

WIRE WOUND CHIP INDUCTORS SWI SERIES

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 and -40 to +85°C for ferrite 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.
- * Consisting of 0402 ~ 1210 size.

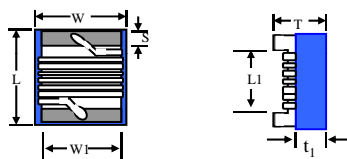
PART NUMBER

SWI 1210 C T 33N J -□□

1 2 3 Taping 4 5 6 (Internal Code)

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	CT Type		FT Type		(t ₁) (Ref.) mm
					L1(Ref.) mm	W1(Ref.) mm	L1(Ref.) mm	W1(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
SWI 0603 1608	(0.063 ± 0.008) 1.60 ± 0.20	(0.041 ± 0.008) 1.05 ± 0.20	(0.041 ± 0.008) 1.05 ± 0.20	(0.014 ± 0.004) 0.35 ± 0.10	0.80	0.95	-	-	0.50
SWI 0805 2012	(0.080 ± 0.008) 2.00 ± 0.20	(0.050 ± 0.008) 1.25 ± 0.20	(0.048 ± 0.008) 1.20 ± 0.20	(0.016 ± 0.004) 0.40 ± 0.10	1.10	1.15	1.20	*0.95~1.2	0.60
SWI 1008 2520	(0.102 ± 0.008) 2.60 ± 0.20	(0.083 ± 0.008) 2.10 ± 0.20	(0.067 ± 0.008) 1.70 ± 0.20	(0.020 ± 0.004) 0.50 ± 0.10	1.40	1.90	1.40	*1.60~1.9	0.70
SWI 1210 3225	(0.126 ± 0.008) 3.20 ± 0.20	(0.102 ± 0.008) 2.60 ± 0.20	(0.083 ± 0.008) 2.10 ± 0.20	(0.020 ± 0.004) 0.50 ± 0.10	2.05	2.10	2.10	2.40	1.10

3 Material Type

C : Ceramic Material F : Ferrite Material

4 Inductance Value

3N3 = 3.3 nH R33 = 330 nH 330 = 33 uH
33N = 33 nH 3R3 = 3.3 uH 101 = 100 uH

5 Tolerance

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

6 Internal Code

SWI0805FT Type SWI1008FT Type
* 0.95mm: -KY * 1.60mm: -KY
* 1.20mm: -02, -30 * 1.90mm: -02, -30

CHIP INDUCTOR SPECIFICATIONS

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.
- *Ferrite Type : For higher inductance at lower frequency circuit requirement.

2 Construction

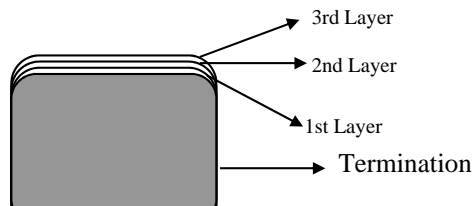
- *Configuration & Dimension : Please refer to the attached figures and tables.
- *Terminals : SWI series terminals shall consist of MoMn alloy or PdAg alloy followed by Nickel, then Au or solder plating for easier soldering.

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 to + 125°C
- : Ferrite Material : - 40°C to + 85°C

4 Ingredient of terminals electrode.



	<u>Ceramic Type</u>	<u>Ferrite Type</u>
a) 1st layer	: Mo/Mn or W or Ag	Ag/Pd
b) 2nd layer	: Nickel	Nickel
c) 3rd layer	: Gold	Sn

5 Characteristics

Standard Atmospheric Conditions

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

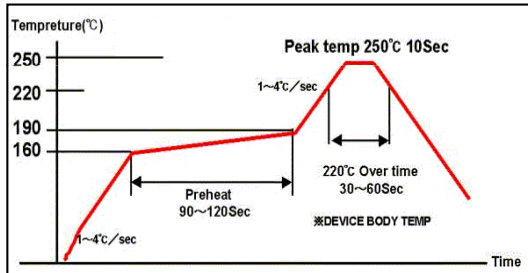
- Ambient Temperature : 25 °C ± 2 °C
- Relative Humidity : 60% to 70%
- Air Pressure : 86 Kpa to 106 Kpa

CHIP INDUCTOR SPECIFICATIONS

TEMPERATURE PROFILE

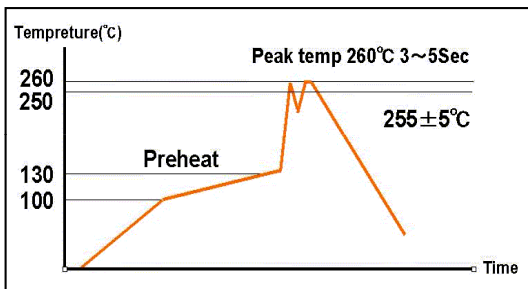
a Reflow temperature profile

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



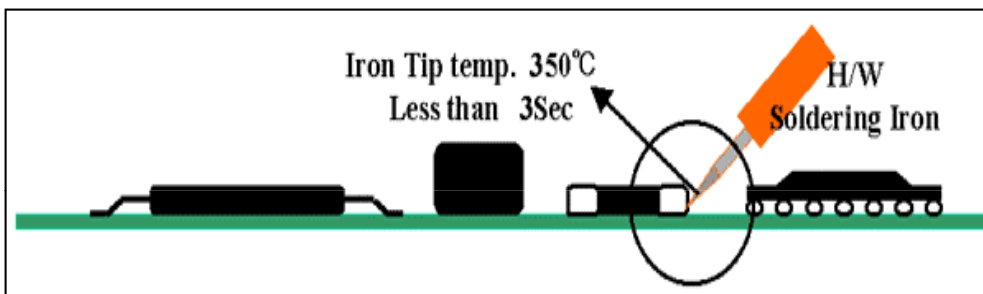
Recommended Peak Temperature: 250°C Max
 250°C up /within 10secs
 Max. Reflow temperature : 260°C.
 Gradient of temperature rise: av 1-4°C/sec
 Preheat: 160-190°C/within 90-120secs
 220°C up /within 30-60secs
 Composition of solder Sn-3Ag-0.5Cu

b 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

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



SWI 1210 CERAMIC SERIES (3225)

Part No.	Inductance ¹ (nH)	Percent Tolerance	Q ² Min	S.R.F. ³		RDC ⁴		IDC ⁵ Max (mA)	Marking
				Min (MHz)	Max (Ω)	Max (Ω)	Max (mA)		
SWI 1210 CT4N7 □-□□	4.7 @ 100 MHz	B, S	50 @ 1000 MHz	6000	0.06	1000	4N7		
SWI 1210 CT5N6 □-□□	5.6 @ 100 MHz	K, J, B	50 @ 1000 MHz	5500	0.08	1000	5N6		
SWI 1210 CT10N □-□□	10 @ 100 MHz	K, J, G	60 @ 500 MHz	4000	0.06	1000	10N		
SWI 1210 CT12N □-□□	12 @ 100 MHz	K, J, G	60 @ 500 MHz	3400	0.06	1000	12N		
SWI 1210 CT15N □-□□	15 @ 100 MHz	K, J, G	60 @ 500 MHz	3200	0.06	1000	15N		
SWI 1210 CT18N □-□□	18 @ 100 MHz	K, J, G	60 @ 300 MHz	2800	0.06	1000	18N		
SWI 1210 CT22N □-□□	22 @ 100 MHz	K, J, G	60 @ 300 MHz	2100	0.08	1000	22N		
SWI 1210 CT27N □-□□	27 @ 100 MHz	K, J, G	60 @ 300 MHz	1900	0.08	1000	27N		
SWI 1210 CT33N □-□□	33 @ 100 MHz	K, J, G	60 @ 300 MHz	1700	0.08	1000	33N		
SWI 1210 CT39N □-□□	39 @ 100 MHz	K, J, G	60 @ 300 MHz	1700	0.08	1000	39N		
SWI 1210 CT47N □-□□	47 @ 100 MHz	K, J, G	60 @ 300 MHz	1400	0.08	1000	47N		
SWI 1210 CT56N □-□□	56 @ 100 MHz	K, J, G	60 @ 300 MHz	1100	0.10	1000	56N		
SWI 1210 CT68N □-□□	68 @ 100 MHz	K, J, G	60 @ 300 MHz	1000	0.10	1000	68N		
SWI 1210 CT82N □-□□	82 @ 100 MHz	K, J, G	60 @ 300 MHz	1000	0.10	1000	82N		
SWI 1210 CTR10 □-□□	100 @ 100 MHz	K, J, G	60 @ 300 MHz	900	0.10	1000	R10		
SWI 1210 CTR12 □-□□	120 @ 50 MHz	K, J, G	60 @ 300 MHz	900	0.12	800	R12		
SWI 1210 CTR15 □-□□	150 @ 50 MHz	K, J, G	60 @ 300 MHz	800	0.18	800	R15		
SWI 1210 CTR18 □-□□	180 @ 50 MHz	K, J, G	60 @ 300 MHz	760	0.21	800	R18		
SWI 1210 CTR22 □-□□	220 @ 50 MHz	K, J, G	60 @ 300 MHz	660	0.27	800	R22		
SWI 1210 CTR27 □-□□	270 @ 50 MHz	K, J, G	50 @ 300 MHz	600	0.33	700	R27		
SWI 1210 CTR33 □-□□	330 @ 50 MHz	K, J, G	50 @ 100 MHz	550	0.37	650	R33		
SWI 1210 CTR39 □-□□	390 @ 50 MHz	K, J, G	50 @ 100 MHz	500	0.63	600	R39		
SWI 1210 CTR47 □-□□	470 @ 50 MHz	K, J, G	50 @ 100 MHz	450	0.69	550	R47		
SWI 1210 CTR56 □-□□	560 @ 50 MHz	K, J, G	50 @ 100 MHz	400	0.90	450	R56		
SWI 1210 CTR68 □-□□	680 @ 25 MHz	K, J, G	50 @ 100 MHz	380	1.05	400	R68		
SWI 1210 CTR82 □-□□	820 @ 25 MHz	K, J, G	50 @ 100 MHz	350	1.45	350	R82		
SWI 1210 CT1R0 □-□□	1000 @ 25 MHz	K, J, G	45 @ 100 MHz	300	1.90	280	1R0		
SWI 1210 CT1R2 □-□□	1200 @ 7.96 MHz	K, J	45 @ 50 MHz	300	2.20	250	1R2		
SWI 1210 CT1R5 □-□□	1500 @ 7.96 MHz	K, J	45 @ 50 MHz	250	2.43	220	1R5		
SWI 1210 CT1R8 □-□□	1800 @ 7.96 MHz	K, J	45 @ 50 MHz	200	3.36	180	1R8		
SWI 1210 CT2R2 □-□□	2200 @ 7.96 MHz	K, J	40 @ 50 MHz	200	3.50	150	2R2		

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

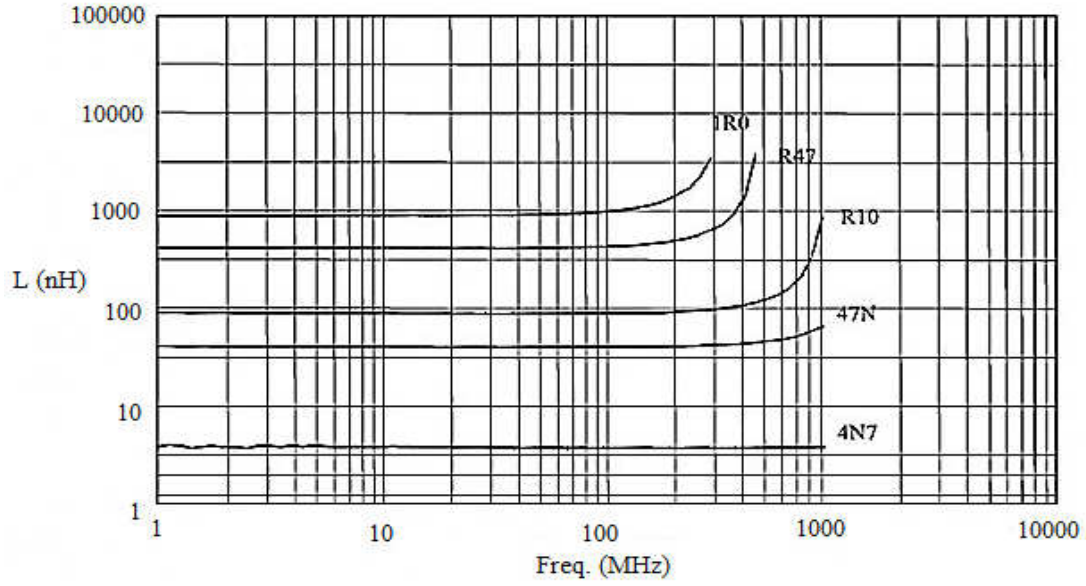
4. RDC is measured in HP-4338B milliohmeter.

5. For 15 °C Rise.

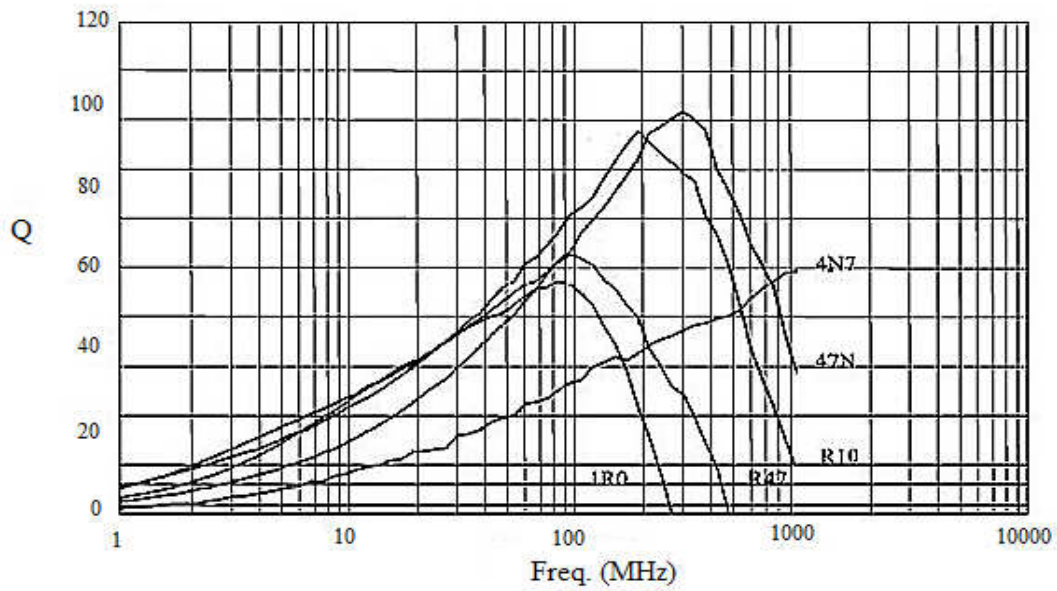
Unit weight = 0.045g (for ref.)

SWI 1210 (3325) CERAMIC SERIES

L vs Freq Plot



Q vs Freq Plot



SPECIFICATION

	ITEM	CONDITION	SPECIFICATION
Mechanical 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)
	Electrical 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.
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 20-second maximum transition time between temperature extremes. Test duration is 10 cycles.	Change In Q: No more than 10% Change In Appearance: Without distinct damage

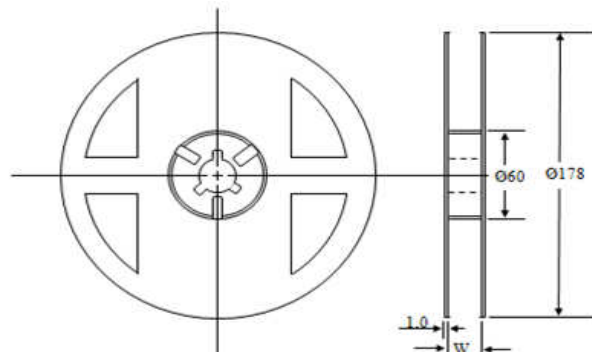
SPECIFICATION

	ITEM	CONDITION	SPECIFICATION
Endurance Characteristics	Solderability	Dip pads in flux and dip in solder pot containing lead free solder at $240\text{ }^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 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 $260\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ 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 - 55 Hz: 0.04 G / 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 $-40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ 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 $85\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 1000hrs (+48 - 0hrs.) 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 $45\text{ }^{\circ}\text{C}$ 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 $+85\text{ }^{\circ}\text{C}$ 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.	

PACKAGING INFORMATION

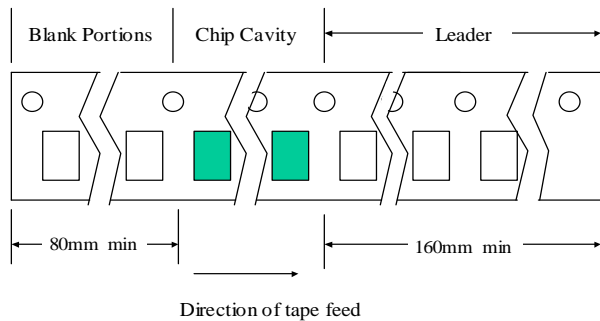
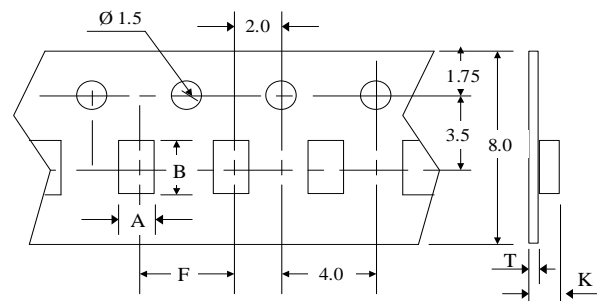
Packing Quantity

Type	Pcs / Reel
SWI0402	10,000
SWI0603	3,000
SWI0805	2,000
SWI1008	2,000
SWI1210	2,000



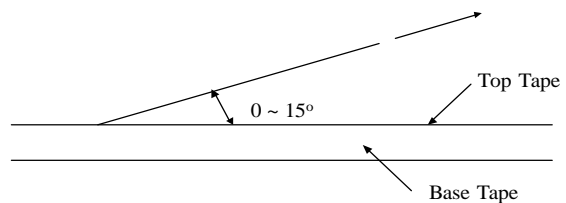
Dimensions (unit: m/m)

Type	Chip Cavity		Insert Pitch	Tape Thickness		
	A	B	F	K	T	W
SWI0402	0.70	1.20	2.00	-	0.70	8.00
SWI0603	1.40	1.90	4.00	1.15	0.20	8.00
SWI0805	1.42	2.26	4.00	1.30	0.20	8.00
SWI1008	2.23	2.73	4.00	1.80	0.20	8.00
SWI1210	2.69	3.56	4.00	2.40	0.20	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
SWI0603	1.90	0.65	1.00
SWI0805	2.60	0.75	1.30
SWI1008	3.00	1.20	2.20
SWI1210	4.00	1.70	2.82

Recommended Pattern

