

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

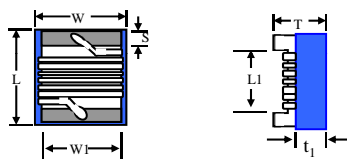
- * Operating temperature -40 to +125 °C for ceramic series and -40 to +85°C for ferrite series.
- * Excellent solderability and resistance to soldering heat .
- * Suitable for reflow soldering..
- * High reliability and easy surface mount assembly.
- * Wide range of inductance values are available for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

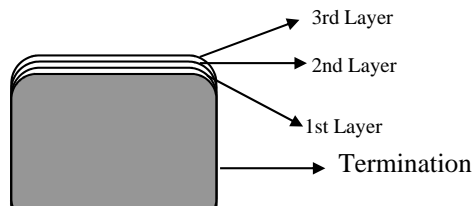
- *Configuration & Dimension : Please refer to the attached figures and tables.
- *Terminals : SWI series terminals shall consist of MoMn alloy or PdAg alloy followed by Nickel, then Au or solder plating for easier soldering.

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 :

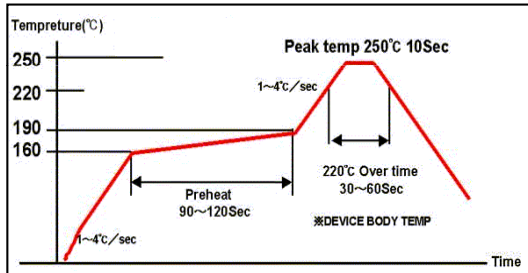
- Ambient Temperature : 25 °C ± 2 °C
- Relative Humidity : 60% to 70%
- Air Pressure : 86 Kpa to 106 Kpa

CHIP INDUCTOR SPECIFICATIONS

TEMPERATURE PROFILE

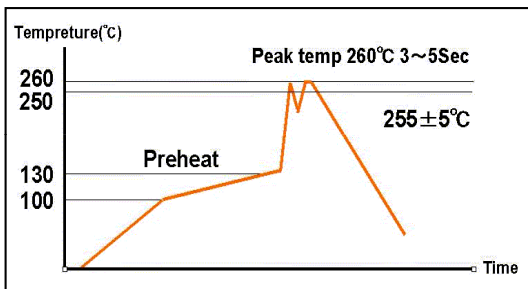
a Reflow temperature profile

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



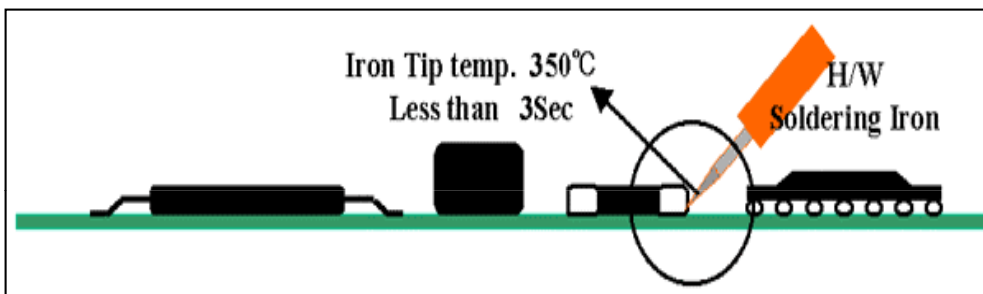
Recommended Peak Temperature: 250°C Max
 250°C up /within 10secs
 Max. Reflow temperature : 260°C.
 Gradient of temperature rise: av 1-4°C/sec
 Preheat: 160-190°C/within 90-120secs
 220°C up /within 30-60secs
 Composition of solder Sn-3Ag-0.5Cu

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 0402 (1005) 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)
			Min	Typical @900MHz			
SWI 0402 CT 1N0 □-□□	1.0 @ 250 MHz	B, S	13	26	6000	0.045	1360
SWI 0402 CT 1N9 □-□□	1.9 @ 250 MHz	B, S	16	29	6000	0.070	1040
SWI 0402 CT 2N0 □-□□	2.0 @ 250 MHz	B, S	16	30	6000	0.070	1040
SWI 0402 CT 2N2 □-□□	2.2 @ 250 MHz	B, S	18	32	6000	0.070	960
SWI 0402 CT 2N4 □-□□	2.4 @ 250 MHz	B, S	16	35	6000	0.068	790
SWI 0402 CT 2N7 □-□□	2.7 @ 250 MHz	B, S	16	31	6000	0.120	860
SWI 0402 CT 3N3 □-□□	3.3 @ 250 MHz	K, J, B	20	41	6000	0.066	840
SWI 0402 CT 3N6 □-□□	3.6 @ 250 MHz	K, J, B	20	43	6000	0.066	840
SWI 0402 CT 3N9 □-□□	3.9 @ 250 MHz	K, J, B	20	41	5800	0.066	840
SWI 0402 CT 4N3 □-□□	4.3 @ 250 MHz	K, J, B	18	45	6000	0.091	700
SWI 0402 CT 4N7 □-□□	4.7 @ 250 MHz	K, J, B	15	45	4775	0.130	640
SWI 0402 CT 5N1 □-□□	5.1 @ 250 MHz	K, J, B	23	49	5800	0.083	800
SWI 0402 CT 5N6 □-□□	5.6 @ 250 MHz	K, J, B	23	46	5800	0.083	760
SWI 0402 CT 6N2 □-□□	6.2 @ 250 MHz	K, J, B	23	49	5800	0.083	760
SWI 0402 CT 6N8 □-□□	6.8 @ 250 MHz	K, J, B	20	50	4800	0.083	680
SWI 0402 CT 7N5 □-□□	7.5 @ 250 MHz	K, J, B	25	50	5800	0.104	680
SWI 0402 CT 8N2 □-□□	8.2 @ 250 MHz	K, J, B	25	49	4400	0.104	680
SWI 0402 CT 8N7 □-□□	8.7 @ 250 MHz	K, J, B	18	50	4100	0.200	480
SWI 0402 CT 9N0 □-□□	9.0 @ 250 MHz	K, J, B	25	49	4160	0.104	680
SWI 0402 CT 9N5 □-□□	9.5 @ 250 MHz	K, J, B	18	45	4000	0.200	680
SWI 0402 CT 10N □-□□	10 @ 250 MHz	K, J, G	23	47	3900	0.195	480
SWI 0402 CT 11N □-□□	11 @ 250 MHz	K, J, G	26	56	3680	0.120	640
SWI 0402 CT 12N □-□□	12 @ 250 MHz	K, J, G	26	51	3600	0.120	640
SWI 0402 CT 13N □-□□	13 @ 250 MHz	K, J, G	24	54	3450	0.210	560
SWI 0402 CT 15N □-□□	15 @ 250 MHz	K, J, G	26	54	3280	0.172	560
SWI 0402 CT 16N □-□□	16 @ 250 MHz	K, J, G	24	54	3100	0.220	560
SWI 0402 CT 18N □-□□	18 @ 250 MHz	K, J, G	25	52	3100	0.230	520
SWI 0402 CT 19N □-□□	19 @ 250 MHz	K, J, G	26	50	3040	0.202	480
SWI 0402 CT 20N □-□□	20 @ 250 MHz	K, J, G	25	51	3000	0.250	420
SWI 0402 CT 22N □-□□	22 @ 250 MHz	K, J, G	25	52	2800	0.300	400
SWI 0402 CT 23N □-□□	23 @ 250 MHz	K, J, G	26	53	2720	0.214	400
SWI 0402 CT 24N □-□□	24 @ 250 MHz	K, J, G	25	51	2700	0.300	400
SWI 0402 CT 27N □-□□	27 @ 250 MHz	K, J, G	26	48	2480	0.298	400
SWI 0402 CT 30N □-□□	30 @ 250 MHz	K, J, G	25	46	2350	0.300	400
SWI 0402 CT 33N □-□□	33 @ 250 MHz	K, J, G	24	48	2350	0.350	400
SWI 0402 CT 36N □-□□	36 @ 250 MHz	K, J, G	26	48	2320	0.403	320
SWI 0402 CT 39N □-□□	39 @ 250 MHz	K, J, G	25	45	2100	0.550	320
SWI 0402 CT 40N □-□□	40 @ 250 MHz	K, J, G	26	48	2240	0.438	320
SWI 0402 CT 43N □-□□	43 @ 250 MHz	K, J, G	25	46	2030	0.810	240
SWI 0402 CT 47N □-□□	47 @ 200 MHz	K, J, G	26	46	2100	0.830	210
SWI 0402 CT 51N □-□□	51 @ 200 MHz	K, J	25	40	1750	0.820	210
SWI 0402 CT 56N □-□□	56 @ 200 MHz	K, J	22	42	1760	0.970	200
SWI 0402 CT 68N □-□□	68 @ 200 MHz	K, J	22	36	1620	1.120	180
SWI 0402 CT 75N □-□□	75 @ 150 MHz	K, J	20	34	1550	1.200	160
SWI 0402 CT 82N □-□□	82 @ 150 MHz	K, J	20	33	1500	1.250	150
SWI 0402 CT 91N □-□□	91 @ 150 MHz	K, J	20	30	1350	2.300	120
SWI 0402 CT R10 □-□□	100 @ 150 MHz	K, J	20	30	1300	2.520	120
SWI 0402 CT R12 □-□□	120 @ 150 MHz	K, J	20	29	1100	2.660	110

- 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.

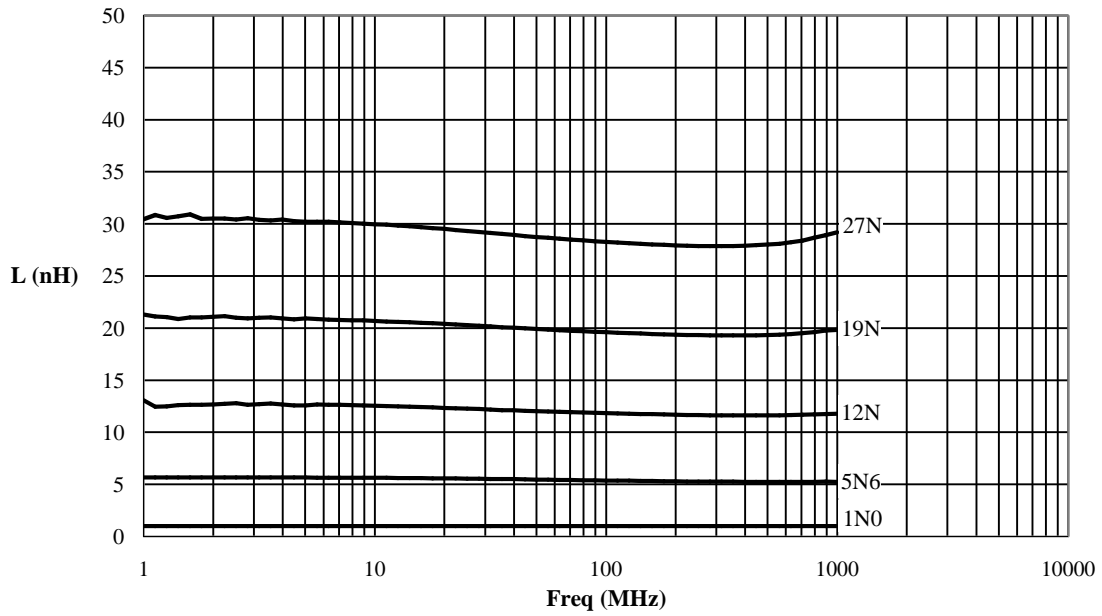
Remarks:

Unit weight = 0.0008g (for ref.)

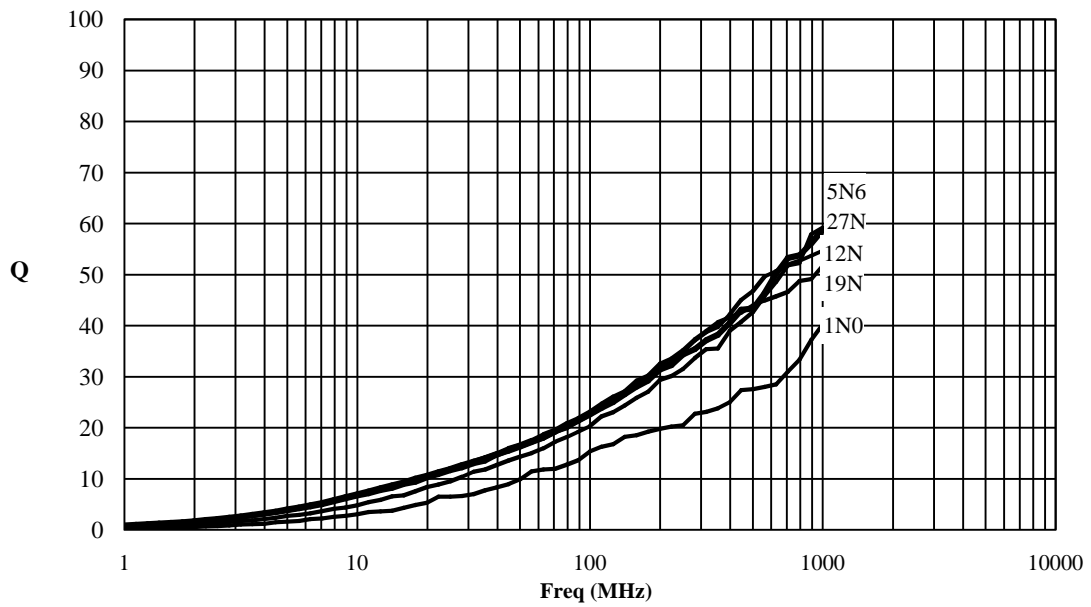
Without marking on the top surface of the product.

SWI 0402 (1005) 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

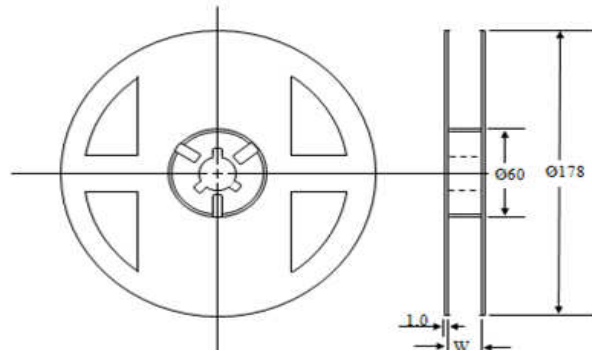
SPECIFICATION

	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

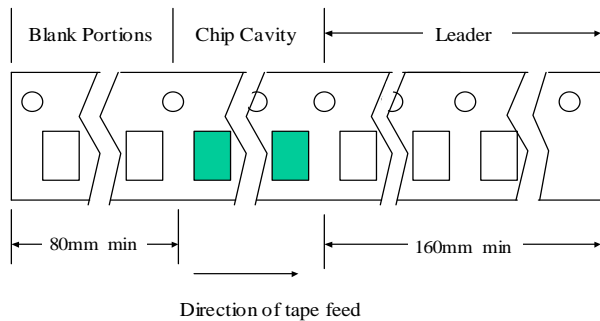
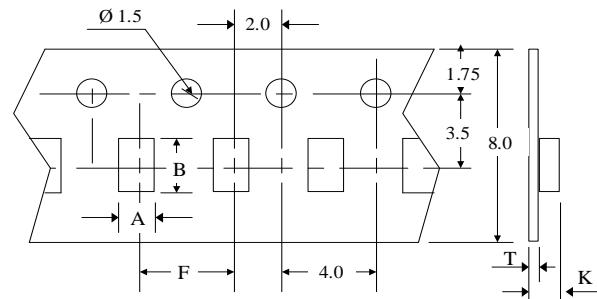
Packing Quantity

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



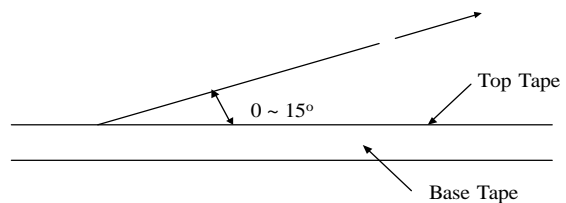
Dimensions (unit: m/m)

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

