6.5±0.15	6.5±0.15	3.0±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



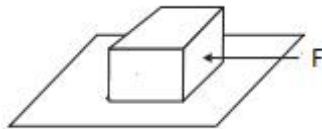
每卷	2500	Pcs
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每盒	4卷,共	10000	Pcs
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每箱	3盒,共	30000	Pcs
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**8. RELIABILITY TEST**

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

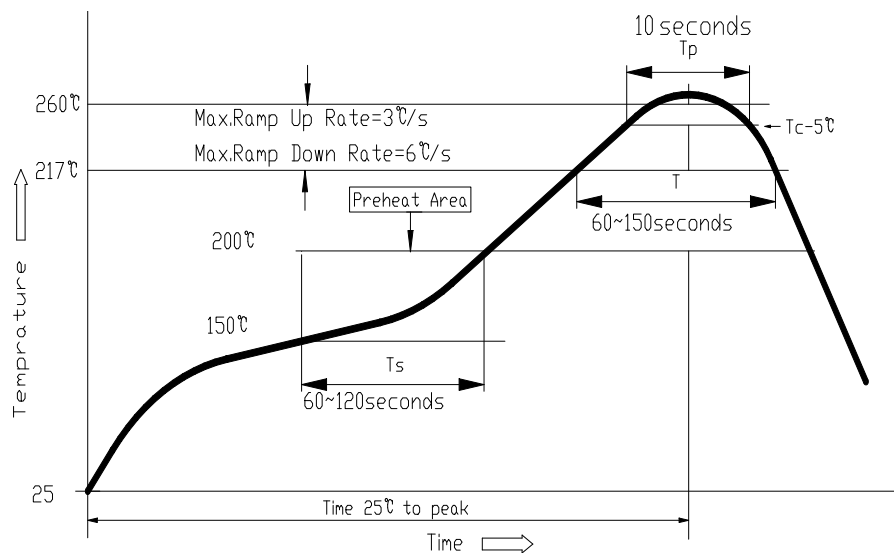
Applicable soldering process to the products is refl.

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



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