

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

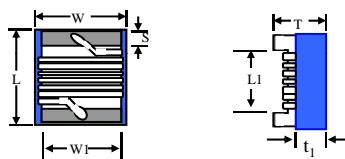
- * Operating temperature -40 to +125 °C for ceramic series and -40 to +85°C for ferrite series.
- * Excellent solderability and resistance to soldering heat .
- * Suitable for reflow soldering..
- * High reliability and easy surface mount assembly.
- * Wide range of inductance values are available for 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

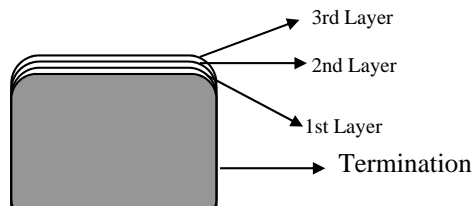
- *Configuration & Dimension : Please refer to the attached figures and tables.
- *Terminals : SWI series terminals shall consist of MoMn alloy or PdAg alloy followed by Nickel, then Au or solder plating for easier soldering.

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 :

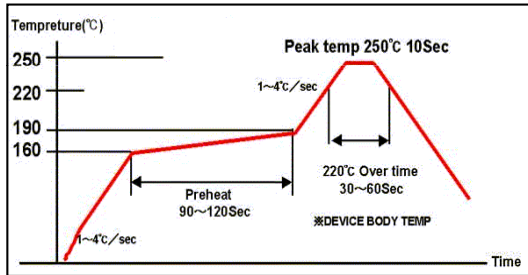
- Ambient Temperature : 25 °C ± 2 °C
- Relative Humidity : 60% to 70%
- Air Pressure : 86 Kpa to 106 Kpa

CHIP INDUCTOR SPECIFICATIONS

TEMPERATURE PROFILE

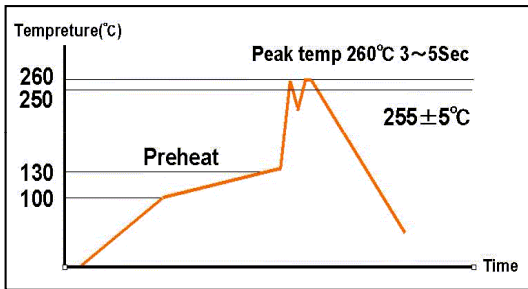
a Reflow temperature profile

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



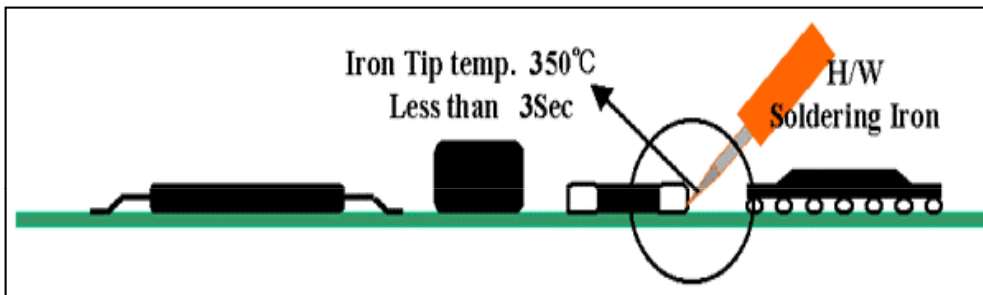
Recommended Peak Temperature: 250°C Max
 250°C up /within 10secs
 Max. Reflow temperature : 260°C.
 Gradient of temperature rise: av 1-4°C/sec
 Preheat: 160-190°C/within 90-120secs
 220°C up /within 30-60secs
 Composition of solder Sn-3Ag-0.5Cu

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.



WIRE WOUND CHIP INDUCTOR

SWI 0805 (2012) CERAMIC SERIES

Part No.	Inductance ¹ (nH)	Percent Tolerance	Q ² Min	S.R.F. ³ Min (MHz)	RDC ⁴ Max (Ω)	IDC ⁵ Max (mA)	Marking
SWI 0805 CT 2N2 □-□□	2.2 @ 250 MHz	B, S	50 @ 1000 MHz	6000	0.06	800	2N2
SWI 0805 CT 2N7 □-□□	2.7 @ 250 MHz	B, S	35 @ 1000 MHz	6000	0.08	800	2N7
SWI 0805 CT 3N3 □-□□	3.3 @ 250 MHz	B, S	60 @ 1000 MHz	6000	0.08	800	3N3
SWI 0805 CT 3N9 □-□□	3.9 @ 250 MHz	B, S	60 @ 1000 MHz	6000	0.06	600	3N9
SWI 0805 CT 4N7 □-□□	4.7 @ 250 MHz	B, S	60 @ 1000 MHz	5800	0.06	600	4N7
SWI 0805 CT 5N1 □-□□	5.1 @ 250 MHz	K, J, B	60 @ 1000 MHz	5800	0.08	600	-
SWI 0805 CT 5N6 □-□□	5.6 @ 250 MHz	K, J, B	60 @ 1000 MHz	5800	0.08	600	5N6
SWI 0805 CT 6N8 □-□□	6.8 @ 250 MHz	K, J, B	60 @ 1000 MHz	5500	0.06	600	6N8
SWI 0805 CT 8N2 □-□□	8.2 @ 250 MHz	K, J, B	60 @ 1000 MHz	5500	0.06	600	8N2
SWI 0805 CT 10N □-□□	10 @ 250 MHz	K, J, G	60 @ 500 MHz	4800	0.08	600	10N
SWI 0805 CT 12N □-□□	12 @ 250 MHz	K, J, G	60 @ 500 MHz	4100	0.08	600	12N
SWI 0805 CT 15N □-□□	15 @ 250 MHz	K, J, G	60 @ 500 MHz	3600	0.08	600	15N
SWI 0805 CT 18N □-□□	18 @ 250 MHz	K, J, G	60 @ 500 MHz	3400	0.08	600	18N
SWI 0805 CT 22N □-□□	22 @ 250 MHz	K, J, G	60 @ 500 MHz	3300	0.10	600	22N
SWI 0805 CT 27N □-□□	27 @ 250 MHz	K, J, G	60 @ 500 MHz	2600	0.12	600	27N
SWI 0805 CT 33N □-□□	33 @ 250 MHz	K, J, G	60 @ 500 MHz	2400	0.15	500	33N
SWI 0805 CT 39N □-□□	39 @ 250 MHz	K, J, G	60 @ 500 MHz	2100	0.18	500	39N
SWI 0805 CT 47N □-□□	47 @ 200 MHz	K, J, G	60 @ 500 MHz	1700	0.15	500	47N
SWI 0805 CT 56N □-□□	56 @ 200 MHz	K, J, G	60 @ 500 MHz	1600	0.25	500	56N
SWI 0805 CT 68N □-□□	68 @ 200 MHz	K, J, G	60 @ 500 MHz	1450	0.27	500	68N
SWI 0805 CT 82N □-□□	82 @ 150 MHz	K, J, G	60 @ 500 MHz	1350	0.32	500	82N
SWI 0805 CT R10 □-□□	100 @ 150 MHz	K, J, G	60 @ 500 MHz	1200	0.43	500	R10
SWI 0805 CT R12 □-□□	120 @ 150 MHz	K, J, G	50 @ 250 MHz	1100	0.48	500	R12
SWI 0805 CT R15 □-□□	150 @ 100 MHz	K, J, G	50 @ 250 MHz	950	0.56	400	R15
SWI 0805 CT R18 □-□□	180 @ 100 MHz	K, J, G	50 @ 250 MHz	900	0.78	400	R18
SWI 0805 CT R22 □-□□	220 @ 100 MHz	K, J, G	50 @ 250 MHz	860	1.00	400	R22
SWI 0805 CT R27 □-□□	270 @ 100 MHz	K, J, G	45 @ 250 MHz	850	1.46	350	R27
SWI 0805 CT R33 □-□□	330 @ 100 MHz	K, J, G	45 @ 250 MHz	800	1.65	300	R33
SWI 0805 CT R39 □-□□	390 @ 100 MHz	K, J, G	45 @ 250 MHz	780	2.20	210	R39

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

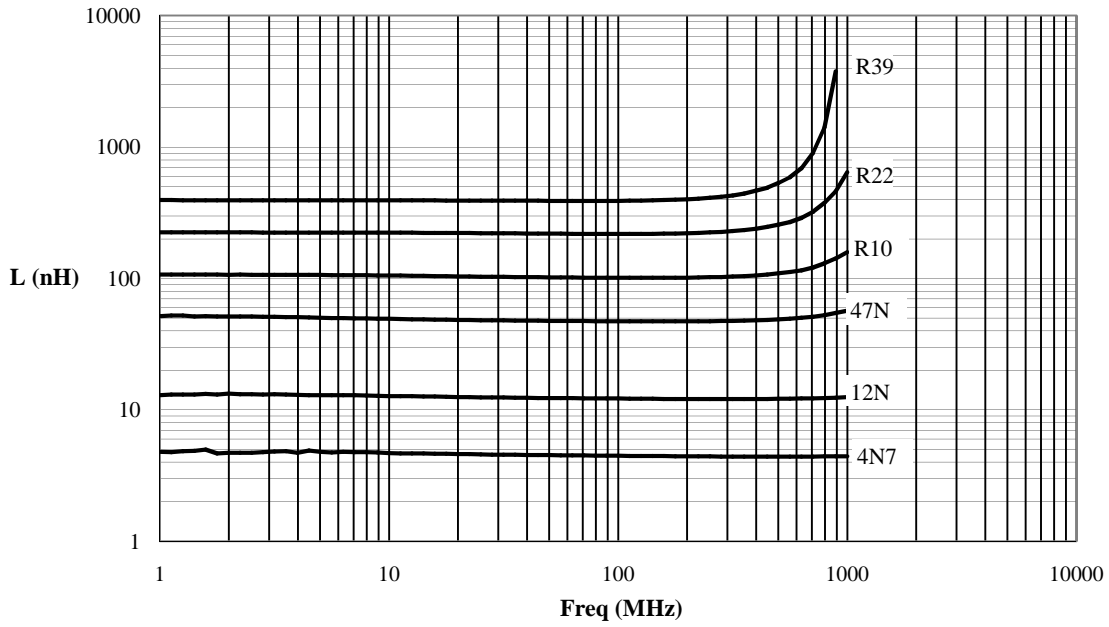
4. RDC is measured in HP-4338B milliohmmeter.

5. For 15 °C Rise.

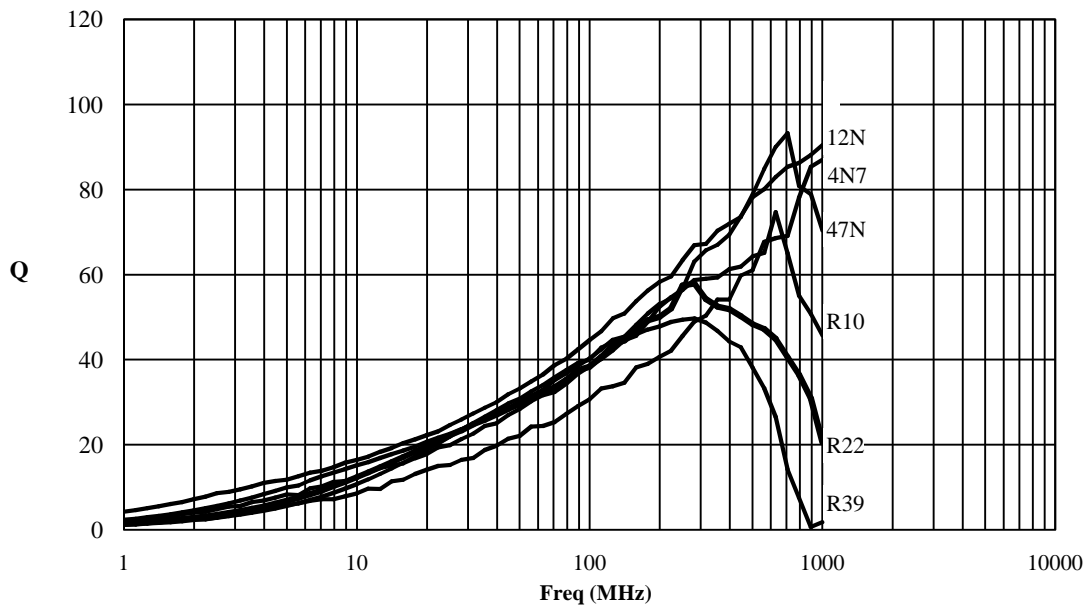
Unit weight = 0.0084g (for ref.)

SWI 0805 (2012) 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

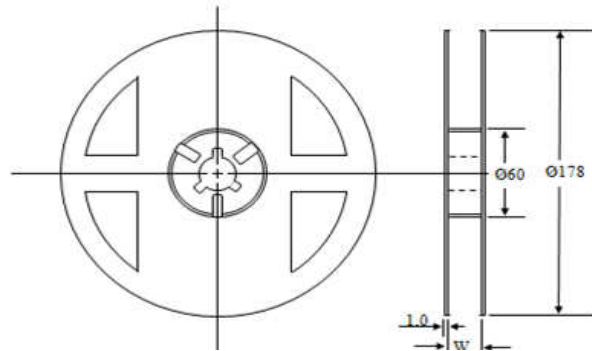
SPECIFICATION

	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 $260\text{ }^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 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 $-40\text{ }^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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 $85\text{ }^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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

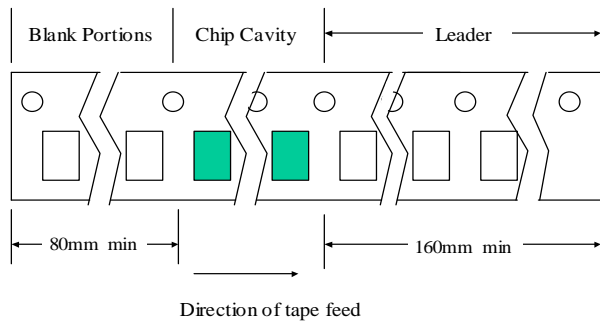
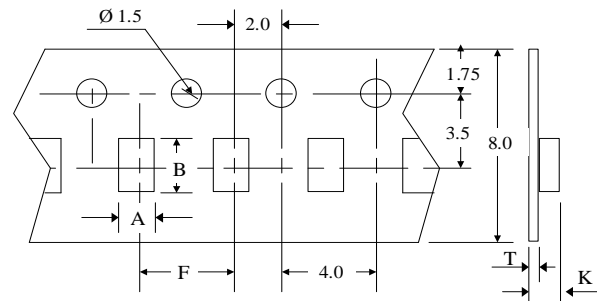
Packing Quantity

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



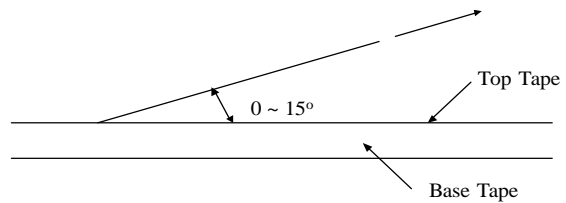
Dimensions (unit: m/m)

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

