

承認書

SPECIFICATION FOR APPROVAL

Figure No. _____ 2144

Product Name _____

Customer Name _____

Customer No. _____

Part No. _____ UHG7242D/

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

CUSTOMER APPROVE



惠州市德立电子有限公司

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1. Scope

This specification applies to the SFE5020 Series of wire wound SMD power inductor.

2. PRODUCT IDENTIFICATION

SFE 5020 □ - 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.

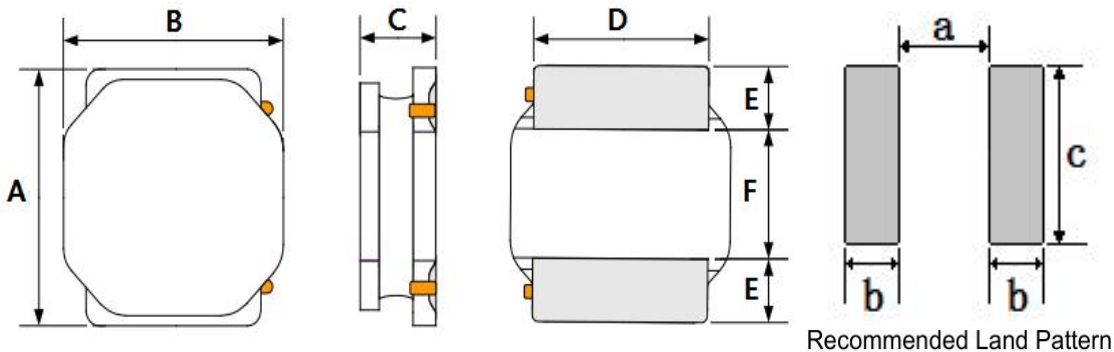
3. Electrical Characteristics

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 L₀ at Isat.

4. Shape and Dimensions (Unit:mm)

shape: A



Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
SFE5020B	5.0±0.2	5.0±0.2	2.0 Max.	4.0±0.2	1.55 Typ.	1.9 Typ.	2.3	1.4	4.2



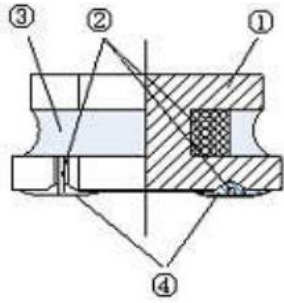
5. Electrical Characteristics

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"/> SFE5020B-R22N-F-HF	0.22±30%	0.011	0.009	9.00	12.00	5.30	6.00	R22
2		<input type="checkbox"/> SFE5020B-R24N-F-HF	0.24±30%	0.011	0.009	9.00	12.00	5.30	6.00	R24
3		<input type="checkbox"/> SFE5020B-R47N-F-HF	0.47±30%	0.017	0.013	6.15	6.70	4.60	5.00	R47
4		<input type="checkbox"/> SFE5020B-R68N-F-HF	0.68±30%	0.022	0.017	5.50	6.00	4.00	4.40	R68
5		<input type="checkbox"/> SFE5020B-1R0N-F-HF	1.00±30%	0.026	0.019	4.10	5.00	3.80	4.10	1R0
6		<input type="checkbox"/> SFE5020B-1R2N-F-HF	1.20±30%	0.034	0.031	4.10	4.50	3.20	3.50	1R2
7		<input type="checkbox"/> SFE5020B-1R5N-F-HF	1.50±30%	0.034	0.031	4.10	4.50	3.20	3.50	1R5
8		<input type="checkbox"/> SFE5020B-2R2M-F-HF	2.20±20%	0.042	0.036	3.20	4.00	2.90	3.10	2R2
9		<input type="checkbox"/> SFE5020B-3R3M-F-HF	3.30±20%	0.056	0.049	2.55	3.00	2.50	2.70	3R3
10		<input type="checkbox"/> SFE5020B-3R9M-F-HF	3.90±20%	0.074	0.063	2.50	2.70	2.20	2.40	3R9
11		<input type="checkbox"/> SFE5020B-4R7M-F-HF	4.70±20%	0.074	0.063	2.50	2.70	2.20	2.40	4R7
12		<input type="checkbox"/> SFE5020B-5R6M-F-HF	5.60±20%	0.108	0.080	2.20	2.40	1.90	2.10	5R6
13		<input type="checkbox"/> SFE5020B-6R8M-F-HF	6.80±20%	0.108	0.080	2.05	2.20	1.80	1.90	6R8
14		<input type="checkbox"/> SFE5020B-8R2M-F-HF	8.20±20%	0.127	0.116	1.85	2.00	1.65	1.80	8R2
15		<input type="checkbox"/> SFE5020B-100M-F-HF	10.0±20%	0.143	0.118	1.70	1.80	1.55	1.70	100
16		<input type="checkbox"/> SFE5020B-150M-F-HF	15.0±20%	0.215	0.164	1.35	1.40	1.25	1.30	150
17		<input type="checkbox"/> SFE5020B-180M-F-HF	18.0±20%	0.255	0.218	1.20	1.30	1.20	1.30	150
18		<input type="checkbox"/> SFE5020B-220M-F-HF	22.0±20%	0.294	0.257	1.15	1.20	1.10	1.20	220
19		<input type="checkbox"/> SFE5020B-330M-F-HF	33.0±20%	0.520	0.472	0.92	1.00	0.90	1.00	330
20		<input type="checkbox"/> SFE5020B-470M-F-HF	47.0±20%	0.680	0.541	0.77	0.84	0.77	0.84	470
21		<input type="checkbox"/> SFE5020B-560M-F-HF	56.0±20%	0.962	0.910	0.70	0.72	0.70	0.72	560
22		<input type="checkbox"/> SFE5020B-680M-F-HF	68.0±20%	0.962	0.910	0.65	0.70	0.64	0.70	680
23		<input type="checkbox"/> SFE5020B-101M-F-HF	100.0±20%	1.430	1.350	0.53	0.58	0.53	0.58	101
24		<input type="checkbox"/> SFE5020B-151M-F-HF	150.0±20%	2.150	1.630	0.35	0.40	0.30	0.35	151
25		<input type="checkbox"/> SFE5020B-201M-F-HF	200.0±20%	2.600	2.150	0.30	0.33	0.30	0.33	201
26		<input type="checkbox"/> SFE5020B-221M-F-HF	220.0±20%	2.990	2.300	0.30	0.34	0.21	0.26	221
27		<input type="checkbox"/> SFE5020B-331M-F-HF	330.0±20%	4.350	3.750	0.22	0.25	0.22	0.25	331
28		<input type="checkbox"/> SFE5020B-471M-F-HF	470.0±20%	6.300	5.253	0.20	0.23	0.20	0.25	471

※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

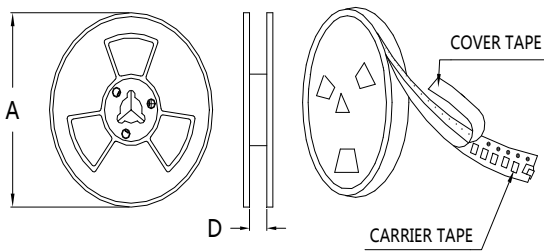
7. PACKAGING(unit: mm)

1.包装类型：编带装

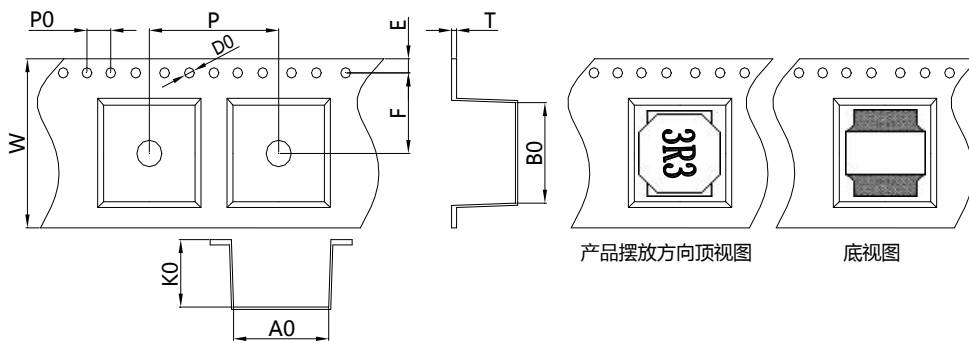
2.包装尺寸：

13" 盘

7" 盘



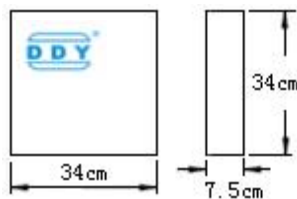
	13" 盘	7" 盘
A	$\Phi 330 \pm 2.0$	$\Phi 178 \pm 2.0$
D	12.5	



产品摆放方向顶视图

底视图

Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
5020	(mm)	12.0 ± 0.3	5.5 ± 0.3	5.5 ± 0.3	2.4 ± 0.2	8.0 ± 0.3	0.4 ± 0.1	1.75 ± 0.1	5.5 ± 0.1	1.5 ± 0.1	4.0 ± 0.2



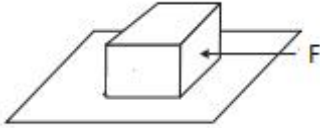
每卷	2500	Pcs
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每盒	4卷,共	10000	Pcs
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每箱	3盒,共	30000	Pcs
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8. RELIABILITY TEST

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 ± 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

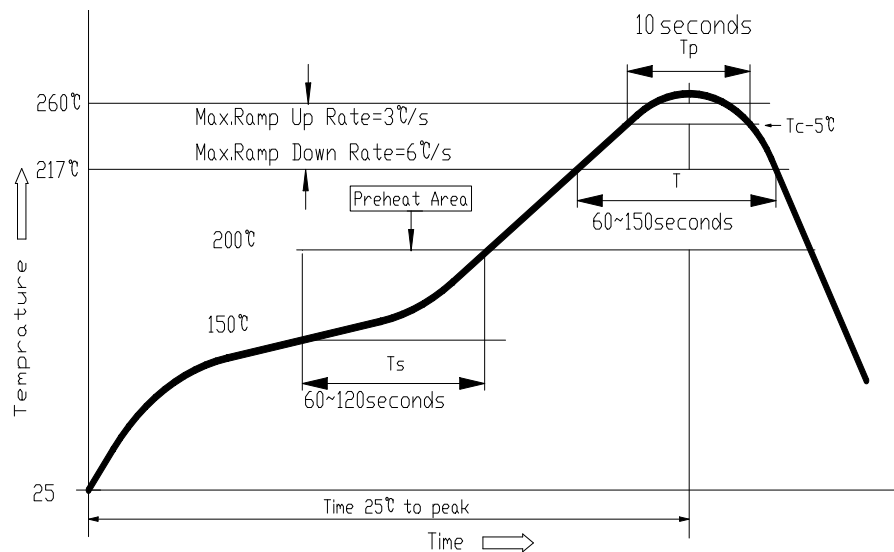
Applicable soldering process to the products is refl.

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](#)