



承認書

SPECIFICATION FOR APPROVAL

CUSTOMER:

DESCRIPTION:

SMD INDUCTOR

PART NO:

MCNR4020AF系列

CUST. PART NO:

REV. NO.

A0

DRAWING		
PREPARED	CHECKED	APPROVED
邹声平	卢嘉良	曾凡强
DATE:	2025/5/5	

CUSTOMER APPROVE

DDY® 德立电子 & 铭易轩

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MODIFY RECORD 变更履历

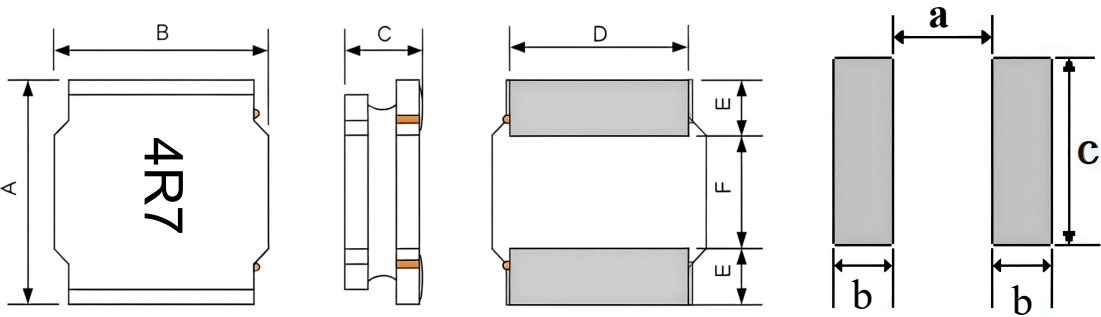
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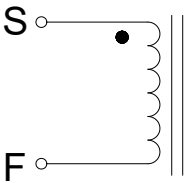
1. SHAPE & DIMENSION (UNIT:mm)



Recommended patterns

A	B	C	D	E	F	a	b	c
4.0±0.2	4.0±0.2	2.0 Max.	3.3±0.2	1.2 Typ.	1.6 Typ.	1.4 Typ.	1.4 Typ.	3.5 Typ.

2. SCHEMATIC



3. PART NUMBERING SYSTEM

MCNR	4020	A	F	-	4R7	M
①	②	③	④		⑤	⑥

- ① PRODUCT SYMBOL（产品代号）
- ② DIMENSIONS（规格尺寸）
- ③ Edge type(边型):A=12边； B=8边； C=4边
- ④ Lettering direction(印字方向) F:首字对孔 D:尾字对孔
- ⑤ Inductance Value:（电感标称值）
- ⑥ TOLERANCE:（公差）： K±10%； M±20%； N±30%

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4. 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	MCNR4020AF-R47N	0.47±30%	0.018	0.012	7.00	7.50	4.00	4.50	R47
2	MCNR4020AF-R68N	0.68±30%	0.022	0.017	6.40	6.80	2.80	3.30	R68
3	MCNR4020AF-1R0N	1.00±30%	0.038	0.029	4.80	5.20	2.15	3.20	1R0
4	MCNR4020AF-1R5N	1.50±30%	0.046	0.035	4.45	4.90	1.98	3.00	1R5
5	MCNR4020AF-2R2M	2.20±20%	0.052	0.045	3.40	3.50	2.00	2.80	2R2
6	MCNR4020AF-3R3M	3.30±20%	0.091	0.075	3.20	3.50	1.40	2.50	3R3
7	MCNR4020AF-4R7M	4.70±20%	0.098	0.075	2.35	2.50	1.34	2.00	4R7
8	MCNR4020AF-6R8M	6.80±20%	0.163	0.141	2.20	2.40	1.10	1.60	6R8
9	MCNR4020AF-100M	10.0±20%	0.215	0.184	1.60	1.70	0.90	1.20	100
10	MCNR4020AF-150M	15.0±20%	0.299	0.240	1.35	1.50	0.77	1.10	150
11	MCNR4020AF-220M	22.0±20%	0.455	0.360	1.05	1.10	0.62	0.87	220
12	MCNR4020AF-330M	33.0±20%	0.715	0.490	0.85	1.00	0.50	0.60	330
13	MCNR4020AF-470M	47.0±20%	0.923	0.795	0.70	0.75	0.44	0.60	470

Test remarks

- (1). All test data is referenced to 25 °C ambient.
- (2). Isat: DC current at which inductance drops approximate 30% from its value without current.
- (3).Irms: DC current that causes the temperature rise ($\Delta T \cong 40^{\circ}C$) from 25°C ambient.

5. GENERAL SPECIFICATION

- (1). Operating temp.: -40°C ~ +125°C (Including self-generated heat).
- (2). Storage temp.: -40°C ~ +85°C R.H.:70% Max.
- (3). Recommended products should be used within 12 months from the date of delivery
- (4). The part temperature (ambient + temp rise) should not exceed 125 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

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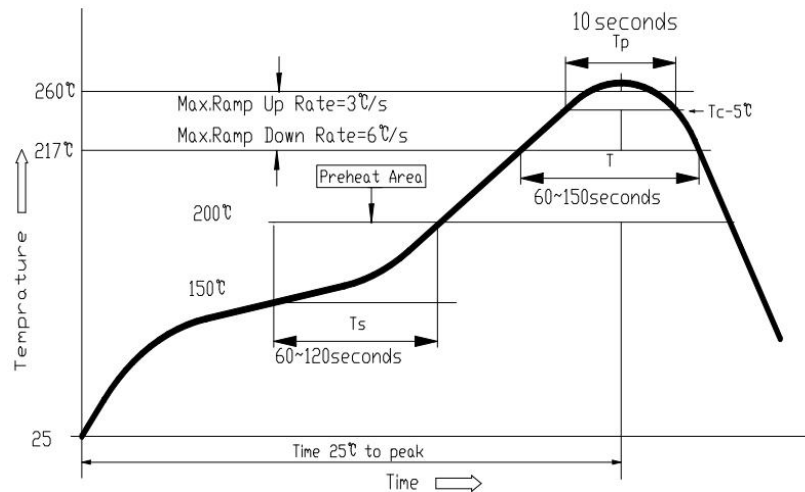


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6. SOLDERING CONDITIONS

Figure 1. Re-flow Soldering (Lead Free)



Note:

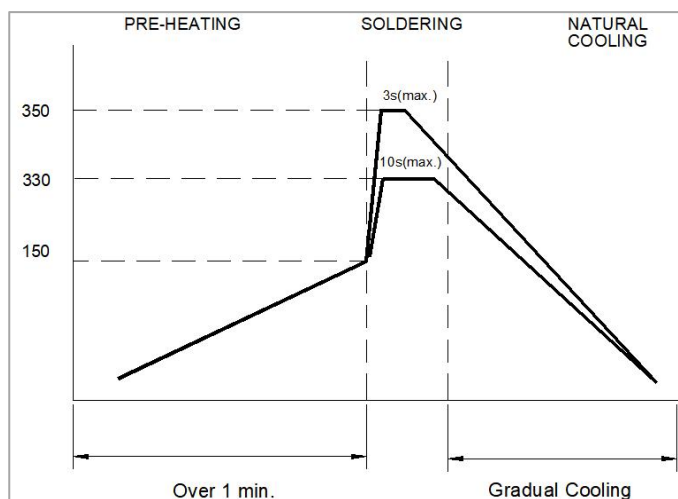
Preheat circuit and products to 150°C

260°C tip temperature (Max)

Reflow times: no more than 2 times

Solder paste thickness: the best 0.08mm is ,but max is 0.1mm

Figure 2. Hand Soldering



Note:

Use a 20 watt soldering iron with tip diameter of 1.0mm

Limit soldering time to 3 sec.

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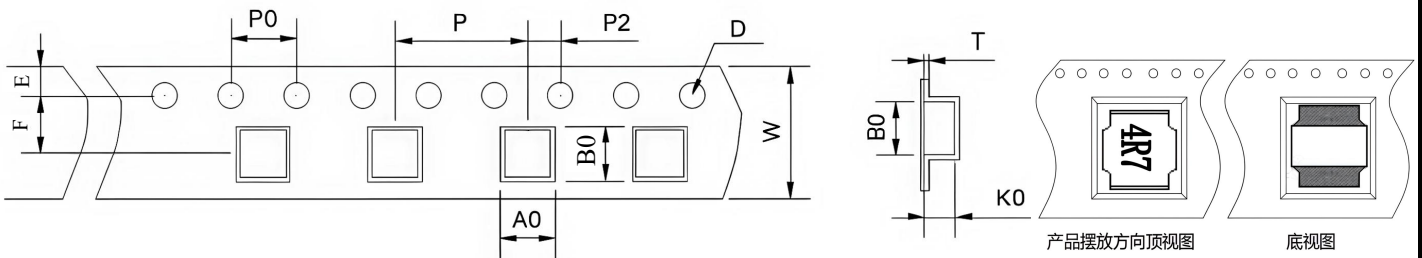


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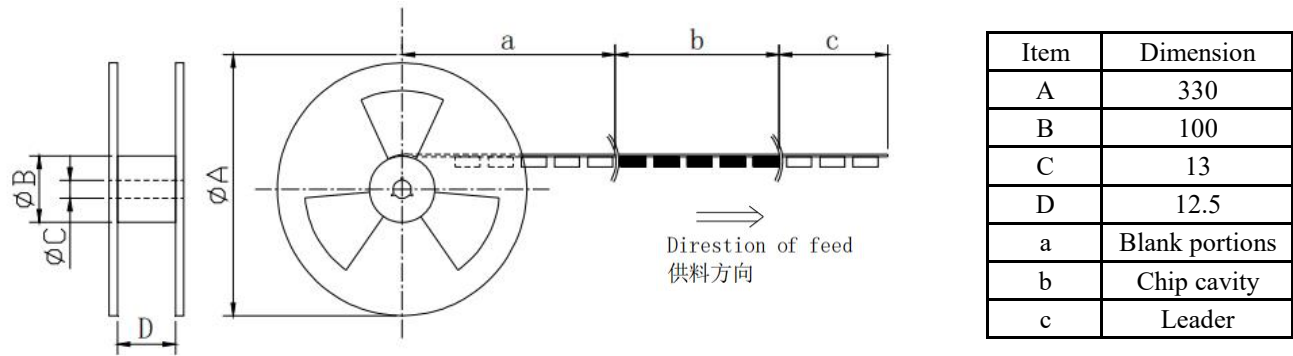
7. PACKAGE SPECIFICATION

(1). Tape Dimensions(Unit:mm)



W	A0	B0	K0	D	E	F	P	P0	P2	T
12.0 ±0.3	4.4 ±0.2	4.4 ±0.2	2.1 ±0.2	1.5 +0.1/-0.1	1.75 ±0.1	5.5 ±0.1	8.0 ±0.3	4.0 ±0.2	2.0 ±0.1	0.3 ±0.1

(2). Reel Dimensions (Unit:mm)

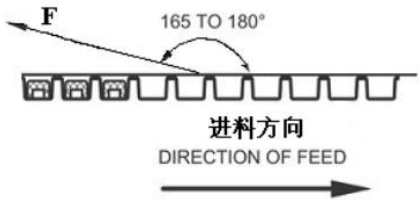


(3). Packaging Quantity

Reel (pcs)	Box (pcs)	Carton (pcs)
3000	12000	36,000

(4). Packaging -Cover Tape

F force: 10~130g
Peeling speed: 300mm/min±10%
Peeling angle: 165°~180°



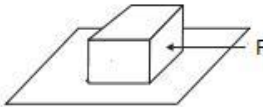
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8. RELIABILITY

No.	Item	Requirements	Test Methods and Remarks
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 tes	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. 

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