

承認書

SPECIFICATION FOR APPROVAL

Customer Name: 2144

Description Part No.:

Customer Part No.:

Sample No.:

DDY Part No.: SFEK252012S-

DRAWING		
MADE	CHECKED	APPROVED
王海玲	赵万虎	肖中华
DATE: 2023年8月24日		

CUSTOMER APPROVE



惠 州 市 德 立 电 子 有 限 公 司

HUI ZHOU DE LI ELECTRONICS CO., LTD

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HUI ZHOU DE LI ELECTRONICS CO., LTD

Version of Changed Record				
DATE	REV	CHANGED CONTENTS	DRAFT	APPROVED
2023/8/24	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 SFEK252012 Series of wire wound SMD power inductor.

2.PRODUCT IDENTIFICATION

SFEK 252012 - 1R5 □ - □
(1) (2) (3) (4) (5)

(1) .Series name (产品品名)

(2) .Dimensions (产品尺寸)

(3) .Inductance value (电感值)

(4) .Tolerance (误差值)

1R5: 1.5 μ H 221: 220 μ H

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

(5) .Environmental status (环保状态)

LF- Lead free; HF-Halogen free;

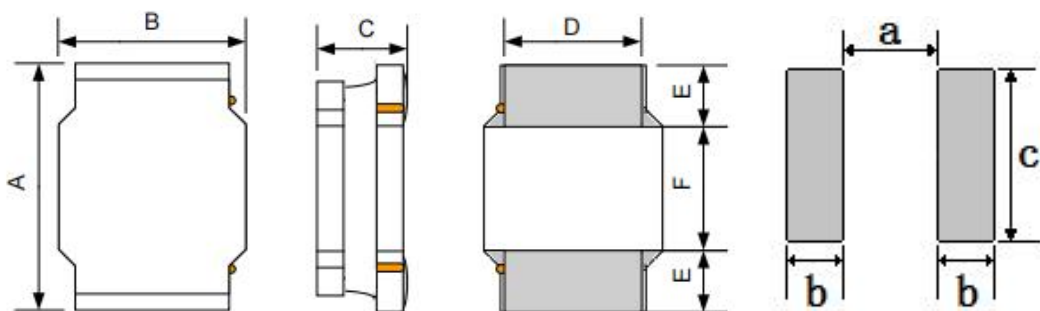
FP-Free red phosphor.

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). Irms:DC current that causes the temperature rise ($\Delta T = 40^{\circ}\text{C}$) from 20°C ambient;
- 4). Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 5). All test data is referenced to 20°C ambient;
- 6). Rated current: Isat or Irms, whichever is smaller;
- 7). Absolute maximum voltage: DC 25V;

4. Shape and Dimensions (Unit:mm)



Recommended Land Pattern

NO	Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
1	SFEK252012	2.5 ± 0.3	2.0 ± 0.3	1.2 Max.	2.0 ± 0.2	0.8 Typ.	0.9 Typ.	0.70	1.00	2.2



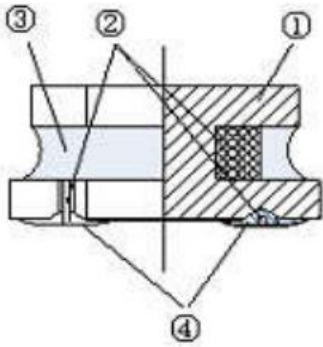
5. Electrical Characteristics

NO	Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
		1MHz/0.1V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
	Units	(uH)	Ω	Ω	A	A	A	A	
1	☐ SFEK252012S-R24N-HF	0.24 $\pm$ 30%	0.023	0.019	6.50	7.80	4.05	4.70	N/A
2	☐ SFEK252012S-R33N-HF	0.33 $\pm$ 30%	0.035	0.028	5.35	6.30	3.70	4.30	N/A
3	☐ SFEK252012S-R47N-HF	0.47 $\pm$ 30%	0.035	0.029	4.90	5.60	3.45	4.00	N/A
4	☐ SFEK252012S-R68N-HF	0.68 $\pm$ 30%	0.045	0.039	3.80	4.50	3.10	3.60	N/A
5	☐ SFEK252012S-1R0N-HF	1.0 $\pm$ 30%	0.054	0.048	3.60	4.00	3.00	3.40	N/A
6	☐ SFEK252012S-1R5N-HF	1.5 $\pm$ 30%	0.100	0.090	2.90	3.50	2.40	2.80	N/A
7	☐ SFEK252012S-2R2M-HF	2.2 $\pm$ 20%	0.120	0.100	2.60	3.00	1.90	2.15	N/A
8	☐ SFEK252012S-3R3M-HF	3.3 $\pm$ 20%	0.215	0.175	1.70	2.10	1.50	1.80	N/A
9	☐ SFEK252012S-4R7M-HF	4.7 $\pm$ 20%	0.260	0.240	1.60	1.90	1.25	1.45	N/A
10	☐ SFEK252012S-5R6M-HF	5.6 $\pm$ 20%	0.336	0.313	1.30	1.40	1.10	1.20	N/A
11	☐ SFEK252012S-6R8M-HF	6.8 $\pm$ 20%	0.366	0.335	1.20	1.40	0.95	1.10	N/A
12	☐ SFEK252012S-8R2M-HF	8.2 $\pm$ 21%	0.460	0.405	1.15	1.36	0.88	1.06	N/A
13	☐ SFEK252012S-100M-HF	10 $\pm$ 20%	0.480	0.465	1.10	1.35	0.85	1.00	N/A
14	☐ SFEK252012S-150M-HF	15.0 $\pm$ 20%	1.000	0.820	0.77	0.90	0.60	0.70	N/A
15	☐ SFEK252012S-220M-HF	22.0 $\pm$ 20%	1.090	0.955	0.60	0.75	0.55	0.65	N/A

※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	soft magnetic metal
②	Wire	Polyurethane system enameled copper wire
③	Magnetic Glue	Epoxy resin and magnetic powder
④	Plating	AgNiSn or FeNiCu + Sn Alloy

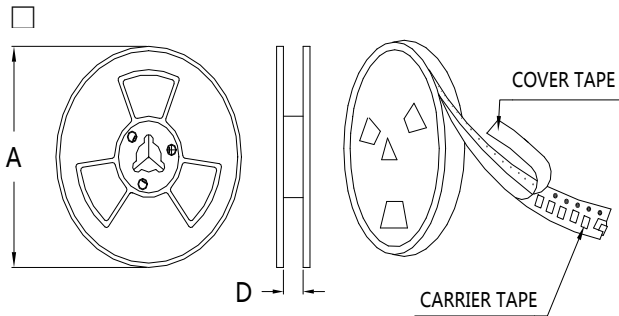
7. PACKAGING(unit: mm)

1.包装类型：编带装

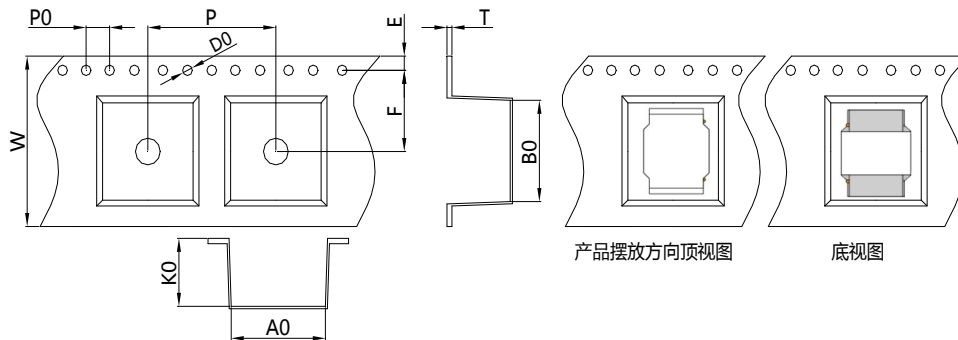
2.包装尺寸：

☐ 13" 盘

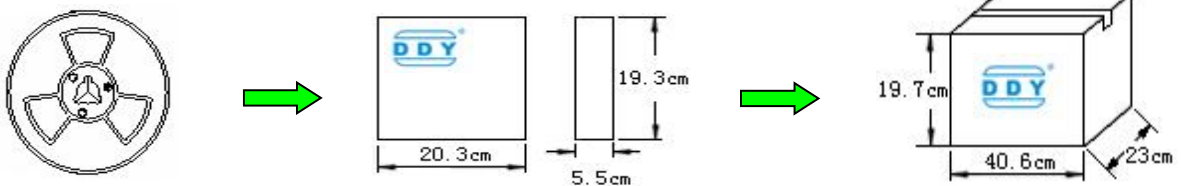
☒ 7" 盘



	13" 盘	7" 盘
A	$\Phi 330 \pm 2.0$	$\Phi 178 \pm 2.0$
D	8.5	



Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
252012	(mm)	8.00 ± 0.3	2.35 ± 0.2	2.65 ± 0.2	1.40 ± 0.1	4.00 ± 0.1	0.25 ± 0.1	1.75 ± 0.1	3.50 ± 0.1	1.50 ± 0.1	4.00 ± 0.2



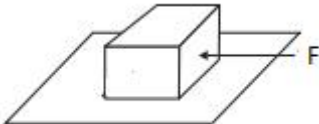
每卷	2000	Pcs
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每盒	4卷,共	8000	Pcs
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每箱	6盒,共	48000	Pcs
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8. RELIABILITY TEST

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 : $260 \pm 0/-5^{\circ}\text{C}$
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°C reflow, apply a standard force on the side of the test samples for 10 seconds. 



9. SOLDERING CONDITIONS

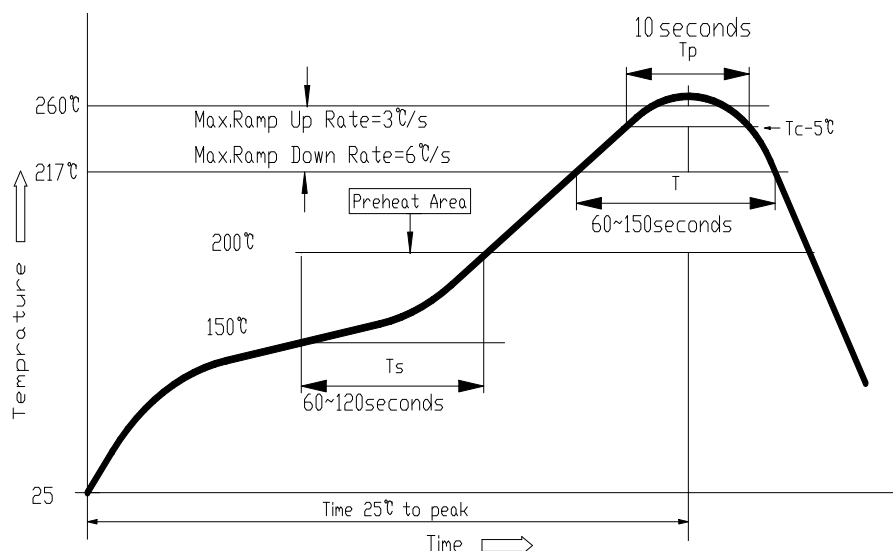
Applicable soldering process to the products is refl.

9.1 Soldering Materials

(1) Solder: Sn-3.0Ag-0.5Cu

(2) Flux: Use rosin-based flux, but not strongly acidic flux (with xhlorine 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: $< 3s$

