



Wire Wound Chip Inductors

SWI0402HP Series



千如電子集團
ABC ELECTRONICS GROUP.

AOBA Technology (M) Sdn. Bhd.

INTRODUCTION

The SWI HP series are wire wound chip inductors widely used in the communication applications such as cellular phones, cable modem, ADSL, repeaters, Bluetooth, and other electronic devices. The wire wound inductors advance in higher self resonate frequency, better Q factor, and lower DCR than other 0402. Precious tolerance of 2% is available.

FEATURES

- Operating temperature -40 to +125°C for ceramic series.
- Excellent solderability and resistance to soldering heat.
- Suitable for reflow soldering.
- High reliability and easy surface mount assembly.
- Wide range of inductance values are available for flexible needs.

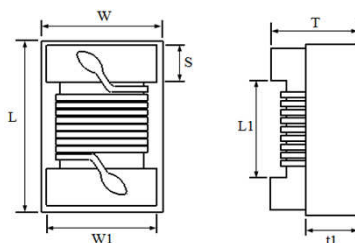
PART NUMBER

SWI 0402 HP 10N J - □□

1 2 3 4 5

1 Product Type

2 Chip Dimension



Size (inch) mm	Length (L) (inch) mm	Width (W) (inch) mm	Thickness (T) (inch) mm	Terminal (S) (inch) mm	Width (W1) (inch) mm	(t1) (Ref.) mm
SWI 0402 1005	(0.039 ± 0.004) 1.00 ± 0.10	(0.022 ± 0.004) 0.55 ± 0.10	(0.020 ± 0.004) 0.50 ± 0.10	(0.008 ± 0.004) 0.20 ± 0.10	(0.0196 ref.) 0.50 ref.	0.2

3 Inductance Value 3N3 = 3.3nH 33N = 33nH

4 Tolerance B = ±0.2nH S = ±0.3nH G = ±2% J = ±5% K = ±10%

5 Internal Code

1 Scope

This specification applies to fixed inductors of the following types used in electronic equipment :

*Ceramic Type : For lower inductance with high Q factor at high frequency and stable circuit requirement.

2 Construction

*Configuration & Dimension : Please refer to the attached figures and tables.

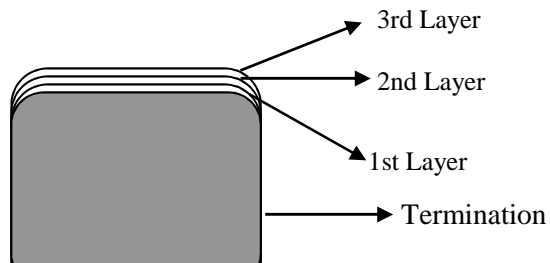
*Terminals : Consist of Mo/Mn or Ag alloy followed by Nickel, then Au plating for easier soldering.

3 Operating Temperature Range

Operating Temperature Range is the scope of ambient temperature at which the inductor can be operated continuously at rated current.

*Temp. Range : Ceramic material -40°C ~ +125°C

4 Ingredient of terminals electrode



Ceramic Type :

1st Layer : Mo/Mn or Ag

2nd Layer : Nickel (Ni)

3rd Layer : Gold (Au)

5 Characteristics

Standard Atmospheric Conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows:

Ambient Temperature : 25°C ± 2°C

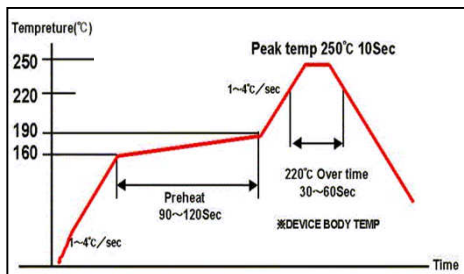
Relative Humidity : 60% to 70%

Air Pressure : 86Kpa to 106Kpa

Temperature Profile

1 Reflow Temperature Profile

(Temperature of the mounted parts surface on the printed circuit board)



Recommended Peak Temperature : 250°C Max

250°C up /within 10secs

Max. Reflow temperature : 260°C

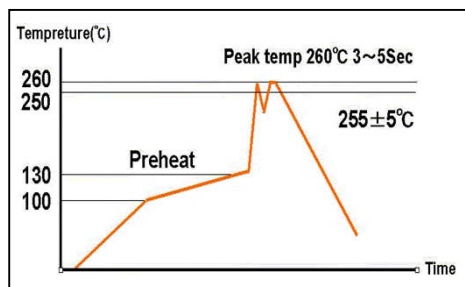
Gradient of temperature rise : av 1-4°C/sec

Preheat : 160-190°C/within 90-120secs

220°C up /within 30-60secs

Composition of solder Sn-3Ag-0.5Cu

2 Dip Temperature



Solder bathtub temperature : 260°C max
within 5secs.

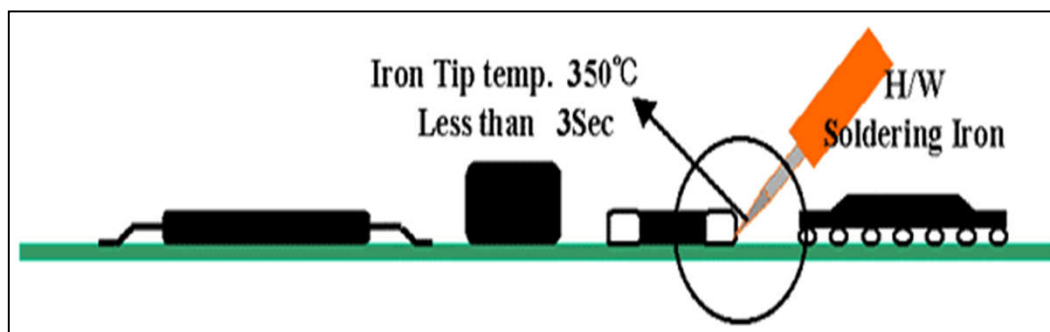
Preheating temperature : 100~130°C
deposit solder temperature.

Composition of solder Sn-3Ag-0.5Cu

3 Soldering iron tip temperature :

Recommended temperature : 350°C max / within 3 seconds.

Maximum temperature : 380°C max / within 3 seconds.



SWI0402HP Series

Part No.	Inductance ¹ (nH)	Tolerance	Q ² Min	S.R.F. ³ Min (MHz)	RDC ⁴ Max (Ω)	IDC ⁵ Max (mA)
SWI0402HP 2N0 □-□□	2.0 @ 250MHz	B, S	22 @ 250MHz	8500	0.038	2100
SWI0402HP 2N2 □-□□	2.2 @ 250MHz	B, S	22 @ 250MHz	8500	0.038	2100
SWI0402HP 2N7 □-□□	2.7 @ 250MHz	B, S	22 @ 250MHz	8500	0.056	1500
SWI0402HP 3N3 □-□□	3.3 @ 250MHz	K, J, B	23 @ 250MHz	8500	0.045	1700
SWI0402HP 3N6 □-□□	3.6 @ 250MHz	K, J, B	23 @ 250MHz	8500	0.045	1700
SWI0402HP 3N9 □-□□	3.9 @ 250MHz	K, J, B	23 @ 250MHz	8500	0.045	1700
SWI0402HP 4N3 □-□□	4.3 @ 250MHz	K, J, B	22 @ 250MHz	7150	0.055	1500
SWI0402HP 4N7 □-□□	4.7 @ 250MHz	K, J, B	20 @ 250MHz	6850	0.075	1400
SWI0402HP 5N1 □-□□	5.1 @ 250MHz	K, J, B	23 @ 250MHz	6800	0.085	1300
SWI0402HP 5N6 □-□□	5.6 @ 250MHz	K, J, B	23 @ 250MHz	6500	0.055	1500
SWI0402HP 6N2 □-□□	6.2 @ 250MHz	K, J, B	25 @ 250MHz	5800	0.065	1400
SWI0402HP 6N8 □-□□	6.8 @ 250MHz	K, J, B	25 @ 250MHz	5800	0.065	1400
SWI0402HP 7N5 □-□□	7.5 @ 250MHz	K, J, B	25 @ 250MHz	5400	0.080	1400
SWI0402HP 8N2 □-□□	8.2 @ 250MHz	K, J, B	25 @ 250MHz	5400	0.085	1300
SWI0402HP 8N7 □-□□	8.7 @ 250MHz	K, J, B	25 @ 250MHz	5000	0.085	1300
SWI0402HP 9N0 □-□□	9.0 @ 250MHz	K, J, B	25 @ 250MHz	5000	0.085	1300
SWI0402HP 9N5 □-□□	9.5 @ 250MHz	K, J, B	25 @ 250MHz	4700	0.095	1200
SWI0402HP 10N □-□□	10 @ 250MHz	K, J, G	25 @ 250MHz	4700	0.085	1300
SWI0402HP 11N □-□□	11 @ 250MHz	K, J, G	25 @ 250MHz	4700	0.090	1300
SWI0402HP 12N □-□□	12 @ 250MHz	K, J, G	26 @ 250MHz	4400	0.090	1100
SWI0402HP 13N □-□□	13 @ 250MHz	K, J, G	25 @ 250MHz	4200	0.140	900
SWI0402HP 15N □-□□	15 @ 250MHz	K, J, G	26 @ 250MHz	3900	0.130	1000
SWI0402HP 16N □-□□	16 @ 250MHz	K, J, G	26 @ 250MHz	3700	0.130	850
SWI0402HP 18N □-□□	18 @ 250MHz	K, J, G	26 @ 250MHz	3550	0.140	850
SWI0402HP 19N □-□□	19 @ 250MHz	K, J, G	26 @ 250MHz	3500	0.145	850
SWI0402HP 20N □-□□	20 @ 250MHz	K, J, G	26 @ 250MHz	3500	0.155	800
SWI0402HP 21N □-□□	21 @ 250MHz	K, J, G	26 @ 250MHz	3300	0.160	800
SWI0402HP 22N □-□□	22 @ 250MHz	K, J, G	26 @ 250MHz	3300	0.160	800
SWI0402HP 23N □-□□	23 @ 250MHz	K, J, G	26 @ 250MHz	3300	0.190	700
SWI0402HP 24N □-□□	24 @ 250MHz	K, J, G	26 @ 250MHz	3150	0.180	650
SWI0402HP 25N □-□□	25 @ 250MHz	K, J, G	25 @ 250MHz	3150	0.180	650
SWI0402HP 26N □-□□	26 @ 250MHz	K, J, G	25 @ 250MHz	3150	0.170	700
SWI0402HP 27N □-□□	27 @ 250MHz	K, J, G	26 @ 250MHz	3200	0.220	600
SWI0402HP 30N □-□□	30 @ 250MHz	K, J, G	25 @ 250MHz	2900	0.275	500
SWI0402HP 33N □-□□	33 @ 250MHz	K, J, G	25 @ 250MHz	2800	0.320	490

SWIO402HP Series

Part No.	Inductance ¹ (nH)	Tolerance	Q ² Min	S.R.F. ³ Min (MHz)	RDC ⁴ Max (Ω)	IDC ⁵ Max (mA)
SWI0402HP 36N □-□□	36 @ 250MHz	K, J, G	26 @ 250MHz	2800	0.360	480
SWI0402HP 37N □-□□	37 @ 250MHz	K, J, G	25 @ 250MHz	2700	0.430	470
SWI0402HP 39N □-□□	39 @ 250MHz	K, J, G	25 @ 250MHz	2600	0.430	450
SWI0402HP 40N □-□□	40 @ 250MHz	K, J, G	26 @ 250MHz	2600	0.430	450
SWI0402HP 43N □-□□	43 @ 250MHz	K, J, G	26 @ 250MHz	2500	0.500	450
SWI0402HP 47N □-□□	47 @ 200MHz	K, J, G	22 @ 200MHz	2400	0.550	420
SWI0402HP 51N □-□□	51 @ 200MHz	K, J	22 @ 200MHz	2300	0.750	360
SWI0402HP 56N □-□□	56 @ 200MHz	K, J	22 @ 200MHz	2070	0.850	330
SWI0402HP 68N □-□□	68 @ 200MHz	K, J	22 @ 200MHz	1840	0.950	320

When ordering, please specify tolerance

Tolerance : B=±0.20nH, S=±0.30nH, G=±2%,

J=±5%, K=±10%

1. Inductance is measured in HP-4287A RF LCR meter with HP-16193 fixture.
2. Q is measured in HP-4287A RF LCR meter with HP-16193 fixture.

3. SRF is measured in ENA E5071B network analyzer or equivalent.

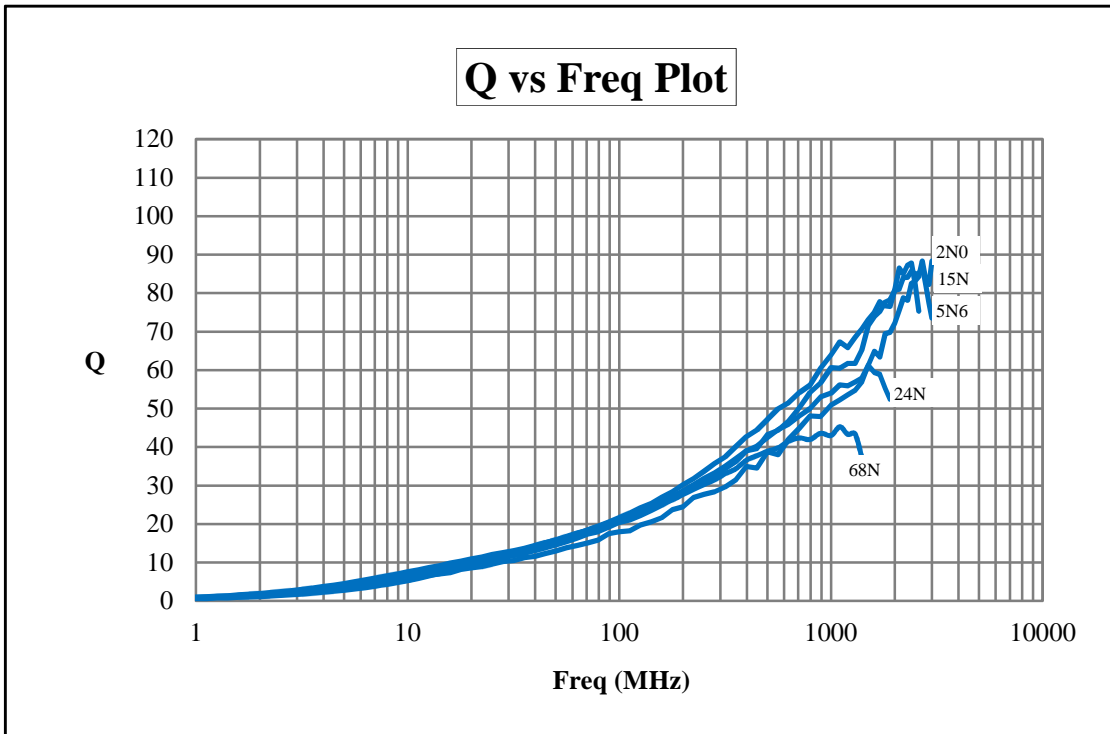
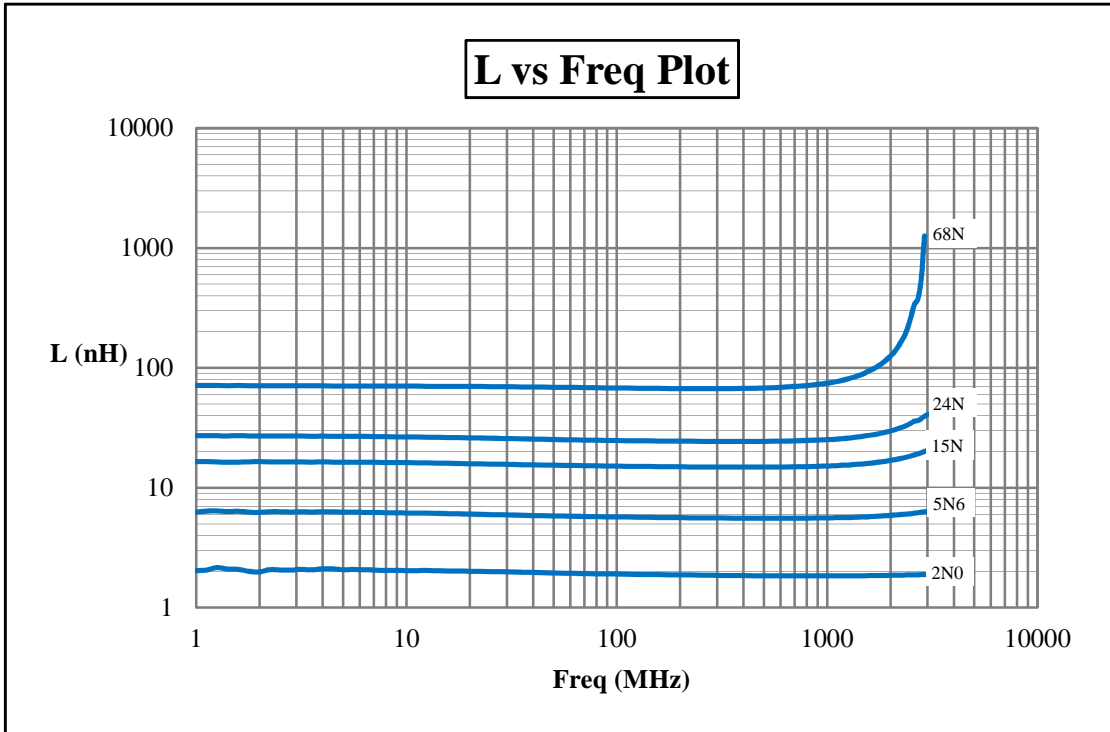
4. RDC is measured in HP-4338B milliohmeter or equivalent.

5. For 25 °C Rise.

Remarks :

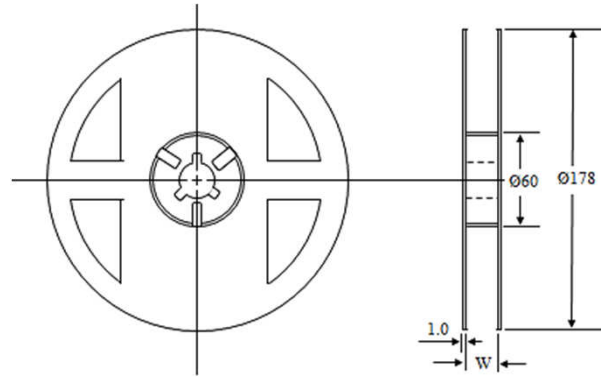
Unit weight = 0.0008g (for ref.)

Without marking on the top surface of the product.

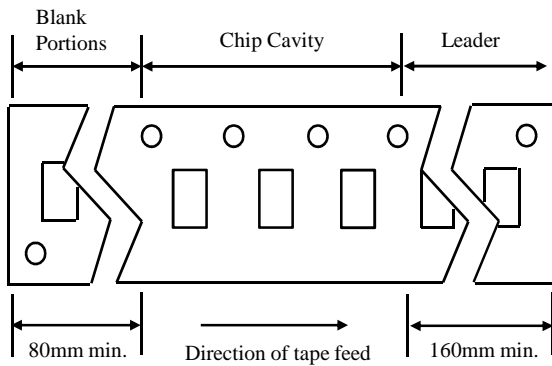
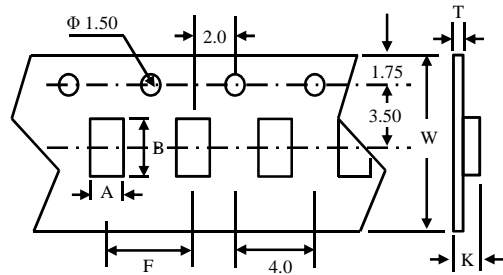


ITEM		CONDITION	SPECIFICATION
Electrical Characteristics	Inductance and Tolerance	Measuring Frequency : As shown in Product Table	Within Specified Tolerance
	Quality Factor	Measuring Temperature : +25°C	
	Insulation Resistance	Measured at 100V DC between inductor terminals and center of case.	1000 mega ohms minimum
	Dielectric Withstanding Voltage	Measured at 500V AC between inductor terminals and center of case for a maximum of 1 minute.	No damage occurs when the test voltage is applied.
	Temperature Coefficient of Inductance (TCL)	Over -40°C to +85°C at frequency specified in Product Table.	+25 to 500 ppm/°C $TCL = \frac{L1 - L2}{L1(T1 - T2)} \times 10^6$ (ppm /°C)
Mechanical Characteristics	Component Adhesion (Push Test)	The component shall be reflow soldered onto a P.C. Board (240°C ± 5°C for 20 seconds). Then a dynamometer force gauge shall be applied to any side of the component.	0402 series - 350g minimum 0603 series - 900g minimum
	Drop Test	The inductor shall be dropped two times on the concrete floor or the vinyl tile from 1M naturally.	Change In Inductance: No more than 5%
	Thermal Shock Test	Each cycle shall consist of 30 minutes at -40°C followed by 30 minutes at +85°C with a 5 minutes transition time between temperature extremes. Test duration is 10 cycles.	Change In Q: No more than 10% Change In Appearance: Without distinct damage
Endurance Characteristics	Solderability	Dip pads in flux and dip in solder pot containing lead free solder at 240°C ± 5°C for 5 seconds.	A minimum of 80% of the metalized area must be covered with solder.
	Resistance to Soldering Heat	Dip the components into flux and dip into solder pot containing lead free solder at 260°C ± 5°C for 5 ± 2 seconds.	Change In Inductance: No more than 5%
	Vibration (Random)	Inductors shall be randomly vibrated at amplitude of 1.5mm and frequency of 10-55Hz : 0.04G/Hz for a minimum of 15 minutes per axis for each of the three axes.	Change In Q: No more than 10%
	Cold Temperature Storage	Inductors shall be stored at temperature of -40°C ± 2°C for 1000hrs (+48 -0 hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	Change In Appearance: Without distinct damage
	High Temperature Storage	Inductors shall be stored at temperature of 85°C ± 2°C for 1000hrs (+48 -0 hrs.) Then inductors shall be subjected to standard atmospheric conditions for 1 hour. After that, measurement shall be made.	
	Moisture Resistance	Inductors shall be stored in the chamber at 45°C at 90-95 R.H. for 1000 hours. Then inductors are to be tested after 2 hours at room temperature.	Inductors shall not have a shorted or open winding.
	High Temperature with Loaded	Inductors shall be stored in the chamber at +85°C for 1000 hours with rated current applied. Inductors shall be tested at the beginning of test at 500 hours and 1000 hours. Then inductors are to be tested after 1 hour at room temperature.	

Type	Pcs/Reel
SWI0402	10,000

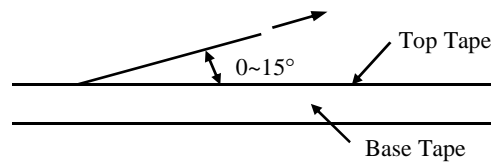


Type	Chip Cavity		Insert Pitch	Tape Thickness		
	A	B		K	T	W
SWI0402	0.74	1.23	2.00	0.60	0.70	8.00



Top Tape Strength

The top tape requires a peel-off force of 0.2 to 0.7N in the direction of the arrow as illustrated below.



Dimensions (unit : m/m)

Type	A	B	C
SWI0402	1.20	0.45	0.65

Recommended Pattern

