

Telecoil-antennas Inductor

PAS4420F-252K-F10

1. Features

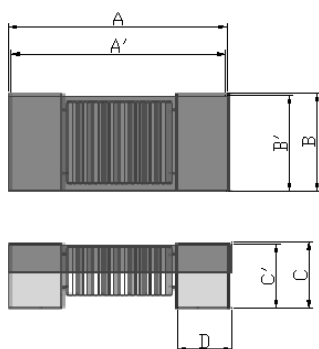
1. Hearing Aid Compatibility-/Telecoil-antennas;
2. PAS4420F-series realizes small size and low profile. 4.4x2.0x2.0 mm.
3. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
4. Meets the T3 FCC requirements(HAC-Act) acc. ANSI C63.19
5. Operating temperature-40~+125°C (Including self - temperature rise)



2. Applications

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

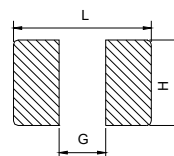
3. Dimensions



Size	A(mm)	A'(mm)	B(mm)	B'(mm)	C(mm)	C'(mm)	D(mm)
PAS4420F	4.55±0.25	4.2±0.2	2.2±0.25	1.80±0.2	2.0±0.2	1.80±0.2	0.98 ref.

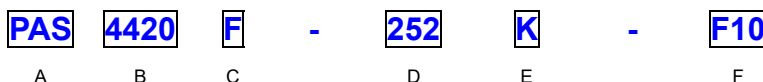
Units : mm

Recommend PC Board Pattern



L(mm)	G(mm)	H(mm)
4.6	2.54	2

4. Part Numbering



A: Series

B: Dimension

L x H

C: Lead Free Code

D: Inductance

252=2500 uH

E: Inductance Tolerance

K=±10%

F: Test Frequency

10 KHZ

5. Specification

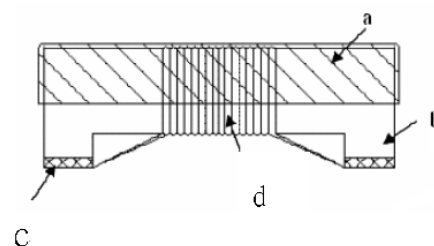
Part Number	Inductance (uH) ±10%	fL0 (kHz)	SRF MHz(min)	RDC (Ω) max.	Rated current (mA) max.
PAS4420F-252K-F10	2500	10	1	82	40

Note:

1. Test frequency : Inductor(L) : 10KHz /0.1V;
2. All test data referenced to 25°C ambient.
3. Testing Instrument : L/Q: Agilent-4192A, Agilent-16334A ; Ims:CH3302,CH1320 ; SRF: Agilent-4292A; RDC: Agilent-34420A
4. Rated Current (Irms) will cause the coil temperature rise approximately Δt of 20°C .

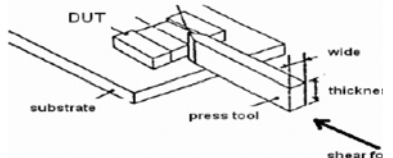
6. Material List

No.	Description	Specification
a.	Upper Plate	UV Glue
b.	Core	Ferrite Core
c.	Termination	Ag/Ni/Sn
d.	Wire	Enameled Copper Wire



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)	
Electrical Performance Test		
Inductance L	Refer to standard electrical characteristic list	Agilent-4291, Agilent-4287 Agilent-4192, Agilent-4285
SRF		Agilent-4291 Agilent-4192
DC Resistance		Agilent-34420A
Rated current		Applied the current to coils, the inductance change shall be less than 20% to initial value.
Reliability Test		
Life Test	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-020DCclassification 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-020DCclassification 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		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DCclassification Reflow Profiles 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-020DCclassification 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: 10Hz~2KHz~10Hz for 20 minute Equipment : Vibration checker Total Amplitude:10g Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) °

Item	Performance	Test Condition															
Bending		Shall be mounted on a FR4 substrate of the following dimensions: >=0805 inch(2012mm):40x100x1.2mm <0805 inch(2012mm):40x100x0.8mm Bending depth: >=0805 inch(2012mm):1.2mm <0805 inch(2012mm):0.8mm duration of 10 sec.															
Shock	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	<table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g'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'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
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SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Solder ability	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		Depth: completely cover the termination <table border="1"> <thead> <tr> <th>Temperature(°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ±5 (solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature(°C)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s	1							
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Terminal Strength	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 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. 															

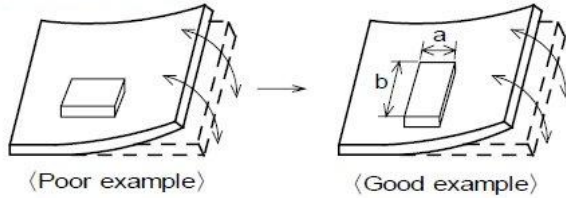
8. Soldering and Mounting

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.

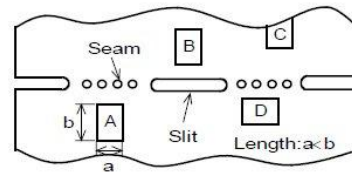
<Products direction>



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.

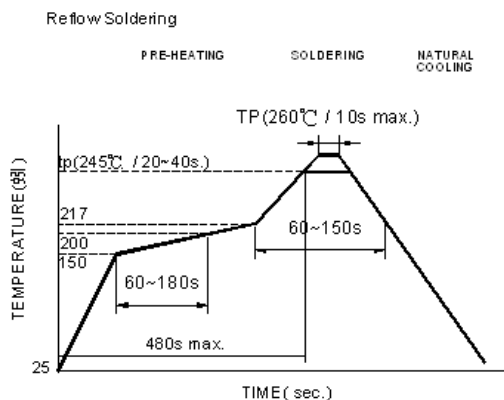
8-2.1 Solder re-flow:

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

8-2.2 Soldering Iron(Figure 2):

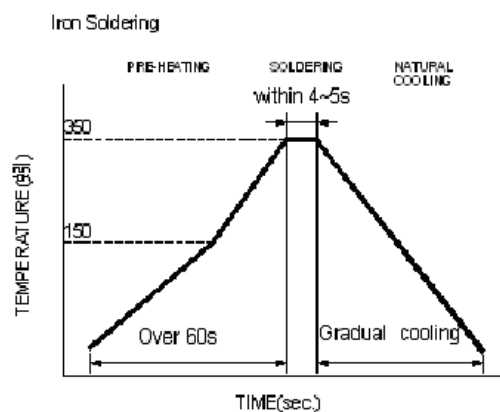
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- 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
- 350°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5 sec.



Reflow times: 3 times max.

Fig.1

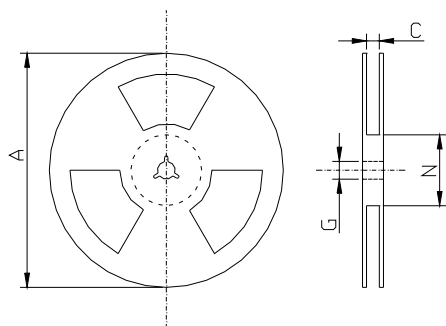


Iron Soldering times: 1 times max.

Fig.2

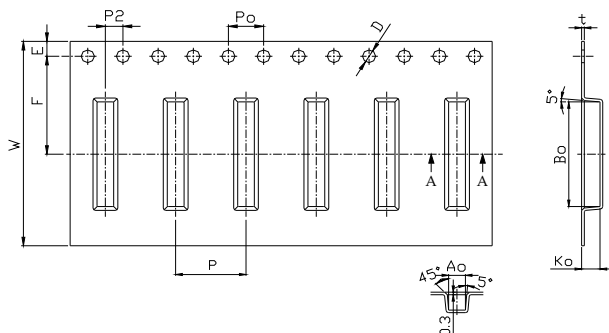
9. Packaging Information

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

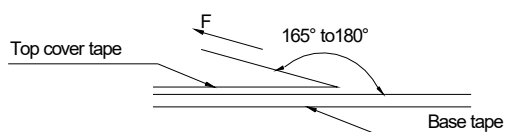


9-3. Packaging Quantity

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.

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