



**Telecoil-antennas Inductor**

**PAS4420F-352K-F10**

**1.Features**

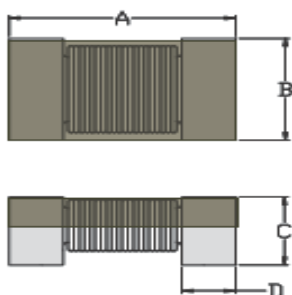
1. Hearing Aid Compatibility-/Telecoil-antennas;
2. PAS4420F-series realizes small size and low profile. 4.4x2.0x2.0 mm.
3. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
4. Meets the T3 FCC requirements(HAC-Act) acc. ANSI C63.19



**2. Applications**

1. T-coil/HAC-coil for hearing and aid compatible cell phones .
2. Decoupling in RF and IF-circuit .
3. Transponder antenna .

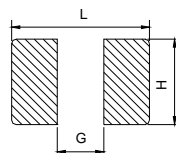
**3. Dimensions**



Size	A(mm)	B(mm)	C(mm)	D(mm)
PAS4420F	4.55±0.25	2.2±0.25	2.0±0.2	0.98 ref.

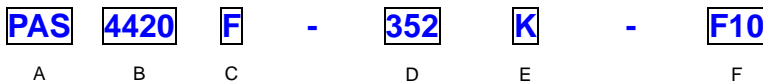
Units : mm

**Recommend PC Board Pattern**



L(mm)	G(mm)	H(mm)
4.6	2.5	2

**4. Part Numbering**



- A: Series
- B: Dimension L x H
- C: Lead Free Code
- D: Inductance 352=3500 uH
- E: Inductance Tolerance K=±10%
- F: Test Frequency 10 KHz

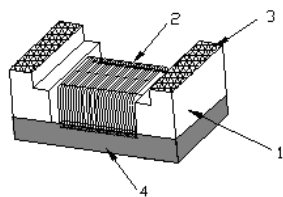
**5. Specification**

Part Number	Inductance (uH) ±10%	fL0 (kHz)	SRF MHz(min)	RDC (Ω) max	Rated current (mA) max.
PAS4420F-352K-F10	3500	10	1	85	20

Note:

1. Test frequency : Inductor(L) : 10KHz /0.1V;
2. .All test data referenced to 25°C ambient.

## 6. Material List

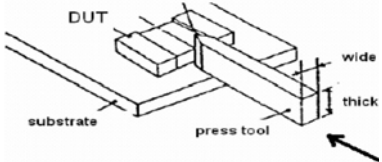


NO	Items	Materials
1	Core	Ferrite
2	Wire	Copper Wire
3	Terminal	Tin (Pb free)
4	Adhesive	UV or Epoxy

## 7. Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)	
Storage temperature	-40~+125°C (on board)	
<b>Electrical Performance Test</b>		
Inductance	Refer to standard electrical characteristics list.	HP4284A, CH11025, CH3302, CH1320, CH1320S LCR Meter.
DCR		CH16502, Agilent33420A Micro-Ohm Meter.
Saturation Current (Isat)	$\Delta L \leq 20\%$ typical.	Saturation DC Current (Isat) will cause L0 to drop $\Delta L(\%)$ (keep quickly).
Heat Rated Current (Irms)	Approximately $\Delta T \leq 40^\circ\text{C}$	Heat Rated Current (Irms) will cause the coil temperature rise $\Delta T(^\circ\text{C})$ without core loss. 1. Applied the allowed DC current(keep 1 min.). 2. Temperature measured by digital surface thermometer

Reliability Test		
Life Test		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature : 125±2°C Applied current : rated current Duration : 1000±12hrs Measured at room temperature after placing for 24±2 hrs
Load Humidity		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Humidity : 85±2%R.H, Temperature : 85°C±2°C Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24±2 hrs
Moisture Resistance	Appearance : No damage. Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) 1. Baked at50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to 65±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs,keep at 25°C for 2 hrs then keep at -10°C for 3 hrs 4. Keep at 25°C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.
Thermal shock		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Condition for 1 cycle Step1 : -40±2°C 30±5min Step2 : 25±2°C ≤0.5min Step3 : 125±2°C 30±5min Number of cycles : 500 Measured at room temperature after placing for 24±2 hrs
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:1.52mm±10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).

Item	Performance	Test Condition															
Shock	Appearance : No damage. Inductance : within±10% of initial value Q : Shall not exceed the specification value.	<table border="1" data-bbox="1010 405 1426 528"> <thead> <tr> <th>Type</th> <th>Peak value (g<sup>2</sup> s)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (V)/ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>	Type	Peak value (g <sup>2</sup> s)	Normal duration (D) (ms)	Wave form	Velocity change (V)/ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type	Peak value (g <sup>2</sup> s)	Normal duration (D) (ms)	Wave form	Velocity change (V)/ft/sec													
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Bending	RDC : within ±15% of initial value and shall not exceed the specification value	Shall be mounted on a FR4 substrate of the following dimensions: >=0805:40x100x1.2mm <0805:40x100x0.8mm Bending depth: >=0805:1.2mm <0805:0.8mm duration of 10 sec.															
Soderability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150°C, 60sec. Solder: Sn96.5% Ag3% Cu0.5% Temperature: 245±5°C. Flux for lead free: Rosin. 9.5%. Dip time: 4±1sec. Depth: completely cover the termination															
Resistance to Soldering Heat	Appearance : No damage. Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value	Number of heat cycles: 1 <table border="1" data-bbox="1010 882 1398 1014"> <thead> <tr> <th>Temperature (°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> </tr> </thead> <tbody> <tr> <td>260 ±5(solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> </tr> </tbody> </table>	Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate	260 ±5(solder temp)	10 ±1	25mm/s ±6 mm/s									
Temperature (°C)	Time(s)	Temperature ramp/immersion and emersion rate															
260 ±5(solder temp)	10 ±1	25mm/s ±6 mm/s															
Terminal Strength		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force (>0805:1kg , <=0805:0.5kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 															

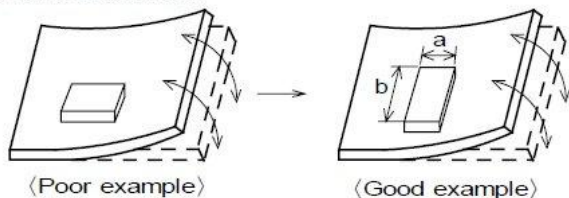
## 8. Soldering and Mounting

### 8-1. Attention regarding P.C.B. bending

The following shall be considered when designing P.C.B.'S

(1) P.C.B. shall be designed so that products are not subjected to the mechanical stress for board warpage.

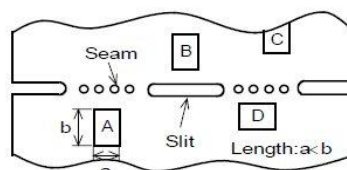
<Products direction>



Products shall be located in the sideways direction  
(Length :a<b) to against the mechanical stress.

(2) Products location on P.C.B.

Products (A,B,C,D) shall be located carefully to prevent mechanical stress when warping the board.  
Products may be subjected to the mechanical stress in the order of A>C>B=D.



### 8-2. Soldering

Mildly activated rosin fluxes are preferred. TAI-TECH terminations are suitable for all wave and re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

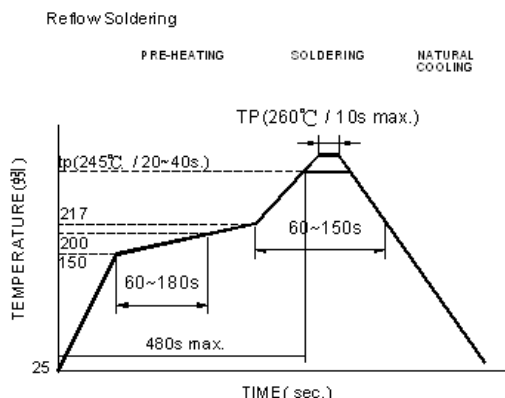
#### 8-2.1 Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

#### 8-2.2 Soldering Iron(Figure 2):

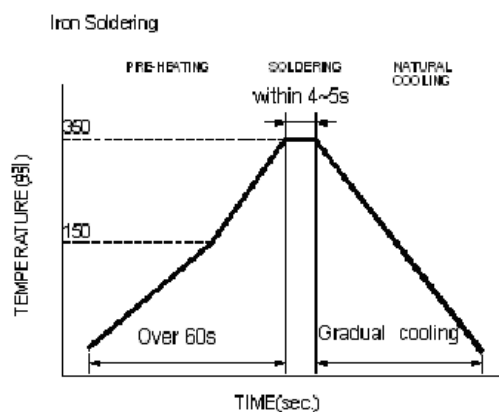
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150°C
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4-5 sec.



Reflow times: 3 times max.

Fig.1

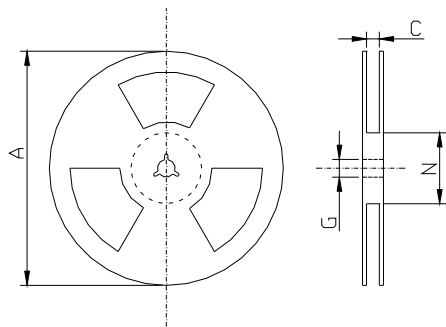


Iron Soldering times: 1 times max.

Fig.2

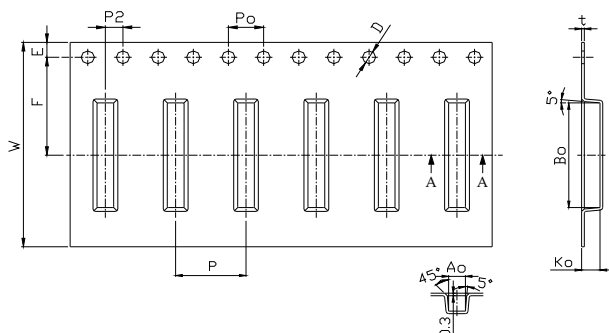
## 9. Packaging Information

### 9-1. Reel Dimension



Type	A(mm)	C(mm)	G(mm)	N(mm)
7"x12mm	180±2	16.5±1	13.5±0.5	100±2

### 9-2. Tape Dimension / 12mm

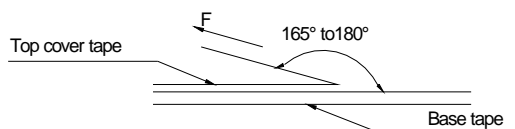


### 9-3. Packaging Quantity

Chip size	4420
Reel	1000
Reel Size	7"x12mm

Series	Size	P(mm)	Po(mm)	P2(mm)	Bo(mm)	Ao(mm)	Ko(mm)	t(mm)
PAS	4420	8.0±0.1	4.0±0.1	2.0±0.1	5.00±0.10	2.5±0.10	2.1±0.10	0.3±0.05
Series	Size	D(mm)	E(mm)	F(mm)	W(mm)			
PAS	4420	1.5+0.1/-0	1.75±0.1	5.5±0.1	12±0.30			

### 9-4. Tearing Off Force



The force for tearing off cover tape is 10 to 80 grams in the arrow direction under the following conditions (referenced ANSI/EIA-481-C-2003 of 4.11 standard).

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5-35	45-85	860-1060	300

#### Application Notice

- Storage Conditions (component level)  
To maintain the solderability of terminal electrodes:
  1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
  2. Temperature and humidity conditions: Less than 40°C and 60% RH.
  3. Recommended products should be used within 12 months from the time of delivery.
  4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
  1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
  2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
  3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

## 測試報告 Test Report

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頁數(Page): 1 of 4

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(慶邦電子元件(泗洪)有限公司 / TAIPAQ ELECTRONICS (SI-HONG) CO., LTD.)

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(桃園市中壢區中壢工業區長春六路15號 / NO. 15, CHANGCHUN 6TH RD., JHONGLI CITY, TAOYUAN COUNTY 320, TAIWAN)



(江蘇省宿遷市泗洪縣經濟開發區金沙南路-高新技術產業園 / HIGH-TECH INDUSTRIAL DISTRICT, JINSHAJIANG ROAD, SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)



以下測試樣品係由申請廠商所提供及確認 (The following sample(s) was/were submitted and identified by/on behalf of the applicant as):

樣品名稱(Sample Description) : WIREWOUND SERIES(FILM BACKING)  
樣品型號(Style/Item No.) : TWI、SWF、SWC\_F、PAS、WCM-L2NF、WCM-F2SNF SERIES  
收件日期(Sample Receiving Date) : 2015/09/11  
測試期間(Testing Period) : 2015/09/11 TO 2015/09/15

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).

  
  
Troy Chang, Manager - Tech  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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## 測試結果(Test Results)

測試部位(PART NAME)No.1 : 整體混測 (MIXED ALL PARTS)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)
				No. 1
銻 / Antimony (Sb)	mg/kg	參考US EPA 3052方法, 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA Method 3052. Analysis was performed by ICP-AES.	2	n. d.

## 備註(Note) :

1. mg/kg = ppm ; 0.1wt% = 1000ppm
2. n. d. = Not Detected (未檢出)
3. MDL = Method Detection Limit (方法偵測極限值)
4. 樣品的測試是基於申請人要求混合測試, 報告中的混合測試結果不代表其中個別單一材質的含量. (The samples was/were analyzed on behalf of the applicant as mixing sample in one testing. The above results was/were only given as the informality value.)

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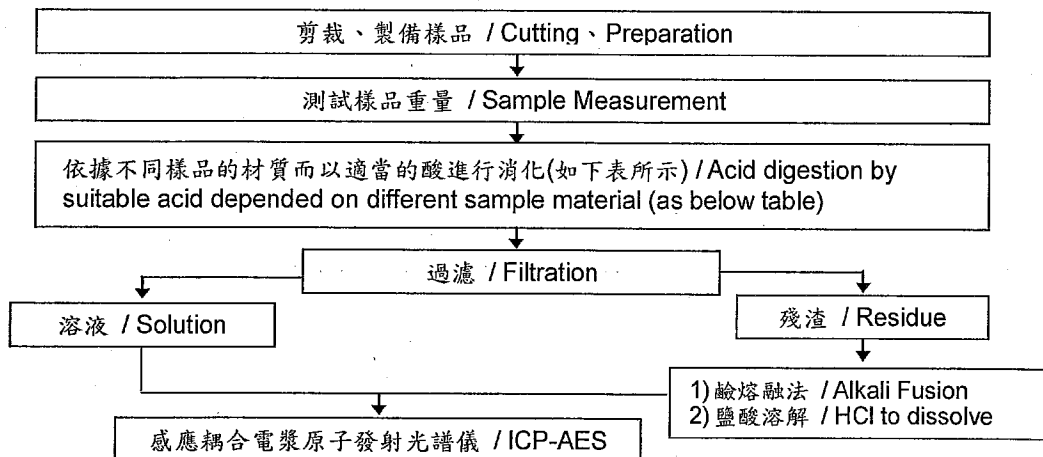
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- 根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.
- 測試人員：楊登偉 / Name of the person who made measurement: Climbgreat Yang
- 測試負責人：張啟興 / Name of the person in charge of measurement: Troy Chang

### 元素以 ICP-AES 分析的消化流程圖

#### (Flow Chart of digestion for the elements analysis performed by ICP-AES)



鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO <sub>3</sub> , HCl, HF, H <sub>2</sub> O <sub>2</sub>
玻璃 / Glass	硝酸,氫氟酸 / HNO <sub>3</sub> /HF
金,鈷,鈦,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO <sub>3</sub>
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H <sub>2</sub> SO <sub>4</sub> , H <sub>2</sub> O <sub>2</sub> , HNO <sub>3</sub> , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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(江蘇省昆山市蓬朗昆嘉高科技工業區郭澤路 / GUO-ZE ROAD, KUNJIA HI-TECH INDUSTRIAL PARK, KUN-SHAN, JIANG-SU, CHINA)

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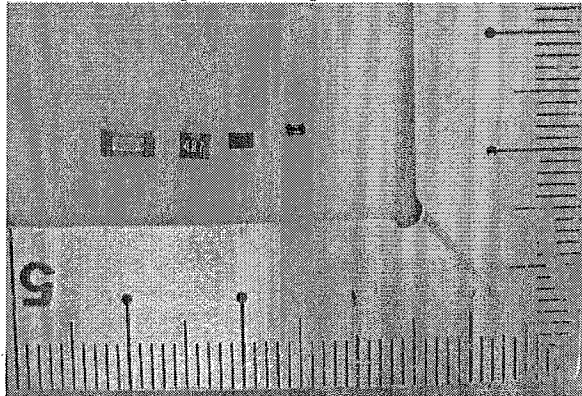
(江蘇省宿遷市泗洪縣經濟開發區金沙南路-高新技術產業園 / HIGH-TECH INDUSTRIAL DISTRICT, JINSHAJIANG ROAD, SIHONG COUNTY ECONOMIC, SUQIAN CITY, JIANGSU)



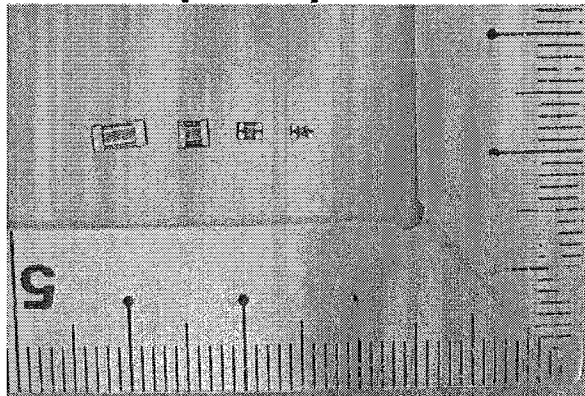
\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。\*

(The tested sample / part is marked by an arrow if it's shown on the photo.)

### CE/2015/92842



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\*\* 報告結尾 (End of Report) \*\*

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