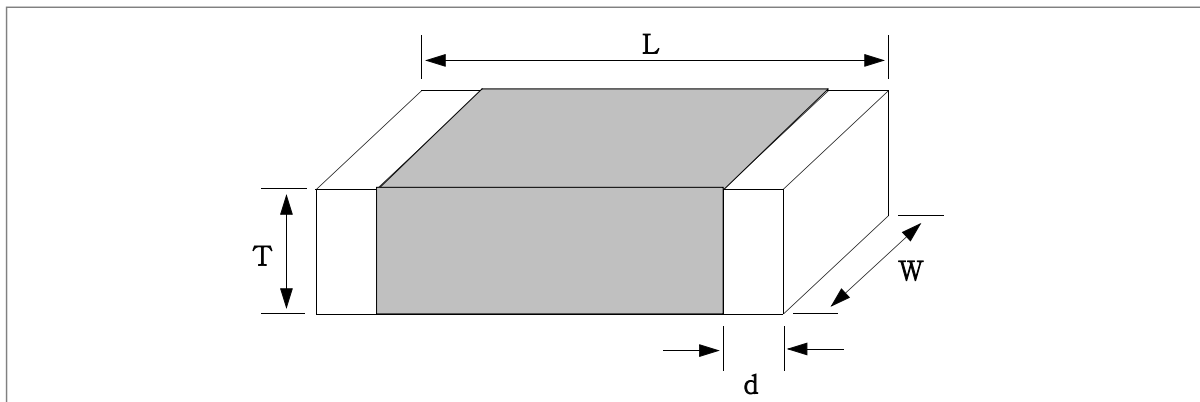


# Chip Bead

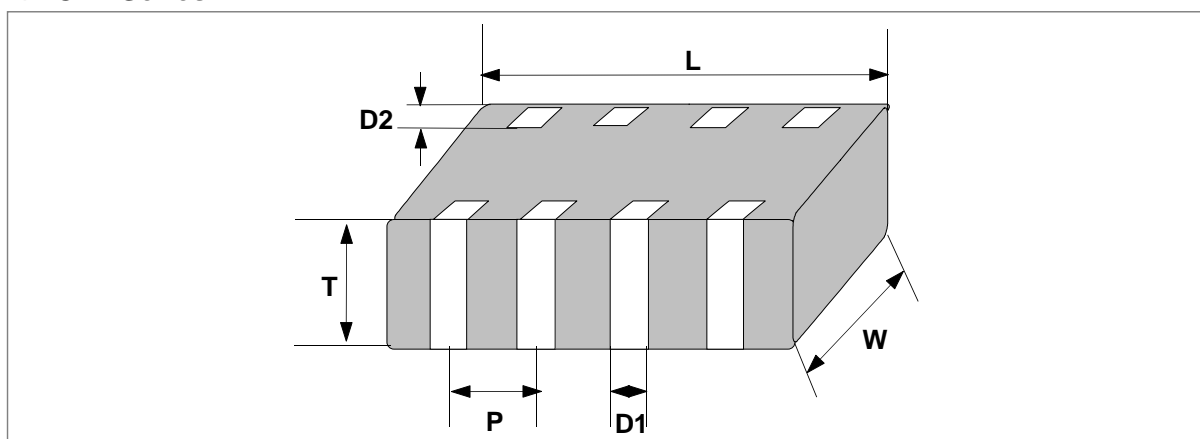
## ■ APPEARANCE AND DIMENSION

### ● CIB / CIM / CIC / CIS Series



CODE	EIA CODE	DIMENSION ( mm )			
		L	W	T	d
05	0402	$1.0 \pm 0.05$	$0.5 \pm 0.05$	$0.5 \pm 0.05$	$0.25 \pm 0.1$
10	0603	$1.6 \pm 0.15$	$0.8 \pm 0.15$	$0.8 \pm 0.15$	$0.3 \pm 0.2$
21	0805	$2.0 \pm 0.2$	$1.25 \pm 0.2$	$0.9 \pm 0.2$	$0.5+0.2/-0.3$
31	1206	$3.2 \pm 0.2$	$1.6 \pm 0.2$	$1.1 \pm 0.2$	$0.5+0.2/-0.3$
32	1210	$3.2 \pm 0.3$	$2.5 \pm 0.2$	$1.3 \pm 0.2$	$0.5 \pm 0.3$
41	1806	$4.5 \pm 0.2$	$1.6 \pm 0.2$	$1.6 \pm 0.2$	$0.5 \pm 0.3$
43	1812	$4.5 \pm 0.2$	$3.2 \pm 0.2$	$1.5 \pm 0.2$	$0.5 \pm 0.3$

### ● CIA Series



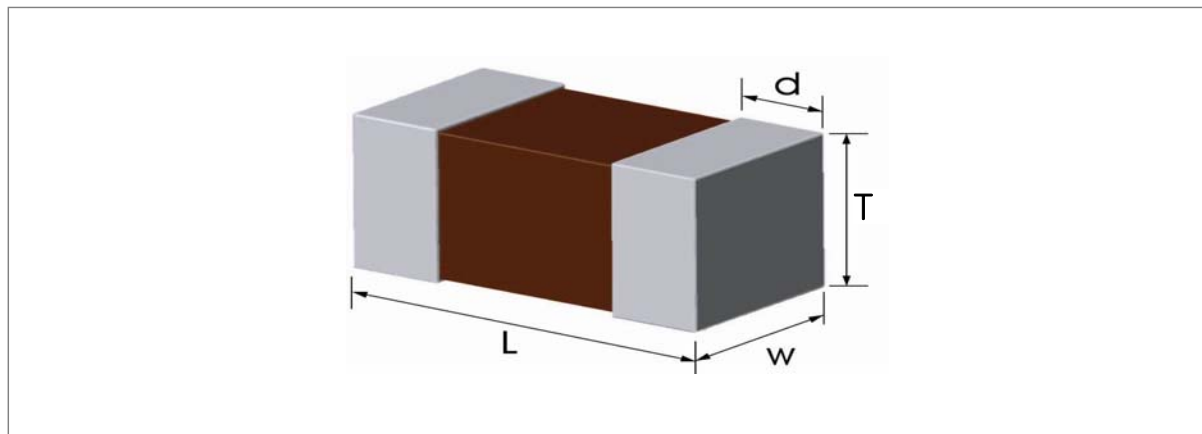
CODE	EIA CODE	DIMENSION ( mm )					
		L	W	T	D1	D2	P
31	1206	$3.2 \pm 0.2$	$1.6 \pm 0.2$	$0.8 \pm 0.2$	$0.4 \pm 0.2$	$0.3 \pm 0.2$	$0.8 \pm 0.2$

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# Chip Bead

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● CIM-V Series



CODE	EIA CODE	DIMENSION ( mm )			
		L	W	T	d
10	0603	$1.6 \pm 0.15$	$0.8 \pm 0.15$	$0.8 \pm 0.15$	$0.3 \pm 0.2$

# Chip Bead

## ■ PART NUMBERING

**CI**   **M**   **10**   **J**   **121**   **N**   **C**  
**①**   **②**   **③**   **④**   **⑤**   **⑥**   **⑦**

- ① SAMSUNG Multilayer Chip Inductor/Bead
- ② Series Code
- ③ Dimension
- ④ Material Code
- ⑤ Nominal Impedance
- ⑥ Thickness Option
- ⑦ Packaging Type

### ② SERIES CODE

CODE	DESCRIPTION OF CODE
B	Mono-layer type Normal Bead
M	Multi-layer type Normal Bead
C	Chip Bead for High Current (max. 3.0A)
S	Chip Bead for Super High Current (max. 6.0A)
A	Chip Bead Array

### ③ DIMENSION

CODE	DIMENSION(L×W)
05	1.0×0.5
10	1.6×0.8
21	2.0×1.25
31	3.2×1.6
32	3.2×2.5
41	4.5×1.6
43	4.5×3.2

# Chip Bead

## ④ MATERIAL CODE

CODE	DESCRIPTION OF CODE
P,U	Broad impedance, especially suppresses noise in the 10~200MHz range
J	Suppresses noise in the 100~300MHz range
K	Suppresses noise in the 200MHz above
N	Suppresses noise in the 200~500MHz range

## ⑤ NOMINAL IMPEDANCE

The nominal impedance value is expressed in Ohm( $\Omega$ ) and identified by three-digit number, first two digits represent significant figures and last digit specifies the number of zeros to follow.

example)

110	: 11 $\times 10^0$ = 11 $\Omega$
121	: 12 $\times 10^1$ = 120 $\Omega$
102	: 10 $\times 10^2$ = 1000 $\Omega$

## ⑥ THICKNESS OPTION

CODE	DESCRIPTION OF CODE
N	Standard thickness
A	Thinner than standard thickness
B	Thicker than standard thickness
V	Internally vertical electrode structure

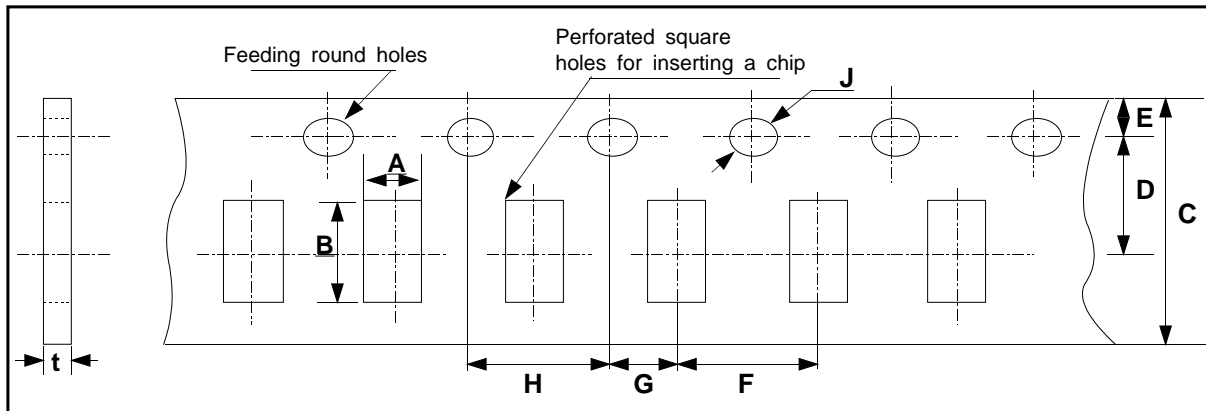
## ⑦ PACKAGING TYPE

CODE	DESCRIPTION OF CODE
C	Paper taping type
E	Embossed (Plastic) taping type

# Chip Bead

## PACKAGING

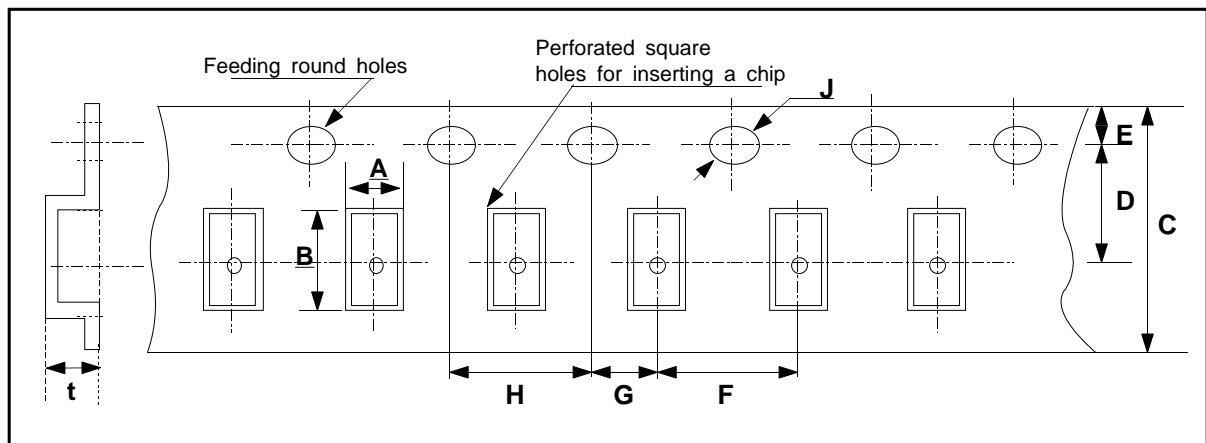
### CARDBOARD PAPER TAPE



unit : mm

TYPE	A	B	C	D	E	F	G	H	J	t max.
05	0.65 ±0.1	1.15 ±0.1	8.0 ±0.2	3.5 ±0.05	1.75 ±0.1	2.0 ±0.05	2.0 ±0.1	4.0 ±0.1	Φ1.5 +0.1/-0	0.8
10	1.0 ±0.2	1.80 ±0.2				4.0 ±0.1				1.1

### EMBOSSED PLASTIC TAPE

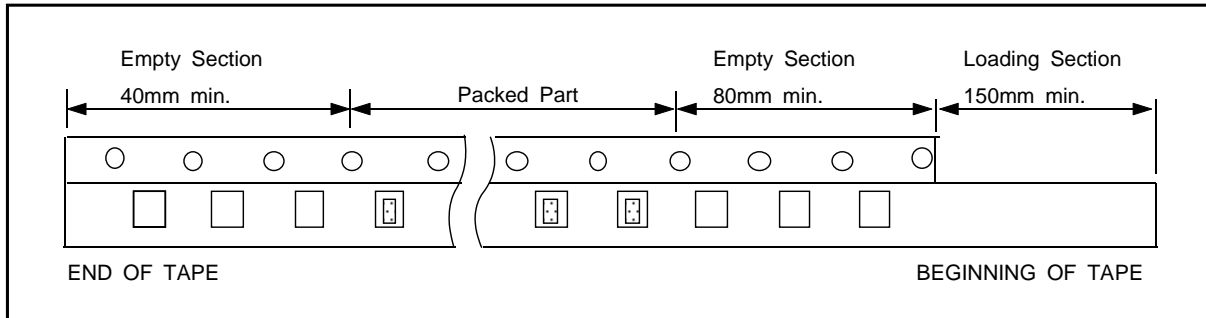


unit : mm

TYPE	A	B	C	D	E	F	G	H	J	t max.
21	1.50 ±0.2	2.3 ±0.2	8.0 ±0.3	3.5 ±0.05	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	4.0 ±0.1	Φ1.5 +0.1/-0	1.5
31	1.90 ±0.2	3.6 ±0.2								1.4
32	2.9 ±0.2	3.6 ±0.2								1.55
41	1.90 ±0.2	4.9 ±0.2	12.0 ±0.3	5.5 ±0.05		8.0 ±0.1				1.8
43	3.5 ±0.2									1.8

# Chip Bead

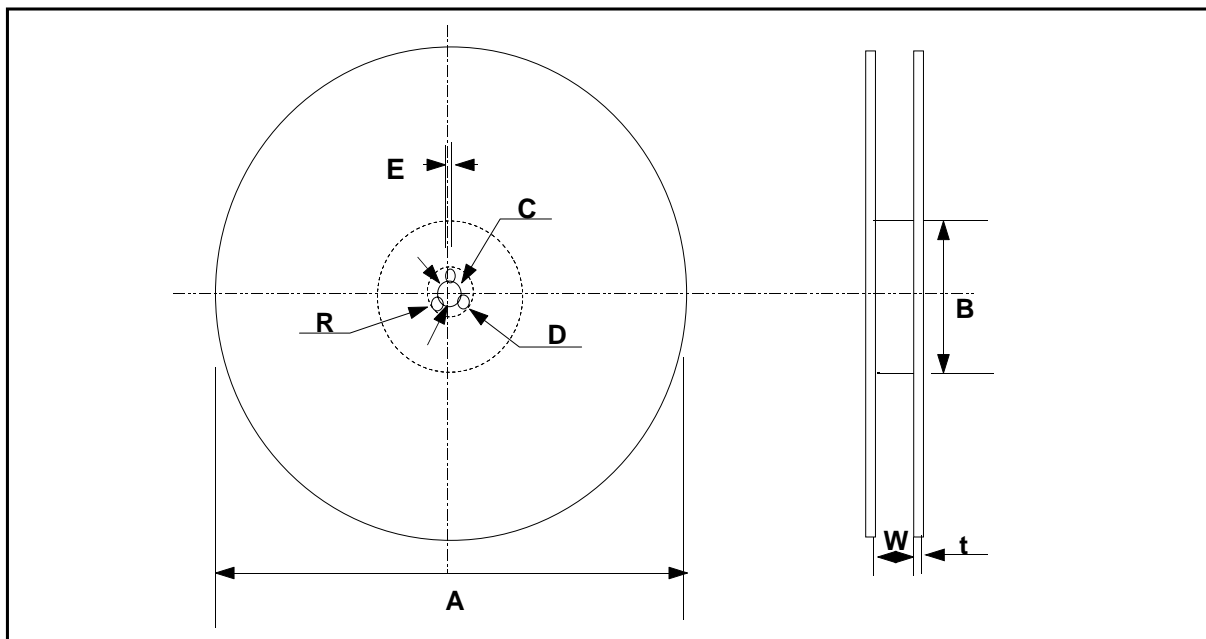
## ● TAPING SIZE



unit : pcs

Symbol	05	10	21	31	32	41	43
7" Reel	10,000	4,000	4,000	3,000	2,500	2,000	1,000

## ● REEL DIMENSION



unit : mm

Tape Width	A	B	C	D	E	W	t	R
8 mm	$\phi 178 \pm 2.0$	$\phi 50 \pm 1.0$	$\phi 13 \pm 0.5$	$21 \pm 0.8$	$2.0 \pm 0.5$	$10 \pm 1.5$	$1.2 \pm 0.5$	1.0
12 mm						$14 \pm 1.5$	$2.0 \pm 0.5$	

# Chip Bead

## ■ CHARACTERISTIC MAP

### ● IMPEDANCE RANGE

SERIES	SIZE	IMPEDANCE RANGE ( $\Omega$ )			
		1	10	100	1000
CIB/CIM	05 (0402)				1500
	10 (0603)				2700
	21 (0805)				2000
	31 (1206)				2000
	32 (1210)			60	
	41 (1806)			150	
	43 (1812)			150	
CIC				600	
CIS				240	
CIA					1500

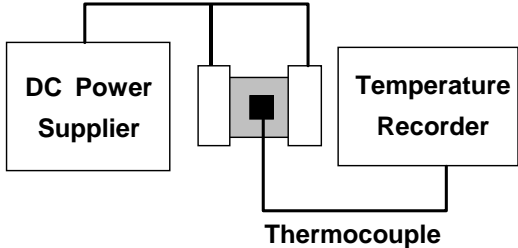
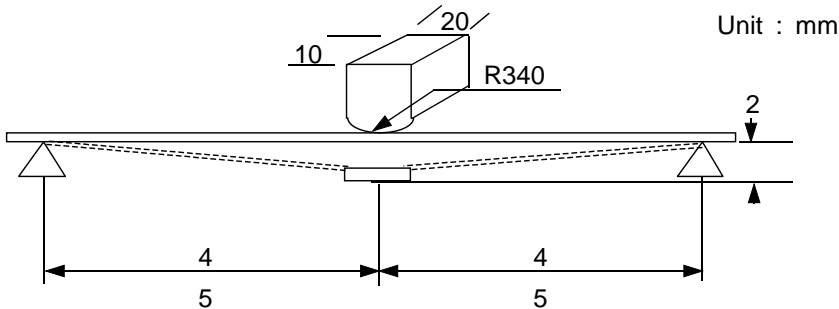
# Chip Bead

## RELIABILITY TEST DATA

ITEM	PERFORMANCE			TEST CONDITION
	CIB/CIM	CIC/CIS	CIA	
1. OPERATING TEMPERATURE RANGE	-55 to +125°C		-25 to +85°C	-
2. STORAGE TEMPERATURE RANGE	-55 to +125°C		-40 to +85°C	-
3. IMPEDANCE	SEE THE SECTION OF ELECTRICAL PROPERTIES.			<ul style="list-style-type: none"> <li>- MEASURING FREQUENCY : 100 ± 1MHz</li> <li>- MEASURING EQUIPMENT, TEST FIXTURE : HP4291A/B + HP16193A (CIB/CIM/CIC/CIS SERIES) HP4291A/B + HP16192A (CIA SERIES)</li> <li>- SOURCE OSC LEVEL : 30 mV</li> </ul>
4. DC RESISTANCE	SEE THE SECTION OF ELECTRICAL PROPERTIES.			- MEASURING EQUIPMENT : HP4338A/B
5. HIGH TEMPERATURE TEST	NO APPARENT DAMAGE. IMPEDANCE CHANGE TO BE WITHIN ±30% TO THE INITIAL.		-	SOLDER THE SAMPLE ON PCB. EXPOSURE AT 125±3°C FOR 500 HOURS. 1-2 HOURS EXPOSURE AT ROOM TEMPERATURE AND HUMIDITY PRIOR TO MEASUREMENT.
6. SOLDER HEAT RESISTANCE	NO MECHANICAL DAMAGE. REMAINING TERMINAL ELECTRODE : 70% MIN. IMPEDANCE CHANGE TO BE WITHIN ±30% TO THE INITIAL.	MORE THAN 75% OF THE TERMINAL SURFACE IS TO BE COVERED WITH SOLDER. NO MECHANICAL DAMAGE. IMPEDANCE VARIATION : WITHIN ±20%		AFTER BEING DIPPED IN FLUX FOR 4±1 SECONDS, AND PREHEATED AT 150~180°C FOR 2~3 MIN , THE SPECIMEN SHALL BE IMMERSERD IN 60/40 TIN-LEAD ALLOY SOLDER AT 260±5°C FOR 10 ± 0.5 SECONDS.
7. SOLDERABILITY	MORE THAN 95% OF TERMINAL ELECTRODE SHOULD BE SOLDERED NEWLY.	MORE THAN 90% OF TERMINAL ELECTRODE SHOULD BE SOLDERED NEWLY.		AFTER BEING DIPPED IN FLUX FOR 4±1 SECONDS, AND PREHEATED AT 150~180°C FOR 2~3 MIN , THE SPECIMEN SHALL BE IMMERSERD IN SOLDER AT 230 ±5°C (FOR CIA SERIES : 245 ±5°C) FOR 4±1 SECONDS.
8. THERMAL SHOCK	IMPEDANCE VARIATION : WITHIN 30%. NO MECHANICAL DAMAGE.	IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.		<ul style="list-style-type: none"> <li>- CIB/CIM SERIES</li> <li>-55 ↔ +125°C, 30 MINUTES EACH. 5 CYCLES.</li> <li>- CIC/CIS SERIES</li> <li>-55 ↔ +125°C, 30 MINUTES EACH. 100 CYCLES.</li> <li>- CIA SERIES</li> <li>-40 ↔ +85°C, 30 MINUTES EACH. 5 CYCLES.</li> </ul>



# Chip Bead

ITEM	PERFORMANCE			TEST CONDITION
	CIB/CIM	CIC/CIS	CIA	
9. MOISTURE LOADING TEST	IMPEDANCE VARIATION : WITHIN 30%. NO MECHANICAL DAMAGE.		IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	- TEMPERATURE : $40\pm 2^{\circ}\text{C}$ - HUMIDITY : 90 ~ 95 %RH - DURATION : $500\pm 5$ HRS. $1000\pm 12$ HRS. (CIA SERIES) - CURRENT : RATED CURRENT
10. HIGH TEMPERATURE LOADING	IMPEDANCE VARIATION : WITHIN 30%. NO MECHANICAL DAMAGE.		IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	- TEMPERATURE : $125\pm 3^{\circ}\text{C}$ $85\pm 3^{\circ}\text{C}$ (CIA SERIES) - DURATION : $500\pm 5$ HRS. $1000\pm 12$ HRS. (CIA SERIES) - CURRENT : RATED CURRENT
11. LOW TEMPERATURE RESISTANCE	IMPEDANCE VARIATION : WITHIN 30%. NO MECHANICAL DAMAGE.		IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	- TEMPERATURE : $-55\pm 2^{\circ}\text{C}$ $-40\pm 2^{\circ}\text{C}$ (CIA SERIES) - DURATION : $500\pm 5$ HRS. $1000\pm 12$ HRS. (CIA SERIES)
12. RATED CURRENT	-	TEMPERATURE INCREASE - CIC : $40^{\circ}\text{C}$ - CIS : $60^{\circ}\text{C}$	-	- APPLIED CURRENT : RATED CURRENT - TIME : 5 MIN. - ROOM TEMPERATURE : $25\pm 5^{\circ}\text{C}$ 
13. BENDING TEST	NO APPARENT DAMAGE.			SOLDER THE SAMPLE ON PCB, BEND TO 2mm.
				

# Chip Bead

ITEM	PERFORMANCE			TEST CONDITION																				
	CIB/CIM	CIC/CIS	CIA																					
14. VIBRATION TEST	IMPEDANCE VARIATION : WITHIN 30%. NO MECHANICAL DAMAGE.	IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	APPLY VIBRATIONS IN EACH OF THE X, Y AND Z DIRECTIONS. - FREQUENCY : 10 ~ 55 ~ 10Hz - TOTAL AMPLITUDE : 1.52mm - TIME : 2 HRS. EACH (TOTAL 6 HRS.)																				
15. DROP TEST	IMPEDANCE VARIATION : WITHIN 30%. NO MECHANICAL DAMAGE.	IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	IMPEDANCE VARIATION : WITHIN 20%. NO MECHANICAL DAMAGE.	DROP THE SAMPLE FROM A HEIGHT OF 1m TO CONCRETE GROUND 10 TIMES.																				
16. TERMINAL TEST	NO INDICATION OF PEELING SHALL OCCUR ON THE TERMINAL ELECTRODE.			<table border="1"> <thead> <tr> <th>SIZE</th> <th>W(Kgf)</th> <th>SIZE</th> <th>W(Kgf)</th> </tr> </thead> <tbody> <tr> <td>05</td> <td>0.5</td> <td>31 (CIA)</td> <td>0.5</td> </tr> <tr> <td>10</td> <td>0.5</td> <td>32</td> <td>1.0</td> </tr> <tr> <td>21</td> <td>0.5</td> <td>41</td> <td>1.0</td> </tr> <tr> <td>31</td> <td>1.0</td> <td>43</td> <td>1.0</td> </tr> </tbody> </table>	SIZE	W(Kgf)	SIZE	W(Kgf)	05	0.5	31 (CIA)	0.5	10	0.5	32	1.0	21	0.5	41	1.0	31	1.0	43	1.0
				SIZE	W(Kgf)	SIZE	W(Kgf)																	
05	0.5	31 (CIA)	0.5																					
10	0.5	32	1.0																					
21	0.5	41	1.0																					
31	1.0	43	1.0																					
				- APPLYING TIME : 10±1 SEC.																				