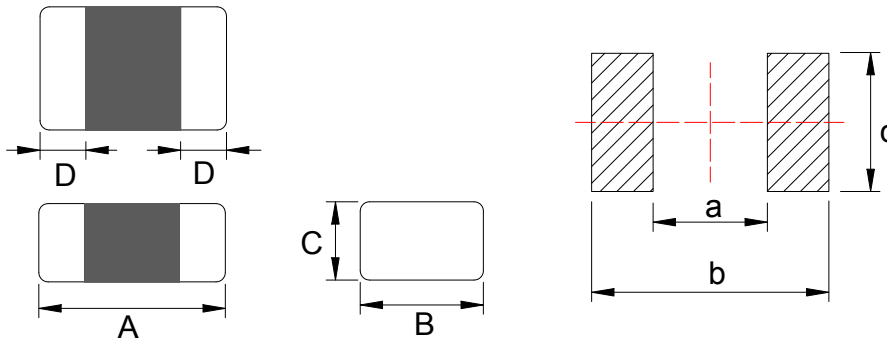


### 1. External Dimensions (Unit:m/m)



Type	A	B	C	D	a	b	c	Q'TY/Reel
APS25T12	2.5±0.2	2.0±0.2	1.25Max	0.6Ref	1.2Ref	2.8Ref	2.0Ref	3000

### 2. Part Number Code

APS    25    T    12    M    4R7  
 A        B        C        D        E        F

A: Series Name                      Metal Alloy Inductors  
 B: Dimensions(mm)                25: 2.5x2.0  
 C: Materials                         T Type  
 D: Thickness(mm)                 12: 1.25 Max  
 E: Tolerance                         M: ±20%  
 F: Inductance                        4R7=4.7uH

### 3. Electrical Characteristics

Part Number	Inductance (μH)	Test Frequency (MHz)	DC Resistance (mΩ)Max.	Heat Rating Current Irms(A)	Saturation Current Isat(A)
APS25T12M4R7	4.7	1MHz	240.0	1.3	1.5

Notes:

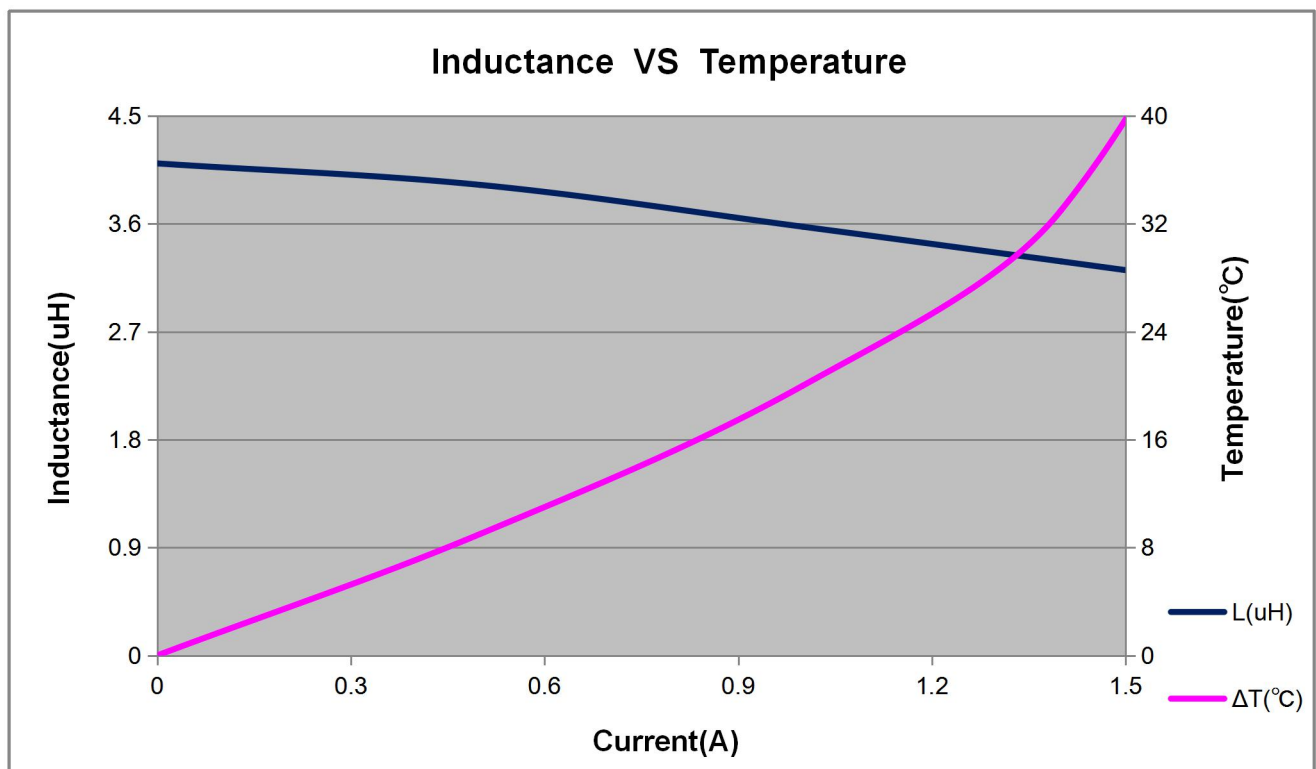
- 1) All test data is referenced to 25°C ambient.
- 2) Operating temperature range -40°C to +125°C.
- 3) Irms :DC current(A) that will cause an approximate ΔT of 40°C.
- 4) Isat :DC current(A) that will cause I<sub>o</sub> to drop approximately 40%.
- 5) The part temperature(ambient + temp rise)should not exceed 125°C under worst case operating conditions.Circuit design,component placement, PCB 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	4.7	240.0	1.5A	2.5	2.0	1.25	0.6
NO	±20%	Max	(L0A-L1.5A) /L0A≈40%	±0.2	±0.2	Max	Ref
1	4.157	205.2	3.242	2.51	2.04	1.05	OK
2	4.021	203.6	3.096	2.52	2.01	1.06	OK
3	4.026	205.1	3.140	2.52	2.03	1.04	OK
4	4.001	205.0	3.081	2.53	2.04	1.05	OK
5	4.020	203.8	3.136	2.51	2.03	1.04	OK
6	3.982	202.7	3.106	2.52	2.04	1.06	OK
7	3.854	201.9	3.006	2.53	2.05	1.06	OK
8	4.042	203.5	3.113	2.51	2.02	1.05	OK
9	3.983	201.6	3.107	2.51	2.04	1.05	OK
10	4.056	205.2	3.164	2.52	2.05	1.05	OK

Test Equipments: IM3536,VR126,VR7210,Calipers

Curve:



### 5. Test and Measurement Procedures

#### 5.1 Test Conditions

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

- a. Ambient Temperature:  $20 \pm 15^\circ\text{C}$
- b. Relative Humidity:  $65\% \pm 20\%$
- c. Air Pressure: 86KPa to 106KPa

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

- a. Ambient Temperature:  $20 \pm 2^\circ\text{C}$
- b. Relative Humidity:  $65\% \pm 5\%$
- c. Air Pressure: 86KPa to 106Kpa

#### 5.2 Visual Examination

- a. Inspection Equipment: 10X magnifier

#### 5.3 Electrical Test

5.3.1 Inductance (L)

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

5.3.2 Direct Current Resistance (DCR)

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

5.3.3 Saturation Current ( $I_{\text{sat}}$ )

- a. Refer to the third item.
- b. Test equipment: Saturation current meter
- c. Definition of saturation current ( $I_{\text{sat}}$ ): DC current at which the inductance drops approximate 40% from its value without current.

5.3.4 Temperature rise current ( $I_{\text{rms}}$ )

- a. Refer to the third item.
- b. Test equipment (see Fig.5.3.4-1): Electric Power, Electric current meter, Thermometer.
- c. Measurement method (see Fig. 5.3.4-1):
  1. Set test current to be 0mA.
  2. Measure initial temperature of choke surface.
  3. Gradually increase current and measure choke temperature for corresponding current.
  4. 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. 5.3.4-2).

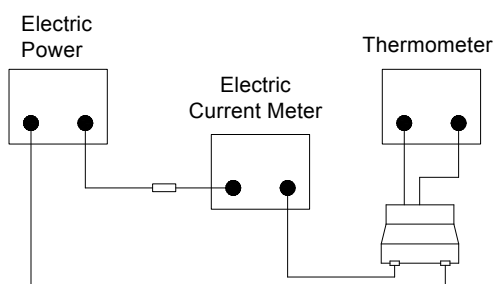


Fig.5.3.4-1

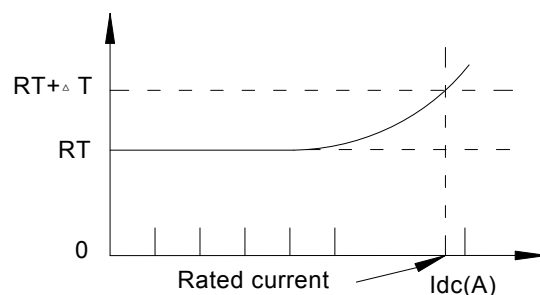
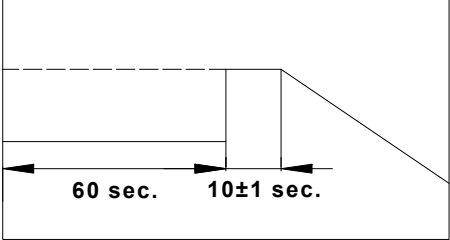
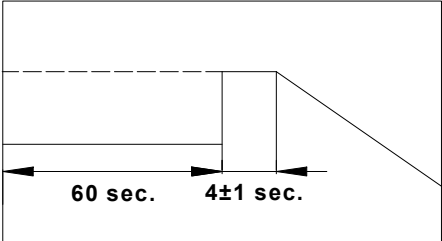


Fig.5.3.4-2

### 5.4 Reliability Test

Item	Specifications	Test conditions
5.4.1 High temperature storage test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	<p>Temperature: <math>125 \pm 2^\circ\text{C}</math>. Duration: 500hrs. Measured at room temperature after placing for <math>24 \pm 4</math> hrs.</p>
5.4.2 Temperature cycling test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	<p>Condition for 1 cycle. Step1: <math>-40 \pm 2^\circ\text{C}</math> 30min Min. Step2: <math>125 \pm 2^\circ\text{C}</math>, transition time 2min Max. Step3: <math>125 \pm 2^\circ\text{C}</math> 30min Min. Step4: Low temp, transition time 2min Max. Number of cycles: 100. Measured at room temperature after placing for <math>24 \pm 4</math> hrs.</p>
5.4.3 Biased humidity test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	<p>Humidity : <math>85\% \pm 3</math> RH. Temperature: <math>60^\circ\text{C} \pm 2^\circ\text{C}</math>. Duration : 500hrs. Measured at room temperature after placing for <math>24 \pm 4</math> hrs.</p>
5.4.4 Operational life test	No visible mechanical damage. Inductance change: Within $\pm 10\%$ .	<p>Temperature: <math>85 \pm 2^\circ\text{C}</math>. Duration : 500hrs. Measured at room temperature after placing for <math>24 \pm 4</math> hrs.</p>
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 $\pm 10\%$ .	The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each.(A total of 6 hours)

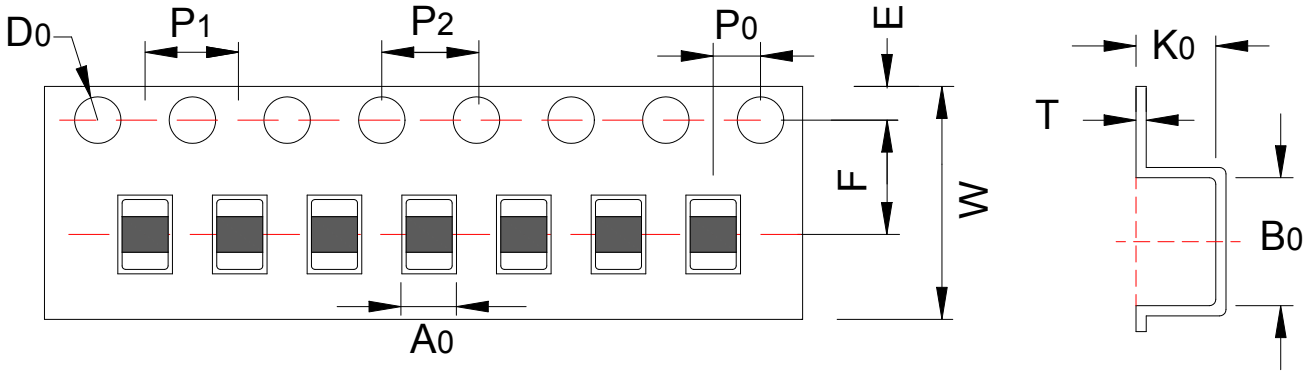
Item	Specifications	Test conditions
<p>5.4.7 Resistance to soldering heat test</p>	<p>No visible mechanical damage. Inductance change: Within <math>\pm 10\%</math>.</p>	<p>Temperature (<math>^{\circ}\text{C}</math>): <math>260 \pm 5</math> (solder temp). Time (s): <math>10 \pm 1</math>. ramp/immersion and emersion rate: <math>25\text{mm/s} \pm 6 \text{ mm/s}</math>. Number of heat cycles:1.</p> 
<p>5.4.8 Solderability test</p>	<p>More than 95% of the terminal electrode should be covered with solder.</p>	<p>Steam Aging: 8 hours <math>\pm</math> 15 min. Preheat: <math>150^{\circ}\text{C}</math>, 60sec. Solder: Sn99.5%-Cu0. 5%. Temperature: <math>245 \pm 5^{\circ}\text{C}</math>. Flux for lead free: Rosin. 9.5%. Dip time: <math>4 \pm 1</math>sec. Depth: completely cover the termination.</p> 
<p>5.4.9 Terminal strength (SMD) test</p>	<p>No visible mechanical damage.</p>	<p>With the component mounted on a PCB with the device to be tested, apply a 10 N force to the side of a device being tested. This force shall be applied for <math>10 \pm 1</math> seconds. Also the force shall be applied radually as not to apply a shock to the component being tested.</p>

**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	D0	T	K0
APS25T12	2.25±0.1	2.8±0.1	8.0±0.3	1.75±0.1	3.5±0.1	2.0±0.1	4.0±0.1	4.0±0.1	1.5±0.1	0.22±0.1	1.35±0.1

6.1.2 Reel Dimensions (Unit: mm)

Please refer to Fig. 6.1.2-1.

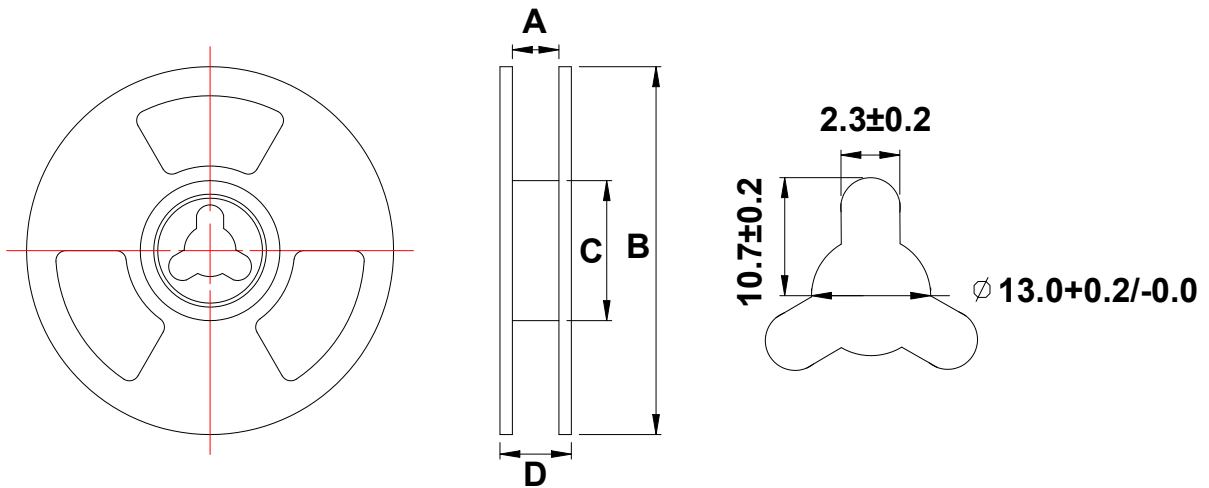


Fig. 6.1.2-1.

TYPE	A	B	C	D
APS25T12	9.0±2.0	178.0±2.0	58.0±2.0	11.0±2.0

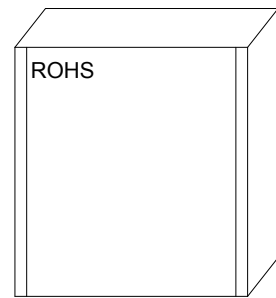
### 6.2 Packaging

6.2.1 The inner box specification: 195\*192\*65MM

Packing quantity: 15000PCS/ box

Sealing bag: 32\*23CM

Job description: putting the air sealing bag products placed inside the box.

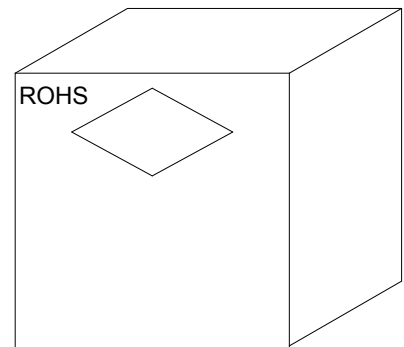


6.2.2 The outside box specification: 410\*405\*165MM

Packing quantity: 120000PCS/ 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 for filling full



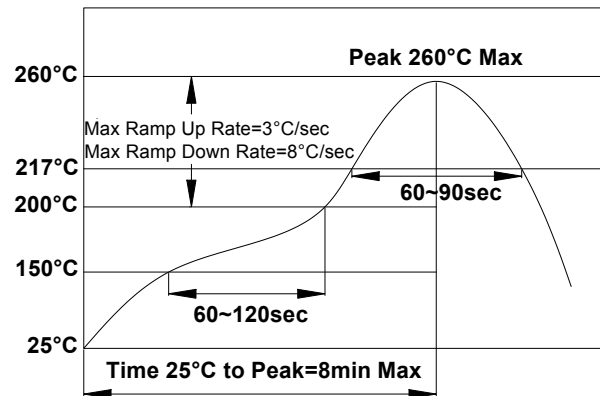
### 6.3 Storage

- 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. 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 one year, solderability shall be checked before actual usage.

### 7. Recommended Soldering Technologies

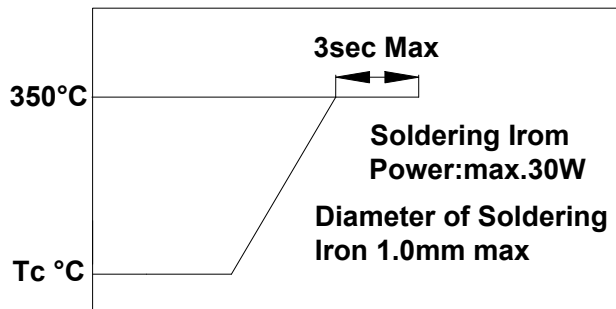
#### 7.1 Re-flowing Profile:

- △ 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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