

Specification for Approval

Date: 2010/03/22

Customer : _____

TAI-TECH P/N: **SWI0402F-SERIES**

CUSTOMER P/N: _____

DESCRIPTION: _____

QUANTITY: _____ pcs

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TAI-TECH Advanced Electronics Co., Ltd

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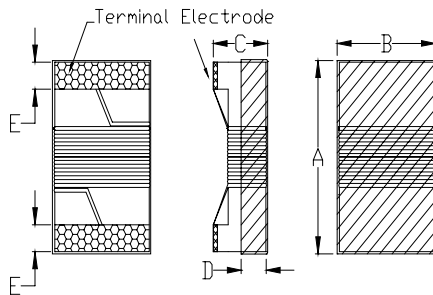
High Frequency Winding Type Chip Inductor SWI0402F-SERIES

1. Features

- 1.Ceramic core wire wound construction.
- 2.No batch to batch variations in inductance, SRF and Q that are present in ferrite inductors.
- 3.High Reliability due to ceramic wire wound construction.
- 4.High frequency application.
- 5.Small footprint as well as low profile.
- 6.This component is compliant with RoHS legislation and also support lead-free soldering.



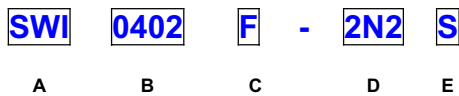
2. Dimensions



Size	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
SWI0402	1.19 max.	0.64 max.	0.66 max.	0.25 ref.	0.23±0.1

Unit:mm

3. Part Numbering

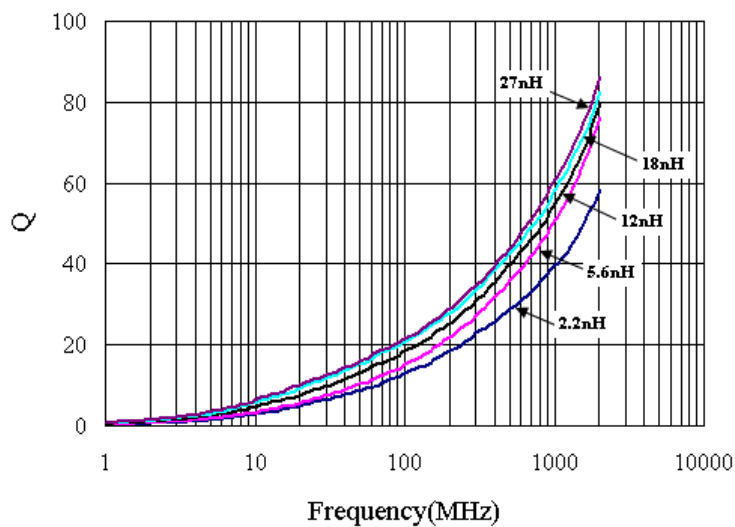
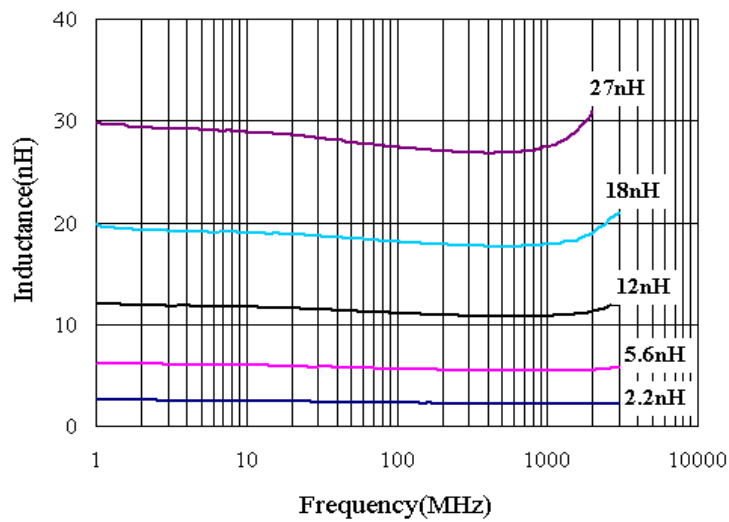


- A: Series
 B: Dimension LxW
 C: Lead free type
 D: Inductance 2N2=2.20nH
 E: Inductance Tolerance S=±0.3nH

4. Specification

Part Number	Inductance (nH)	Tolerance	Test Frequency (Hz)	Q @ 250MHz min.	Rated Current (mA) max.	DCR (Ω) max.	SRF (MHz) min.
SWI0402F-1N0□	1.0	B,S	0.1V/250M	16	1360	0.054	7000
SWI0402F-2N0□	2.0	B,S	0.1V/250M	16	1040	0.084	7000
SWI0402F-2N2□	2.2	B,S	0.1V/250M	19	960	0.084	7000
SWI0402F-2N7□	2.7	B,S	0.1V/250M	19	840	0.095	7000
SWI0402F-3N3□	3.3	B,S	0.1V/250M	19	840	0.079	7000
SWI0402F-3N9□	3.9	B,S	0.1V/250M	19	840	0.079	6000
SWI0402F-5N2□	5.2	B,J,K	0.1V/250M	20	640	0.120	4800
SWI0402F-5N6□	5.6	B,J,K	0.1V/250M	20	760	0.099	4700
SWI0402F-6N8□	6.8	B,J,K	0.1V/250M	20	680	0.099	4800

Part Number	Inductance (nH)	Tolerance	Test Frequency (Hz)	Q @ 250MHz min.	Rated Current (mA) max.	DCR (Ω) max.	SRF (MHz) min.
SWI0402F-8N2□	8.2	B,J,K	0.1V/250M	21	680	0.136	4400
SWI0402F-8N5□	8.5	B,J,K	0.1V/250M	24	680	0.150	4400
SWI0402F-9N0□	9.0	B,J,K	0.1V/250M	24	680	0.170	3900
SWI0402F-10N□	10	G,J,K	0.1V/250M	21	480	0.240	3900
SWI0402F-12N□	12	G,J,K	0.1V/250M	24	640	0.168	3600
SWI0402F-15N□	15	G,J,K	0.1V/250M	24	560	0.204	3300
SWI0402F-18N□	18	G,J,K	0.1V/250M	24	420	0.276	3100
SWI0402F-22N□	22	G,J,K	0.1V/250M	24	400	0.360	2800
SWI0402F-27N□	27	G,J,K	0.1V/250M	24	400	0.360	2500
SWI0402F-33N□	33	G,J,K	0.1V/250M	24	400	0.450	2400
SWI0402F-39N□	39	G,J,K	0.1V/250M	25	200	0.660	2100
SWI0402F-43N□	43	G,J,K	0.1V/250M	25	175	0.744	2000
SWI0402F-47N□	47	G,J,K	0.1V/250M	20	175	0.792	2100
SWI0402F-56N□	56	G,J,K	0.1V/250M	22	175	0.780	1800
SWI0402F-68N□	68	G,J,K	0.1V/250M	22	150	0.912	1600



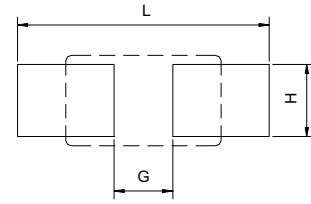
5. Reliability and Test Condition

Item	Performance	Test Condition											
Operating Temperature	-40~+85℃												
Electrical Performance Test													
Inductance L	Refer to standard electrical characteristic list	HP4291A, HP4287A											
Q													
SRF		HP4291A											
DC Resistance		HP4338B, Chroma 16502											
Rated Current		Applied the current to coils, the inductance change shall be less than 10% to initial value.											
Temperature Rise Test	20℃ MAX(Δt)	1. Applied the allowed DC current for 10 mins. 2. Temperature measure by digital surface thermometer.											
Mechanical Performance Test													
Resistance to Soldering Heat	1. Inductors shall be no evidence of electrical and mechanical damage. 2. Inductance : within $\pm 0.3nH$ of initial value for $\leq 4.7nH$. 3. Inductance : within $\pm 10\%$ of initial value for $\geq 6.8nH$. 4. Q shall not change more than $\pm 20\%$.	Temp.: 260 \pm 5℃ Time: 10 \pm 1.0 Sec											
Solderability Test	The terminal shall be at least 90% covered with solder.	After fluxing, inductor shall be dipped in a melted solder bath at 245 \pm 5℃ for 5 Sec.											
Reliability Test													
Humidity Test	1. Inductors shall be no evidence of electrical and mechanical damage. 2. Inductance : within $\pm 0.3nH$ of initial value for $\leq 4.7nH$. 3. Inductance : within $\pm 10\%$ of initial value for $\geq 6.8nH$. 4. Q shall not change more than $\pm 20\%$.	1. Temperature :50 \pm 2℃ 2. R.H. : 90-95% 3. Time : 48 \pm 2 Hours											
Thermal Shock Test		<table border="1"> <thead> <tr> <th colspan="3">Conditions of 1 cycle</th> </tr> <tr> <th>Step</th> <th>Temperature(℃)</th> <th>Times(min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40\pm5</td> <td>30\pm3</td> </tr> <tr> <td>2</td> <td>125\pm5</td> <td>30\pm3</td> </tr> </tbody> </table> Total:10 cycles	Conditions of 1 cycle			Step	Temperature(℃)	Times(min.)	1	-40 \pm 5	30 \pm 3	2	125 \pm 5
Conditions of 1 cycle													
Step	Temperature(℃)	Times(min.)											
1	-40 \pm 5	30 \pm 3											
2	125 \pm 5	30 \pm 3											
High Temperature Load Life Test	Inductors shall be no evidence of short or open circuit.	1. Temp. : 85 \pm 2℃ 2. Time : 500 \pm 12 Hours 3. Load : Allowed DC current											
Humidity Load Life		1. Temp : 40 \pm 2℃ 2. R.H. : 90-95% 3. Time : 500 \pm 12 Hours 4. Load : Allowed DC current											
Low temperature storage test	1. Appearance : no damage 2. Inductance : within $\pm 0.3nH$ of initial value for $\leq 4.7nH$ 3. Inductance : within $\pm 10\%$ of initial value for $\geq 6.8nH$ 4. Q : within $\pm 20\%$ of initial value	1. Temperature:-40 \pm 2℃ 2. Applied current : rated current 3. Duration : 500 \pm 12hrs 4. Measured at room temperature after Placing for 2to 3hrs.											
Random Vibration Test	Appearance: Cracking, shipping and any other defects harmful to the characteristics should not be allowed. Impedance: within \pm 30%	Frequency: 10-55-10Hz for 1 min. Amplitude: 1.52mm Directions and times: X, Y, Z directions for 2 hours. A period of 2 hours in each of 3 mutually perpendicular directions (Total 6 hours).											

6. Soldering and Mounting

6-1. Recommended PC Board Pattern

Chip size							Land Patterns For Reflow Soldering		
Series	Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	L(mm)	G(mm)	H(mm)
SWI	0402	1.19max.	0.64max.	0.66max	0.25 ref	0.23±0.1	1.18	0.46	0.66



PC board should be designed so that products are not sufficient under mechanical stress as warping the board. Products shall be positioned in the sideways direction against the mechanical stress to prevent failure.

6-2. Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. 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.

6-2.1 Solder re-flow:

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

6-2.2 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.

- Note : • 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
- 280°C tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 3 sec.

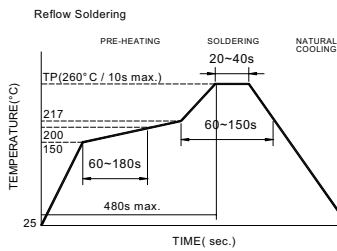


Figure 1. Re-flow Soldering(Lead Free)

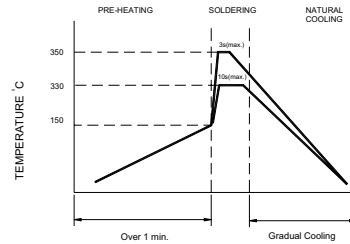
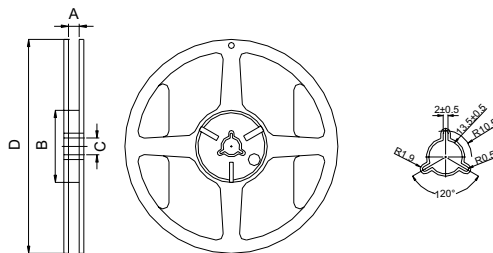


Figure 2. Hand Soldering

7. Packaging Information

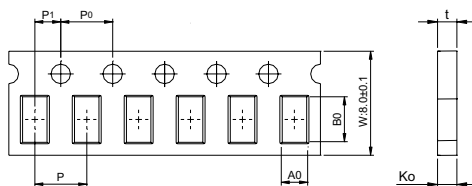
7-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	8.4±0.5	60±2	13.5±0.5	178±2

7-2.1 Tape Dimension / 8mm

■ Material of taping is paper

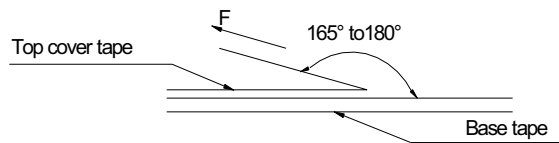


Series	Size	P(mm)	Po(mm)	P1(mm)	Bo(mm)	Ao(mm)	Ko(mm)	t(mm)
SWI	0402	2.0±0.1	4.0±0.1	2.0±0.1	1.12±0.1	0.62±0.1	0.60±0.1	0.60±0.1

7-3. Packaging Quantity

Chip size	0402	0402
Reel	3000	10000
Reel Size	7"x8mm	7"x8mm

7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

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

Application Notice

- Storage Conditions
 - To maintain the solderability of terminal electrodes:
 - 1. Temperature and humidity conditions: Less than 40°C and 70% RH.
 - 2. Recommended products should be used within 6 months from the time of delivery.
 - 3. 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.

单击下面可查看定价，库存，交付和生命周期等信息

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