

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

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

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

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

DDY Part No.: SFE6028A-

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

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<b>Version of Changed Record</b>				
DATE	REV	CHANGED CONTENTS	DRAFT	APPROVED
2023/5/21	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 SFE6028 Series of wire wound SMD power inductor.

## 2. PRODUCT IDENTIFICATION

SFE 6028 □ - 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: 1.5 $\mu$ H 221: 220 $\mu$ H  
 (5) Tolerance (误差值) (6) .Identification code (标识码)  
 M:  $\pm 20\%$ ; N:  $\pm 30\%$   
 (7) .Environmental status (环保状态)

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

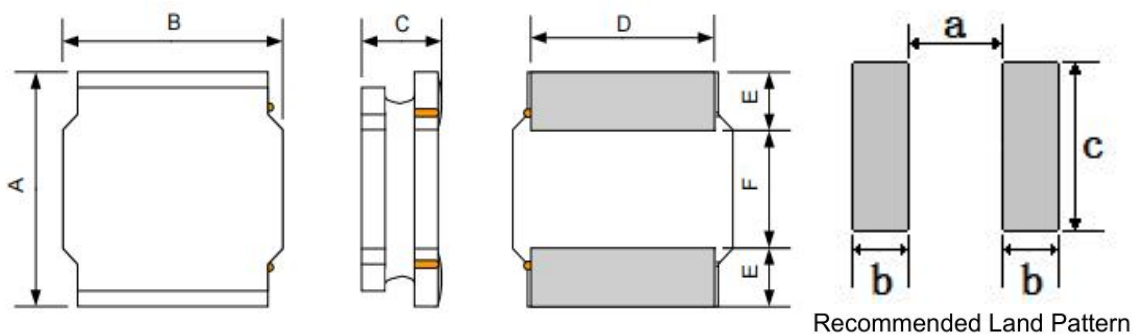
## 3. Electrical Characteristics

Please refer to Item 5.

- 1). Operating temperature range (individual chip without packing):  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$  .
- 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( $\Delta T$ ) is  $40^{\circ}\text{C}$  approximately at Irms.
- 4). Saturation DC current: Inductance drop approximately 30% of  $L_0$  at Isat.

## 4. Shape and Dimensions (Unit:mm)

shape: A



Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
SFE6028A	6.0 $\pm$ 0.3	6.0 $\pm$ 0.3	2.8 Max.	4.9 $\pm$ 0.3	1.9 Typ.	2.2 Typ	2.0	2.1	5.1

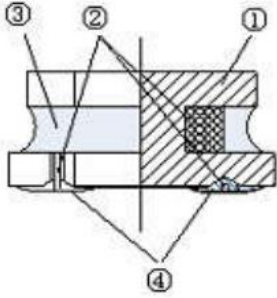


### 5. Electrical Characteristics

NO.	DDY CODE	Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
			100KHz/1.0V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
		Units	( $\mu$ H)	$\Omega$	$\Omega$	A	A	A	A	
1		<input type="checkbox"/> SFE6028A-1R0N-F-HF	1.0 $\pm$ 30%	0.016	0.012	7.00	8.00	5.20	5.70	1R0
2		<input type="checkbox"/> SFE6028A-1R2N-F-HF	1.2 $\pm$ 30%	0.017	0.015	6.40	7.50	4.58	5.00	1R2
3		<input type="checkbox"/> SFE6028A-1R5N-F-HF	1.5 $\pm$ 30%	0.017	0.015	6.00	6.60	4.58	5.00	1R5
4		<input type="checkbox"/> SFE6028A-2R2M-F-HF	2.2 $\pm$ 20%	0.026	0.020	5.10	5.60	4.00	4.10	2R2
5		<input type="checkbox"/> SFE6028A-2R7M-F-HF	2.7 $\pm$ 20%	0.033	0.028	4.15	4.15	3.75	4.10	2R7
6		<input type="checkbox"/> SFE6028A-3R3M-F-HF	3.3 $\pm$ 20%	0.033	0.028	4.15	4.50	3.50	3.80	3R3
7		<input type="checkbox"/> SFE6028A-4R7M-F-HF	4.7 $\pm$ 20%	0.039	0.032	3.00	3.30	3.08	3.40	4R7
8		<input type="checkbox"/> SFE6028A-5R6M-F-HF	5.6 $\pm$ 20%	0.061	0.051	3.20	3.50	2.60	2.80	5R6
9		<input type="checkbox"/> SFE6028A-6R8M-F-HF	6.8 $\pm$ 20%	0.061	0.051	2.60	3.00	2.40	2.60	6R8
10		<input type="checkbox"/> SFE6028A-8R2M-F-HF	8.2 $\pm$ 20%	0.072	0.062	2.30	2.70	2.25	2.50	8R2
11		<input type="checkbox"/> SFE6028A-100M-F-HF	10.0 $\pm$ 20%	0.094	0.073	2.20	2.40	2.00	2.40	100
12		<input type="checkbox"/> SFE6028A-150M-F-HF	15.0 $\pm$ 20%	0.163	0.130	1.75	1.90	1.45	1.60	150
13		<input type="checkbox"/> SFE6028A-180M-F-HF	18.0 $\pm$ 20%	0.172	0.141	1.52	0.80	1.45	1.60	180
14		<input type="checkbox"/> SFE6028A-220M-F-HF	22.0 $\pm$ 20%	0.182	0.153	1.45	1.80	1.40	1.60	220
15		<input type="checkbox"/> SFE6028A-330M-F-HF	33.0 $\pm$ 20%	0.241	0.220	1.35	1.50	1.22	1.30	330
16		<input type="checkbox"/> SFE6028A-470M-F-HF	47.0 $\pm$ 20%	0.410	0.310	1.15	1.30	1.06	1.10	470
17		<input type="checkbox"/> SFE6028A-560M-F-HF	56.0 $\pm$ 20%	0.449	0.378	1.05	1.20	0.90	1.05	560
18		<input type="checkbox"/> SFE6028A-680M-F-HF	68.0 $\pm$ 20%	0.468	0.425	0.80	0.95	0.86	0.95	680
19		<input type="checkbox"/> SFE6028A-101M-F-HF	100.0 $\pm$ 20%	0.810	0.680	0.65	0.71	0.70	0.77	101
20		<input type="checkbox"/> SFE6028A-121M-F-HF	120.0 $\pm$ 20%	1.150	0.960	0.55	0.60	0.60	0.65	121
21		<input type="checkbox"/> SFE6028A-221M-F-HF	220.0 $\pm$ 20%	1.560	1.370	0.38	0.40	0.40	0.45	221
22		<input type="checkbox"/> SFE6028A-331M-F-HF	330.0 $\pm$ 20%	2.850	2.250	0.35	0.40	0.40	0.44	331
23		<input type="checkbox"/> SFE6028A-471M-F-HF	470.0 $\pm$ 20%	3.580	3.110	0.32	0.37	0.35	0.40	471
24		<input type="checkbox"/> SFE6028A-102M-F-HF	1000.0 $\pm$ 20%	7.540	5.980	0.18	0.22	0.22	0.23	102
25										



### 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

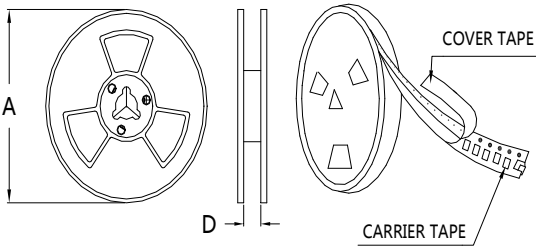
### 7. PACKAGING(unit: mm)

1.包装类型：编带装

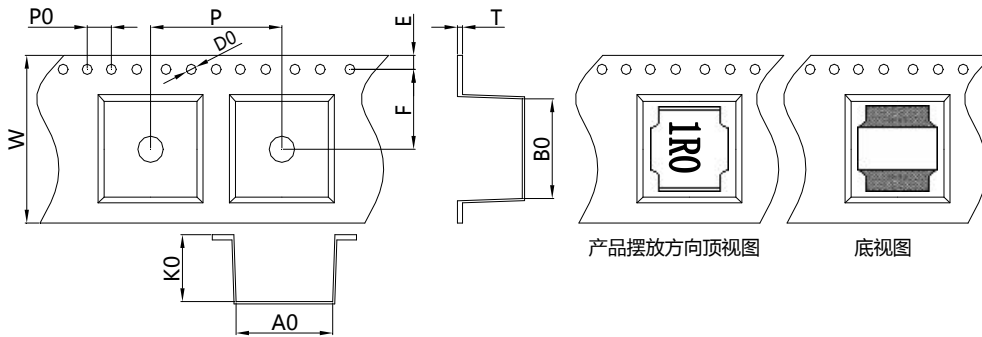
2.包装尺寸：

13" 盘

7" 盘



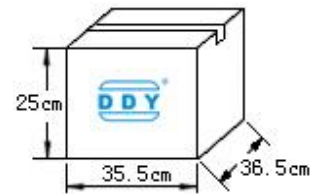
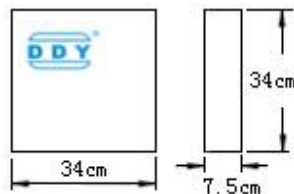
	13" 盘	7" 盘
A	$\Phi 330 \pm 2.0$	$\Phi 178 \pm 2.0$
D	12.5/16.5	



产品摆放方向顶视图

底视图

Size	Item	W	A0	B0	K0	P	T	E	F	D0	P0
√	6028 (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
	6028 (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

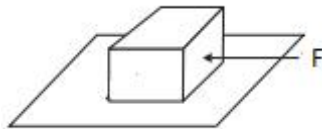


每卷	2000	Pcs
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每盒	4卷,共	8000	Pcs
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每箱	3盒,共	24000	Pcs
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8. RELIABILITY TEST			
No.	TEST ITEM	SPECIFICATION	TEST CONDITION
1	High temperature Storage test	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

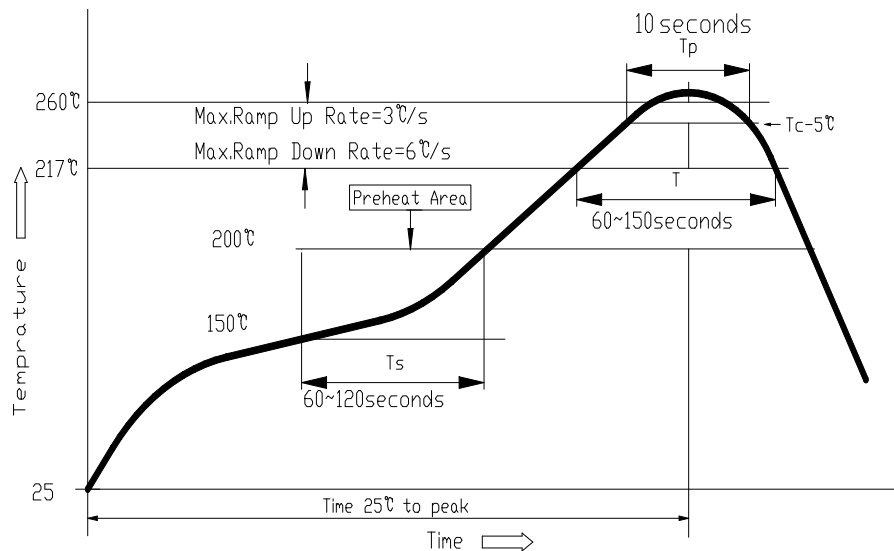
Applicable soldering process to the products is refl.

### 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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