

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

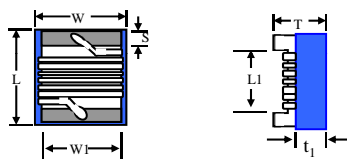
- * Operating temperature -40 to +125 °C for ceramic series and -40 to +85°C for ferrite series.
- * Excellent solderability and resistance to soldering heat .
- * Suitable for reflow soldering..
- * High reliability and easy surface mount assembly.
- * Wide range of inductance values are available for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

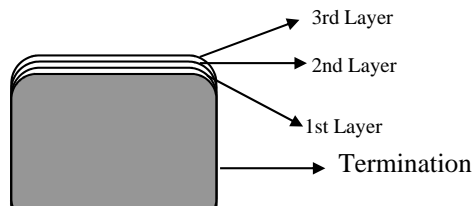
- *Configuration & Dimension : Please refer to the attached figures and tables.
- *Terminals : SWI series terminals shall consist of MoMn alloy or PdAg alloy followed by Nickel, then Au or solder plating for easier soldering.

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 :

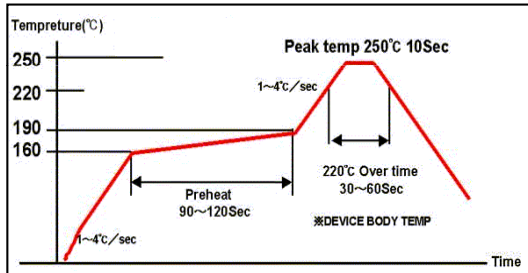
- Ambient Temperature : 25 °C ± 2 °C
- Relative Humidity : 60% to 70%
- Air Pressure : 86 Kpa to 106 Kpa

CHIP INDUCTOR SPECIFICATIONS

TEMPERATURE PROFILE

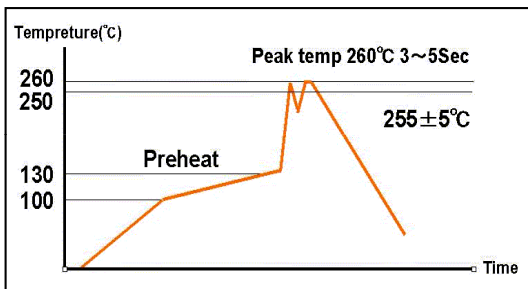
a Reflow temperature profile

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



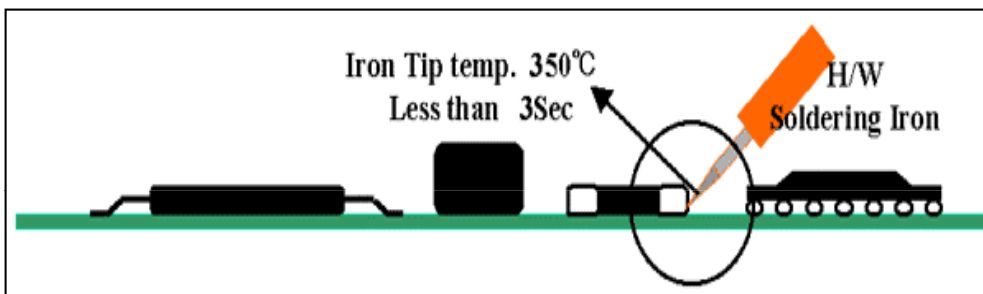
Recommended Peak Temperature: 250°C Max
 250°C up /within 10secs
 Max. Reflow temperature : 260°C.
 Gradient of temperature rise: av 1-4°C/sec
 Preheat: 160-190°C/within 90-120secs
 220°C up /within 30-60secs
 Composition of solder Sn-3Ag-0.5Cu

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 0603 (1608) CERAMIC SERIES

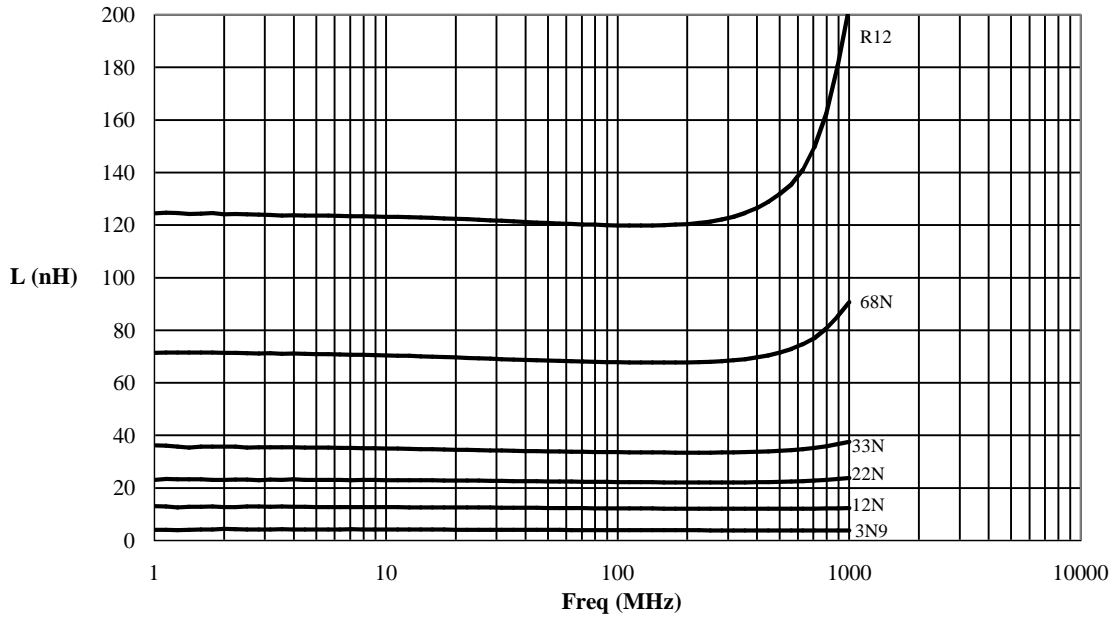
Part No.	Inductance ¹ (nH)	Percent Tolerance	Q ²		S.R.F. ³ Min (MHz)	RDC ⁴ Max (Ω)	IDC ⁵ Max (mA)	Marking
			Min	Typical @900MHz				
SWI 0603 CT 1N6 □-□□	1.6 @ 250 MHz	B, S	24	40	12500	0.030	700	-
SWI 0603 CT 1N8 □-□□	1.8 @ 250 MHz	B, S	16	35	12500	0.045	700	-
SWI 0603 CT 2N0 □-□□	2.0 @ 250 MHz	B, S	16	31	6900	0.080	700	-
SWI 0603 CT 3N9 □-□□	3.9 @ 250 MHz	B, S	22	51	6900	0.080	700	-
SWI 0603 CT 4N3 □-□□	4.3 @ 250 MHz	B, S	22	45	5900	0.080	700	-
SWI 0603 CT 4N7 □-□□	4.7 @ 250 MHz	B, S	20	47	5800	0.130	700	-
SWI 0603 CT 5N1 □-□□	5.1 @ 250 MHz	K, J	20	47	5700	0.140	700	-
SWI 0603 CT 5N6 □-□□	5.6 @ 250 MHz	K, J	16	40	5500	0.150	700	-
SWI 0603 CT 6N8 □-□□	6.8 @ 250 MHz	K, J, B	30	63	5800	0.110	700	-
SWI 0603 CT 7N5 □-□□	7.5 @ 250 MHz	K, J, B	28	64	4800	0.106	700	-
SWI 0603 CT 8N2 □-□□	8.2 @ 250 MHz	K, J, B	30	72	4600	0.100	700	-
SWI 0603 CT 8N7 □-□□	8.7 @ 250 MHz	K, J	28	66	4600	0.109	700	-
SWI 0603 CT 9N1 □-□□	9.1 @ 250 MHz	K, J	28	60	4000	0.135	700	-
SWI 0603 CT 9N5 □-□□	9.5 @ 250 MHz	K, J	28	62	4500	0.135	700	-
SWI 0603 CT 10N □-□□	10 @ 250 MHz	K, J, G	30	66	3800	0.130	700	-
SWI 0603 CT 11N □-□□	11 @ 250 MHz	K, J	33	68	4000	0.090	700	-
SWI 0603 CT 12N □-□□	12 @ 250 MHz	K, J, G	35	72	4000	0.130	700	-
SWI 0603 CT 13N □-□□	13 @ 250 MHz	K, J	38	75	4000	0.106	700	-
SWI 0603 CT 15N □-□□	15 @ 250 MHz	K, J, G	35	68	4000	0.170	700	-
SWI 0603 CT 16N □-□□	16 @ 250 MHz	K, J	34	66	3300	0.170	700	-
SWI 0603 CT 18N □-□□	18 @ 250 MHz	K, J, G	38	77	3100	0.170	700	-
SWI 0603 CT 20N □-□□	20 @ 250 MHz	K, J	38	72	3000	0.220	700	-
SWI 0603 CT 22N □-□□	22 @ 250 MHz	K, J, G	38	70	3000	0.220	700	-
SWI 0603 CT 24N □-□□	24 @ 250 MHz	K, J	37	75	2650	0.135	700	-
SWI 0603 CT 27N □-□□	27 @ 250 MHz	K, J, G	40	75	2800	0.220	600	-
SWI 0603 CT 30N □-□□	30 @ 250 MHz	K, J	45	57	2300	0.220	600	-
SWI 0603 CT 33N □-□□	33 @ 250 MHz	K, J, G	43	78	2300	0.220	600	-
SWI 0603 CT 36N □-□□	36 @ 250 MHz	K, J	43	70	2200	0.250	600	-
SWI 0603 CT 39N □-□□	39 @ 250 MHz	K, J, G	43	66	2200	0.250	600	-
SWI 0603 CT 43N □-□□	43 @ 250 MHz	K, J	38	62	2000	0.280	600	-
SWI 0603 CT 47N □-□□	47 @ 200 MHz	K, J, G	40	65	2000	0.280	600	-
SWI 0603 CT 51N □-□□	51 @ 200 MHz	K, J	40	66	1900	0.310	600	-
SWI 0603 CT 56N □-□□	56 @ 200 MHz	K, J, G	40	66	1900	0.310	600	-
SWI 0603 CT 62N □-□□	62 @ 200 MHz	K, J	40	60	1700	0.340	600	-
SWI 0603 CT 68N □-□□	68 @ 200 MHz	K, J, G	40	57	1700	0.340	600	-
SWI 0603 CT 72N □-□□	72 @ 150 MHz	K, J, G	35	60	1700	0.490	400	-
SWI 0603 CT 82N □-□□	82 @ 150 MHz	K, J, G	35	58	1700	0.540	400	-
SWI 0603 CT 90N □-□□	90 @ 150 MHz	K, J	35	52	1700	0.540	400	-
SWI 0603 CT R10 □-□□	100 @ 150 MHz	K, J, G	35	51	1400	0.630	400	-
SWI 0603 CT R11 □-□□	110 @ 150 MHz	K, J, G	35	22	1400	0.630	400	-
SWI 0603 CT R12 □-□□	120 @ 150 MHz	K, J, G	35	45	1300	0.650	300	-
SWI 0603 CT R13 □-□□	130 @ 150 MHz	K, J	35	40	1000	0.920	280	-
SWI 0603 CT R15 □-□□	150 @ 150 MHz	K, J, G	35	33	1000	0.920	280	-
SWI 0603 CT R16 □-□□	160 @ 100 MHz	K, J, G	30	27	1000	1.000	250	-
SWI 0603 CT R18 □-□□	180 @ 100 MHz	K, J, G	30	26	1000	1.250	240	-
SWI 0603 CT R20 □-□□	200 @ 100 MHz	K, J	30	23	1000	1.250	240	-
SWI 0603 CT R21 □-□□	210 @ 100 MHz	K, J	27	23	1000	1.700	200	-
SWI 0603 CT R22 □-□□	220 @ 100 MHz	K, J, G	30	23	1000	1.700	200	-
SWI 0603 CT R24 □-□□	240 @ 100 MHz	K, J	30	15	1000	1.700	200	-
SWI 0603 CT R27 □-□□	270 @ 100 MHz	K, J, G	30	10	1000	1.800	170	-
SWI 0603 CT R33 □-□□	330 @ 100 MHz	K, J	25	-	450	2.000	150	-
SWI 0603 CT R39 □-□□	390 @ 100 MHz	K, J	20	-	350	2.000	170	-

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

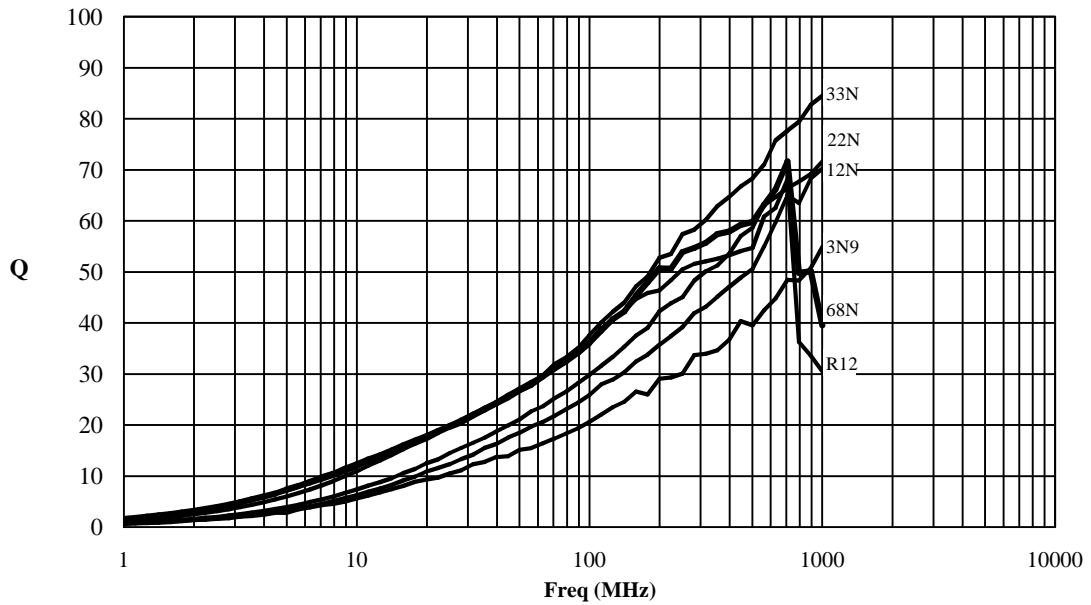
- SRF is measured in ENA E5071B network analyzer
- RDC is measured in HP-4338B millohmmeter.
- For 15 °C Rise.
Unit weight = 0.0049g (for ref.)

SWI 0603 (1608) 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

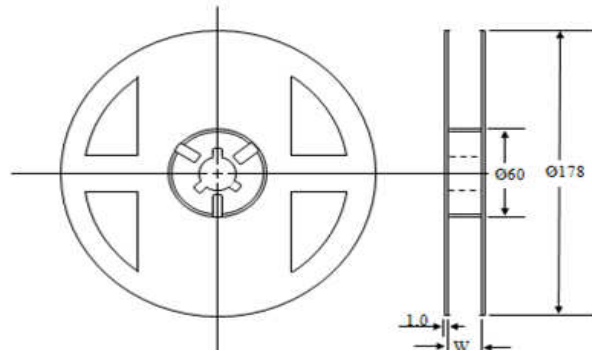
SPECIFICATION

	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

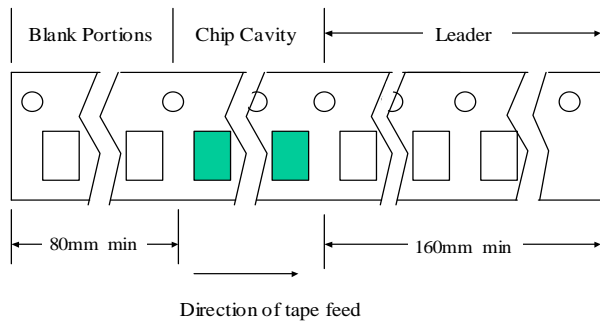
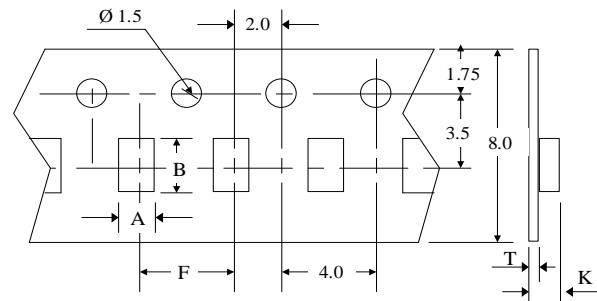
Packing Quantity

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



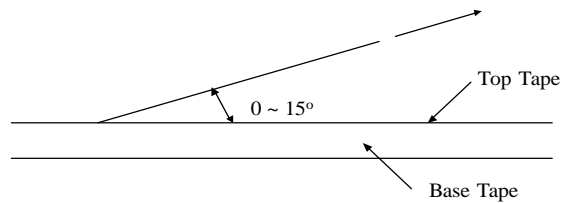
Dimensions (unit: m/m)

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

