

# Specification for Approval



Customer: 立创

Customer P/N: C328276

Product Name: Power Inductors

Coilank P/N: APD08830M220

[  New Released,  Revised ]

Approved by	Checked by	Prepared by
	Jean.lin	Bruce.lan

## Coilank Technology Co., Ltd

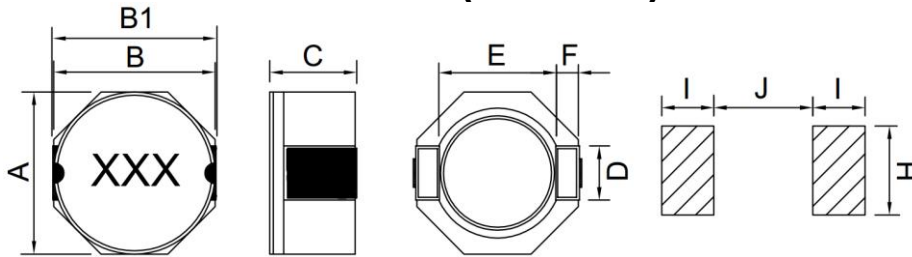
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## Change Note

Version	Content	Draw	Check	Approval	Date	Coding
1	New Design	Bruce.lan	Jean.lin	Jean.lin	2019.04.18	S105

### 1. External Dimensions (Unit:m/m)



Type	A	B	B1	C	D	E	F	H	I	J	Q'TY/Reel
APD08830	8.3Max	8.3Max	9.8Max	3.2Max	2.5Ref	6.3Ref	1.2Ref	2.8Ref	2.0Ref	6.1Ref	1000

### 2. Part Number Code

$\frac{APD}{A}$      $\frac{08}{B}$      $\frac{8}{C}$      $\frac{30}{D}$      $\frac{M}{E}$      $\frac{220}{F}$

A: Series Name	Power Inductors
B: Dimensions(mm)	08: 8.3x8.3 Max
C: Materials	8: 8 type
D: Thickness(mm)	30: 3.2 Max
E: Tolerance	M: $\pm 20\%$
F: Inductance	220=22uH

### 3. Electrical Characteristics

Part Number	Inductance (uH)	Test Frequency (KHz)	DC Resistance (m $\Omega$ )Max.	Saturation Current (A)Max.
APD08830M220	22.0	100KHz/0.25V	130.0	1.8

#### Notes:

- 1) AEC-Q200 qualified.
- 2) All test data is referenced to 25°C ambient.
- 3) Operating temperature range -40°C to +125°C.
- 4) Isat :DC current(A) that will cause I<sub>o</sub> to drop approximately 35%.
- 5) 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.

## 4. Test Data

ELECTRICAL CHARACTERISTIC				MECHANICAL DIMENSIONS			
SPEC	L(uH)	DCR(mΩ)	Isat(uH)	A(mm)	B(mm)	C(mm)	D(mm)
TOL	22.0	130.0	1.8A	8.3	8.3	3.2	2.5
NO	±20%	Max	(L0A-L1.8A) /L0A≤35%	Max	Max	Max	Ref
1	20.28	92.23	16.23	8.02	8.15	2.84	OK
2	20.20	92.32	16.09	8.10	8.07	2.80	OK
3	19.48	92.56	15.89	8.12	8.11	2.87	OK
4	19.63	93.25	16.05	8.07	8.09	2.86	OK
5	19.02	93.24	15.81	8.07	8.13	2.83	OK
6	18.57	92.65	15.61	8.11	8.14	2.86	OK
7	18.20	92.48	16.21	8.12	8.11	2.80	OK
8	18.98	92.86	16.62	8.06	8.06	2.82	OK
9	18.24	92.69	16.03	8.12	8.07	2.84	OK
10	18.14	92.96	15.87	8.13	8.18	2.83	OK

Test Equipments: IM3536,VR126,VR7210,Calipers

## 5. Test and Measurement Procedures

### 5.1 Test Conditions

5.1.1 Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- Ambient Temperature: 20±15℃
- Relative Humidity: 65%±20%
- Air Pressure: 86KPa to 106KPa

5.1.2 If any doubt on the results, measurements/tests should be made within the following limits:

- Ambient Temperature: 20±2℃
- Relative Humidity: 65%±5%
- Air Pressure: 86KPa to 106Kpa

### 5.2 Visual Examination

- Inspection Equipment: 10X magnifier

### 5.3 Electrical Test

#### 5.3.1 Inductance (L)

- Refer to the third item.
- Test equipment: IM3536 LCR meter or equivalent.
- Test Frequency and Voltage: Refer to the third item.

#### 5.3.2 Direct Current Resistance (DCR)

- Refer to the third item.
- Test equipment: VR126 or equivalent.

#### 5.3.3 Current

- Refer to the third item.
- Test equipment (see Fig.5.3.3-1): Electric Power, Electric current meter, Thermometer.

c. Measurement method (see Fig. 5.3.3-1):

1. Set test current to be 0 mA.
2. Measure initial temperature of chip surface.
3. Gradually increase voltage and measure chip temperature for corresponding current.

d. Definition of Temperature rise current: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from  $20^\circ\text{C}$  ambient (see Fig. 5.3.3-2).

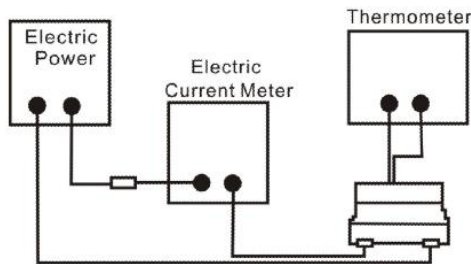


Fig.5.3.3-1

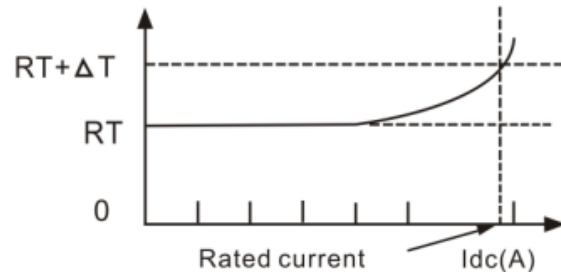
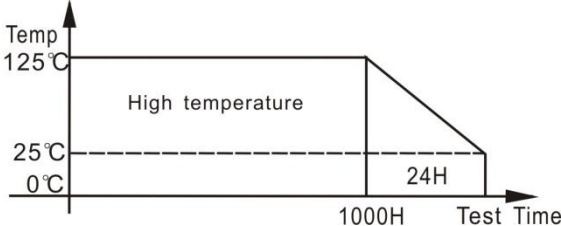
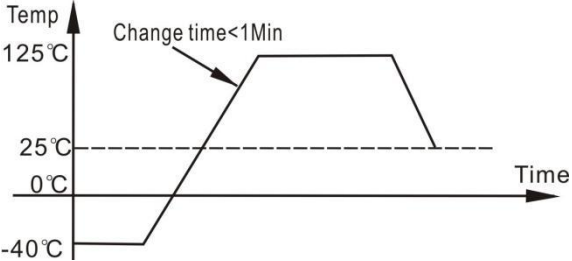
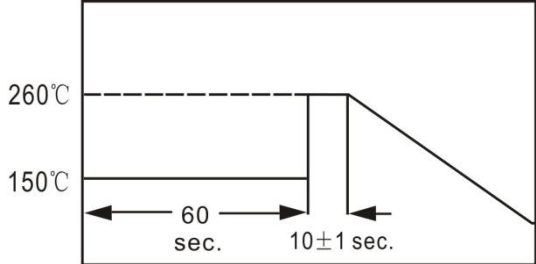
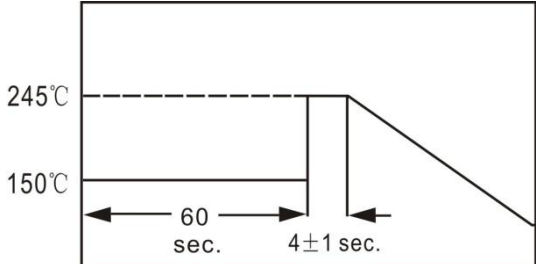


Fig.5.3.3-2

### 5.4 Reliability Test

Item	Specifications	Test conditions
5.4.1 High temperature storage test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Temperature: $125 \pm 2^\circ\text{C}$ . Duration: 1000hrs. Measured at room temperature after placing for $24 \pm 4$ hrs. 
5.4.2 Temperature cycling test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Condition for 1 cycle. Step1 : $-40 \pm 2^\circ\text{C}$ 30min Min. Step2 : $125 \pm 2^\circ\text{C}$ , transition time 1min Max. Step3 : $125 \pm 2^\circ\text{C}$ 30min Min. Step4 : Low temp, transition time 1min Max. Number of cycles : 1000. Measured at room temperature after placing for $24 \pm 4$ hrs. 
5.4.3 Biased humidity test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Humidity : $85\% \pm 3$ RH. Temperature : $85^\circ\text{C} \pm 2^\circ\text{C}$ . Duration : 1000hrs. Measured at room temperature after placing for $24 \pm 4$ hrs.

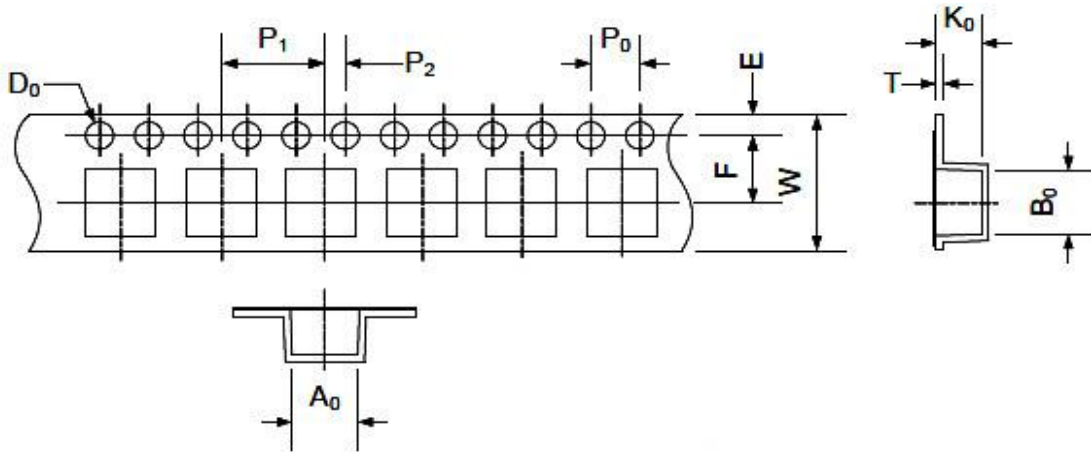
Item	Specifications	Test conditions
5.4.4 Operational life test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Temperature: $105 \pm 2^\circ\text{C}$ . Duration :1000hrs. Measured at room temperature after placing for $24 \pm 4$ hrs.
5.4.5 Resistance to solvent test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Add aqueous wash chemical - OKEM clean or equivalent.
5.4.6 Vibration test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Oscillation Frequency: 10~2K~10Hz for 20 minute. Total Amplitude: $1.52\text{mm} \pm 10\%$ . Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).
5.4.7 Resistance to soldering heat test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	Temperature ( $^\circ\text{C}$ ): $260 \pm 5$ (solder temp). Time (s): $10 \pm 1$ . ramp/immersion and emersion rate: $25\text{mm/s} \pm 6 \text{mm/s}$ . Number of heat cycles:1. 
5.4.8 Solderability test	More than 95% of the terminal electrode should be covered with solder.	Steam Aging: 8 hours $\pm$ 15 min. Preheat: $150^\circ\text{C}$ , 60sec. Solder: Sn99.5%-Cu0. 5%. Temperature: $245 \pm 5^\circ\text{C}$ . Flux for lead free: Rosin. 9.5%. Dip time: $4 \pm 1$ sec. Depth: completely cover the termination. 
5.4.9 Terminal strength (SMD) test	No visible mechanical damage.	With the component mounted on a PCB with the device to be tested, apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for $60 \pm 1$ seconds. Also the force shall be applied radually as not to apply a shock to the component being tested.

### 6. Packaging, Storage

#### 6.1 Tape and Reel Packaging Dimensions

6.1 .1 Taping Dimensions (Unit: mm)

Please refer to Fig. 6.1.1-1



6.1.1-1

TYPE	A0	B0	W	E	F	P0	P1	P2	T	K0
APD08830	$8.4 \pm 0.1$	$9.5 \pm 0.1$	$16.0 \pm 0.3$	$1.75 \pm 0.1$	$7.5 \pm 0.1$	$4.0 \pm 0.1$	$12.0 \pm 0.1$	$2.0 \pm 0.1$	$0.35 \pm 0.1$	$3.4 \pm 0.1$

6.1.2 Reel Dimensions (Unit: mm)

Please refer to Fig. 6.1.2-1.

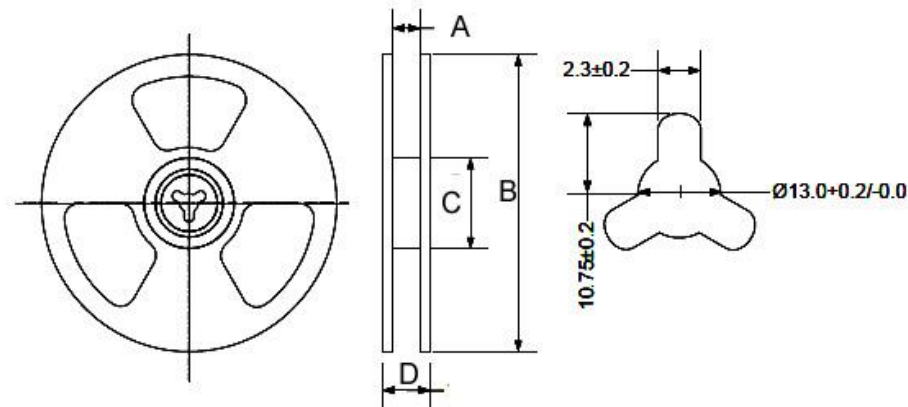


Fig. 6.1.2-1.

TYPE	A	B	C	D
APD08830	$16.5 \pm 2.0$	$330.0 \pm 2.0$	$100.0 \pm 2.0$	$20.5 \pm 2.0$

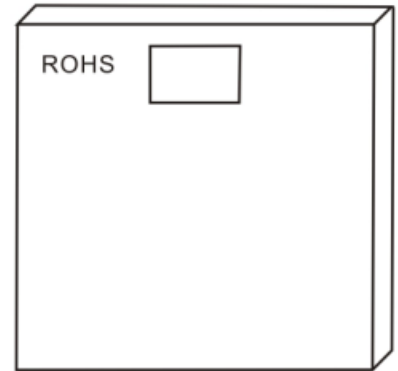
### 6.2 Packaging

6.2.1 The inner box specification: 350\*340\*40MM

Packing quantity: 2000PCS/ box

Bubble bag : 37\*45CM

Job description: putting the air bubble bag products placed inside the box, sealed with scotch tape

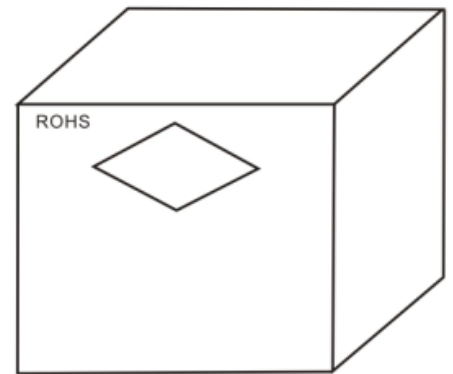


6.2.2 the outside box specification: 370\*360\*255MM

Packing quantity: 10000PCS/ box

Job description: will be outside the box bottom sealed, inner box into the box.

- a. with transparent tape sealed box at the top
- b. the specified location with a box labels in the outer box.
- c. if the mantissa box under a FCL with inner box or filling full



### 6.3 Storage

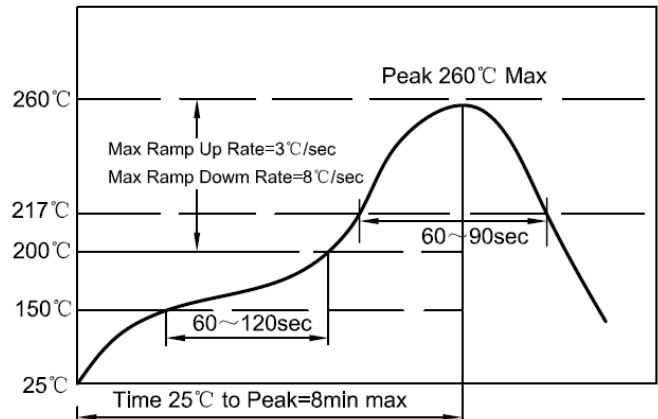
- a. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled.
- b. Recommended conditions: -10°C~40°C, 70%RH (Max.)
- c. The ambient temperature must be kept below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes. For this reason, product should be used with one year from the time of delivery.
- d. In case of storage over 6 months, solderability shall be checked before actual usage.



### 7. Recommended Soldering Technologies

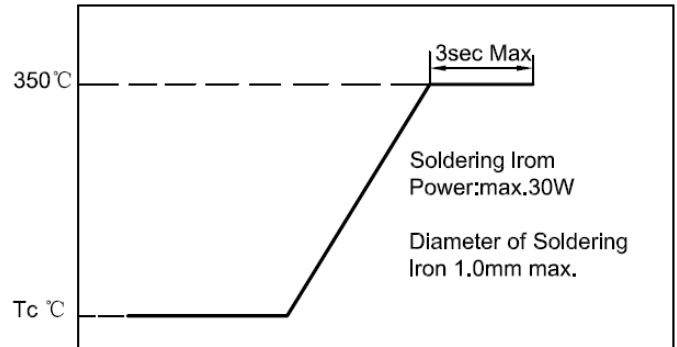
#### 7.1 Re-flowing Profile:

- △ Preheat condition: 150~200°C/60~120sec.
- △ Allowed time above 217°C: 60~90sec.
- △ Max temp: 260°C
- △ Max time at max temp: 5sec.
- △ Solder paste: Sn/3.0Ag/0.5Cu
- △ Allowed Reflow time: 2x max



#### 7.2 Iron Soldering Profile:

- △ Iron soldering power: Max.30W
  - △ Pre-heating: 150°C/60sec.
  - △ Soldering Tip temperature: 350°C Max.
  - △ Soldering time: 3sec Max.
  - △ Solder paste: Sn/3.0Ag/0.5Cu
  - △ Max.1 times for iron soldering
- [Note: Take care not to apply the tip of the soldering iron to the]



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