

承認書

SPECIFICATION FOR APPROVAL

Customer Name: 2144

Description Part No.: _____

Customer Part No.: _____

Sample No.: _____

DDY Part No.: SFE201610-

DRAWING		
MADE	CHECKED	APPROVED
王海玲	赵万虎	肖中华
DATE: 2023年5月22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

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[illegible]

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



1. Scope

This specification applies to the SFE201610 Series of wire wound SMD power inductor.

2.PRODUCT IDENTIFICATION

SFE 201610 - 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.

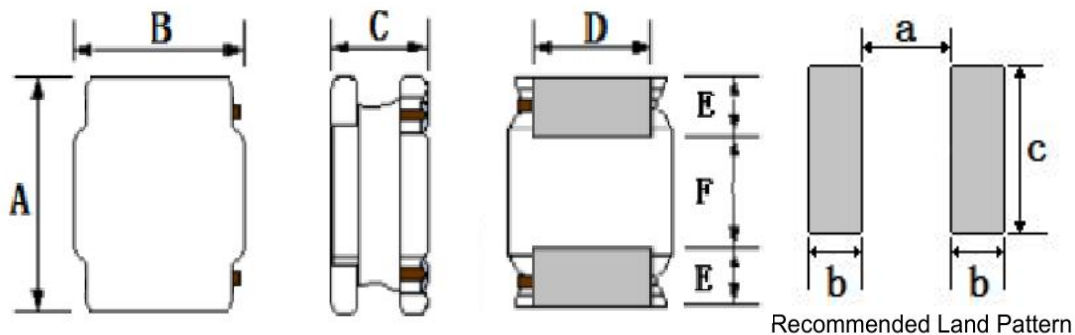
FP-Free red phosphor.

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). Rating DC current: Temperature rise(ΔT) is 40°C approximately at Irms.
- 4). Saturation DC current: Inductance drop approximately 30% of L_0 at Isat.

4. Shape and Dimensions (Unit:mm)



NO	Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
1	SFE201610	2.0 $\pm$ 0.3	1.6 $\pm$ 0.3	1.05 Max	1.2 $\pm$ 0.2	0.6 Typ.	0.8 Typ.	0.60	0.80	1.40



5. Electrical Characteristics

NO	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	☐ SFE201610-R22N-HF	0.22±30%	0.040	0.033	3.70	4.10	2.80	3.10	N/A
2	☐ SFE201610-R24N-HF	0.24±30%	0.040	0.033	3.70	4.10	2.80	3.10	N/A
3	☐ SFE201610-R33N-HF	0.33±30%	0.048	0.043	3.00	3.70	2.40	2.90	N/A
4	☐ SFE201610-R47N-HF	0.47±30%	0.060	0.052	2.30	2.80	2.30	2.60	N/A
5	☐ SFE201610-R68N-HF	0.68±30%	0.076	0.068	1.95	2.45	2.00	2.20	N/A
6	☐ SFE201610-1R0N-HF	1.0±30%	0.114	0.104	1.65	1.85	1.45	1.60	N/A
7	☐ SFE201610-1R5N-HF	1.5±30%	0.174	0.164	1.35	1.65	1.10	1.20	N/A
8	☐ SFE201610-2R2M-HF	2.2±20%	0.265	0.232	1.20	1.45	1.05	1.15	N/A
9	☐ SFE201610-3R3M-HF	3.3±20%	0.345	0.328	1.00	1.20	0.85	0.95	N/A
10	☐ SFE201610-4R7M-HF	4.7±20%	0.480	0.430	0.75	0.90	0.70	0.80	N/A
11	☐ SFE201610-6R8M-HF	6.8±20%	0.800	0.715	0.70	0.85	0.55	0.60	N/A
12	☐ SFE201610-8R2M-HF	8.2±20%	0.940	0.818	0.68	0.78	0.53	0.60	N/A
13	☐ SFE201610-100M-HF	10±20%	1.000	0.930	0.65	0.70	0.50	0.60	N/A

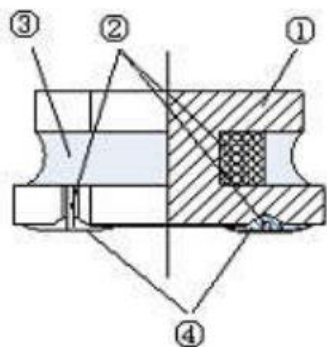
※Design as Customer's Requested Specifications. (可按顾客的特殊需求设计)



惠州市德立电子有限公司

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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

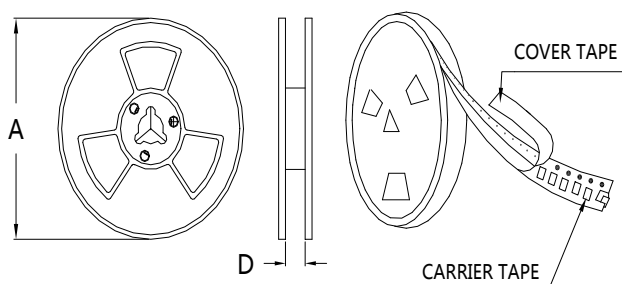
7. PACKAGING(unit: mm)

1.包装类型：编带装

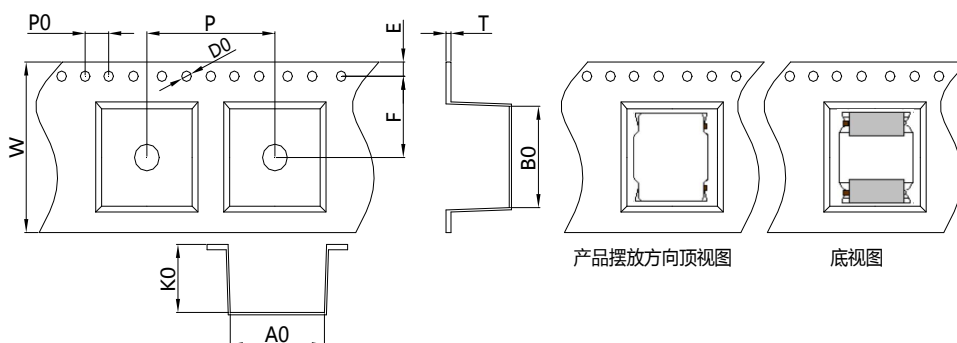
2.包装尺寸：

☐ 13" 盘

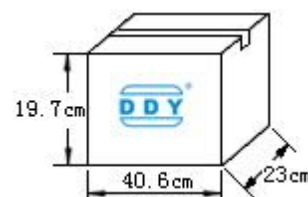
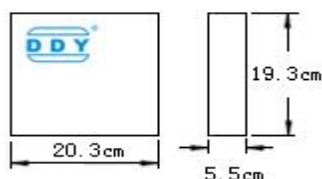
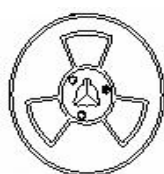
☒ 7" 盘



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



Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
2016	(mm)	8.0 ± 0.1	1.9 ± 0.1	2.2 ± 0.1	1.2 ± 0.1	4.0 ± 0.1	0.25 ± 0.1	1.75 ± 0.1	3.5 ± 0.1	1.5 ± 0.1	4.0 ± 0.1



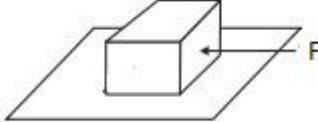
每卷	2000	Pcs
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每盒	4卷,共	8000	Pcs
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每箱	6盒,共	48000	Pcs
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8. RELIABILITY TEST

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



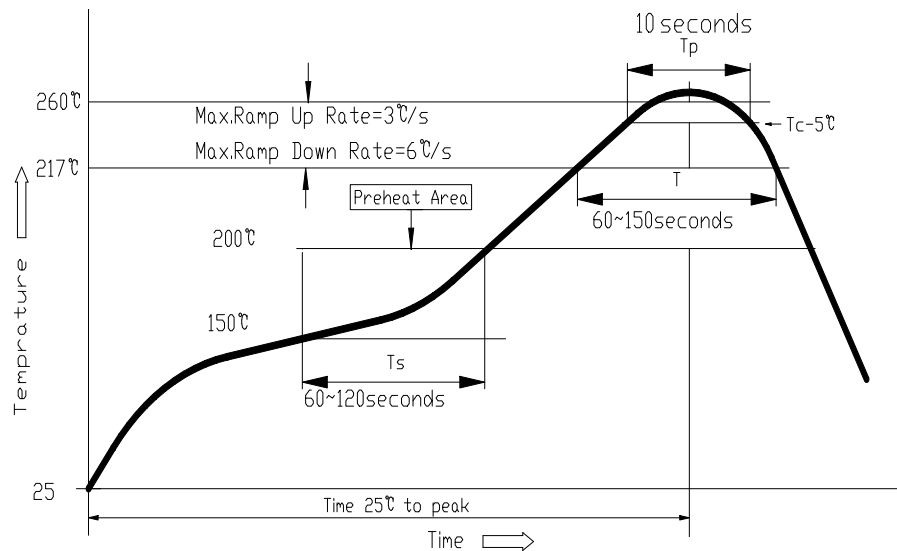
9. SOLDERING CONDITIONS

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: ≤30W;
- ③ Diameter of soldering iron end: ≤1.0mm;
- ④ Soldering time: <3 s

