

# 承 認 書

## SPECIFICATION FOR APPROVAL

Customer Name: 2144

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

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

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

DDY Part No.: SFE6045A-

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

HUI ZHOU DE LI ELECTRONICS CO., LTD

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## 1. Scope

This specification applies to the SFE6045 Series of wire wound SMD power inductor.

## 2. PRODUCT IDENTIFICATION

SFE 6045 □ - 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.

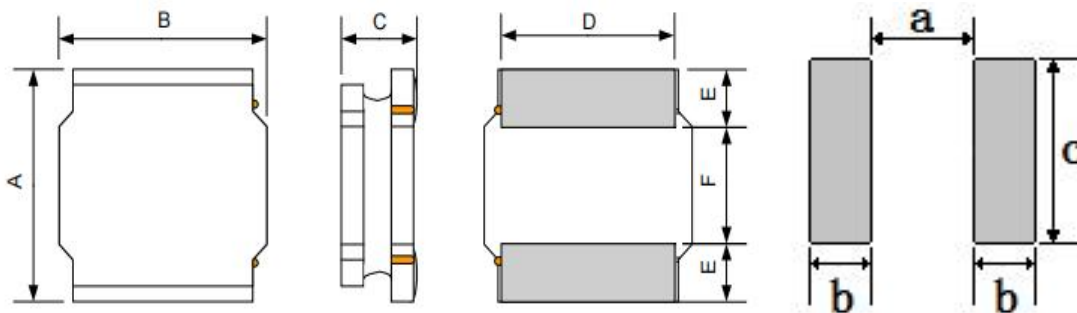
## 3. Electrical Characteristics

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



Recommended Land Pattern

Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
SFE6045A	6.0 $\pm$ 0.3	6.0 $\pm$ 0.3	4.5 Max.	4.9 $\pm$ 0.3	1.65 Typ.	2.2 Typ.	2.0	2.1	5.1



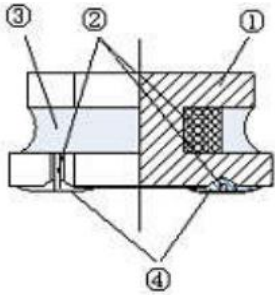
### 5. Electrical Characteristics

NO	DDY CODE	Part Number	Inductance	DC Resistance		Isat(A)		Irms(A)		Marking
			100KHz/1.0V	Max.	Typ.	Max.	Typ.	Max.	Typ.	
			Units	Ω	Ω	A	A	A	A	
1		□ SFE6045A-R47N-F-HF	0.47±30%	0.011	0.009	15.00	16.50	6.50	6.50	R47
2		□ SFE6045A-R56N-F-HF	0.56±30%	0.011	0.009	14.00	15.00	6.30	6.30	R56
3		□ SFE6045A-1R0N-F-HF	1.0±30%	0.014	0.011	9.50	10.00	5.50	6.00	1R0
4		□ SFE6045A-1R2N-F-HF	1.2±30%	0.016	0.013	9.00	9.50	5.00	5.40	1R2
5		□ SFE6045A-1R5N-F-HF	1.5±30%	0.016	0.013	8.80	9.50	4.95	5.40	1R5
6		□ SFE6045A-2R2M-F-HF	2.2±20%	0.023	0.018	6.75	7.40	4.60	5.00	2R2
7		□ SFE6045A-3R3M-F-HF	3.3±20%	0.027	0.022	5.90	6.20	3.70	4.00	3R3
8		□ SFE6045A-4R7M-F-HF	4.7±20%	0.034	0.027	4.97	5.50	3.30	3.60	4R7
9		□ SFE6045A-5R6M-F-HF	5.6±20%	0.038	0.032	4.15	4.60	3.15	3.40	5R6
10		□ SFE6045A-6R2M-F-HF	6.2±20%	0.040	0.035	4.00	4.30	3.00	3.30	6R2
11		□ SFE6045A-6R8M-F-HF	6.8±20%	0.040	0.035	3.90	4.30	3.00	3.30	6R8
12		□ SFE6045A-8R2M-F-HF	8.2±20%	0.060	0.053	3.90	4.30	2.60	2.80	8R2
13		□ SFE6045A-100M-F-HF	10.0±20%	0.062	0.051	3.20	3.50	2.45	2.70	100
14		□ SFE6045A-120M-F-HF	12.0±20%	0.075	0.063	2.80	3.00	2.20	2.40	120
15		□ SFE6045A-150M-F-HF	15.0±20%	0.088	0.073	2.50	2.70	2.05	2.20	150
16		□ SFE6045A-180M-F-HF	18.0±20%	0.105	0.089	2.20	2.40	1.85	2.00	180
17		□ SFE6045A-220M-F-HF	22.0±20%	0.116	0.095	2.05	2.20	1.80	2.00	220
18		□ SFE6045A-270M-F-HF	27.0±20%	0.133	0.114	1.90	2.10	1.65	1.80	270
19		□ SFE6045A-300M-F-HF	30.0±20%	0.172	0.141	1.70	1.80	1.50	1.60	300
20		□ SFE6045A-330M-F-HF	33.0±20%	0.178	0.147	1.75	2.00	1.45	1.70	330
21		□ SFE6045A-470M-F-HF	47.0±20%	0.260	0.230	1.40	1.50	1.30	1.40	470
22		□ SFE6045A-560M-F-HF	56.0±20%	0.287	0.254	1.30	1.40	1.10	1.20	560
23		□ SFE6045A-680M-F-HF	68.0±20%	0.376	0.340	1.20	1.30	1.00	1.10	680
24		□ SFE6045A-820M-F-HF	82.0±20%	0.500	0.430	1.00	1.10	1.00	1.10	820
25		□ SFE6045A-101M-F-HF	100.0±20%	0.563	0.510	0.95	1.00	0.80	0.88	101
26		□ SFE6045A-151M-F-HF	150.0±20%	0.754	0.690	0.80	0.88	0.70	0.77	151
27		□ SFE6045A-221M-F-HF	220.0±20%	1.084	0.900	0.70	0.75	0.57	0.60	221
28		□ SFE6045A-331M-F-HF	330.0±20%	1.651	1.530	0.57	0.60	0.55	0.57	331
29		□ SFE6045A-471M-F-HF	470.0±20%	2.340	2.150	0.45	0.48	0.40	0.42	471
30		□ SFE6045A-561M-F-HF	560.0±20%	3.250	2.750	0.42	0.46	0.42	0.42	561
31		□ SFE6045A-681M-F-HF	680.0±20%	3.250	2.750	0.40	0.42	0.33	0.35	681
32		□ SFE6045A-821M-F-HF	820.0±20%	5.560	4.450	0.36	0.40	0.33	0.35	821
33		□ SFE6045A-102M-F-HF	1000.0±20%	5.850	5.120	0.30	0.35	0.30	0.35	102

※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

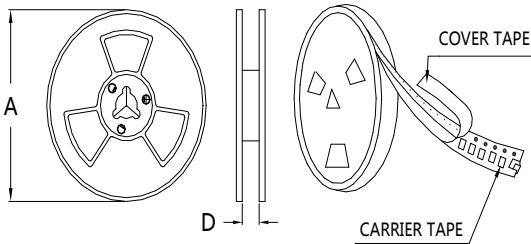
## 7. PACKAGING(unit: mm)

1.包装类型：编带装

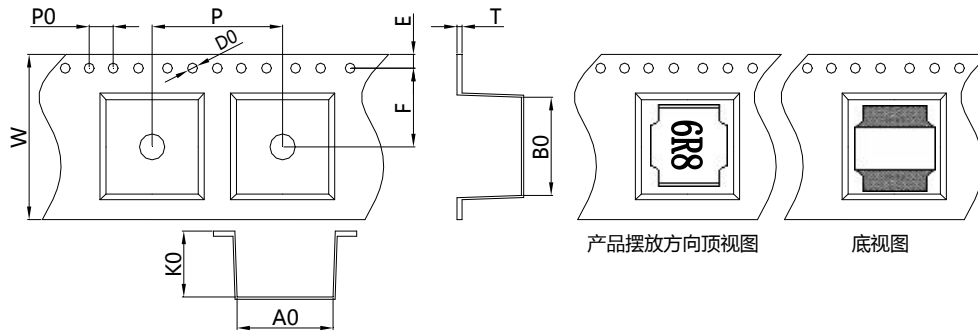
2.包装尺寸：

13" 盘

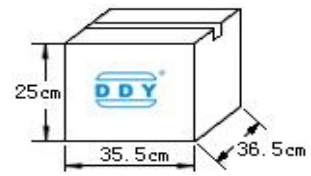
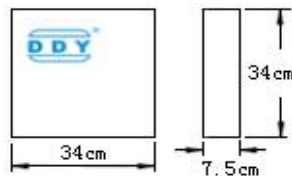
7" 盘



	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
√	6045 (mm)	12.0±0.3	6.5±0.15	6.5±0.15	4.7±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
	6045 (mm)	16.0±0.3	6.5±0.15	6.5±0.15	4.7±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



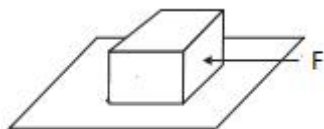
每卷	1500	Pcs
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每盒	4卷,共	6000	Pcs
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每箱	3盒,共	18000	Pcs
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**8. RELIABILITY TEST**

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

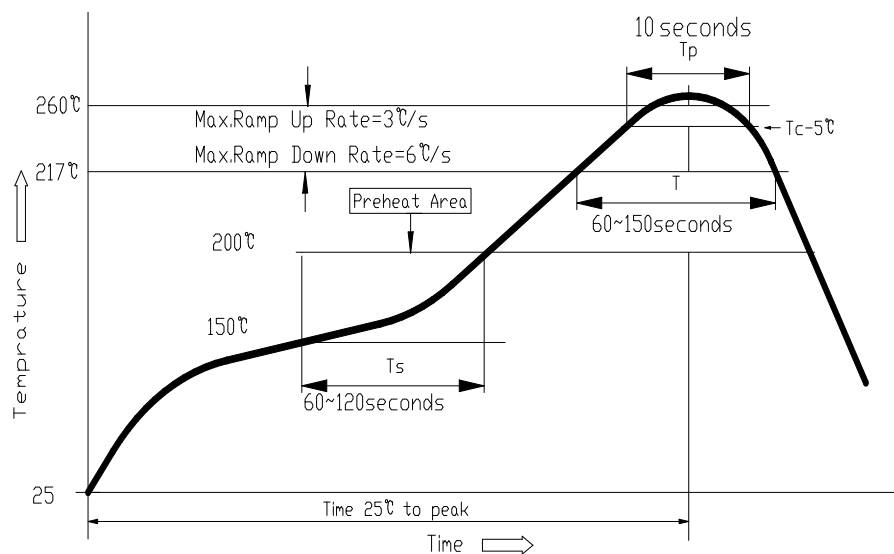
Applicable soldering process to the products is refl.

### 9.1 Soldering Materials

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

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



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