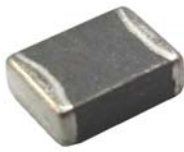


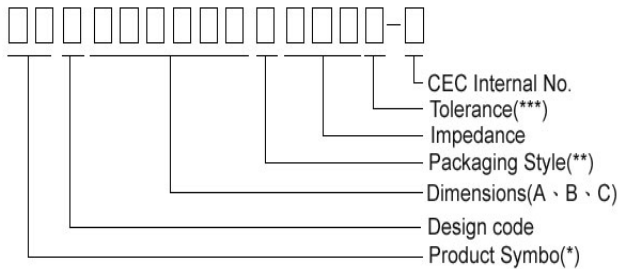
## Multilayer Ferrite Chip beads



Chilisin offers hundreds of multi-layered ferrite chip beads with various sizes, frequency characteristics, and a wide range of impedance values to provide powerful solutions for EMI problems.

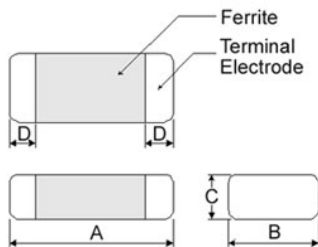
Three formulas of ferrite compose several types of EMI suppression chip beads that are classified into six categories- SB, GB, PB, UPB, NB, and HF series.

### Product Identification



- Product Symbol: SB, GB, PB, UPB, NB, HF
- Packaging: T : Tape and Reel ; B : Bulk
- Tolerance: Y =  $\pm 25\%$ ; M =  $\pm 20\%$ ; T:  $\pm 30\%$
- Note: RoHS Compliant

### Shapes and Dimensions



Dimensions in mm

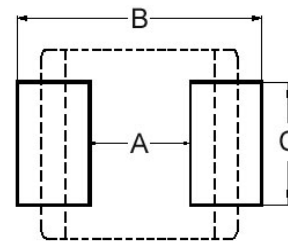
TYPE	A	B	C	D
①060303	0.6 $\pm$ 0.03	0.30 $\pm$ 0.03	0.3 $\pm$ 0.03	0.15 $\pm$ 0.05
②100505	1.0 $\pm$ 0.10	0.50 $\pm$ 0.10	0.5 $\pm$ 0.10	0.25 $\pm$ 0.10
③160808	1.6 $\pm$ 0.15	0.80 $\pm$ 0.15	0.8 $\pm$ 0.15	0.3 $\pm$ 0.2
④201209	2.0 $\pm$ 0.20	1.25 $\pm$ 0.20	0.9 $\pm$ 0.20	0.5 $\pm$ 0.3
⑤201212	2.0 $\pm$ 0.20	1.25 $\pm$ 0.20	1.25 $\pm$ 0.20	0.5 $\pm$ 0.3
④321611	3.2 $\pm$ 0.20	1.60 $\pm$ 0.20	1.1 $\pm$ 0.20	0.5 $\pm$ 0.3
⑥321616	3.2 $\pm$ 0.20	1.60 $\pm$ 0.20	1.6 $\pm$ 0.20	0.5 $\pm$ 0.3
⑦322513	3.2 $\pm$ 0.20	2.50 $\pm$ 0.20	1.3 $\pm$ 0.20	0.5 $\pm$ 0.3
⑧451616	4.5 $\pm$ 0.25	1.60 $\pm$ 0.20	1.6 $\pm$ 0.20	0.5 $\pm$ 0.3
⑧453215	4.5 $\pm$ 0.25	3.20 $\pm$ 0.20	1.5 $\pm$ 0.20	0.5 $\pm$ 0.3

① : SB / PB    ② : SB / PB / NB / HF    ④ : SB / PB / NB / GB / UPB \*  
 ③ : SB / PB / NB / GB / UPB / HF    ⑤ : UPB    ⑥ : SB / GB  
 ⑦ : SB / PB / GB    ⑧ : SB / PB / GB / UPB

### Dimension Conversion

Code	Dimension in mm (AxBxC)	EIA
060303	0.6X0.3X0.3	0201
100505	1.0X0.5X0.5	0402
160808	1.6x0.8x0.8	0603
201209	2.0x1.2x0.9	0805
321611	3.2x1.6x.1.1	1206
321616	3.2x1.6x1.6	1206
322513	3.2x2.5x1.3	1210
451616	4.5x1.6x1.6	1806
453215	4.5x3.2x1.5	1812

### Recommended Pattern



Dimensions in mm

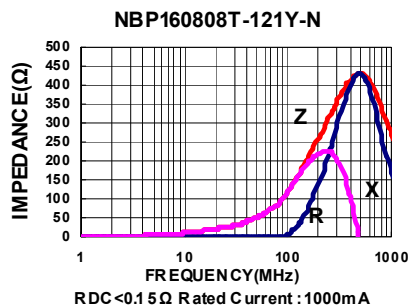
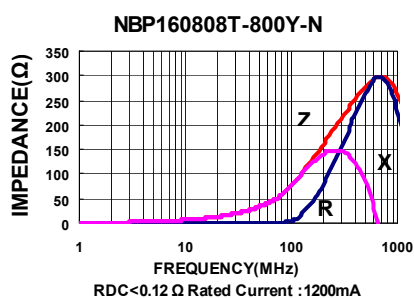
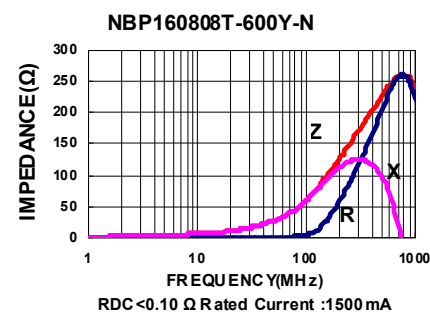
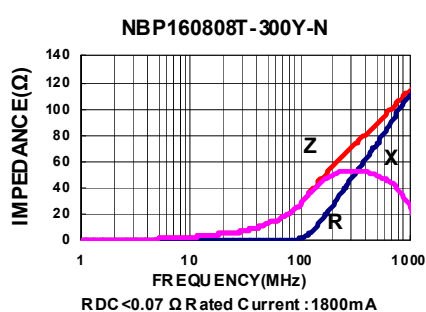
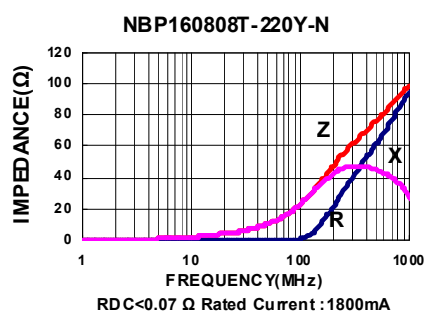
TYPE	A	B	C
①060303	0.2 ~ 0.3	0.75 ~ 1.05	0.3
②100505	0.4	1.2 ~ 1.4	0.5
③160808	0.7 ~ 0.8	1.8 ~ 2.0	0.6 ~ 0.8
④201209	1.0 ~ 1.2	2.6 ~ 4.0	1.0 ~ 1.2
⑤201212	1.0 ~ 1.2	2.6 ~ 4.0	1.0 ~ 1.2
④321611	2.0	4.2 ~ 5.2	1.2
⑥321616	2.0	4.2 ~ 5.2	1.2
⑦322513	2.0	5.5 ~ 6.5	1.8
⑧451616	3.0	5.5 ~ 6.5	1.2
⑧453215	3.0	5.5 ~ 6.5	2.4

Don't apply narrower pattern than listed above to PB and UPB. Narrow pattern might cause excessive heat or open circuit.

## Electrical Characteristics

Part Number	Test Frequency (MHz)	Impedance ( $\Omega \pm 25\%$ )	D.C. Resistance ( $\Omega$ ) Max	Rated current (mA) Max
NBP160808T-100Y-N	100	10	0.03	3000
NBP160808T-220Y-N	100	22	0.07	1800
NBP160808T-300Y-N	100	30	0.07	1800
NBP160808T-600Y-N	100	60	0.10	1500
NBP160808T-800Y-N	100	80	0.12	1200
NBP160808T-101Y-N	100	100	0.12	1000
NBP160808T-121Y-N	100	120	0.15	1000

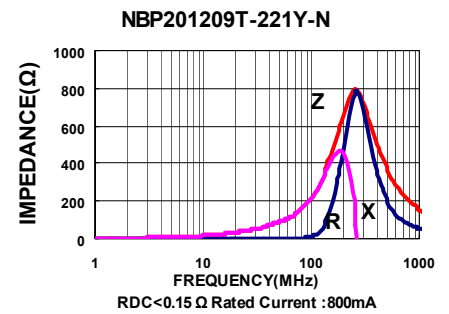
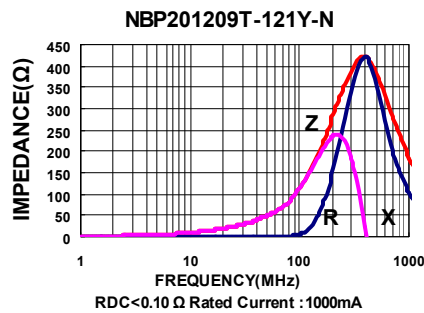
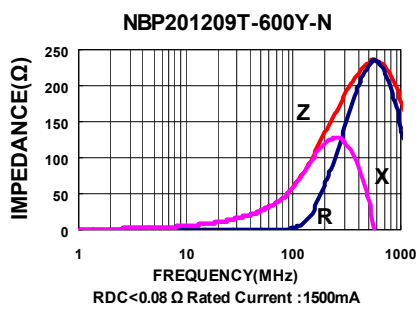
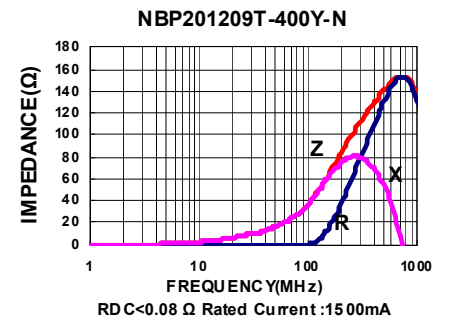
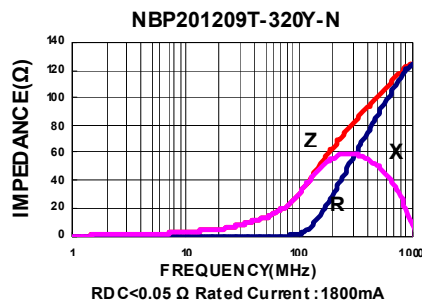
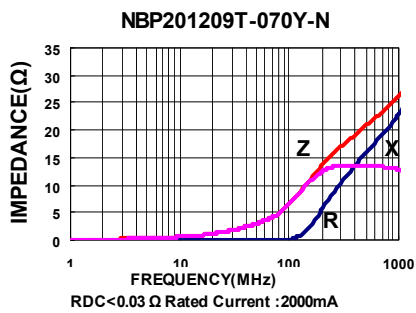
**Test Instruments :** HP4291A Impedance / Material Analyzer



## Electrical Characteristics

Part Number	Test Frequency (MHz)	Impedance ( $\Omega \pm 25\%$ )	D.C. Resistance ( $\Omega$ ) Max	Rated current (mA) Max
NBP201209T-070Y-N	100	7	0.03	2000
NBP201209T-320Y-N	100	32	0.05	1800
NBP201209T-400Y-N	100	40	0.08	1500
NBP201209T-600Y-N	100	60	0.08	1500
NBP201209T-121Y-N	100	120	0.10	1000
NBP201209T-221Y-N	100	220	0.15	800

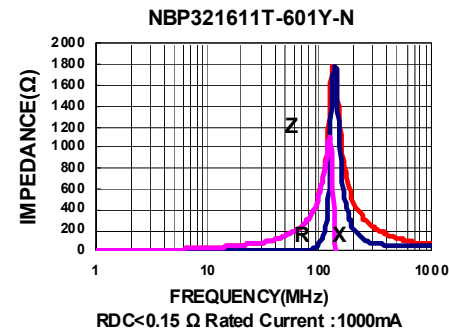
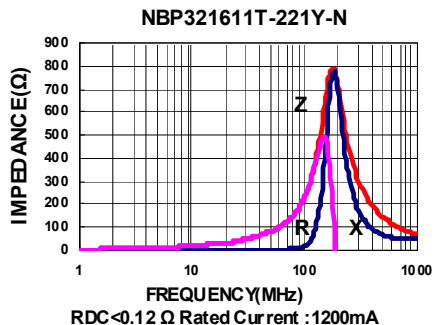
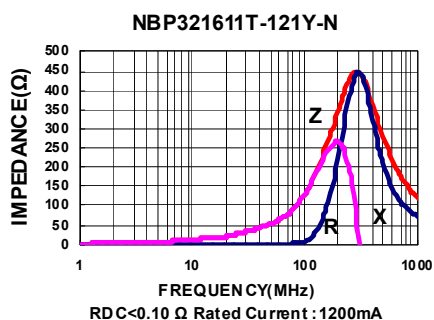
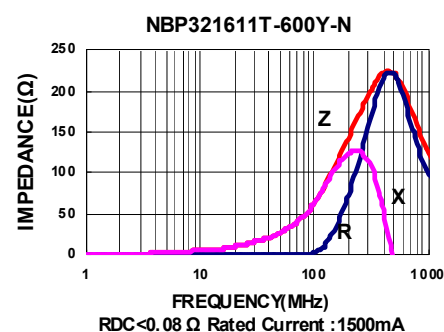
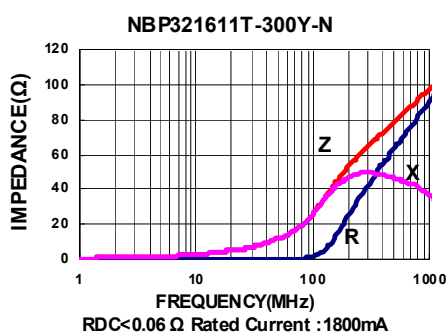
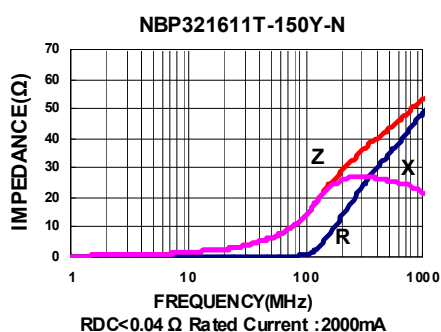
**Test Instruments :** HP4291A Impedance / Material Analyzer



## Electrical Characteristics

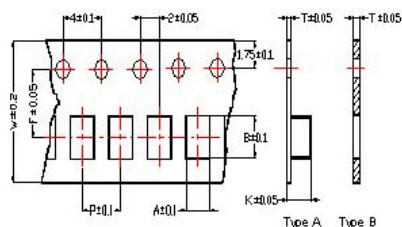
Part Number	Test Frequency (MHz)	Impedance ( $\Omega \pm 25\%$ )	D.C. Resistance ( $\Omega$ ) Max	Rated current (mA) Max
NBP321611T-150Y-N	100	15	0.04	2000
NBP321611T-190Y-N	100	19	0.04	2000
NBP321611T-300Y-N	100	30	0.06	1800
NBP321611T-600Y-N	100	60	0.08	1500
NBP321611T-121Y-N	100	120	0.10	1200
NBP321611T-221Y-N	100	220	0.12	1200
NBP321611T-601Y-N	100	600	0.15	1000

**Test Instruments :** HP4291A Impedance / Material Analyzer

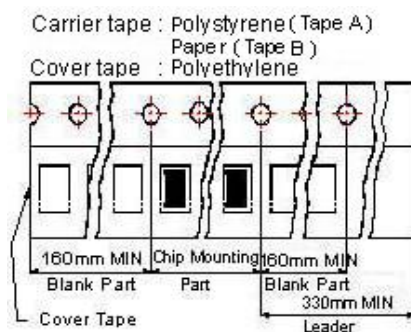


## Packaging Specifications

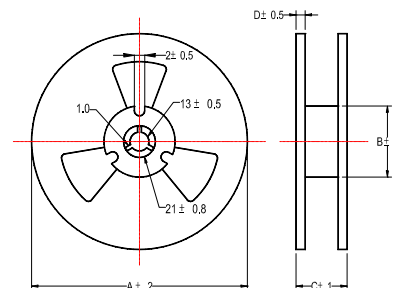
Tape Dimensions



Tape Material



Reel Dimensions



①: SB / PB ②: SB / PB / NB / HF ④: SB / PB / NB / GB / UPB  
③: SB / PB / NB / GB / UPB / HF ⑤: UPB ⑥: SB / GB  
⑦: SB / PB / GB ⑧: SB / PB / GB / UPB

## Dimensions in mm

TYPE	Tape Dimensions								Reel Dimensions				Quantity PCS / REEL
	A	B	T	W	P	F	K	Tape Type.	A	B	C	D	
①060303	0.38	0.67	0.45	8.0	2.0	3.5	-	B	178	60	10	2	15000
②100505	0.65	1.15	0.60	8.0	2.0	3.5	-	B	178	60	12	2	10000
③160808	1.05	1.85	0.95	8.0	4.0	3.5	-	B	178	60	12	2	4000
④201209	1.50	2.30	0.97	8.0	4.0	3.5	-	B	178	60	12	2	4000
⑤201212	1.35	2.25	0.22	8.0	4.0	3.5	1.35	A	178	60	12	2	3000
④321611	1.88	3.50	0.22	8.0	4.0	3.5	1.27	A	178	60	12	2	3000
⑥321616	1.88	3.53	0.22	8.0	4.0	3.5	1.80	A	178	60	12	2	2000
⑦322513	2.77	3.42	0.22	8.0	4.0	3.5	1.55	A	178	60	12	2	2500
⑧451616	1.93	4.95	0.24	12	4.0	5.5	1.93	A	178	60	14	2	2000
⑧453215	3.66	4.95	0.24	12	8.0	5.5	1.85	A	178	60	14	2	1000