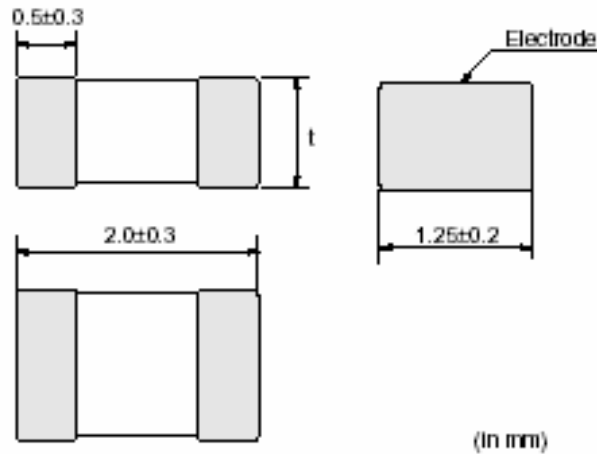


# Specification For Approval

## BCCLH-2012E1 series

### 1. SHAPE AND SIZE (mm)



### 2. SPECIFICATION

#### 2.1 Dimension and Inductance tolerance

DIMENSION CODE (EIA CODE)	AVAILABLE INDUCTANCE	RATINGS	NORMAL TOLERANCE
0603 (0201)	0.6 nH ~ 15nH	0.6nH~3.9nH	D: +/- 0.2nH
		4.7nH~15nH	J: +/- 5%
1005 (0402)	1.0 nH ~ 120 nH	1.0 nH ~ 2.7 nH	A: +/- 0.1nH S: +/- 0.3 nH
		3.3 nH ~ 5.6 nH	A: +/- 0.1nH S: +/- 0.3 nH K: +/- 10%
		6.8 nH ~ 120 nH	J: +/- 5% K: +/- 10%
1608 (0603)	1.5 nH ~ 220 nH	1.5 nH ~ 2.7 nH	A: +/- 0.1nH S: +/- 0.3 nH
		3.3 nH ~ 5.6 nH	A: +/- 0.1nH S: +/- 0.3 nH K: +/- 10%
		6.8 nH ~ 220 nH	J: +/- 5% K: +/- 10%
2012 (0805)	1.5 nH ~ 680 nH	1.5 nH ~ 2.7 nH	S: +/- 0.3 nH
		3.3 nH ~ 5.6 nH	S: +/- 0.3 nH K: +/- 10%
		6.8 nH ~ 680 nH	J: +/- 5% K: +/- 10%

## BCCLH-2012E1 series

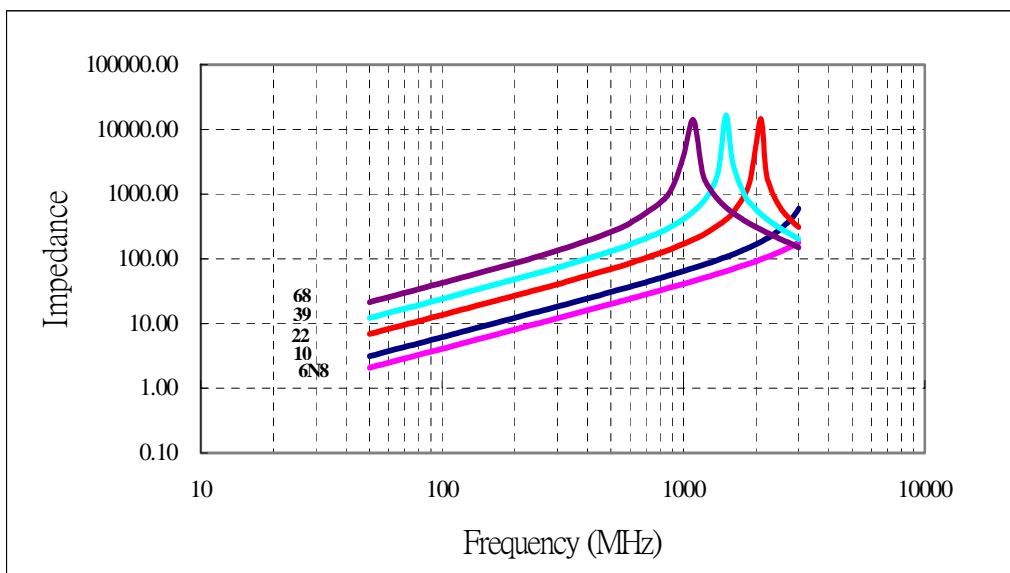
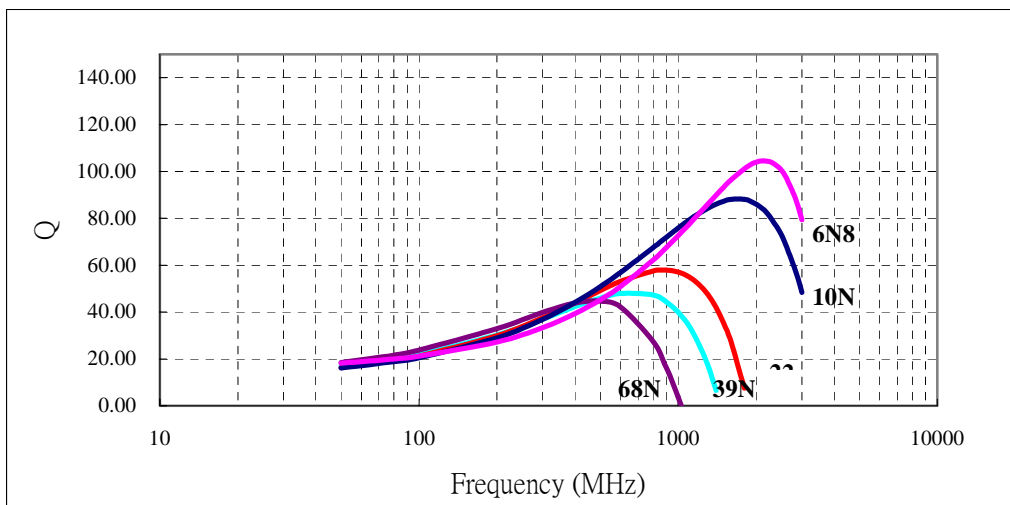
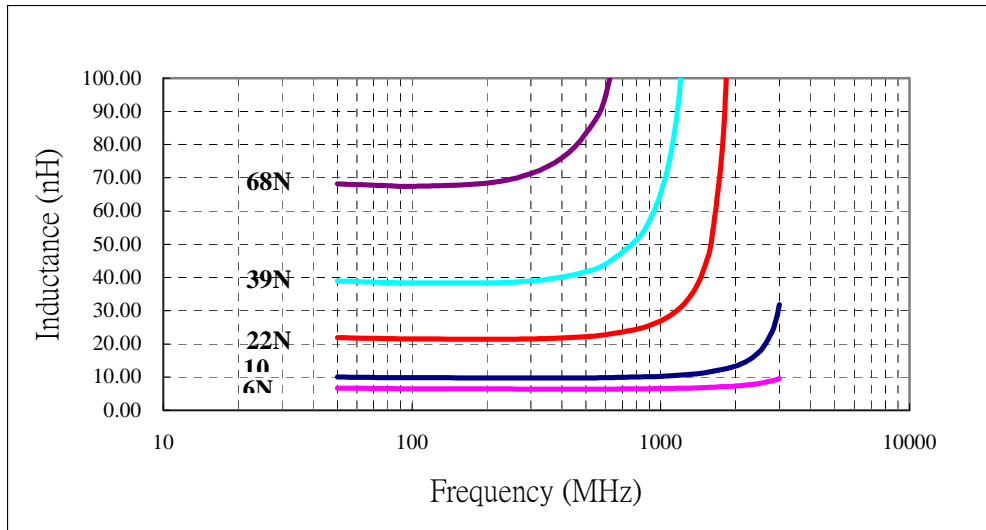
### 2.2 ELECTRICAL SPECIFICATION

Ordering Code	Inductance	Tolerance	Q	L, Q Measuring Frequency	Q(Typical) Frequency(MHz)			SRF Self-Resonance Frequency	RDC DC-Resistance	Rated Current	Packing Amount of 7" reel
	(nH)		Min	(MHz)	100	500	800	(MHz) min.	(Ω) max.	(mA) max.	Pcs.
BCCLH-2012E1-1N5	1.5	S	10	100	21	56	61	4000	0.10	300	4000
BCCLH-2012E1-1N8	1.8	S	10	100	19	49	55	4000	0.10	300	
<b>BCCLH-2012E1-2N2</b>	<b>2.2</b>	<b>S</b>	<b>10</b>	<b>100</b>	<b>19</b>	<b>47</b>	<b>54</b>	<b>4000</b>	<b>0.10</b>	<b>300</b>	
BCCLH-2012E1-2N7	2.7	S	12	100	19	50	56	4000	0.10	300	
BCCLH-2012E1-3N3	3.3	S,K	12	100	16	42	49	4000	0.13	300	
BCCLH-2012E1-3N9	3.9	S,K	12	100	18	46	54	4000	0.15	300	
BCCLH-2012E1-4N7	4.7	S,K	12	100	18	46	55	3500	0.20	300	
BCCLH-2012E1-5N6	5.6	S,K	15	100	20	51	60	3200	0.23	300	
BCCLH-2012E1-6N8	6.8	J,K	15	100	21	52	63	2800	0.25	300	
BCCLH-2012E1-8N2	8.2	J,K	15	100	21	54	63	2400	0.28	300	
BCCLH-2012E1-10N	10	J,K	15	100	21	51	60	2100	0.30	300	
BCCLH-2012E1-12N	12	J,K	15	100	21	52	60	1900	0.35	300	
<b>BCCLH-2012E1-15N</b>	<b>15</b>	<b>J,K</b>	<b>15</b>	<b>100</b>	<b>22</b>	<b>55</b>	<b>63</b>	<b>1600</b>	<b>0.40</b>	<b>300</b>	
BCCLH-2012E1-18N	18	J,K	15	100	24	57	63	1500	0.45	300	
BCCLH-2012E1-22N	22	J,K	18	100	23	55	60	1400	0.50	300	
BCCLH-2012E1-27N	27	J,K	18	100	23	54	59	1300	0.55	300	
BCCLH-2012E1-33N	33	J,K	18	100	24	54	56	1200	0.60	300	
BCCLH-2012E1-39N	39	J,K	18	100	23	50	47	1000	0.65	300	
BCCLH-2012E1-47N	47	J,K	18	100	23	49	43	900	0.70	300	
BCCLH-2012E1-56N	56	J,K	18	100	23	48	39	800	0.75	300	
BCCLH-2012E1-68N	68	JK	18	100	25	45	30	700	0.80	300	
BCCLH-2012E1-82N	82	J,K	18	100	24	42	-	600	0.90	300	
BCCLH-2012E1-R10	100	J,K	18	100	23	38	-	600	0.90	300	
BCCLH-2012E1-R12	120	J,K	13	50	22	31	-	500	0.95	300	
BCCLH-2012E1-R15	150	J,K	13	50	22	26	-	500	1.00	300	
BCCLH-2012E1-R18	180	J,K	13	50	23	20	-	400	1.10	300	
<b>BCCLH-2012E1-R22</b>	<b>220</b>	<b>J,K</b>	<b>12</b>	<b>50</b>	<b>21</b>	<b>-</b>	<b>-</b>	<b>350</b>	<b>1.20</b>	<b>300</b>	
<b>BCCLH-2012E1-R27</b>	<b>270</b>	<b>J,K</b>	<b>12</b>	<b>50</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>300</b>	<b>1.30</b>	<b>300</b>	
BCCLH-2012E1-R33	330	J,K	12	50	22	-	-	250	1.40	300	
BCCLH-2012E1-R39	390	J,K	10	50	17	-	-	250	1.40	300	

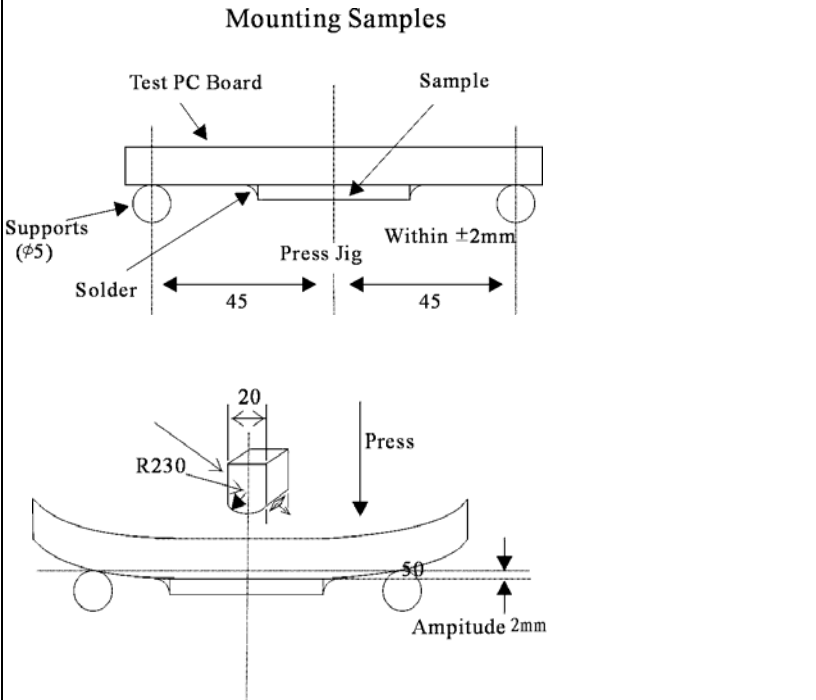
### 3. TESTING CONDITION AND REQUIREMENTS

<b>Item</b>	<b>Test Condition</b>	<b>Requirements</b>
<b>Inductance</b>	a. Temperature: 25+/- 1°C b. Relative Humidity: 45 to 85%RH c. Atmospheric Pressure: 86 to 106kpa d. Measuring equipment and fixture: 2012(0805) HP 4291+16192A 1608(0603) HP 4291+16192A 1005(0402) HP 4291+16193A	Within specified tolerance.
<b>Q Value</b>	a. Temperature: 25+/- 1°C b. Relative Humidity: 45 to 85%RH c. Atmospheric Pressure: 86 to 106kpa d. Measuring equipment and fixture: 2012(0805) HP 4291+16192A 1608(0603) HP 4291+16192A 1005(0402) HP 4291+16193A	In accordance with electrical specification.
<b>DC Resistance</b>	a. Temperature: 25+/- 1°C b. Relative Humidity: 45 to 85%RH c. Atmospheric Pressure: 86 to 106kpa d. Measuring equipment: HP 4338	In accordance with electrical specification.
<b>Temperature Characteristics</b>	a. Temperature range: -40 to 100°C b. Reference temperature: 25°C	Within specified tolerance.

## 4. ELECTRICAL CHARACTERISTICS

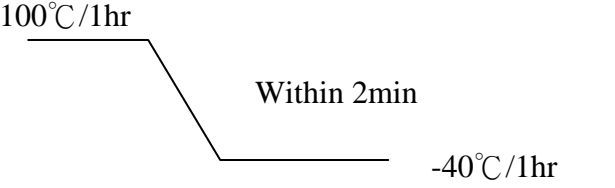


## TEST CONDITIONS AND REQUIREMENTS

Item	Test Condition	Requirements
Appearance	Inductors shall be visually inspected for visible evidence of defect.	In accordance with specification.
Dimension	Dimension shall be measured with caliper or micrometer	In accordance with dimension specification.
Solderability	Immerse a test sample into a methanol solution containing rosin, preheat it at 150 to 180°C for 3 to 5 seconds and immerse into molten solder of 230+/-5°C for 5+/-1 seconds.	More than 75% of the terminal electrode part shall be covered with fresh solder.
Bending Strength	<p>Solder the chip to test jig then apply a force in the direction shown in below. The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.</p> <p style="text-align: center;">Mounting Samples</p> 	No mechanical damage shall be observed.
Resistance to Soldering Heat	Immerse a test sample into a methanol solution containing resin, preheat it at 150 to 180°C for 2 to 3 minutes and immerse into molten solder of 260+/-5°C for 10+/-0.5 seconds so that both terminal electrodes are completely submerged.	No visible damage

# Specification For Approval

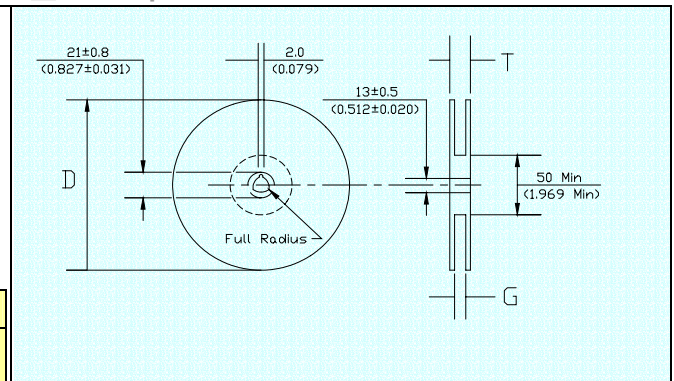
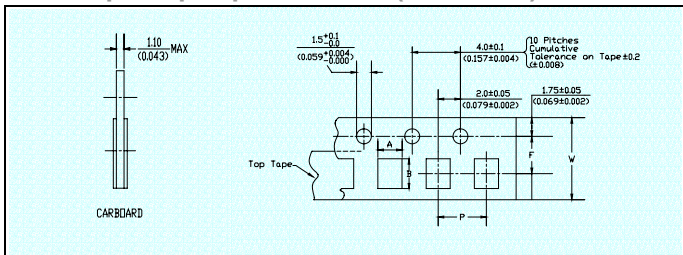
■ **Reliability**

Item	Test Condition	Requirements
<p><b>Thermal Shock</b></p>	<p>Solder a test sample to printed circuit board, and conduct 100 cycles of test under the conditions shown as below.</p> <p>Cycle:</p>  <p>100°C/1hr</p> <p>Within 2min</p> <p>-40°C/1hr</p>	<p>No visible damage Inductance variation within 10% Q variation within 20%</p>
<p><b>High Humidity State Life Test</b></p>	<p>Keep a test sample in an atmosphere with a temperature of 70+/-2°C , 90~95%RH for 500+/-12 hours. After the test, keep the test sample at a normal temperature for 1 to 2 hours, and then carry out measurement.</p>	<p>No visible damage. Inductance variation within 10%. Q variation within 20%.</p>
<p><b>High Humidity Load Life Test</b></p>	<p>Solder a test sample to printed circuit board then keep the test sample in an atmosphere with a temperature of 70+/-2°C , 90~95%RH for 500+/-12 hours while supplying the rated current. After the test, keep the test sample at a normal temperature for 1 to 2 hours, and then carry out measurement.</p>	<p>No visible damage. Inductance variation within 10%. Q variation within 20%.</p>
<p><b>High Temperature State Life Test</b></p>	<p>Keep a test sample in an atmosphere with a temperature of 85+/-2°C for 500+/-12 hours. After the test, keep the test sample at a normal temperature for 1 to 2 hours, and then carry out measurement.</p>	<p>No visible damage. Inductance variation within 10%. Q variation within 20%.</p>
<p><b>High Temperature Load</b></p>	<p>Solder a test sample to printed circuit board then keep the test sample in an atmosphere with a temperature of 85+/-2°C for 500+/-12 hours while supplying the rated current. After the test, keep the test sample at a normal temperature for 1 to 2 hours, and then carry out measurement.</p>	<p>No visible damage. Inductance variation within 10%. Q variation within 20%.</p>

## PACKAGING

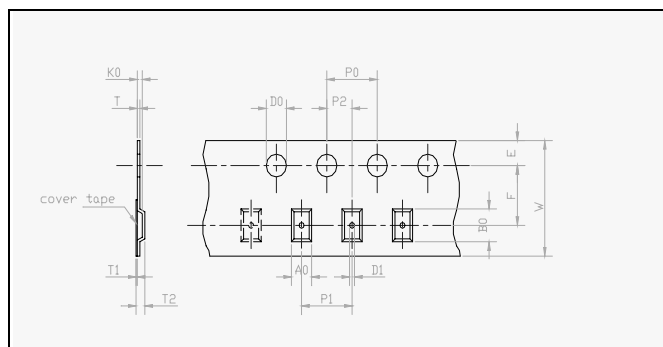
### Paper tape specifications(1005/1608)

### Reel specifications



SYMBOL	1005		1608	
	Size (mm)	Tolerance (mm)	Size (mm)	Tolerance (mm)
A	0.62	+/-0.03	1.0	+/-0.20
B	1.12	+/-0.03	1.8	+/-0.20
F	3.50	+/-0.05	3.5	+/-0.05
P	2.00	+/-0.05	4.0	+/-0.10
W	8.00	+/-0.20	8.0	+/-0.20

Tape Width (mm)	G (mm)	T MAX(mm)	D (mm)
8	10.0+/-1.5	14.4	178



$k_0$ : so chosen that the orientation of the component cannot change.  
 For  $W = 8\text{mm}$ :  $T_2 = 2.5\text{mm max.}$   
 For  $W = 12\text{mm}$ :  $T_2 = 4.5\text{mm}$

Note: For dimensions please see table below.

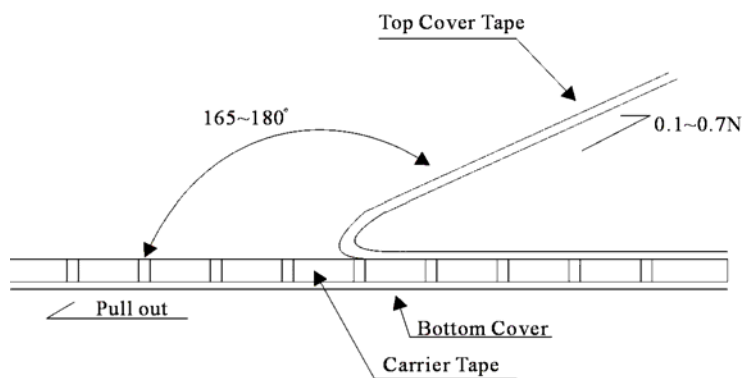
DIMENSION (mm)	Product Size Code	TOLERANCE (mm)
	2012(0805)	
$A_0$ nominal clearance;	0.2	-
$B_0$ nominal clearance;	0.2	-
$K_0$ minimum clearance;	0.05	-
W	8.1	+/- 0.20
E	1.75	+/- 0.10
F	3.5	+/- 0.05
$D_0$	1.5	+0.1/-0.0
$D_1$	1 min	+0.1/-0.0
$P_0$ . note 2	4	+/- 0.10
$P_1$	4	+/- 0.10
$P_2$	2	+/- 0.05

Notes 1. Typical inductors displace in pocket.  
 2.  $P_0$  pitch tolerance over any 10 pitches is +/- 0.2mm.

## ■ Peel strength of top cover tape

The peel speed shall be about 300 mm/min.

The peel strength of top cover tape shall be between 0.1 to 0.7N.



## ■ Quantity per reel

2012 (0805): 4000 pieces / reel(thickness 0.85mm)

3000 pieces / reel(thickness 1.00mm)

1608 (0603): 4,000 pieces / reel

1005 (0402): 10,000 pieces / reel

## ■ The contents of a box

2012 (0805): 5 reels / box

1608 (0603): 5 reels / box

1005 (0402): 5 reels / box



## CAUTIONS

### Storage

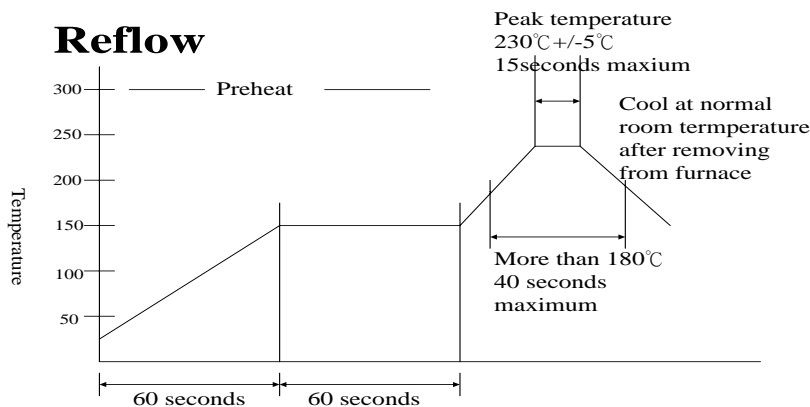
1. The chip inductor shall be packaged in carrier tapes.
2. To keep storage place temperature from +5 to 35°C, humidity from 45 to 70% RH.
3. The storage atmosphere must be free of gas containing sulfur and chlorine. Also, avoid exposing the product to saline moisture. If the product is exposed to such atmospheres, the terminals will oxidize and solderability will be affected.
4. The solderability is assured for 12 months from our final inspection date if the above storage condition is followed.

### Handling

Chip inductor should be handled with care to avoid contamination or damage. The use of vacuum pick-up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machine.

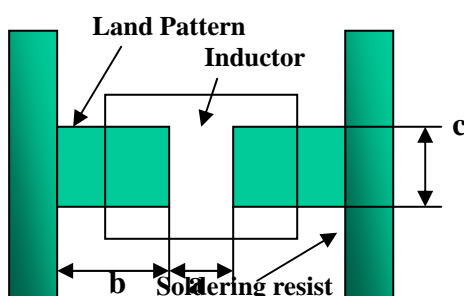
### Soldering

Since rapid heating or cooling may easily damage ceramic, so we have to limit the temperature difference to within 130°C while some heat shock is unavoidable.



The recommended soldering profile is shown as follows

### Recommended pad dimensions



(Unit: mm)

Size	L x W	a	b	c
1005 (0402)	1.0*0.5	0.45 to 0.55	0.40 to 0.50	0.45 to 0.55
1608 (0603)	1.6*0.8	0.60 to 0.80	0.60 to 0.80	0.60 to 0.80
2012 (0805)	2.0*1.2	0.80 to 1.20	0.80 to 1.20	0.90 to 1.60