Wire Wound Chip Inductors

SWI0402CT Series

ABC 千如電子集團 ABC ELECTRONICS GROUP.
AOBA Technology (M) Sdn. Bhd.

INTRODUCTION

The SWI 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 much more stable performance. 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.

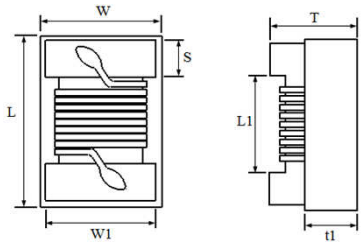
PART NUMBER

SWI 0402 C T 10N J - □□

1 2 3 taping 4 5 6

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	L1 (Ref.) mm	W1 (Ref.) mm	t_1 (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	0.60	0.48	0.20

3 Material Type C : Ceramic

4 Inductance Value 1N0 = 1.0nH 10N = 10nH R10 = 100nH

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

6 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.

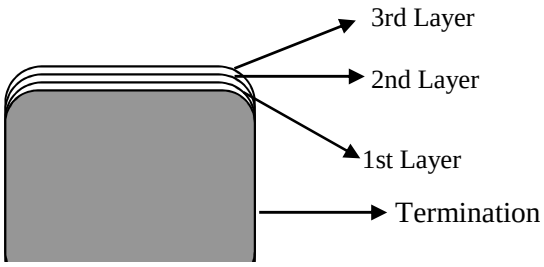
*Terminals : Consist of Mo/Mn or Ag alloy followed by Nickel, then Au platting for easier soldering.

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

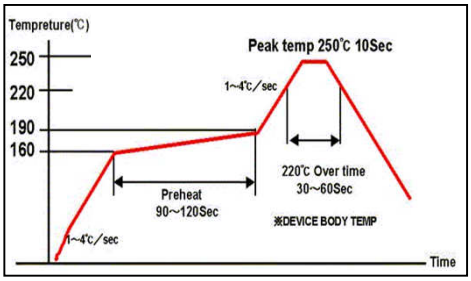
Relative Humidity : 60% to 70%

Air Pressure : 86Kpa to 106Kpa

Temperature Profile

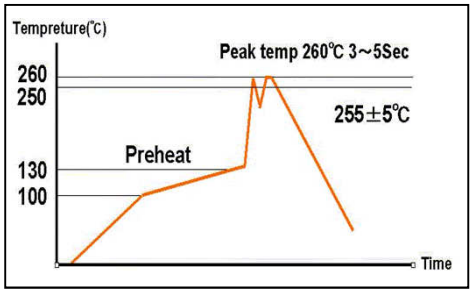
1 Reflow Temperature Profile

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



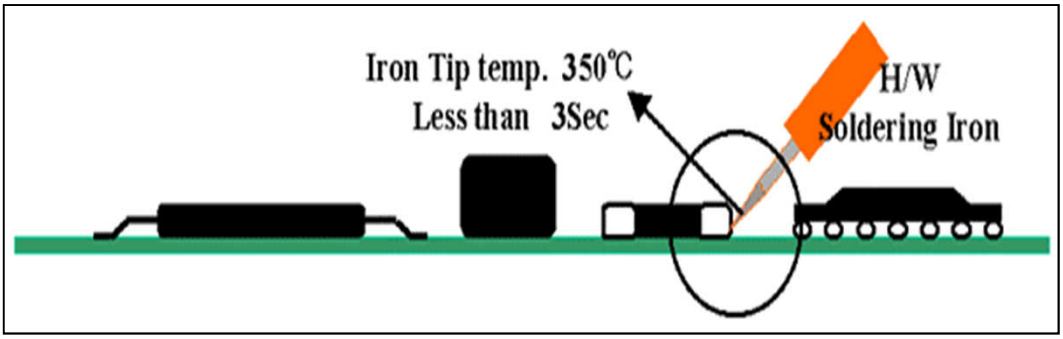
Recommended Peak Temperature : 250℃ Max
250℃ up /within 10secs
Max. Reflow temperature : 260°C
Gradient of temperature rise : av 1-4℃/sec
Preheat : 160-190℃/within 90-120secs
220℃ up /within 30-60secs
Composition of solder Sn-3Ag-0.5Cu

2 Dip Temperature



Solder bathtub temperature : 260℃ max
within 5secs.
Preheating temperature : 100～130℃
deposit solder temperature.
Composition of solder Sn-3Ag-0.5Cu

3 Soldering iron tip temperature : 350°C max / within 3 seconds.



Part No.	Inductance [1] (nH)	Tolerance	Q [2]		S.R.F.[3] Min (MHz)	RDC [4] Max (Ω)	IDC [5] Max (mA)
			Min	Typical @900MHz			
SWI0402CT 1N0 □-□□	1.0 @ 250MHz	B, S	13	26	6000	0.045	1360
SWI0402CT 1N9 □-□□	1.9 @ 250MHz	B, S	16	29	6000	0.070	1040
SWI0402CT 2N0 □-□□	2.0 @ 250MHz	B, S	16	30	6000	0.070	1040
SWI0402CT 2N2 □-□□	2.2 @ 250MHz	B, S	18	32	6000	0.070	960
SWI0402CT2N4 □-□□	2.4 @ 250MHz	B, S	16	35	6000	0.068	790
SWI0402CT 2N7 □-□□	2.7 @ 250MHz	B, S	16	31	6000	0.120	860
SWI0402CT 3N3 □-□□	3.3 @ 250MHz	K, J, B	20	41	6000	0.066	840
SWI0402CT 3N6 □-□□	3.6 @ 250MHz	K, J, B	20	43	6000	0.066	840
SWI0402CT 3N9 □-□□	3.9 @ 250MHz	K, J, B	20	41	5800	0.066	840
SWI0402CT 4N3 □-□□	4.3 @ 250MHz	K, J, B	18	45	6000	0.091	700
SWI0402CT 4N7 □-□□	4.7 @ 250MHz	K, J, B	15	45	4775	0.130	640
SWI0402CT 5N1 □-□□	5.1 @ 250MHz	K, J, B	23	49	5800	0.083	800
SWI0402CT 5N6 □-□□	5.6 @ 250MHz	K, J, B	23	46	5800	0.083	760
SWI0402CT 6N2 □-□□	6.2 @ 250MHz	K, J, B	23	49	5800	0.083	760
SWI0402CT 6N8 □-□□	6.8 @ 250MHz	K, J, B	20	50	4800	0.083	680
SWI0402CT 7N5 □-□□	7.5 @ 250MHz	K, J, B	25	50	5800	0.104	680
SWI0402CT 8N2 □-□□	8.2 @ 250MHz	K, J, B	25	49	4400	0.104	680
SWI0402CT 8N7 □-□□	8.7 @ 250MHz	K, J, B	18	50	4100	0.200	480
SWI0402CT 9N0 □-□□	9.0 @ 250MHz	K, J, B	25	49	4160	0.104	680
SWI0402CT 9N5 □-□□	9.5 @ 250MHz	K, J, B	18	45	4000	0.200	680
SWI0402CT 10N □-□□	10 @ 250MHz	K, J, G	23	47	3900	0.195	480
SWI0402CT 11N □-□□	11 @ 250MHz	K, J, G	26	56	3680	0.120	640
SWI0402CT 12N □-□□	12 @ 250MHz	K, J, G	26	51	3600	0.120	640
SWI0402CT 13N □-□□	13 @ 250MHz	K, J, G	24	54	3450	0.210	560
SWI0402CT 15N □-□□	15 @ 250MHz	K, J, G	26	54	3280	0.172	560
SWI0402CT 16N □-□□	16 @ 250MHz	K, J, G	24	54	3100	0.220	560
SWI0402CT 18N □-□□	18 @ 250MHz	K, J, G	25	52	3100	0.230	520
SWI0402CT 19N □-□□	19 @ 250MHz	K, J, G	26	50	3040	0.202	480
SWI0402CT 20N □-□□	20 @ 250MHz	K, J, G	25	51	3000	0.250	420
SWI0402CT 22N □-□□	22 @ 250MHz	K, J, G	25	52	2800	0.300	400
SWI0402CT 23N □-□□	23 @ 250MHz	K, J, G	26	53	2720	0.214	400
SWI0402CT 24N □-□□	24 @ 250MHz	K, J, G	25	51	2700	0.300	400
SWI0402CT 27N □-□□	27 @ 250MHz	K, J, G	26	48	2480	0.298	400
SWI0402CT 30N □-□□	30 @ 250MHz	K, J, G	25	46	2350	0.300	400
SWI0402CT 33N □-□□	33 @ 250MHz	K, J, G	24	48	2350	0.350	400

SWI0402CT Series

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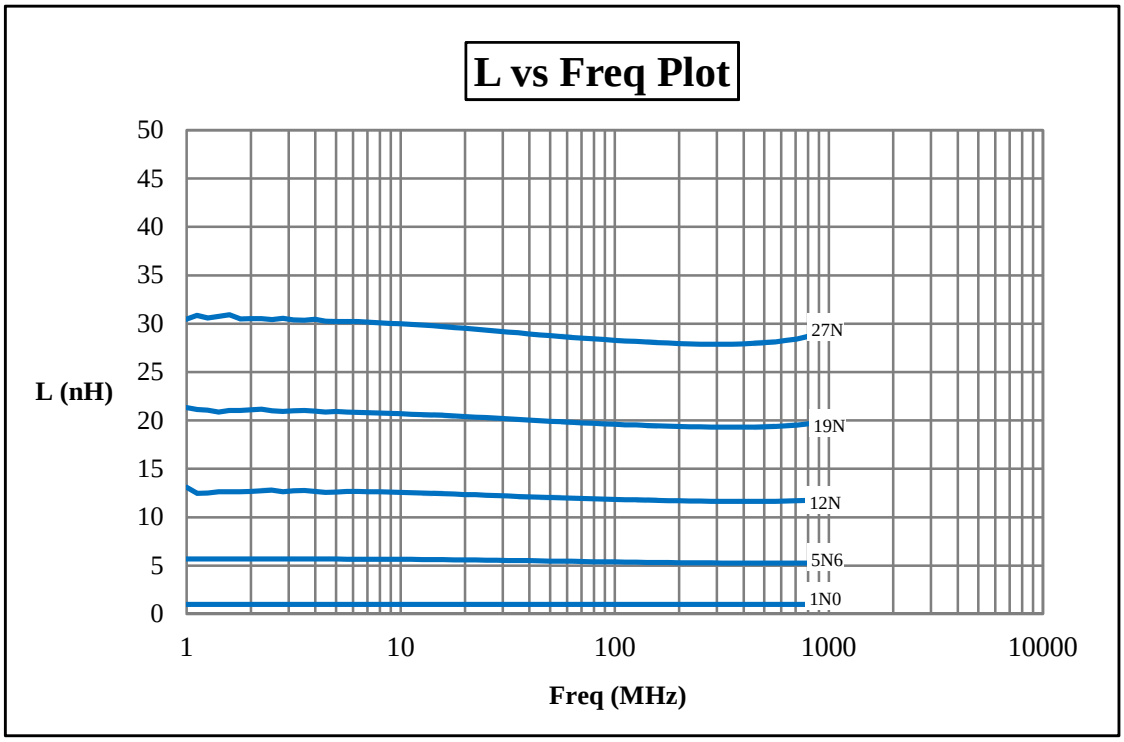
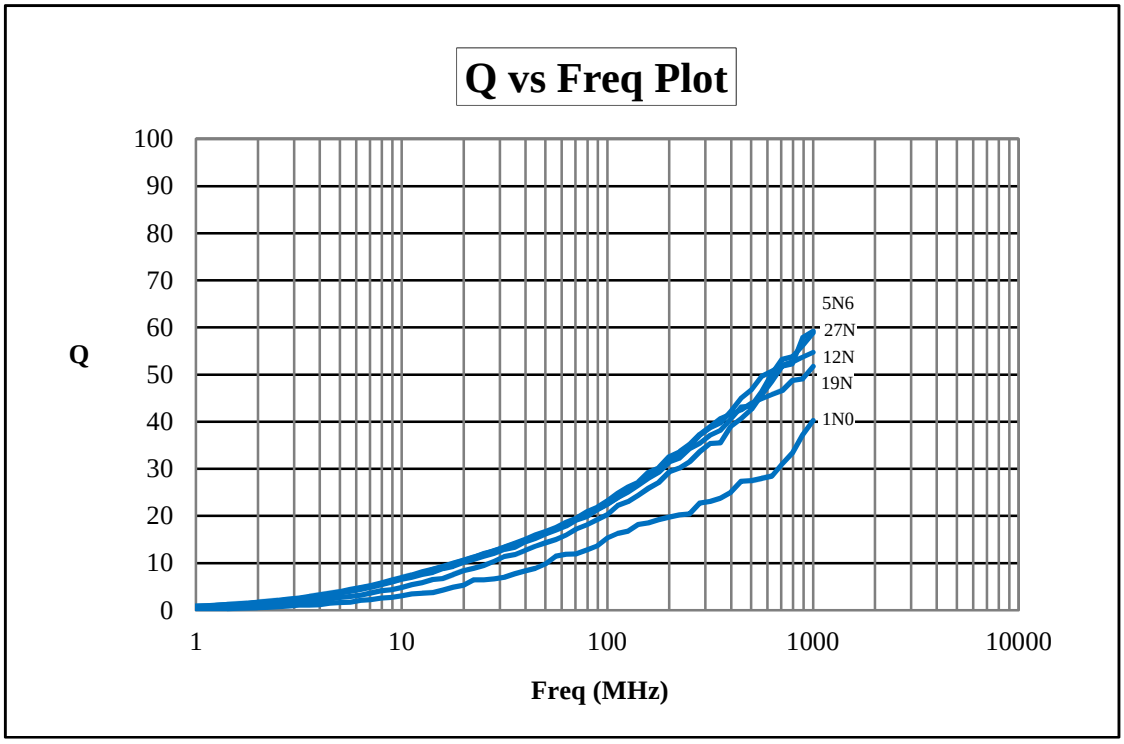
Part No.	Inductance [1] (nH)	Tolerance	Q [2]		S.R.F.[3] Min (MHz)	RDC [4] Max (Ω)	IDC [5] Max (mA)
			Min	Typical @900MHz			
SWI0402CT 36N □-□□	36 @ 250MHz	K, J, G	26	48	2320	0.403	320
SWI0402CT 39N □-□□	39 @ 250MHz	K, J, G	25	45	2100	0.550	320
SWI0402CT 40N □-□□	40 @ 250MHz	K, J, G	26	48	2240	0.438	320
SWI0402CT 43N □-□□	43 @ 250MHz	K, J, G	25	46	2030	0.810	240
SWI0402CT 47N □-□□	47 @ 200MHz	K, J, G	26	46	2100	0.830	210
SWI0402CT 51N □-□□	51 @ 200MHz	K, J	25	40	1750	0.820	210
SWI0402CT 56N □-□□	56 @ 200MHz	K, J	22	42	1760	0.970	200
SWI0402CT 68N □-□□	68 @ 200MHz	K, J	22	36	1620	1.120	180
SWI0402CT 75N □-□□	75 @ 150MHz	K, J	20	34	1550	1.200	160
SWI0402CT 82N □-□□	82 @ 150MHz	K, J	20	33	1500	1.250	150
SWI0402CT 91N □-□□	91 @ 150MHz	K, J	20	30	1350	2.300	120
SWI0402CT R10 □-□□	100 @ 150MHz	K, J	20	30	1300	2.520	120
SWI0402CT R12 □-□□	120 @ 150MHz	K, J	20	29	1100	2.660	110

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 15 °C Rise.

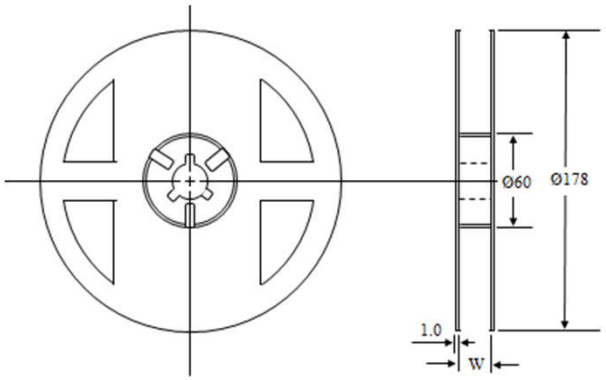
Remarks :
Unit weight = 0.0008g (for ref.)
Without marking on the top surface of the product.


L vs Freq Plot
L (nH)
50
45
40
35
30
25
20
15
10
5
0
1
10
100
1000
10000
Freq (MHz)
27N
19N
12N
5N6
1N0

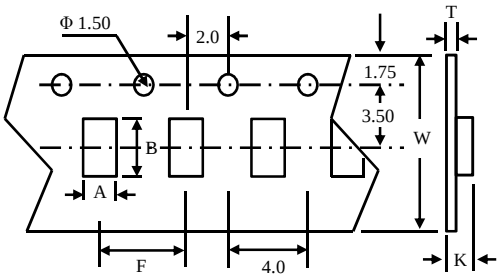

Q vs Freq Plot
Q
100
90
80
70
60
50
40
30
20
10
0
1
10
100
1000
10000
Freq (MHz)
5N6
27N
12N
19N
1N0

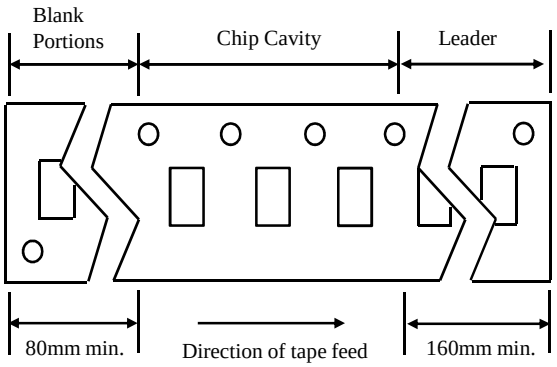
ITEM		CONDITION	SPECIFICATION
Electrical Characteristics	Inductance and Tolerance	Measuring Frequency : As shown in Product Table Measuring Temperature : +25°C	Within Specified Tolerance
	Quality Factor		
	Insulation Resistance	Measured at 100V DC between inductor terminals and center of case.	1000 mega 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 dynometer force gauge shall be applied to any side of the component.	0402 series - 350g 0603 series - 1.0Kg Other series - 0805 ~ 1210 Minimum 1Kg for Ag termination and 2Kg for Mo/Mn termination.
	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% Change In Q: No more than 10% Change In Appearance: Without distinct damage
	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.	
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% Change In Q: No more than 10% Change In Appearance: Without distinct damage
	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.	
	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.	
	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



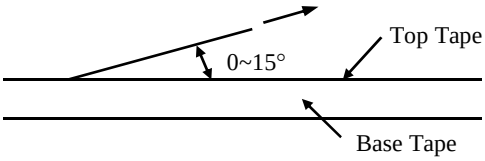
Type	Chip Cavity		Insert Pitch	Tape Thickness		
	A	B	F	K	T	W
SWI0402	0.74	1.23	2.00	0.60	0.70	8.00





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