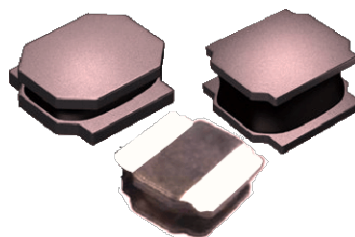


◆ Features

- 1、Magnetic-resin shielded construction reduces buzz noise to ultra-low levels;
- 2、Metallization on ferrite core results in excellent shock resistance and damage-free durability;
- 3、Closed magnetic circuit design reduces leakage
- 4、Small and low profile inductor;
- 5、Take up less PCB real estate and save more power。



◆ Applications

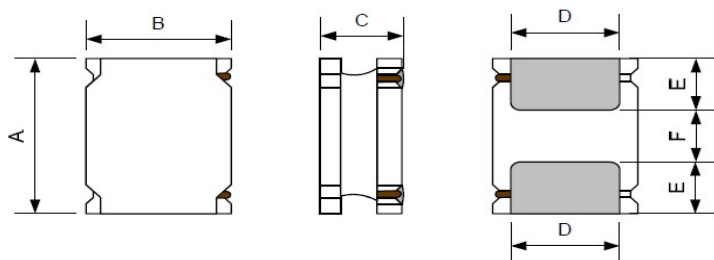
- 1、Smart phone;
- 2、Mobile devices with multifunction such as adding color TV and camera;
- 3、Flat-screen TVs, blue-ray disc recorders, set top boxes;
- 4、Notebooks, desktop computers, servers, graphic cards;
- 5、Portable gaming devices, personal navigation systems, personal multimedia devices;
- 6、Automotive systems;
- 7、Telecomm base stations.

◆ Lead Free Part Numbering

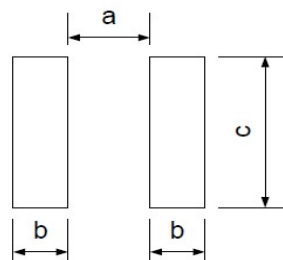
INNER 4020 F 2R2 M T
(1) (2) (3) (4) (5) (6)

- (1) Series Type
- (2) Dimension: $L \times W \times H(4.0 \times 4.0 \times 1.2\text{mm})$
- (3) Material Code
- (4) Inductance: R47=0.47 μH ;
2R2=2.2 μH ; 100=10 μH
- (5) Inductance Tolerance: M=±20%, N=±30%
- (6) Company Code
- (7) Packaging: Tape Carrier Package

◆ Dimensions



Recommended Land Pattern



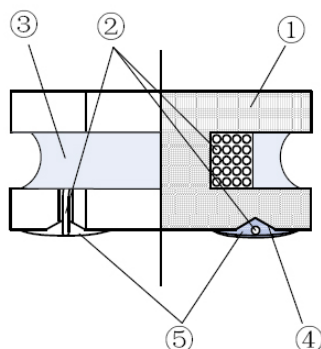
Unit:mm

Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
INNER4020F	4.0±0.2	4.0±0.2	2.0 Max.	3.3±0.2	0.95±0.2	2.10±0.2	1.90	1.10	3.7

◆ Electrical Characteristics

- 1) Operating and storage temperature range (individual chip without packing): cking): $-25^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- 2) Storage temperature range (packaging conditions): $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ and RH 70% (Max.)

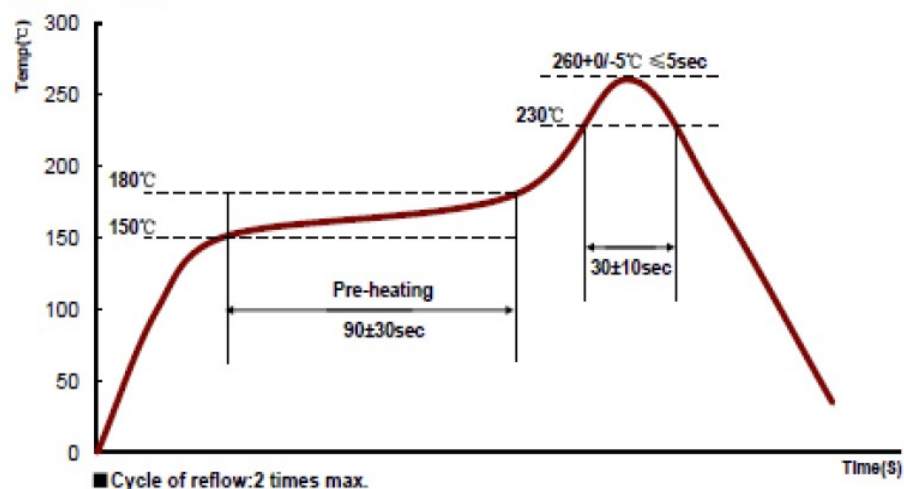
◆ Construction and material



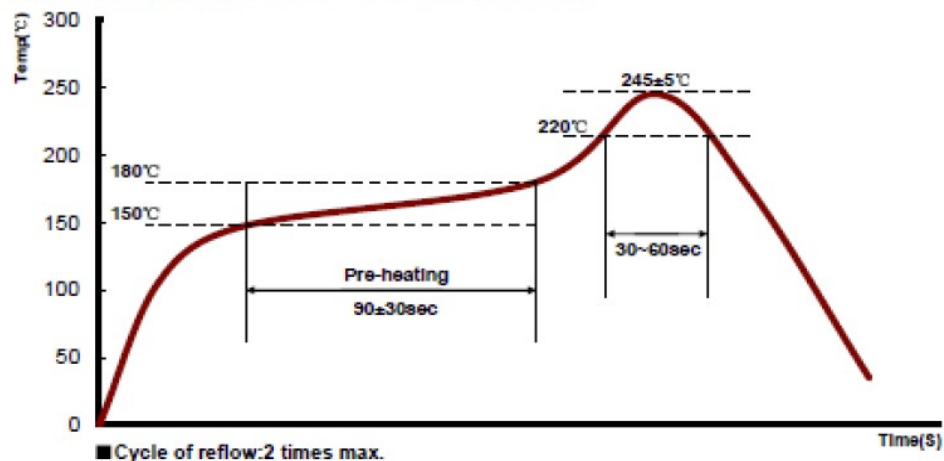
No.	Components	Material
①	Core	Soft magnetic Metal
②	Wire	Polyurethane system enameled copper wire
③	Magnetic Glue	Epoxy resin and magnetic powder
④	substrate	FeNiCu/Ag or Ag/Ni/Sn
⑤	Top Electrodes	Sn alloy
⑥	Marking	Nitrocellulose

◆ REFLOW-PROFILE

Limit Profile



Standard Profile (for EOC Solder paste S70G-HF)



◆ Specification

Part Number	Inductance @100KHz,1V (μH)	DC Resistance(m Ω)		Saturation Current Typ. (A)	Heat Rating Current Typ. (A)
		Max.	Typ.		
		DCR		Isat	Irms
INNER4012F Series					
INNER4020FR22MT	0.22±20%	13	11	22.00	18.70
INNER4020FR47MT	0.47±20%	22	18	15.50	7.40
INNER4020FR68MT	0.68±20%	22	18	11.10	7.40
INNER4020F1R0MT	1.00±20%	26	22	8.70	5.50
INNER4020F1R5MT	1.50±20%	38	33	7.70	5.20
INNER4020F2R2MT	2.20±20%	58	40	6.50	4.20
INNER4020F3R3MT	3.30±20%	82	60	5.50	3.50
INNER4020F4R7MT	4.70±20%	112	95	4.90	2.80
INNER4020F6R8MT	6.80±20%	155	135	3.20	2.40
INNER4020F100MT	10.00±20%	216	180	2.80	2.00
INNER4020F220MT	22.00±20%	422	360	2.00	1.10

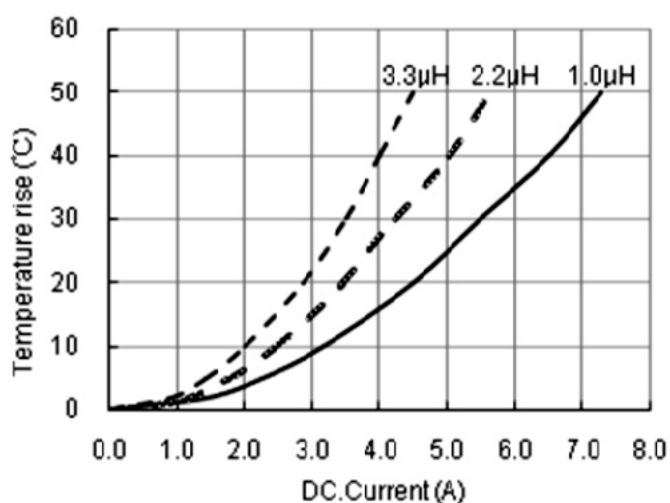
◆ Note

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

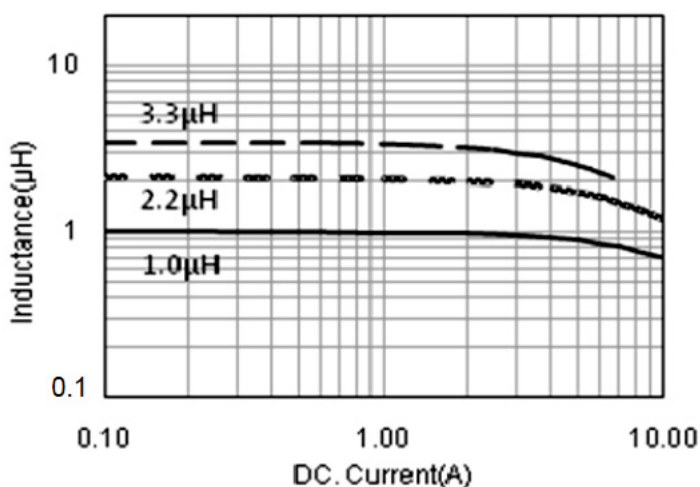
◆ TYPICAL ELECTRICAL CHARACTERISTICS

INNER4020F Series

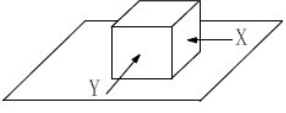
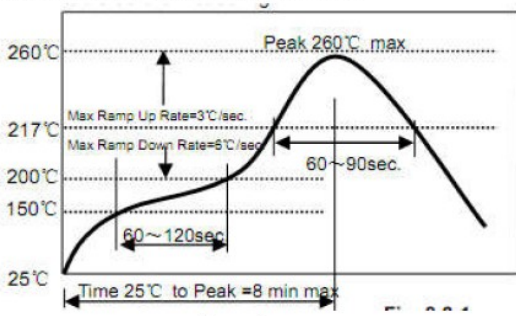
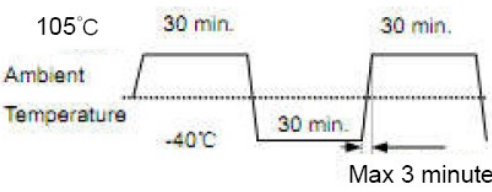
Temperature vs.DC Current Characteristics



Inductance vs.DC Current Characteristics

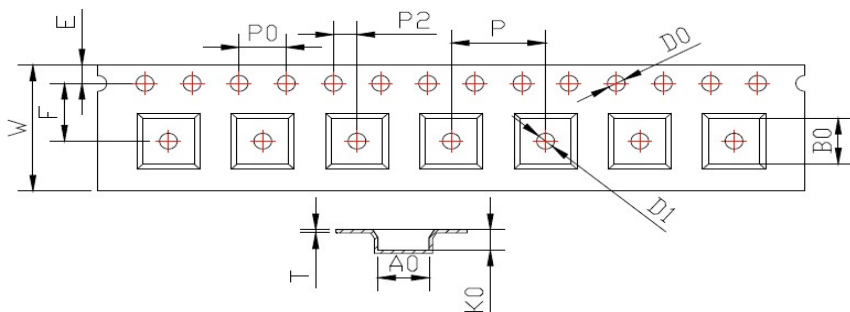


◆Reliability Test

Items	Requirements	Test Methods and Remarks
A. Terminal Strength	No removal or split of the termination or other defects shall occur.  Fig.7.1-1	1) Solder the inductor to the testing jig (glass epoxy board shown in Fig.7.1-1) using eutectic solder. Then apply a force in the direction of the arrow. 2) 10N force. 3) Keep time: 5±2s
B. High Temperature	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1) Storage Temperature :125+/-5℃ 2) Duration : 96 ±4 Hours 3) Recovery : then measured at room ambient temperature after placing 24 hours.
C. Low Temperature	1. No visible mechanical damage 2. Inductance change: Within ±10%	1) Temperature and time: -40±5℃ 2) Duration: 96±4 hours 3) TRecovery : then measured at room ambient temperature after placing 24 hours.
D. Vibration test	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1) Frequency range:10HZ~55HZ~10HZ 2) Amplitude:1.5mm p-p 3) Direction:X,Y,Z 4) Time:1 minute/cycle,2hours per axis
E. High Temperature Storage Tested	1. No visible mechanical damage. 2. Inductance change: Within ±10%	1) Storage Temperature :60+/-2℃ 2) Relative Humidity :90-95% RH 3) Duration : 96 ±4 Hours 4) Recovery : then measured at room ambient temperature after placing 24 hours.
F. Resistance to Soldering Heat	1. No visible mechanical damage. 2. Inductance change: Within ±10%  Fig. 1	1) Re-flowing Profile: Please refer to Fig. 1 2) Test board thickness: 1.0mm 3) Test board material: glass epoxy resin 4) The chip shall be stabilized at normal condition for 1~2 hours before measuring
G. Thermal Shock	1. No visible mechanical damage. 2. Inductance change: Within ±10%  Fig. 2	1) Temperature and time: -40±3℃ for 30±3 min→105℃ for 30±3min, please refer to Fig. 2. 2) Transforming interval: Max, 3 minute 3) Tested cycle: 100 cycles 4) The chip shall be stabilized at normal condition for 1~2 hours before measuring

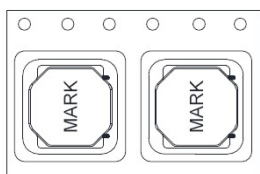
◆Packaging and Marking:

1.Carrier Tape Dimensions:

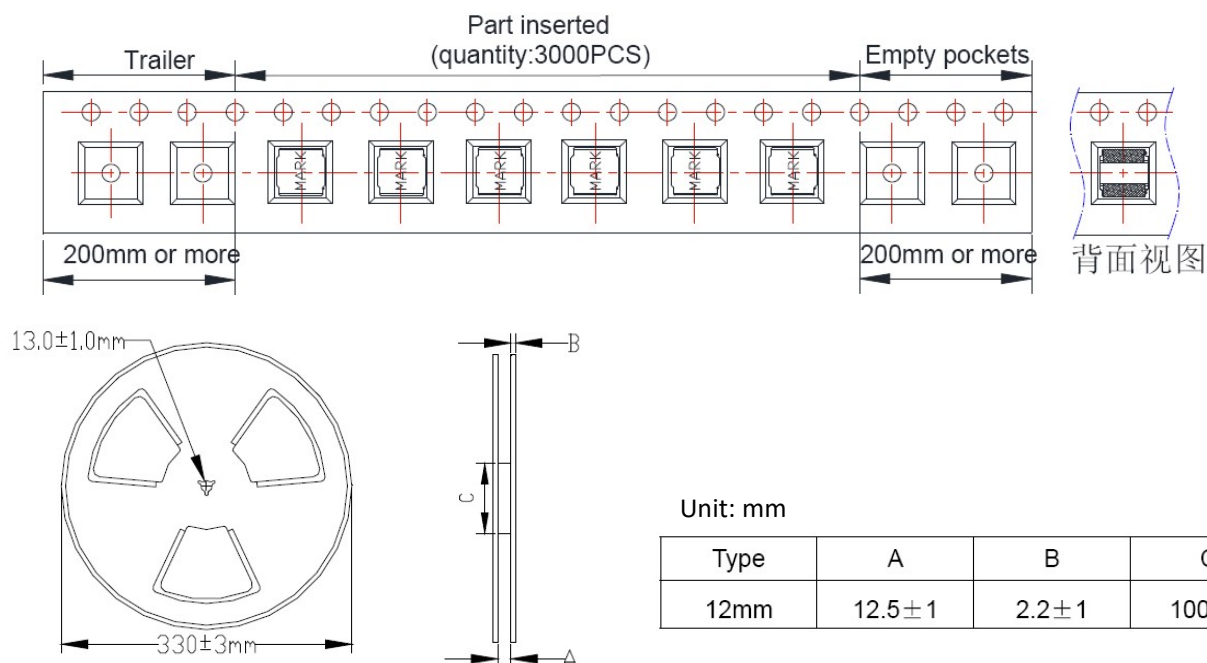


ITEM	W	A0	B0	K0	P	F	E	D0	D1	P0	P2	T
DIM	12.00	4.3	4.3	1.6	8.00	5.50	1.75	1.50	1.50	4.00	2.00	0.30
TOLE	+0.30 -0.10	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	+0.1	+0.1	±0.1	±0.1	±0.05

2.Taping Dimensions:



3.Reel Dimensions:



4. Packaging Quantity:

Standard Packing Quantity: 3000 pcs/reel