

## Power Line Series

### ❖ Features

- High impedance characteristics
- Low Rdc, High Current characteristics
- Good reliability (Monolithic structure)
- Magnetically shielded
- Fast mounting speed
- RoHS compliant

### ❖ Applications

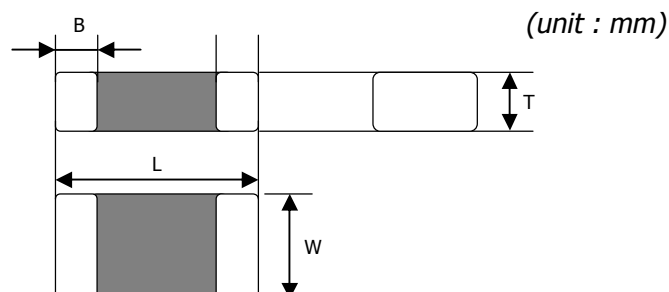
- PDP/LCD Monitor, Digital TV/VCR etc.

### ❖ General Code



- Series Code  
CB : Chip Ferrite Beads
- Dimension Code  
The first two digits : length(mm)  
The last two digits : width(mm)
- Application Code  
G : Signal Line  
P : High Current Line  
U : Ultra High Current Line
- Material Code  
A: General Frequency  
K,J: Medium Frequency  
M: High Frequency  
V: Very High Frequency
- Impedance Value Code  
The first two digits represents significant  
The last digit is the number of zeros following  
ex) 601 = 600 ( $\Omega$ )
- Packaging Code  
T : Reel paper packaging  
E : Reel embossed tape packaging

### ❖ Dimensions

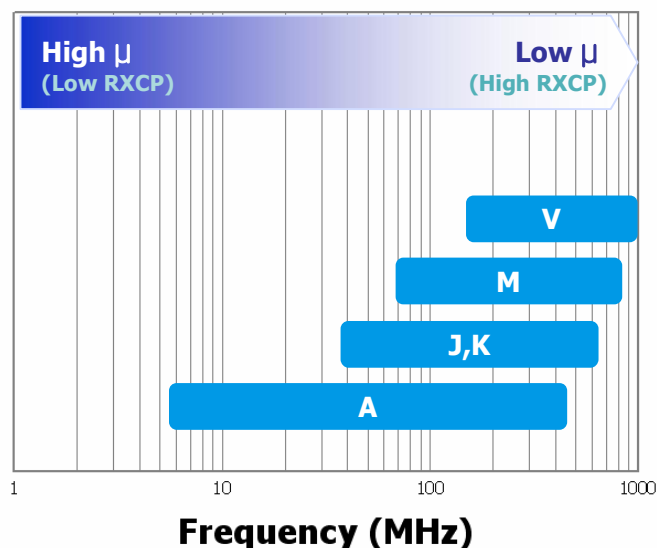


Size	L	W	T	B
1005	1.0±0.10	0.5±0.10	0.5±0.10	0.25±0.1
1608	1.6±0.15	0.8±0.15	0.8±0.15	0.3±0.2
2012	2.0±0.20	1.25±0.2	0.85±0.2	0.5±0.3
3216	3.2±0.20	1.6±0.20	1.1±0.20	0.5±0.3
4516	4.5±0.25	1.6±0.20	1.3±0.20	0.5±0.3
4532	4.5±0.25	3.2±0.25	1.5±0.25	0.5±0.3

### ❖ Temperature Range

- Operating Temp. -55 ~ +125°C
- Storage Temp. -10 ~ +40 °C

### ❖ Typical Material Characteristics



This description in the this catalogue is subject to change without notice

## ❖ 1608 SIZE

Samwha P/N	Impedance ( $\Omega$ ) $\pm 25\%$	DC Resistance ( $\Omega$ ) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB1608PA100	10	0.05	2000	100
CB1608PA300	30	0.05	2000	
CB1608PA600	60	0.08	1000	
CB1608PA121	120	0.10	800	
CB1608PA181	180	0.12	800	
CB1608PK100	10	0.05	2000	
CB1608PK300	30	0.05	2000	
CB1608PK600	60	0.08	1000	
CB1608PK121	120	0.10	800	
CB1608PK181	180	0.12	800	
CB1608PJ300	30	0.05	2000	
CB1608PJ600	60	0.10	1000	
CB1608PJ121	120	0.12	1000	
CB1608PM300	30	0.06	1500	
CB1608PM600	60	0.08	1000	
CB1608PM121	120	0.12	800	

CHIP BEAD, Power Line Series

※ Measuring Equipment

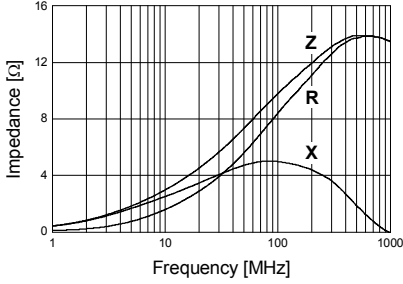
- . Z : HP4291B / E4991A

- . Rdc : HP4338B

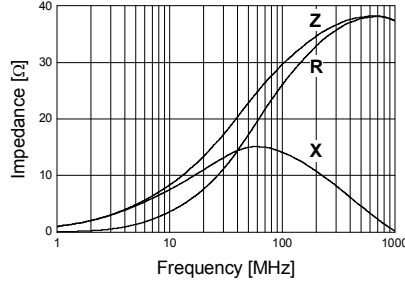
*This description in the this catalogue is subject to change without notice*

## ❖ 1608 SIZE

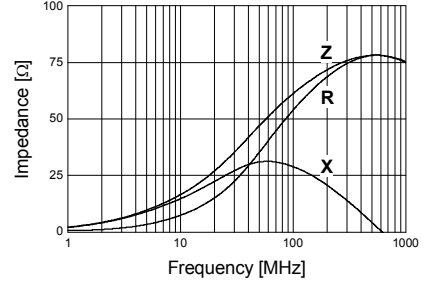
**CB 1608 PA 100**



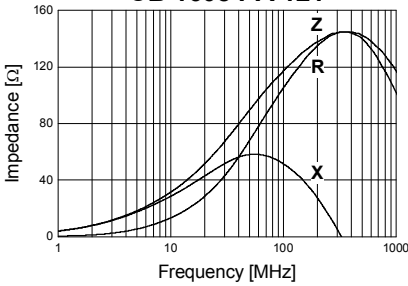
**CB 1608 PA 300**



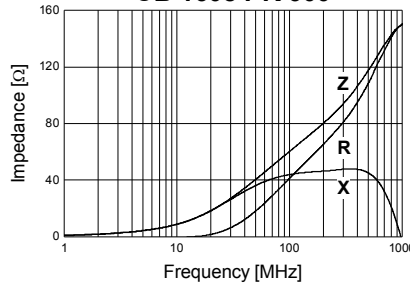
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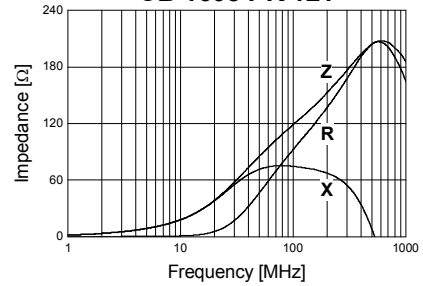
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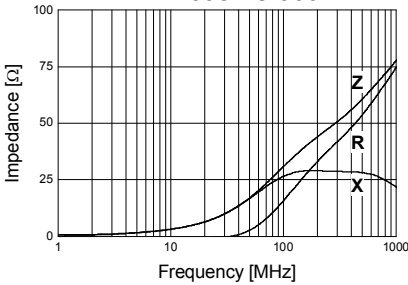
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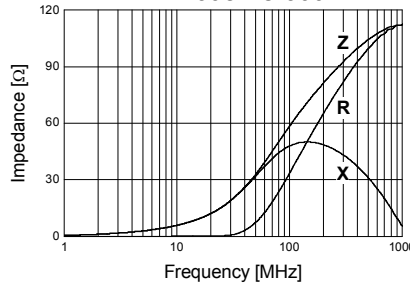
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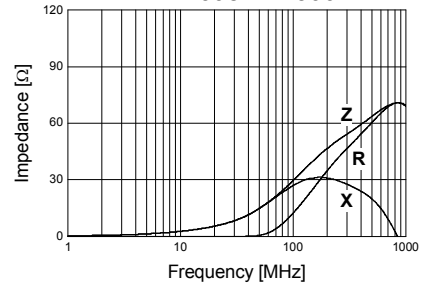
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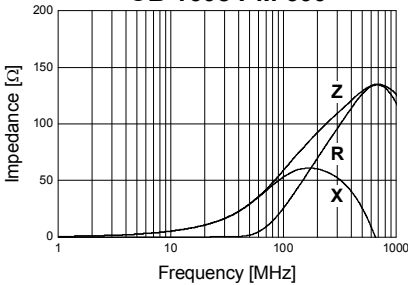
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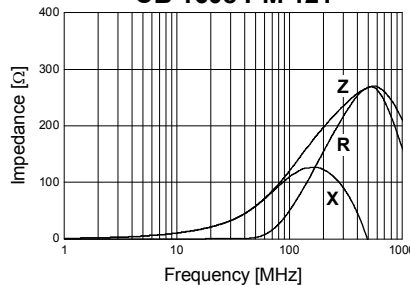
**CB 1608 PM 300**



**CB 1608 PM 600**



**CB 1608 PM 121**



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## ❖ 2012 SIZE

Samwha P/N	Impedance ( $\Omega$ ) $\pm 25\%$	DC Resistance ( $\Omega$ ) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB2012PA110	11	0.007	3000	100
CB2012PA300	30	0.015	3000	
CB2012PA600	60	0.025	3000	
CB2012PA121	120	0.050	2500	
CB2012PA221	220	0.050	2000	
CB2012PA301	300	0.100	2000	
CB2012PA601	600	0.130	1500	
CB2012PK150	15	0.080	2000	
CB2012PK300	30	0.015	3000	
CB2012PK600	60	0.025	3000	
CB2012PK121	120	0.050	2500	
CB2012PK181	180	0.050	2000	
CB2012PK221	220	0.050	2000	
CB2012PK301	300	0.070	2000	
CB2012PK601	600	0.130	1500	
CB2012PK102	1000	0.250	1000	70
CB2012PK202	2000	0.300	500	
CB2012PJ601	600	0.100	1500	100
CB2012PJ801	800	0.150	1500	
CB2012PM600	60	0.020	3000	
CB2012PM121	120	0.050	2500	
CB2012PM221	220	0.050	2000	
CB2012PM301	300	0.070	2000	
CB2012PM601	600	0.130	1500	

CHIP BEAD, Power Line Series

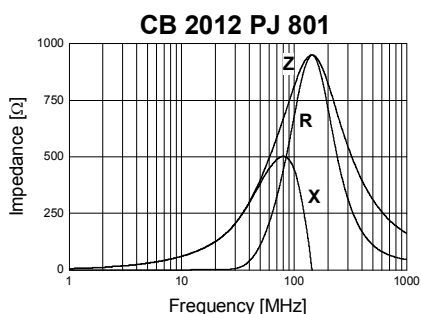
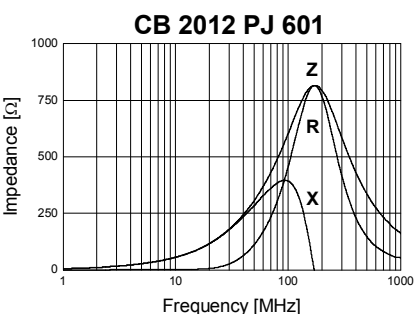
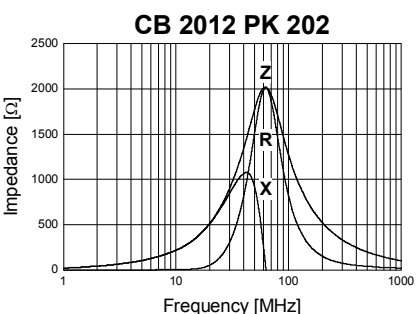
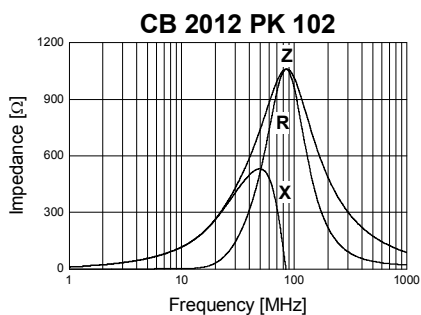
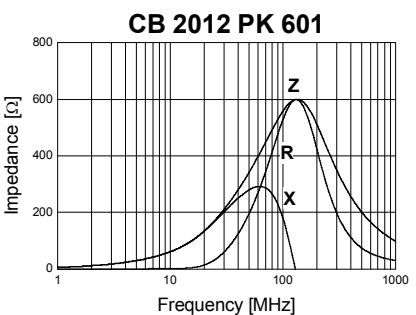
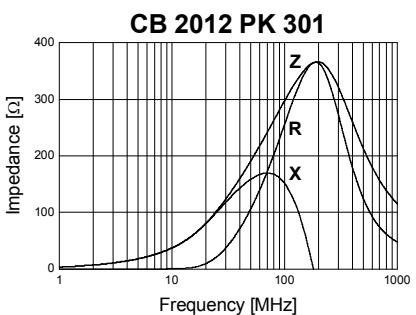
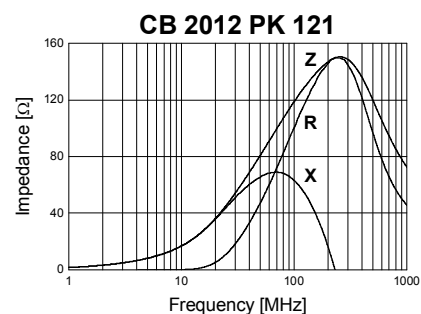
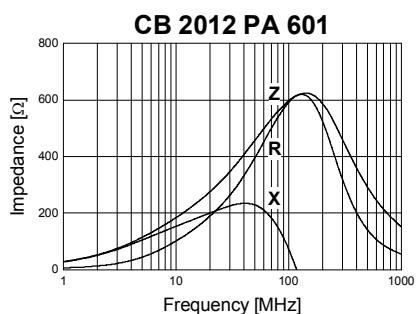
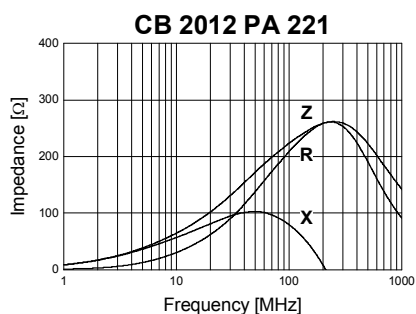
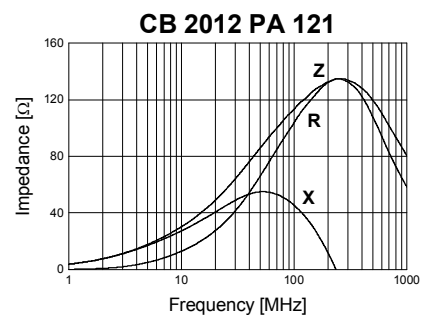
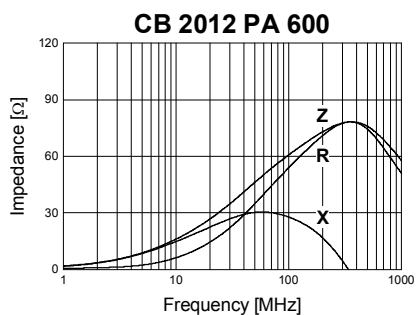
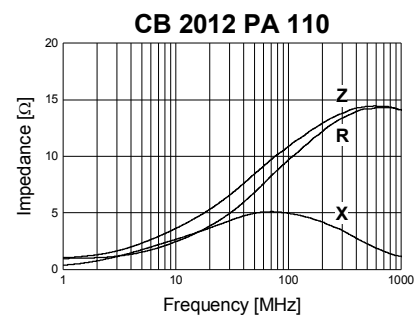
※ Measuring Equipment

-. Z : HP4291B / E4991A

-. Rdc : HP4338B

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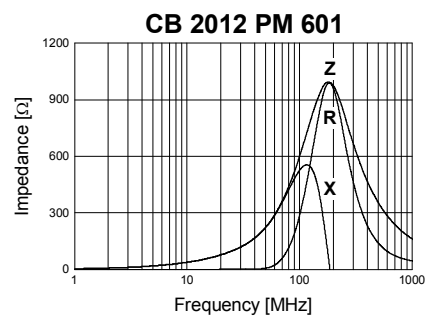
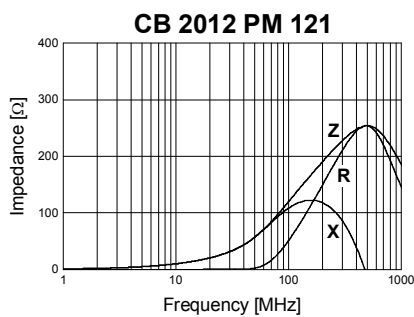
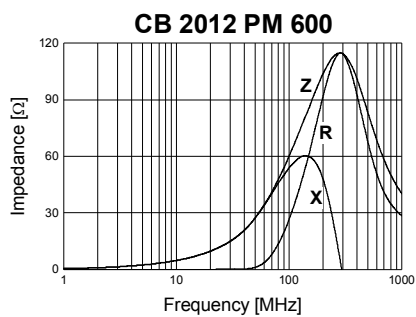
## ❖ 2012 SIZE



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## ❖ 2012 SIZE



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## ❖ 3216 SIZE

Samwha P/N	Impedance ( $\Omega$ ) $\pm 25\%$	DC Resistance ( $\Omega$ ) max.	Rated Current (mA) max.	Test Frequency (MHz)
CB3216PA310	31	0.03	3000	100
CB3216PA350	35	0.03	3000	
CB3216PA500	50	0.03	3000	
CB3216PA600	60	0.03	3000	
CB3216PA700	70	0.03	3000	
CB3216PA900	90	0.03	3000	
CB3216PA101	100	0.03	3000	
CB3216PA121	120	0.03	3000	
CB3216PA151	150	0.03	3000	
CB3216PA301	300	0.06	3000	
CB3216PA501	500	0.06	3000	
CB3216PA601	600	0.06	3000	
CB3216PK501	500	0.06	3000	
CB3216PK601	600	0.06	3000	
CB3216PJ601	600	0.06	3000	
CB3216PM121	120	0.03	3000	
CB3216PM601	600	0.06	3000	

CHIP BEAD, Power Line Series

※ Measuring Equipment

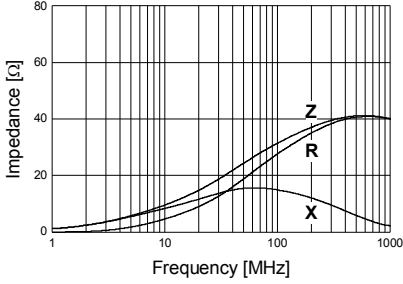
- . Z : HP4291B / E4991A

- . Rdc : HP4338B

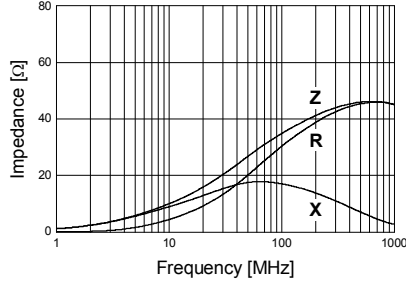
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## ❖ 3216 SIZE

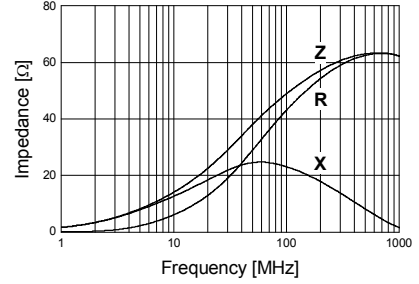
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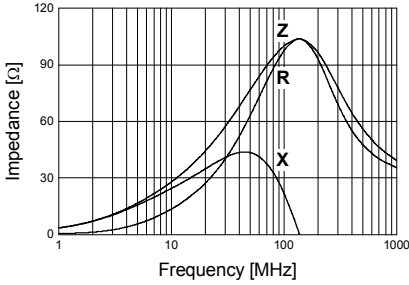
**CB 3216 PA 350**



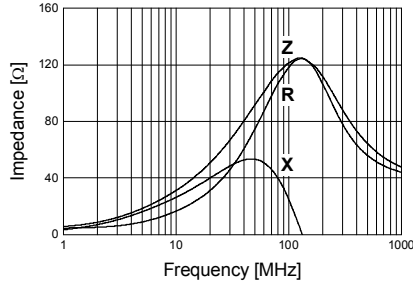
**CB 3216 PA 500**



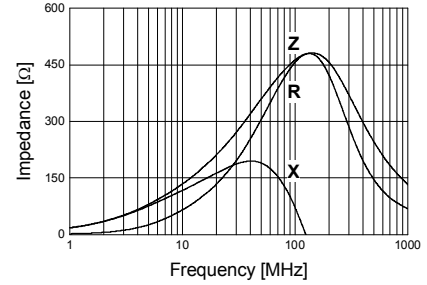
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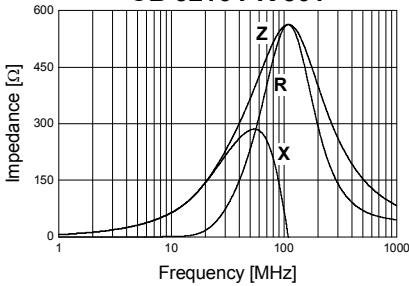
**CB 3216 PA 121**



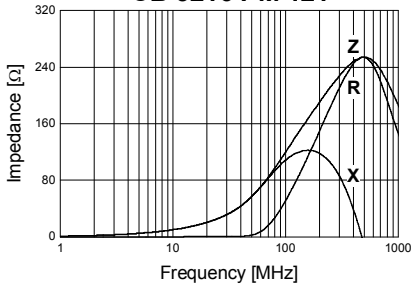
**CB 3216 PA 501**



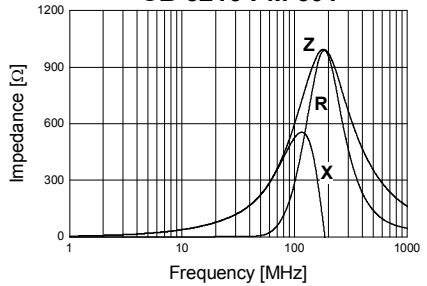
**CB 3216 PK 501**



**CB 3216 PM 121**



**CB 3216 PM 601**

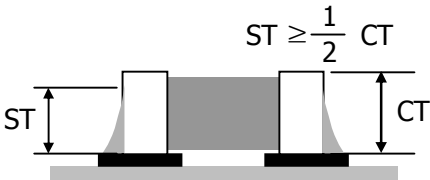


**CHIP BEAD, Power Line Series**

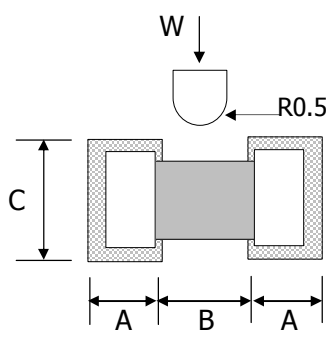
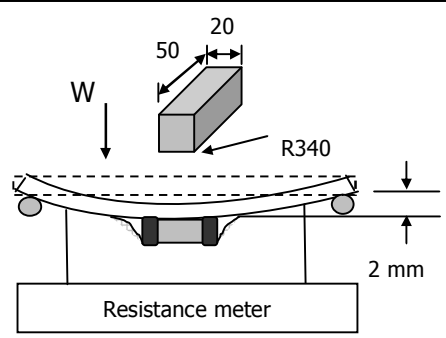
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## Reliability & Test Condition

Item	Requirements	Test Conditions
Operating temperature range	- 55 °C ~ + 125 °C	-
Storage temperature range	40 °C max., 70% RH max.	at packing condition
Solderability	More than 90% of the terminal electrode shall be covered with new solder	Preheat temperature : 100 ~ 150 °C Preheat time : 60 sec. Solder temperature : 245 ± 5 °C Soldering time : 10 ± 1 sec.
Resistance to soldering heat	<ol style="list-style-type: none"> <li>1. No damage such as cracks should be caused in chip element</li> <li>2. More than 75% of the terminal electrode shall be covered with new solder</li> <li>3. Impedance shall not change more than ± 30 %</li> </ol>	Preheat temperature : 100 ~ 150 °C Preheat time : 60 sec. Solder temperature : 270 ± 10 °C Soldering time : 10 ± 0.5 sec.
Reflow soldering	<p>More than 50% of the terminal electrode shall be covered with new solder</p> 	Preheat temperature : 150 °C Preheat time : 60 sec. Solder temperature : 245 ± 5 °C Soldering time : 10 sec. max. (Reflow soldering profile)
High temperature resistance		Temperature : 125 ± 3 °C Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours
High temperature load resistance	<ol style="list-style-type: none"> <li>1. No mechanical damage</li> <li>2. Impedance shall not change more than ± 30 %</li> </ol>	Temperature : 125 ± 3 °C Applied current : rated current Time : 1000 ± 12 hours Measurement at room ambient temperature after placing for 24 hours
Humidity resistance		Temperature : 40 ± 2 °C Humidity : 90 ± 2 % RH Time : 500 ± 12 hours Measurement at room ambient temperature after placing for 24 hours

## Reliability & Test Condition

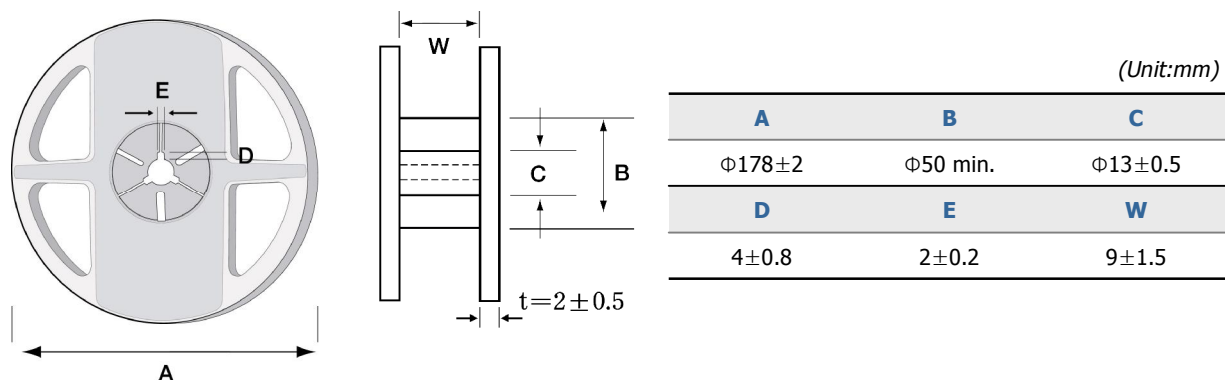
Item	Requirements	Test Conditions																																			
Humidity load resistance	1. No mechanical damage 2. Impedance shall not change more than $\pm 30\%$	Temperature : $40 \pm 2\text{ }^\circ\text{C}$ Humidity : $90 \pm 2\%$ RH Applied current : rated current Time : $500 \pm 12$ hours Measurement at room ambient temperature after placing for 24 hours																																			
Low temperature resistance		Temperature : $-55 \pm 3\text{ }^\circ\text{C}$ Time : $1000 \pm 12$ hours Measurement at room ambient temperature after placing for 24 hours																																			
Thermal shock		1. $-55 \pm 3\text{ }^\circ\text{C}$ for 30 minutes 2. $125 \pm 3\text{ }^\circ\text{C}$ for 30 minutes 3. repeat 100 cycle																																			
Vibration		Frequency : $10 \sim 55$ Hz Amplitude : 1.5 mm Direction : X, Y, Z Sweep time : 2 hours for each axis																																			
Drop		Drop 10 times on a concrete floor from a height of 100 cm																																			
Flexure strength	No mechanical damage <table border="1"> <thead> <tr> <th>ITEM</th> <th>1005</th> <th>1608</th> <th>2012</th> <th>3216</th> <th>4516</th> <th>4532</th> </tr> </thead> <tbody> <tr> <td>A (mm)</td> <td>0.7</td> <td>1.0</td> <td>1.0</td> <td>1.3</td> <td>1.5</td> <td>1.5</td> </tr> <tr> <td>B (mm)</td> <td>0.5</td> <td>0.8</td> <td>1.0</td> <td>1.5</td> <td>3.6</td> <td>3.6</td> </tr> <tr> <td>C (mm)</td> <td>0.7</td> <td>1.3</td> <td>1.3</td> <td>3.0</td> <td>3.0</td> <td>3.8</td> </tr> <tr> <td>W (kgf)</td> <td>0.7</td> <td>2.0</td> <td>4.0</td> <td>5.0</td> <td>5.0</td> <td>5.0</td> </tr> </tbody> </table>	ITEM	1005	1608	2012	3216	4516	4532	A (mm)	0.7	1.0	1.0	1.3	1.5	1.5	B (mm)	0.5	0.8	1.0	1.5	3.6	3.6	C (mm)	0.7	1.3	1.3	3.0	3.0	3.8	W (kgf)	0.7	2.0	4.0	5.0	5.0	5.0	
ITEM	1005	1608	2012	3216	4516	4532																															
A (mm)	0.7	1.0	1.0	1.3	1.5	1.5																															
B (mm)	0.5	0.8	1.0	1.5	3.6	3.6																															
C (mm)	0.7	1.3	1.3	3.0	3.0	3.8																															
W (kgf)	0.7	2.0	4.0	5.0	5.0	5.0																															
Bending strength	The terminal electrode shall be neither break off nor the chip damage																																				

## Packaging

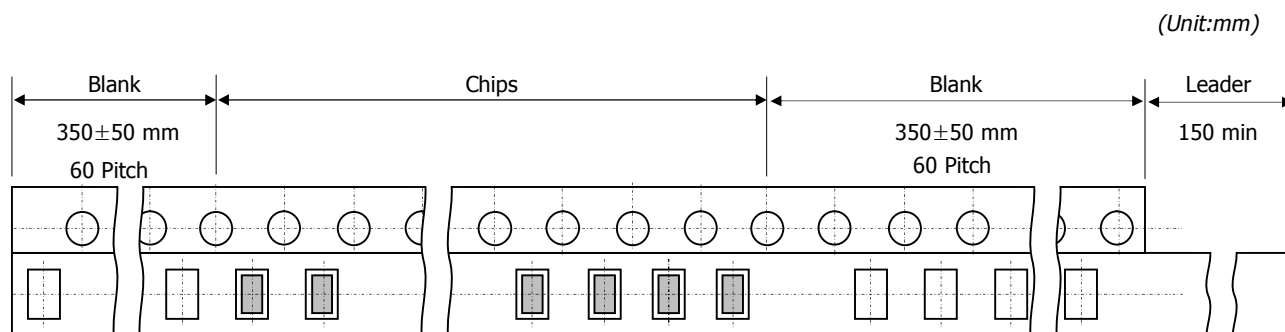
### ❖ Standard Quantity

Size	Q'TY(PCS)	Remarks
1005	10,000	
1608	4,000	
2012	4,000	0.85 T size
3216	3,000	
4516	2,000	
4532	1,000	

### ❖ Reel Dimension



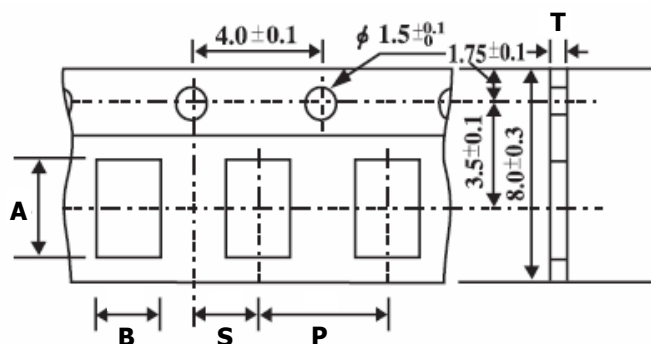
### ❖ Leader & Blank Portion



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## Packaging

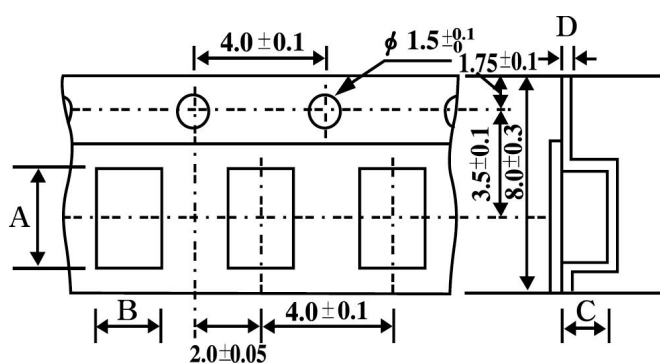
### ❖ Taping Dimensions (Paper tape)



(Unit:mm)

Type	A ±0.1	B ±0.1	P ±0.1	S ±0.1	T (Max.)
1005	1.15	0.65	2.0	1.0	0.8
1608	1.80	1.00	4.0	2.0	1.1
2012	2.30	1.55	4.0	2.0	1.1

### ❖ Taping Dimensions (Emboss tape)



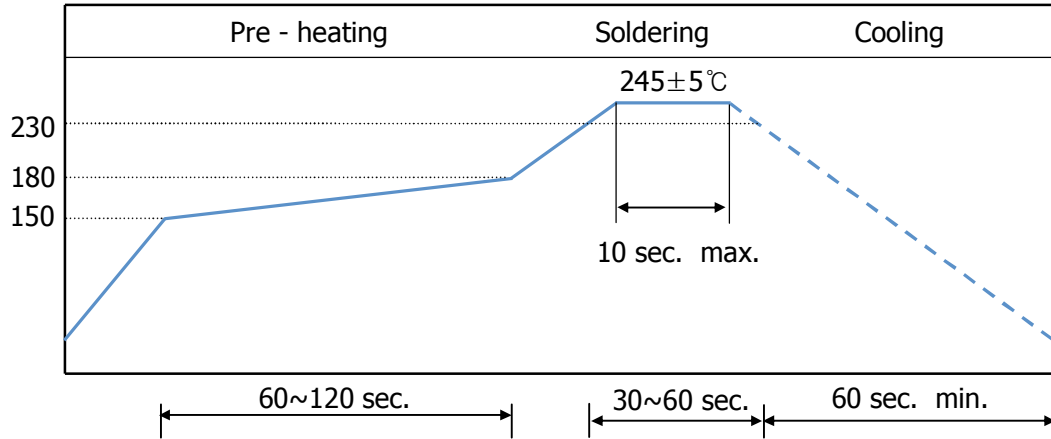
(Unit:mm)

Type	A ±0.1	B ±0.1	C ±0.1	D ±0.1
2012	2.25	1.45	1.50	0.23
3216	3.50	1.85	1.25	0.23
4516	4.90	1.90	1.35	0.30
4532	4.85	3.60	1.40	0.30

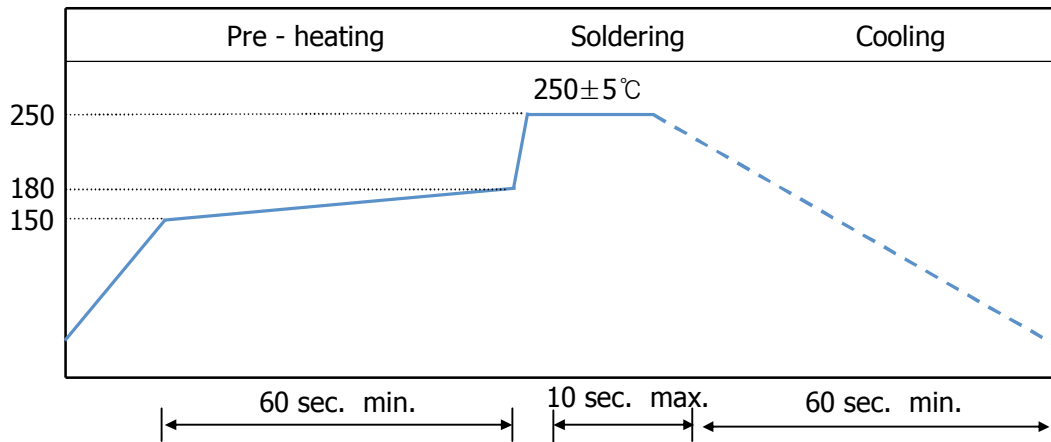
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## Soldering Profile

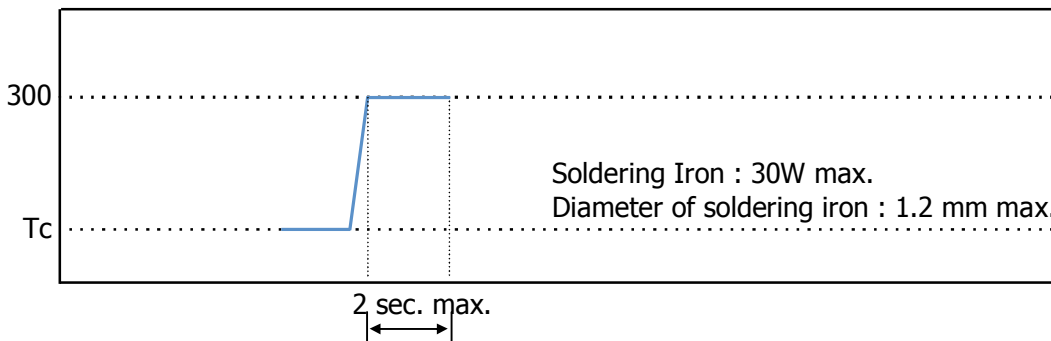
### ❖ Reflow Soldering



### ❖ Flow Soldering



### ❖ Manual Soldering



CHIP BEAD, Soldering Profile

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