

Viking Tech Corporation

Multilayer Chip Beads



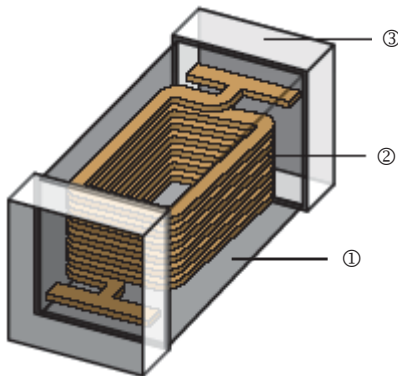
■ Features

- Effective EMI protection
- Low DC resistance
- High soldering heat resistance
- Multiple size availability

■ Applications

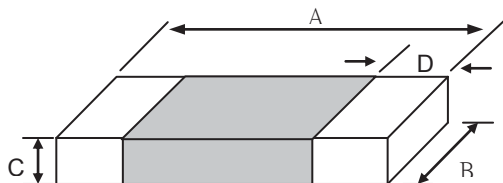
- Computers and Peripheral Equipment
- VCRS, Television, Pagers
- Cellular Phones
- Digital Communication Equipment
- Various Electronics Equipments
- Circuit Where a Stable Ground is Unavailable

■ Construction



① Ferrite	② Internal Electrode	③ Electrode Plating (Ag/Ni/Sn)
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■ Dimensions



Unit : mm

Type	Size (Inch)	A	B	C	D	Weight (g) (1000pcs)
CB02	0402	1.0±0.10	0.50±0.10	0.5±0.10	0.1~0.35	2.6
CB03	0603	1.6±0.20	0.80±0.15	0.8±0.15	0.1~0.6	6.2
CB05	0805	2.0±0.20	1.25±0.20	0.9±0.20	0.2~0.8	10
CB04	1204	3.2±0.20	1.60±0.20	1.1±0.20	0.2~1.0	30
CB06	1206	3.2±0.20	1.60±0.20	1.6±0.20	0.2~1.0	42
CB10	1210	3.2±0.20	2.50±0.20	1.3±0.20	0.2~1.0	54
CB08	1808	4.5±0.25	1.60±0.20	1.6±0.20	0.2~1.0	60
CB12	1812	4.5±0.25	3.20±0.20	1.5±0.20	0.2~1.0	62

Wire Wound Chip Inductor (Ferrite)

Features

- Very strong solderability by flow soldering, soldering iron or wave soldering
- Highly accurate dimensions, can be mounted automatically
- Terminals are highly resistant to pull forces
- Highly resistant to mechanical shocks and pressure
- Highly reliable in environments of sudden temperature change and humidity.
- Super Q characteristics



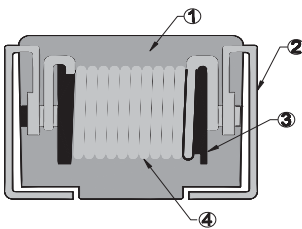
Applications

- Micro Televisions, Liquid Crystal Televisions, Video Cameras, Portable VCRs, Car Radios, Car Stereos, Thin Tape Radios, Television Tuners, Mobile Telephones, Radio and Other Electronic Devices



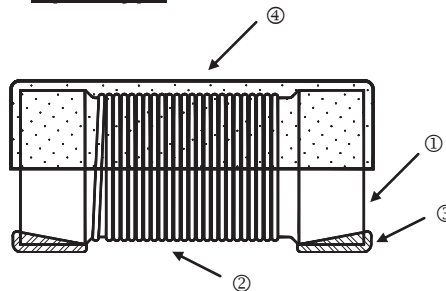
Construction

Molding Type



① Molded resin	③ Ferrite core
② Electrode (Tinned Copper Wire)	④ Magnet wire

Open Type



① Ferrite core	③ Electrode (Ag/Pd+Ni+Sn)
② Magnet wire	④ UV Glue

Part Numbering

NL	05	K	T	C	1R0
Product Type	Dimensions (LxW)	Inductance Tolerance	Packaging Code	Current	Inductance
	03: 0603 05: 0805 08: 1008 10: 1210 12: 1812 20: 2220	J: ±5% K: ±10% M: ±20%	T: Taping Reel	: Standard C: Large Current L: Low Profile	R12: 120nH R27: 270nH 2R7: 2700nH 100: 10µH

Dimensions

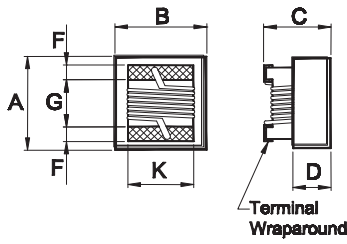


Figure 1

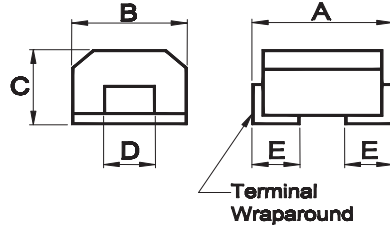


Figure 2

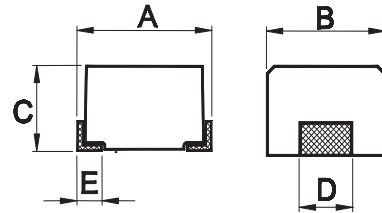
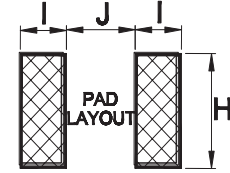
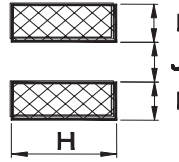
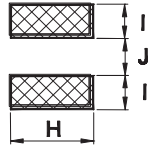


Figure 3



Unit: mm

Type	Size (Inch)	Figure	A	B	C	D	E	F	G	H	I	J	K	Weight (g) (1000pcs)
NL03	0603	1	1.80 max	1.20 max	1.00 max	0.45	-	0.33	0.95	1.02	0.64	0.64	1.05	9.6
NL05	0805	1	2.40 max	1.71 max	1.45 max	0.65	-	0.44	1.02	1.78	1.02	0.76	1.27	14
NL08	1008	1	2.92 max	2.79 max	2.10 max	1.20	-	0.45	1.52	2.54	1.02	1.27	2.03	30
NL10	1210	2	3.2±0.4	2.5±0.2	2.2±0.2	1.0±0.2	0.6-0/+0.3	-	-	1.40	1.00	1.80	-	40
NL12	1812	2	4.5±0.3	3.2±0.2	3.2±0.2	1.20	1.0-0/+0.3	-	-	1.60	1.50	2.20	-	160
NL20	2220	3	5.6±0.3	5.0±0.2	4.0±0.3	4±0.2	0.7±0.2	-	-	4.50	2.00	4.00	-	300
NL05(L)	0805	1	2.29 max	1.73 max	1.00 max	0.51	-	0.44	1.02	1.78	1.02	0.76	1.27	14
NL03(C)	0603	1	1.80 max	1.20 max	1.10 max	0.45	-	0.33	0.95	1.02	0.64	0.64	1.05	9.6
NL05(C)	0805	1	2.40 max	1.71 max	1.45 max	0.65	-	0.44	1.02	1.78	1.02	0.76	1.27	14
NL08(C)	1008	1	2.92 max	2.79 max	2.10 max	1.30	-	0.45	1.52	2.54	1.02	1.27	2.03	30
NL10(C)	1210	2	3.2±0.4	2.5±0.2	2.2±0.2	1.0±0.2	0.6-0/+0.3	-	-	1.40	1.00	1.80	-	40
NL12(C)	1812	2	4.5±0.3	3.2±0.2	3.2±0.2	1.20	1.0-0/+0.3	-	-	1.60	1.50	2.20	-	160
NL20(C)	2220	3	5.6±0.3	5.0±0.2	4.0±0.3	4±0.2	0.7±0.2	-	-	4.50	2.00	4.00	-	300

Color Coding

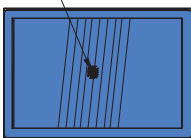
0603 / 0805 / 1008 Type (except NL05(L))

Because of small sizes, these parts are marked with a single color dot.

The inductance value represented by the dot is shown on the data page for each type.

0603/0805

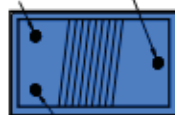
1st Code



Color Coding

1008

1st Code 3rd Code



2nd Code

Color Coding

Standard Electrical Specifications



NL03 Wire Wound Chip Inductors (Ferrite / Open Type) / Standard Type

Codes	Inductance (μH)	Tolerance	Q typ.	Test Freq. (MHz)	SRF (MHz) typ.	DCR (Ω) max.	IDC (mA) max.	Color Code
1R0	1.0	±10, ±20%	16	7.96	390	0.416	860	Black
1R5	1.5	±10, ±20%	16	7.96	160	0.520	720	Brown
1R8	1.8	±10, ±20%	16	7.96	121	0.559	640	Red
2R2	2.2	±10, ±20%	16	7.96	103	0.728	600	Orange
2R7	2.7	±10, ±20%	16	7.96	72	0.806	540	Yellow
3R3	3.3	±10, ±20%	16	7.96	66	0.910	500	Green
3R9	3.9	±10, ±20%	16	7.96	61	1.079	460	Blue
4R7	4.7	±10, ±20%	16	7.96	51	1.261	400	Violet
5R6	5.6	±10, ±20%	16	7.96	47	1.430	380	Gray
6R8	6.8	±10, ±20%	16	7.96	43	1.950	340	White
8R2	8.2	±10, ±20%	16	7.96	40	2.184	300	Black
100	10	±10, ±20%	14	2.52	36	2.405	280	Brown
120	12	±10, ±20%	14	2.52	32	2.964	260	Red
150	15	±10, ±20%	14	2.52	29	3.380	240	Orange
180	18	±10, ±20%	14	2.52	28	3.770	220	Yellow
220	22	±10, ±20%	14	2.52	24	4.693	200	Green
270	27	±10, ±20%	14	2.52	20	6.760	140	Blue
330	33	±10, ±20%	14	2.52	15	8.580	120	Violet

NL05 Wire Wound Chip Inductors (Ferrite / Open Type) / Standard Type



Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.	Color Code
R11	0.11	±10%	25	25.2	1200	0.05	2000	White
R12	0.12	±5, ±10%	20	25.2	700	0.18	1100	Violet
R15	0.15	±5, ±10%	20	25.2	900	0.18	1100	Gray
R18	0.18	±5, ±10%	20	25.2	600	0.20	800	Black
R22	0.22	±5, ±10%	20	25.2	550	0.25	700	Brown
R27	0.27	±5, ±10%	20	25.2	550	0.38	700	Red
R33	0.33	±5, ±10%	20	25.2	550	0.35	650	Orange
R39	0.39	±5, ±10%	20	25.2	420	0.35	600	Yellow
R47	0.47	±5, ±10%	20	25.2	350	0.45	600	Green
R56	0.56	±5, ±10%	20	25.2	300	0.45	550	Blue
R62	0.62	±5, ±10%	30	25.2	640	0.45	980	Brown
R68	0.68	±5, ±10%	20	25.2	300	0.60	500	Violet
R82	0.82	±5, ±10%	20	25.2	300	0.55	500	Gray
R91	0.91	±5, ±10%	30	25.2	500	0.55	900	Yellow
1R0	1.0	±5, ±10%	15	7.96	280	0.80	450	White
1R2	1.2	±5, ±10%	15	7.96	280	0.90	400	Black
1R5	1.5	±5, ±10%	15	7.96	250	1.05	350	Brown
1R8	1.8	±5, ±10%	15	7.96	120	1.00	350	Red
2R2	2.2	±5, ±10%	15	7.96	110	1.10	320	Orange
2R7	2.7	±5, ±10%	15	7.96	70	1.20	320	Yellow
3R3	3.3	±5, ±10%	15	7.96	60	1.50	300	Green
3R9	3.9	±5, ±10%	15	7.96	55	1.75	300	Blue
4R7	4.7	±5, ±10%	15	7.96	45	2.10	200	Violet
5R6	5.6	±5, ±10%	15	7.96	40	2.30	250	Gray
6R8	6.8	±5, ±10%	15	7.96	36	2.70	200	White
8R2	8.2	±5, ±10%	15	7.96	33	3.30	180	Black
100	10	±5, ±10%	10	2.52	30	4.50	180	Brown
120	12	±5, ±10%	16	2.52	37	2.80	220	Red
150	15	±5, ±10%	16	2.52	30	3.80	200	Orange
180	18	±5, ±10%	16	2.52	23	4.48	180	Yellow
220	22	±5, ±10%	16	2.52	20	6.30	160	Green
270	27	±5, ±10%	16	2.52	19	6.85	140	Blue
330	33	±5, ±10%	16	2.52	18	7.60	120	Violet
390	39	±5, ±10%	15	2.52	16	8.20	100	Gray

NL08 Wire Wound Chip Inductors (Ferrite / Open Type) / Standard Type



Codes	Inductance (µH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.	Color Code		
R12	0.12	±5, ±10%	26	25.2	800	0.30	1000	Brown	Red	Brown
R18	0.18	±5, ±10%	30	25.2	600	0.30	960	Brown	Gray	Brown
R20	0.20	±5, ±10%	30	25.2	735	0.30	960	Red	Black	Brown
R22	0.22	±5, ±10%	27	25.2	600	0.40	880	Red	Red	Brown
R27	0.27	±5, ±10%	29	25.2	425	0.42	900	Red	Violet	Brown
R33	0.33	±5, ±10%	30	25.2	400	0.42	900	Orange	Orange	Brown
R39	0.39	±5, ±10%	30	25.2	375	0.45	700	Orange	White	Brown
R47	0.47	±5, ±10%	30	25.2	350	0.50	900	Yellow	Violet	Brown
R56	0.56	±5, ±10%	30	25.2	325	0.55	850	Green	Blue	Brown
R62	0.62	±5, ±10%	30	25.2	460	0.55	900	Blue	Red	Brown
R68	0.68	±5, ±10%	30	25.2	300	0.55	800	Blue	Gray	Brown
R75	0.75	±5, ±10%	30	25.2	420	0.65	880	Violet	Green	Brown
R82	0.82	±5, ±10%	30	25.2	260	0.65	700	Gray	Red	Brown
R91	0.91	±5, ±10%	30	25.2	400	0.65	840	White	Brown	Brown
1R0	1.0	±5, ±10%	25	7.96	245	0.60	600	Brown	Black	Red
1R2	1.2	±5, ±10%	25	7.96	230	0.74	600	Brown	Red	Red
1R5	1.5	±5, ±10%	25	7.96	182	0.85	550	Brown	Green	Red
1R8	1.8	±5, ±10%	25	7.96	135	0.92	500	Brown	Gray	Red
2R2	2.2	±5, ±10%	25	7.96	105	1.10	500	Red	Red	Red
2R7	2.7	±5, ±10%	25	7.96	70	1.22	350	Red	Violet	Red
3R3	3.3	±5, ±10%	25	7.96	55	1.37	350	Orange	Orange	Red
3R9	3.9	±5, ±10%	25	7.96	48	1.66	310	Orange	White	Red
4R7	4.7	±5, ±10%	25	7.96	43	1.68	300	Yellow	Violet	Red
5R6	5.6	±5, ±10%	25	7.96	42	1.75	300	Green	Blue	Red
6R8	6.8	±5, ±10%	25	7.96	39	1.85	300	Blue	Gray	Red
8R2	8.2	±5, ±10%	25	7.96	36	2.00	250	Gray	Red	Red
100	10	±5, ±10%	20	2.52	33	2.32	250	Brown	Black	Orange
120	12	±5, ±10%	15	2.52	28	2.99	200	Brown	Red	Orange
150	15	±5, ±10%	15	2.52	24	3.42	200	Brown	Green	Orange
180	18	±5, ±10%	15	2.52	20	4.65	180	Brown	Gray	Orange
220	22	±5, ±10%	15	2.52	18	5.12	180	Red	Red	Orange
270	27	±5, ±10%	15	2.52	17	5.76	160	Red	Violet	Orange
330	33	±5, ±10%	15	2.52	16	6.44	120	Orange	Orange	Orange
390	39	±5, ±10%	15	2.52	15	6.85	120	Orange	White	Orange
470	47	±5, ±10%	14	2.52	13	9.94	110	Yellow	Violet	Orange
560	56	±5, ±10%	14	2.52	10	10.7	90	Green	Blue	Orange
680	68	±5, ±10%	14	2.52	8	12.8	90	Blue	Gray	Orange
820	82	±5, ±10%	14	2.52	8	18.3	80	Gray	Red	Orange
101	100	±5, ±10%	8	1	7	19.6	120	Brown	Black	Yellow

NL10 Wire Wound Chip Inductors (Ferrite / Molding Type) / Standard Type



Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
R18	0.18	±20%	30	25.2	400	0.28	450
R22	0.22	±20%	30	25.2	350	0.32	450
R27	0.27	±20%	30	25.2	320	0.36	450
R33	0.33	±20%	30	25.2	300	0.40	450
R39	0.39	±20%	30	25.2	250	0.45	450
R47	0.47	±20%	30	25.2	220	0.50	450
R56	0.56	±20%	30	25.2	180	0.55	450
R68	0.68	±20%	30	25.2	160	0.60	450
R82	0.82	±20%	30	25.2	140	0.65	450
1R0	1.0	±10%	30	7.96	120	0.70	400
1R2	1.2	±10%	30	7.96	100	0.75	390
1R5	1.5	±10%	30	7.96	85	0.85	370
1R8	1.8	±10%	30	7.96	80	0.90	350
2R2	2.2	±10%	30	7.96	75	1.00	320
2R7	2.7	±10%	30	7.96	70	1.10	290
3R3	3.3	±10%	30	7.96	60	1.20	260
3R9	3.9	±10%	30	7.96	55	1.30	250
4R7	4.7	±10%	30	7.96	50	1.50	220
5R6	5.6	±10%	30	7.96	45	1.60	200
6R8	6.8	±10%	30	7.96	40	1.80	180
8R2	8.2	±10%	30	7.96	35	2.00	170
100	10	±10%	30	2.52	30	2.10	150
120	12	±10%	30	2.52	20	2.50	140
150	15	±10%	30	2.52	20	2.80	130
180	18	±10%	30	2.52	20	3.30	120
220	22	±10%	30	2.52	20	3.70	110
270	27	±10%	30	2.52	20	5.00	80
330	33	±10%	30	2.52	17	5.60	70
390	39	±10%	30	2.52	16	6.40	65
470	47	±10%	30	2.52	15	7.00	60
560	56	±10%	30	2.52	13	8.00	55
680	68	±10%	30	2.52	12	9.00	50
820	82	±10%	30	2.52	11	10.00	45
101	100	±10%	20	0.796	10	10.00	40
121	120	±10%	20	0.796	10	11.00	70
151	150	±10%	20	0.796	8	15.00	65



Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
R18	0.18	±20%	30	25.2	220	0.24	700
R22	0.22	±20%	30	25.2	200	0.25	665
R27	0.27	±20%	30	25.2	180	0.26	635
R33	0.33	±20%	30	25.2	165	0.28	605
R39	0.39	±20%	30	25.2	150	0.30	575
R47	0.47	±20%	30	25.2	145	0.32	545
R56	0.56	±20%	30	25.2	140	0.36	520
R68	0.68	±20%	30	25.2	135	0.40	500
R82	0.82	±20%	30	25.2	130	0.45	475
1R0	1.0	±10%	50	7.96	100	0.50	450
1R2	1.2	±10%	50	7.96	80	0.55	430
1R5	1.5	±10%	50	7.96	70	0.60	410
1R8	1.8	±10%	50	7.96	60	0.65	390
2R2	2.2	±10%	50	7.96	55	0.70	380
2R7	2.7	±10%	50	7.96	50	0.75	370
3R3	3.3	±10%	50	7.96	45	0.80	355
3R9	3.9	±10%	50	7.96	40	0.90	330
4R7	4.7	±10%	50	7.96	35	1.00	315
5R6	5.6	±10%	50	7.96	33	1.10	300
6R8	6.8	±10%	50	7.96	27	1.20	285
8R2	8.2	±10%	50	7.96	25	1.40	270
100	10	±10%	50	2.52	20	1.60	250
120	12	±10%	50	2.52	18	2.00	225
150	15	±10%	50	2.52	17	2.50	200
180	18	±10%	50	2.52	15	2.80	190
220	22	±10%	50	2.52	13	3.20	180
270	27	±10%	50	2.52	12	3.60	170
330	33	±10%	50	2.52	11	4.00	160
390	39	±10%	50	2.52	10	4.50	150
470	47	±10%	50	2.52	10	5.00	140
560	56	±10%	50	2.52	9	5.50	135
680	68	±10%	50	2.52	9	6.00	130
820	82	±10%	50	2.52	8	7.00	120
101	100	±10%	40	0.796	8	8.00	110
121	120	±10%	40	0.796	6	8.00	110
151	150	±10%	40	0.796	5	9.00	105
181	180	±10%	40	0.796	5	9.50	102
221	220	±10%	40	0.796	4	10.0	100
271	270	±10%	30	0.796	4	15.0	92
331	330	±10%	30	0.796	3.5	15.0	85
391	390	±10%	30	0.796	3	18.0	80
471	470	±10%	30	0.796	3	26.0	62
561	560	±10%	30	0.796	3	30.0	50
681	680	±10%	30	0.796	3	30.0	50
821	820	±10%	30	0.796	2.5	43.0	30

NL20 Wire Wound Chip Inductors (Ferrite / Molding Type) / Standard Type



Codes	Inductance (mH)	Tolerance	Test Freq. (MHz)	Q min.	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
122	1.2	$\pm 5, \pm 10\%$	0.252	20	1.5	17	75
152	1.5	$\pm 5, \pm 10\%$	0.252	20	1.4	20	70
182	1.8	$\pm 5, \pm 10\%$	0.252	20	1.3	30	60
222	2.2	$\pm 5, \pm 10\%$	0.252	20	1.2	35	55
272	2.7	$\pm 5, \pm 10\%$	0.252	20	1.1	55	45
332	3.3	$\pm 5, \pm 10\%$	0.252	20	1.0	60	40
392	3.9	$\pm 5, \pm 10\%$	0.252	20	1.0	70	38
472	4.7	$\pm 5, \pm 10\%$	0.252	20	0.9	78	36
562	5.6	$\pm 5, \pm 10\%$	0.252	20	0.8	85	33
682	6.8	$\pm 5, \pm 10\%$	0.252	20	0.7	110	30
822	8.2	$\pm 5, \pm 10\%$	0.252	20	0.6	125	28
103	10	$\pm 5, \pm 10\%$	0.0796	15	0.5	150	25

Low Profile Electrical Specifications



NL05 Wound Chip Inductors (Ferrite / Open Type) / **Low Profile Type**

Codes	Inductance (μ H)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	$\pm 5, \pm 10\%$	15	L: 7.96 / Q: 25.2	115	0.90	450
3R3	3.3	$\pm 5, \pm 10\%$	13	7.96	70	1.40	450
4R7	4.7	$\pm 5, \pm 10\%$	15	7.96	65	1.90	400
6R8	6.8	$\pm 5, \pm 10\%$	15	7.96	41	2.40	400
100	10	$\pm 5, \pm 10\%$	14	7.96	31	2.70	400
150	15	$\pm 5, \pm 10\%$	12	7.96	28	5.00	300
220	22	$\pm 5, \pm 10\%$	10	7.96	25	6.00	250

Large Current Electrical Specifications



NL03 Wound Chip Inductors (Ferrite / Open Type) / **Large Current Type**

Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.	Color Code
47N	0.047	±10%	12	7.96	2000	0.075	1800	White
51N	0.051	±10%	12	7.96	1500	0.075	1800	Violet
68N	0.068	±10%	12	7.96	1500	0.12	1800	Gray
72N	0.072	±10%	12	7.96	1500	0.12	1800	Brown
R10	0.10	±10%	12	7.96	1150	0.13	1700	Black
R12	0.12	±5, ±10%	12	7.96	1100	0.15	1700	Orange
R15	0.15	±5, ±10%	15	7.96	1050	0.15	1600	Brown
R18	0.18	±5, ±10%	15	7.96	950	0.15	1500	Green
R22	0.22	±5, ±10%	15	7.96	900	0.30	1200	Red
R24	0.24	±5, ±10%	15	7.96	850	0.16	1460	Green
R27	0.27	±5, ±10%	15	7.96	835	0.30	1460	Yellow
R33	0.33	±5, ±10%	15	7.96	725	0.40	1420	Orange
R39	0.39	±5, ±10%	15	7.96	680	0.41	1400	Blue
R47	0.47	±5, ±10%	15	7.96	640	0.43	1400	Black
R56	0.56	±5, ±10%	15	7.96	630	0.44	1400	Brown
R68	0.68	±5, ±10%	15	7.96	510	0.52	1340	Red
R78	0.78	±5, ±10%	15	7.96	465	0.63	1300	Orange
R82	0.82	±5, ±10%	15	7.96	460	0.69	1200	Yellow
1R0	1.0	±5, ±10%	15	7.96	320	0.81	1100	Green
1R2	1.2	±5, ±10%	15	7.96	270	0.87	1000	Blue
1R5	1.5	±5, ±10%	15	7.96	230	0.96	920	Violet
1R8	1.8	±5, ±10%	15	7.96	210	1.10	900	Gray
2R2	2.2	±5, ±10%	15	7.96	115	1.20	740	White
2R7	2.7	±5, ±10%	15	7.96	100	1.38	700	Black
3R3	3.3	±5, ±10%	15	7.96	84	1.50	680	Brown
3R9	3.9	±5, ±10%	15	7.96	75	1.50	600	Red
4R7	4.7	±5, ±10%	15	7.96	67	2.10	580	Orange
5R6	5.6	±5, ±10%	15	7.96	55	2.37	540	Yellow
6R8	6.8	±5, ±10%	15	7.96	48	3.10	500	Green
7R8	7.8	±5, ±10%	15	7.96	40	3.35	460	Blue
8R2	8.2	±5, ±10%	15	7.96	38	3.50	440	Violet
100	10	±5, ±10%	15	7.96	32	4.46	400	Gray

NL05 Wire Wound Chip Inductors (Ferrite / Open Type) / **Large Current Type**



Codes	Inductance (μH)	Tolerance	Q typ.	Test Freq. (MHz)	SRF (MHz) typ.	DCR (Ω) max.	IDC (mA) max.	Color Code
R47	0.47	±10, ±20%	14	25.2	850	0.156	1400	Blue
R68	0.68	±10, ±20%	14	25.2	765	0.195	1200	Gray
1R0	1.00	±10, ±20%	14	7.96	208	0.169	1100	Black
1R2	1.20	±10, ±20%	14	7.96	159	0.208	960	Red
1R5	1.50	±10, ±20%	14	7.96	159	0.221	920	Brown
1R8	1.80	±10, ±20%	14	7.96	112	0.260	860	Orange
2R2	2.20	±10, ±20%	13	7.96	87	0.286	740	Red
2R7	2.70	±10, ±20%	13	7.96	72	0.325	680	Yellow
3R3	3.30	±10, ±20%	12	7.96	70	0.364	620	Orange
3R9	3.90	±10, ±20%	14	7.96	61	0.494	580	Green
4R7	4.70	±10, ±20%	14	7.96	51	0.559	520	Yellow
5R6	5.60	±10, ±20%	12	7.96	47	0.650	480	Blue
6R8	6.80	±10, ±20%	14	7.96	46	0.884	420	Green
8R2	8.20	±10, ±20%	13	7.96	33	0.949	400	Violet
100	10	±5, ±10, ±20%	14	2.52	31	1.105	360	Blue
120	12	±5, ±10, ±20%	14	2.52	30	1.17	340	Gray
150	15	±5, ±10, ±20%	15	2.52	28	1.82	300	Violet
180	18	±5, ±10, ±20%	15	2.52	27	2.01	280	White
220	22	±5, ±10, ±20%	15	2.52	20	2.28	240	Gray
270	27	±5, ±10, ±20%	15	2.52	17	2.60	220	Black
330	33	±5, ±10, ±20%	15	2.52	17	3.05	200	White
470	47	±5, ±10, ±20%	14	2.52	15	4.42	160	Black
560	56	±5, ±10, ±20%	14	2.52	10	5.74	150	Yellow
680	68	±5, ±10, ±20%	14	2.52	10	5.78	140	Brown
820	82	±5, ±10, ±20%	14	2.52	10	9.75	100	Orange
101	100	±5, ±10, ±20%	10	1	9	9.75	100	Red

NL08 Wound Chip Inductors (Ferrite / Open Type) / **Large Current Type**



Codes	Inductance (μH)	Tolerance	Q typ.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.	Color Code		
								1st	2nd	3rd
R22	0.22	±5, ±10%	35	25.2	800	0.15	2600	Red	Red	Brown
R47	0.47	±5, ±10%	35	25.2	460	0.20	2400	Yellow	Violet	Brown
R68	0.68	±5, ±10%	35	25.2	400	0.30	2200	Blue	Gray	Brown
R82	0.82	±5, ±10%	35	25.2	360	0.35	1800	Gray	Red	Brown
1R0	1.0	±5, ±10%	22	7.96	245	0.35	800	Brown	Black	Red
1R2	1.2	±5, ±10%	25	7.96	230	0.40	550	Brown	Red	Red
1R5	1.5	±5, ±10%	25	7.96	182	0.45	550	Brown	Green	Red
1R8	1.8	±5, ±10%	25	7.96	135	0.55	550	Brown	Gray	Red
2R2	2.2	±5, ±10%	22	7.96	105	0.60	500	Red	Red	Red
2R7	2.7	±5, ±10%	25	7.96	70	0.70	500	Red	Violet	Red
3R3	3.3	±5, ±10%	22	7.96	55	0.75	450	Orange	Orange	Red
3R9	3.9	±5, ±10%	25	7.96	50	0.80	450	Orange	White	Red
4R7	4.7	±5, ±10%	22	7.96	45	0.90	400	Yellow	Violet	Red
5R6	5.6	±5, ±10%	22	7.96	42	1.05	400	Green	Blue	Red
6R8	6.8	±5, ±10%	22	7.96	40	1.05	400	Blue	Gray	Red
8R2	8.2	±5, ±10%	22	7.96	36	1.30	350	Gray	Red	Red
100	10	±5, ±10%	20	2.52	35	1.55	300	Brown	Black	Orange
120	12	±5, ±10%	20	2.52	30	2.10	280	Brown	Red	Orange
150	15	±5, ±10%	20	2.52	24	2.38	250	Brown	Green	Orange
180	18	±5, ±10%	20	2.52	20	2.60	200	Brown	Gray	Orange
220	22	±5, ±10%	20	2.52	18	2.92	200	Red	Red	Orange
330	33	±5, ±10%	20	2.52	16	4.10	180	Orange	Orange	Orange
470	47	±5, ±10%	23	2.52	17	7.80	350	Yellow	Violet	Orange
101	100	±5, ±10%	13	1	4	13.2	200	Brown	Black	Yellow
221	220	±5, ±10%	13	1	3	26.5	140	Red	Red	Yellow
331	330	±5, ±10%	13	1	2	32.5	110	Orange	Orange	Yellow

NL10 Wire Wound Chip Inductors (Ferrite / Molding Type) / **Large Current Type**



Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	±20%	10	7.96	100	0.156	770
1R5	1.5	±20%	10	7.96	80	0.195	580
2R2	2.2	±20%	10	7.96	65	0.260	480
3R3	3.3	±20%	10	7.96	55	0.325	400
4R7	4.7	±20%	10	7.96	45	0.520	320
6R8	6.8	±20%	10	7.96	35	0.650	280
100	10	±10%	15	2.52	28	1.105	220
150	15	±10%	15	2.52	25	1.690	180
220	22	±10%	15	2.52	20	2.600	145
270	27	±10%	15	2.52	17	3.000	125
330	33	±10%	15	2.52	15	3.640	115
470	47	±10%	20	2.52	13	5.460	105
680	68	±10%	20	2.52	10	8.450	85
820	82	±10%	20	2.52	9	8.710	80
101	100	±10%	20	0.796	8	10.140	75



Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	±10%	10	7.96	200	0.11	1050
1R2	1.2	±10%	10	7.96	160	0.12	1000
1R5	1.5	±10%	10	7.96	130	0.15	950
1R8	1.8	±10%	10	7.96	100	0.16	900
2R2	2.2	±10%	10	7.96	80	0.18	850
2R7	2.7	±10%	10	7.96	60	0.20	800
3R3	3.3	±10%	10	7.96	45	0.22	750
3R9	3.9	±10%	10	7.96	40	0.24	700
4R7	4.7	±10%	10	7.96	35	0.27	650
5R6	5.6	±10%	10	7.96	30	0.30	650
6R8	6.8	±10%	10	7.96	28	0.35	600
8R2	8.2	±10%	10	7.96	25	0.40	600
100	10	±10%	10	2.52	22	0.50	550
120	12	±10%	10	2.52	21	0.60	500
150	15	±10%	10	2.52	20	0.70	450
180	18	±10%	10	2.52	19	0.80	400
220	22	±10%	10	2.52	18	0.90	370
270	27	±10%	10	2.52	16	1.20	330
330	33	±10%	10	2.52	14	1.40	300
390	39	±10%	10	2.52	12	1.60	280
470	47	±10%	10	2.52	11.5	1.90	260
560	56	±10%	10	2.52	11	2.20	240
680	68	±10%	10	2.52	10	2.60	220
820	82	±10%	10	2.52	9	3.50	200
101	100	±10%	20	0.796	8	4.00	180
121	120	±10%	20	0.796	7.5	4.50	160
151	150	±10%	20	0.796	7	6.50	140
181	180	±10%	20	0.796	6.5	7.50	120
221	220	±10%	20	0.796	5.5	9.00	120
271	270	±10%	20	0.796	5	11.0	100
331	330	±10%	20	0.796	4	13.0	90
391	390	±10%	20	0.796	3.8	23.0	80
471	470	±10%	20	0.796	3.5	26	75
561	560	±10%	20	0.796	2.8	30	70
681	680	±10%	20	0.796	2.6	40	65
821	820	±10%	20	0.796	2.5	45	60



Codes	Inductance (μH)	Tolerance	Q min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	±10, ±20%	10	7.96	95	0.03	1800
1R2	1.2	±10, ±20%	10	7.96	70	0.035	1700
1R5	1.5	±10, ±20%	10	7.96	55	0.04	1600
1R8	1.8	±10, ±20%	10	7.96	47	0.05	1400
2R2	2.2	±10, ±20%	10	7.96	42	0.06	1300
2R7	2.7	±10, ±20%	10	7.96	37	0.07	1200
3R3	3.3	±10, ±20%	10	7.96	34	0.08	1120
3R9	3.9	±10, ±20%	10	7.96	32	0.09	1050
4R7	4.7	±10, ±20%	10	7.96	29	0.11	950
5R6	5.6	±10, ±20%	10	7.96	26	0.13	880
6R8	6.8	±10, ±20%	10	7.96	24	0.15	810
8R2	8.2	±10, ±20%	10	7.96	22	0.18	750
100	10	±10, ±20%	10	2.52	19	0.21	690
120	12	±10, ±20%	10	2.52	17	0.25	630
150	15	±10, ±20%	10	2.52	16	0.30	580
180	18	±10, ±20%	10	2.52	14	0.36	530
220	22	±5, ±10%	10	2.52	13	0.43	480
270	27	±5, ±10%	10	2.52	11.5	0.52	440
330	33	±5, ±10%	10	2.52	10.5	0.62	400
390	39	±5, ±10%	10	2.52	9.5	0.72	370
470	47	±5, ±10%	10	2.52	8.5	0.85	340
560	56	±5, ±10%	10	2.52	7.8	1.00	310
680	68	±5, ±10%	10	2.52	7.0	1.2	290
820	82	±5, ±10%	10	2.52	6.4	1.4	270
101	100	±5, ±10%	20	0.796	6.0	1.6	250
121	120	±5, ±10%	20	0.796	5.4	1.9	230
151	150	±5, ±10%	20	0.796	4.8	2.2	210
181	180	±5, ±10%	20	0.796	4.4	2.8	190
221	220	±5, ±10%	20	0.796	3.9	3.4	170
271	270	±5, ±10%	20	0.796	3.6	4.2	155
331	330	±5, ±10%	20	0.796	3.2	4.9	140
391	390	±5, ±10%	20	0.796	2.9	5.8	130
471	470	±5, ±10%	20	0.796	2.6	7.0	120
561	560	±5, ±10%	20	0.796	2.4	8.5	110
681	680	±5, ±10%	20	0.796	2.2	10	100
821	820	±5, ±10%	20	0.796	2.0	13	90
102	1000	±5, ±10%	20	0.252	1.8	15	85

■ Environmental Characteristics

Electrical Performance Test

Item	Requirement	Test Method
Inductance	Refer to standard electrical characteristic spec.	HP4291 or HP4284
Q		HP4291 or HP4284
SRF		HP4291
DC Resistance DCR		Agilent 34401A
Rated Current IDC		Applied the current to coils, The inductance change should be less than 10% to initial value

Mechanical Performance Test

Item	Requirement	Test Method
Solderability	The electrodes shall be at least 90% covered with new solder coating	Lead-free inductor: after fluxing(alpha 100 or equiv), inductor shall be dipped in a melted solder bath at $245\pm 5^{\circ}\text{C}$, 5 ± 0.5 seconds
Resistance to Soldering Heat	Appearance: No damage	Pre-heating: 150°C , 1min. Solder Temperature: $260\pm 5^{\circ}\text{C}$ Immersion Time: 10 ± 1 seconds
Vibration	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 30\%$ DCR: within specification	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1 min. Amplitude: 1.5 mm Time: 2 hrs for each axis (X, Y&Z), total 6 hrs

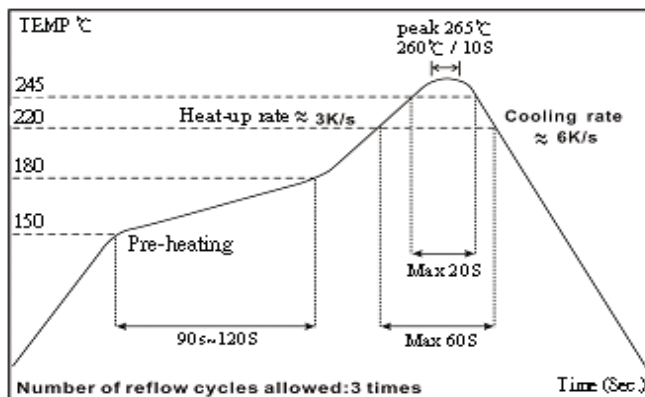
Climatic Test

Item	Requirement	Test Method															
Temperature Cycle	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 30\%$ DCR: within specification	One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature ($^{\circ}\text{C}$)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25 ± 3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25 ± 2</td> <td>3</td> </tr> <tr> <td>3</td> <td>85 ± 3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25 ± 2</td> <td>3</td> </tr> </tbody> </table>	Step	Temperature ($^{\circ}\text{C}$)	Time (min.)	1	-25 ± 3	30	2	25 ± 2	3	3	85 ± 3	30	4	25 ± 2	3
Step		Temperature ($^{\circ}\text{C}$)	Time (min.)														
1		-25 ± 3	30														
2		25 ± 2	3														
3		85 ± 3	30														
4	25 ± 2	3															
Damp Heat with Load	Total: 100 cycles Measured after exposure in the room condition for 24 hrs																
High Temperature Storage	Temperature: $40\pm 2^{\circ}\text{C}$ Relative Humidity: 90 ~ 95% Time: 1000 hrs Measured after exposure in the room condition for 24 hrs																
Low Temperature Storage	Temperature: $85\pm 3^{\circ}\text{C}$ Applied Current: Rated Current Time: 1000 hrs Measured after exposure in the room condition for 24 hrs																
	Temperature: $-25\pm 3^{\circ}\text{C}$ Time: 1000 hrs Measured after exposure in the room condition for 24 hrs																

■ Storage Temperature: $25\pm 3^{\circ}\text{C}$; Humidity < 80%RH

■ Operating Temperature Range: $-40\sim +85^{\circ}\text{C}$

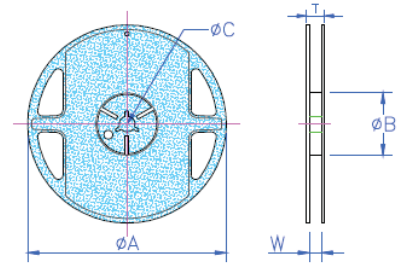
■ Reflow



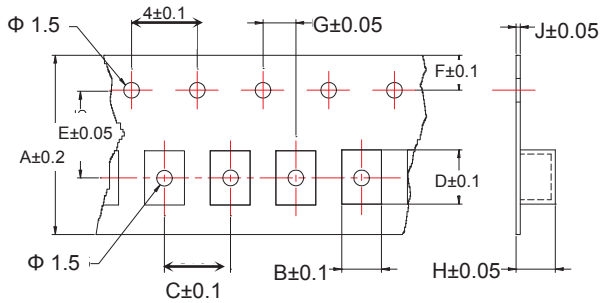
Packaging

Packaging Quantity & Reel Specifications

Type	ΦA	ΦB	ΦC	W	T	Quantity (EA)
NL03	178±2.0	60±0.5	13±0.3	9±0.3	12±1.0	4000
NL05	178±2.0	60±0.5	13±0.3	9±0.3	12±1.0	2000
NL08	178±2.0	60±0.5	13±0.3	9±0.3	12±1.0	2000
NL10	178±2.0	60±0.5	13±0.3	9±0.3	12±1.0	2000
NL12	178±2.0	80±0.5	13±0.3	13.2±0.3	16±1.0	500
NL20	330±2.0	100±0.5	13±0.3	17.4±0.3	22±1.0	1000



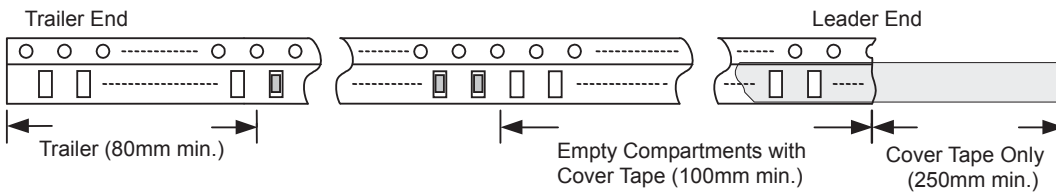
Embossed Plastic Tape Specifications



Unit: mm

Type	A	B	C	D	E	F	G	H	J
NL03	8	1.25	4	1.90	3.5	1.75	2	1.00	0.23
NL05	8	1.85	4	2.55	3.5	1.75	2	1.45	0.23
NL08	8	2.80	4	2.95	3.5	1.75	2	2.22	0.23
NL10	8	2.96	4	3.60	3.5	1.75	2	2.40	0.23
NL12	12	3.30	8	5.00	5.5	1.75	2	3.50	0.30
NL20	16	5.35	12	6.10	7.5	1.75	2	5.50	0.35

Leader / Trailer Tape



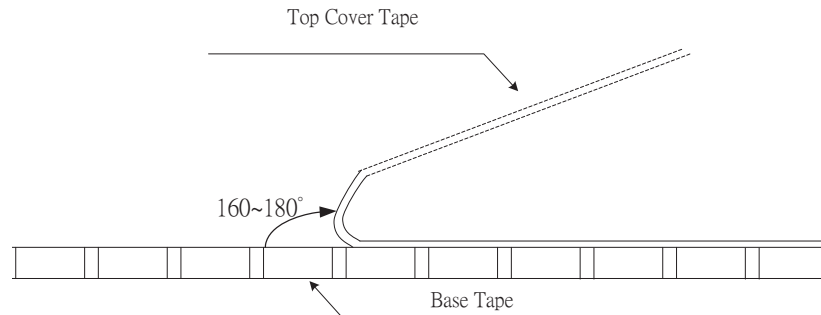
Cover Tape Peel Strength

The force for tearing off cover tape is 0.1~0.6 (N) in the arrow direction at the following conditions:

Temperature: 5~35°C

Humidity: 45~85%

Atmospheric Pressure: 860~1060 hpa



Multilayer Ferrite Chip Inductor



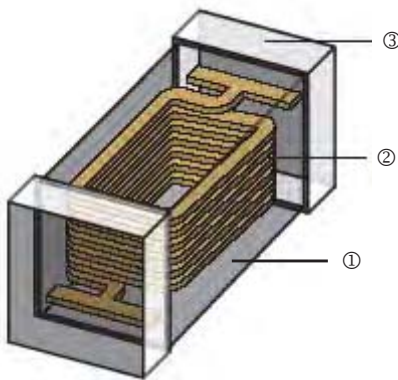
■ Features

- Closed magnetic circuit avoids crosstalk
- Suitable for high density installation and re-flow soldering
- Sizes 0603 / 0805 / 1206

■ Applications

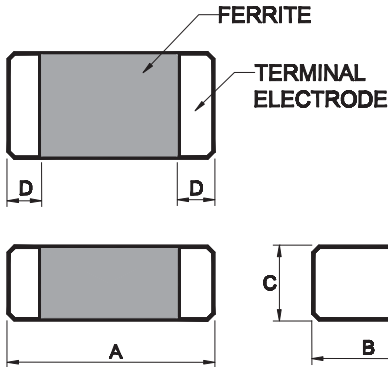
- Personal Computers
- Portable Equipment
- CD-ROM, Hard Disk, Modem, Printers
- DC-DC Converters
- DSC, DVC, PDA, DVD and HDD

■ Construction



① Ferrite	② Internal Electrode	③ Electrode Plating (Ag/Ni/Sn)
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■ Dimensions



Unit: mm

Type	Size (Inch)	A	B	C	D	Weight (g) (1000pcs)
ML03	0603	1.60±0.20	0.80±0.20	0.80±0.20	0.30±0.20	6.2
ML05(≤2.2μH)	0805	2.00±0.20	1.25±0.20	0.90±0.20	0.50±0.30	10
ML05(≥2.7μH)	0805	2.00±0.20	1.25±0.20	1.25±0.20	0.50±0.30	10
ML06	1206	3.20±0.20	1.60±0.20	1.10±0.20	0.50±0.30	30
MLH05	0805	2.00±0.20	1.25±0.20	0.90±0.10	0.50±0.20	10
MLH06	0806	2.00±0.15	1.60±0.15	0.90±0.10	0.50±0.20	12
MLH08	1008	2.50±0.20	2.00±0.20	0.90±0.10	0.60±0.20	21

Part Numbering

ML	05	K	T	1R0
Product Type	Dimensions	Inductance Tolerance	Packaging Code	Inductance
ML :Standard MLH :High Current	03: 0603 05: 0805 06: 0806 08: 1008 06: 1206	K: $\pm 10\%$ M: $\pm 20\%$	T: Taping Reel	10N: 10nH R27: 270nH 1R0: 1000nH

Standard Electrical Specifications

ML03 Multilayer Ferrite Chip Inductors Type

Codes	Inductance (nH)	Tolerance	L/Q Freq. (MHz)	Q min.	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
10N	10	$\pm 20\%$	50MHz, 200mV	10	300	0.20	50
33N	33	$\pm 20\%$	50MHz, 200mV	10	270	0.20	50
47N	47	$\pm 20\%$	50MHz, 200mV	10	260	0.30	50
56N	56	$\pm 20\%$	50MHz, 200mV	10	255	0.30	50
68N	68	$\pm 20\%$	50MHz, 200mV	10	250	0.30	50
82N	82	$\pm 20\%$	50MHz, 200mV	10	245	0.30	50
R10	100	$\pm 10, \pm 20\%$	25MHz, 200mV	15	240	0.50	50
R12	120	$\pm 10, \pm 20\%$	25MHz, 200mV	15	205	0.50	50
R15	150	$\pm 10, \pm 20\%$	25MHz, 200mV	15	180	0.60	50
R18	180	$\pm 10, \pm 20\%$	25MHz, 200mV	15	165	0.60	50
R22	220	$\pm 10, \pm 20\%$	25MHz, 200mV	15	150	0.80	50
R27	270	$\pm 10, \pm 20\%$	25MHz, 200mV	15	136	0.80	50
R33	330	$\pm 10, \pm 20\%$	25MHz, 200mV	15	125	0.85	35
R39	390	$\pm 10, \pm 20\%$	25MHz, 200mV	15	110	1.00	35
R47	470	$\pm 10, \pm 20\%$	25MHz, 200mV	15	105	1.35	35
R56	560	$\pm 10, \pm 20\%$	25MHz, 200mV	15	95	1.55	35
R68	680	$\pm 10, \pm 20\%$	25MHz, 200mV	15	85	1.70	35
R82	820	$\pm 10, \pm 20\%$	25MHz, 200mV	15	75	2.10	35
1R0	1000	$\pm 10, \pm 20\%$	10MHz, 200mV	35	65	0.60	25
1R2	1200	$\pm 10, \pm 20\%$	10MHz, 200mV	35	60	0.80	25
1R5	1500	$\pm 10, \pm 20\%$	10MHz, 200mV	35	55	0.80	25
1R8	1800	$\pm 10, \pm 20\%$	10MHz, 200mV	35	50	0.95	25
2R2	2200	$\pm 10, \pm 20\%$	10MHz, 200mV	35	45	1.55	15
2R7	2700	$\pm 10, \pm 20\%$	10MHz, 200mV	35	40	1.35	15
3R3	3300	$\pm 10, \pm 20\%$	10MHz, 200mV	35	38	1.55	15
3R9	3900	$\pm 10, \pm 20\%$	10MHz, 200mV	35	35	1.70	15
4R7	4700	$\pm 10, \pm 20\%$	10MHz, 200mV	35	33	2.10	15
5R6	5600	$\pm 10, \pm 20\%$	4MHz, 200mV	35	22	1.55	5
6R8	6800	$\pm 10, \pm 20\%$	4MHz, 200mV	35	20	1.70	5
8R2	8200	$\pm 10, \pm 20\%$	4MHz, 60 mV	30	18	2.10	5
100	10000	$\pm 10, \pm 20\%$	2MHz, 60mV	30	17	2.55	5

ML05 Multilayer Ferrite Chip Inductors Type

Codes	Inductance (nH)	Tolerance	L/Q Freq. (MHz)	Q min.	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
47N	47	$\pm 20\%$	50MHz, 200mV	20	320	0.20	300
56N	56	$\pm 20\%$	50MHz, 200mV	20	320	0.20	300
68N	68	$\pm 20\%$	50MHz, 200mV	20	280	0.20	300
82N	82	$\pm 20\%$	50MHz, 200mV	20	255	0.20	300
R10	100	$\pm 10, \pm 20\%$	25MHz, 200mV	20	235	0.30	250
R12	120	$\pm 10, \pm 20\%$	25MHz, 200mV	20	220	0.30	250
R15	150	$\pm 10, \pm 20\%$	25MHz, 200mV	20	200	0.40	250
R18	180	$\pm 10, \pm 20\%$	25MHz, 200mV	20	185	0.40	250
R22	220	$\pm 10, \pm 20\%$	25MHz, 200mV	20	170	0.50	250
R27	270	$\pm 10, \pm 20\%$	25MHz, 200mV	20	150	0.50	250
R33	330	$\pm 10, \pm 20\%$	25MHz, 200mV	20	145	0.55	250
R39	390	$\pm 10, \pm 20\%$	25MHz, 200mV	25	135	0.65	200
R47	470	$\pm 10, \pm 20\%$	25MHz, 200mV	25	125	0.65	200
R56	560	$\pm 10, \pm 20\%$	25MHz, 200mV	25	115	0.75	150
R68	680	$\pm 10, \pm 20\%$	25MHz, 200mV	25	105	0.80	150
R82	820	$\pm 10, \pm 20\%$	25MHz, 200mV	25	100	1.00	150
1R0	1000	$\pm 10, \pm 20\%$	10MHz, 200mV	45	75	0.40	50
1R2	1200	$\pm 10, \pm 20\%$	10MHz, 200mV	45	65	0.50	50
1R5	1500	$\pm 10, \pm 20\%$	10MHz, 200mV	45	60	0.50	50
1R8	1800	$\pm 10, \pm 20\%$	10MHz, 200mV	45	55	0.60	50
2R2	2200	$\pm 10, \pm 20\%$	10MHz, 200mV	45	50	0.65	30
2R7	2700	$\pm 10, \pm 20\%$	10MHz, 200mV	45	45	0.75	30
3R3	3300	$\pm 10, \pm 20\%$	10MHz, 200mV	45	41	0.80	30
3R9	3900	$\pm 10, \pm 20\%$	10MHz, 200mV	45	38	0.90	30
4R7	4700	$\pm 10, \pm 20\%$	10MHz, 200mV	45	35	1.00	30
5R6	5600	$\pm 10, \pm 20\%$	4MHz, 200mV	45	32	0.90	15
6R8	6800	$\pm 10, \pm 20\%$	4MHz, 200mV	45	29	1.00	15
8R2	8200	$\pm 10, \pm 20\%$	4MHz, 200mV	45	26	1.10	15
100	10000	$\pm 10, \pm 20\%$	2MHz, 60mV	45	24	1.15	15
120	12000	$\pm 10, \pm 20\%$	2MHz, 60mV	45	22	1.25	15
150	15000	$\pm 10, \pm 20\%$	1MHz, 60mV	30	19	0.80	5
180	18000	$\pm 10, \pm 20\%$	1MHz, 60mV	30	18	0.90	5
220	22000	$\pm 10, \pm 20\%$	1MHz, 60mV	30	16	1.10	5

ML06 Multilayer Ferrite Chip Inductors Type

Codes	Inductance (nH)	Tolerance	L/Q Freq. (MHz)	Q min.	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
47N	47	$\pm 20\%$	50MHz, 200mV	20	320	0.15	300
56N	56	$\pm 20\%$	50MHz, 200mV	20	280	0.25	300
68N	68	$\pm 20\%$	50MHz, 200mV	20	280	0.25	300
82N	82	$\pm 20\%$	50MHz, 200mV	20	250	0.25	300
R10	100	$\pm 10, \pm 20\%$	25MHz, 200mV	20	235	0.25	250
R12	120	$\pm 10, \pm 20\%$	25MHz, 200mV	20	220	0.30	250
R15	150	$\pm 10, \pm 20\%$	25MHz, 200mV	20	200	0.30	250
R18	180	$\pm 10, \pm 20\%$	25MHz, 200mV	20	185	0.40	250
R22	220	$\pm 10, \pm 20\%$	25MHz, 200mV	20	170	0.40	250
R27	270	$\pm 10, \pm 20\%$	25MHz, 200mV	20	150	0.50	250
R33	330	$\pm 10, \pm 20\%$	25MHz, 200mV	20	145	0.60	250
R39	390	$\pm 10, \pm 20\%$	25MHz, 200mV	25	135	0.50	200
R47	470	$\pm 10, \pm 20\%$	25MHz, 200mV	25	125	0.60	200
R56	560	$\pm 10, \pm 20\%$	25MHz, 200mV	25	115	0.70	150
R68	680	$\pm 10, \pm 20\%$	25MHz, 200mV	25	105	0.80	150
R82	820	$\pm 10, \pm 20\%$	25MHz, 200mV	25	100	0.90	150
1R0	1000	$\pm 10, \pm 20\%$	10MHz, 200mV	45	75	0.40	100
1R2	1200	$\pm 10, \pm 20\%$	10MHz, 200mV	45	65	0.50	100
1R5	1500	$\pm 10, \pm 20\%$	10MHz, 200mV	45	60	0.50	80
1R8	1800	$\pm 10, \pm 20\%$	10MHz, 200mV	45	55	0.50	70
2R2	2200	$\pm 10, \pm 20\%$	10MHz, 200mV	45	50	0.60	60
2R7	2700	$\pm 10, \pm 20\%$	10MHz, 200mV	45	45	0.60	60
3R3	3300	$\pm 10, \pm 20\%$	10MHz, 200mV	45	41	0.70	60
3R9	3900	$\pm 10, \pm 20\%$	10MHz, 200mV	45	38	0.80	50
4R7	4700	$\pm 10, \pm 20\%$	10MHz, 200mV	45	35	0.90	50
5R6	5600	$\pm 10, \pm 20\%$	4MHz, 200mV	45	32	0.70	25
6R8	6800	$\pm 10, \pm 20\%$	4MHz, 200mV	45	29	0.80	25
8R2	8200	$\pm 10, \pm 20\%$	4MHz, 200mV	45	26	0.90	25
100	10000	$\pm 10, \pm 20\%$	2MHz, 60mV	45	24	1.00	25
120	12000	$\pm 10, \pm 20\%$	2MHz, 60mV	45	22	1.05	15
150	15000	$\pm 10, \pm 20\%$	1MHz, 60mV	35	19	0.70	5
180	18000	$\pm 10, \pm 20\%$	1MHz, 60mV	35	18	0.75	5
220	22000	$\pm 10, \pm 20\%$	1MHz, 60mV	35	16	0.90	5
270	27000	$\pm 10, \pm 20\%$	1MHz, 60mV	35	14	0.90	5
330	33000	$\pm 10, \pm 20\%$	1MHz, 60mV	35	13	1.05	5

High Current Electrical Specifications

MLH05 Multilayer Ferrite Chip Inductors Type

Codes	Inductance (uH)	Tolerance	Test Freq.	SRF (MHz) min.	DCR (Ω)	IDC (mA) max.
R47	0.47	±20%	1MHz, 250mV	100	0.10±25%	1100
R68	0.68	±20%	1MHz, 250mV	100	0.12±25%	1000
R82	0.82	±20%	1MHz, 250mV	90	0.14±25%	900
1R0	1.0	±20%	1MHz, 250mV	90	0.16±25%	800
1R2	1.2	±20%	1MHz, 250mV	80	0.16±25%	800
1R5	1.5	±20%	1MHz, 250mV	70	0.22±25%	700
1R8	1.8	±20%	1MHz, 250mV	60	0.22±25%	700
2R2	2.2	±20%	1MHz, 250mV	50	0.25±25%	600
3R3	3.3	±20%	1MHz, 250mV	40	0.22±25%	500
4R7	4.7	±20%	1MHz, 250mV	30	0.30±25%	500

MLH06 Multilayer Ferrite Chip Inductors Type

Codes	Inductance (uH)	Tolerance	Test Freq.	SRF (MHz) min.	DCR (Ω)	IDC (mA) max.
R47	0.47	±20%	1MHz, 250mV	100	0.14±30%	1500
R68	0.68	±20%	1MHz, 250mV	90	0.15±30%	1500
R82	0.82	±20%	1MHz, 250mV	80	0.16±30%	1500
1R0	1.0	±20%	1MHz, 250mV	60	0.16±30%	1400
1R2	1.2	±20%	1MHz, 250mV	60	0.16±30%	1400
1R5	1.5	±20%	1MHz, 250mV	50	0.20±30%	1200
1R8	1.8	±20%	1MHz, 250mV	50	0.20±30%	1200
2R2	2.2	±20%	1MHz, 250mV	40	0.22±30%	1200
3R3	3.3	±20%	1MHz, 250mV	30	0.24±30%	1100
4R7	4.7	±20%	1MHz, 250mV	20	0.30±30%	1100

MLH08 Multilayer Ferrite Chip Inductors Type

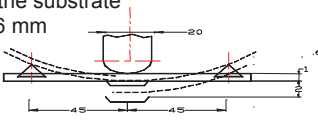
Codes	Inductance (uH)	Tolerance	Test Freq.	SRF (MHz) min.	DCR (Ω)	IDC (mA) max.
R47	0.47	±20%	1MHz, 250mV	100	0.07±25%	1800
R68	0.68	±20%	1MHz, 250mV	90	0.09±25%	1700
R82	0.82	±20%	1MHz, 250mV	80	0.10±25%	1700
1R0	1.0	±20%	1MHz, 250mV	60	0.11±25%	1600
1R2	1.2	±20%	1MHz, 250mV	60	0.11±25%	1600
1R5	1.5	±20%	1MHz, 250mV	50	0.13±25%	1500
1R8	1.8	±20%	1MHz, 250mV	50	0.13±25%	1500
2R2	2.2	±20%	1MHz, 250mV	40	0.17±25%	1300
3R3	3.3	±20%	1MHz, 250mV	30	0.16±25%	1200
4R7	4.7	±20%	1MHz, 250mV	25	0.20±25%	1100

Environmental Characteristics

Electrical Performance Test

Item	Requirement	Test Method
Inductance	Refer to standard electrical characteristic spec.	HP4291B
Q		HP4291B
SRF		HP4291B
DC Resistance RDC		Agilent 34401A
Rated Current IDC		Applied the current to coils, The inductance change should be less than 10% to initial value

Mechanical Performance Test

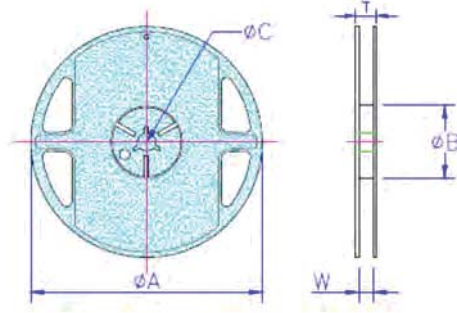
Item	Requirement	Test Method
Resistance to Soldering Heat	Appearance: No damage More than 75% of the terminal. Electrode should be covered with solder. Inductance: within $\pm 15\%$ of initial value Q: within $\pm 30\%$ of initial value Inductance: within $\pm 20\%$ of initial value (0603 over 12uH)	Pre-heating: 150°C, 1min. Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free) Solder Temperature: 260 \pm 5°C (Pb-Free) Immersion Time: 10 \pm 1 sec.
Solderability	The electrodes shall be at least 90% covered with new solder coating	Pre-heating: 150°C, 1min. Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free) Solder Temperature: 245 \pm 5°C (Pb-Free) Immersion Time: 4 \pm 1 sec.
Flexure Strength	The forces applied on the right conditions must not damage the terminal electrode and the ferrite.	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6 mm Deflection: 2.0 mm Keeping Time: 30 sec. 
Vibration		Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1 min. Amplitude: 1.5 mm Time: 2 hrs for each axis (X, Y & Z), total 6 hrs *For 0402, substrate dimension is 100x40x0.8 mm

Climatic Test

Item	Requirement	Test Method															
Damp Heat with Load	Appearance: No damage L change: within $\pm 10\%$ of initial value Q change: within $\pm 30\%$ of initial value	Temperature: 40 \pm 2°C Relative Humidity: 90 ~ 95% Time: 1000 hrs Measured after exposure in the room condition for 24 hrs															
Temperature Cycle		One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25\pm3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25\pm2</td> <td>3</td> </tr> <tr> <td>3</td> <td>85\pm3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25\pm2</td> <td>3</td> </tr> </tbody> </table> Total: 100 cycles Measured after exposure in the room condition for 24 hrs	Step	Temperature (°C)	Time (min.)	1	-25 \pm 3	30	2	25 \pm 2	3	3	85 \pm 3	30	4	25 \pm 2	3
Step		Temperature (°C)	Time (min.)														
1		-25 \pm 3	30														
2	25 \pm 2	3															
3	85 \pm 3	30															
4	25 \pm 2	3															
High Temperature Resistance	Temperature: 85 \pm 3°C Relative Humidity: 20% Applied Current: Rated Current Time: 1000 hrs Measured after exposure in the room condition for 24 hrs																
Low Temperature Resistance	Temperature: -25 \pm 3°C Relative Humidity: 0% Time: 1000 hrs Measured after exposure in the room condition for 24 hrs																

■ Packaging

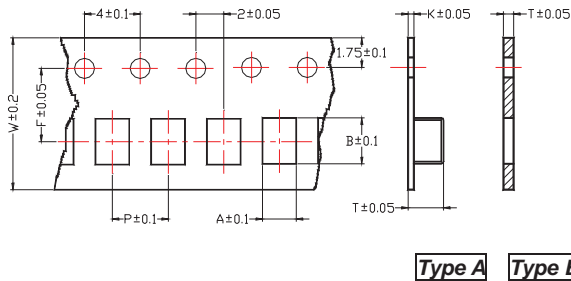
Reel Specifications



Unit: mm

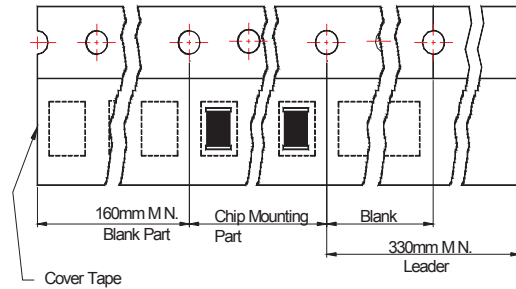
Type	A	B	C	W	T	Quantity (EA)	
						Paper Tape (Type B)	Polystyrene Tape (Type A)
ML03	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	4,000	-
ML05(≤2.2uH)	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	4,000	-
ML05(≥2.7uH)	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	-	3,000
ML06	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	-	3,000
MLH05	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	4,000	-
MLH06	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	-	3,000
MLH08	178±1	60.0±0.5	13.0±0.2	9.00±0.5	12.0±0.15	-	3,000

Tape Specifications



Tape Material

Carrier tape : Polystyrene for 0805(≤2.2uH) 1206
 Paper for 0603 0805(≥2.7uH)
 Cover type : Polystyrene



Unit: mm

Type	A	B	T	W	P	F	K	Tape Type
ML03	1.05	1.85	0.95	8.0	4.0	3.5	-	B
ML05(≤2.2uH)	1.50	2.42	0.95	8.0	4.0	3.5	-	B
ML05(≥2.7uH)	1.50	2.35	1.45	8.0	4.0	3.5	0.22	A
ML06	1.88	3.50	1.27	8.0	4.0	3.5	0.22	A
MLH05	1.45	2.25	0.95	8.0	4.0	3.5	-	B
MLH06	1.88	2.40	1.23	8.0	4.0	3.5	0.23	A
MLH08	2.20	2.85	1.40	8.0	4.0	3.5	0.23	A

Note:

- Please make sure that your product is has been evaluated and confirmed against your specifications when our product is mounted to your product.
- Do not knock nor drop.
- All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.

Part Numbering

CB	03	Y	T	Y	N	601
Product Type	Dimensions	Impedance Tolerance	Packaging Code	Design Code	Current	Impedance
	02: 0402 03: 0603 05: 0805 04: 1204 06: 1206 10: 1210 08: 1808 12: 1812	Y: $\pm 25\%$	T: Taping Reel	Y: ui:200 Q:ui:75(High Speed Signals)	H: High current N: General current	090: 9 Ω 110: 11 Ω 451: 450 Ω 152: 1500 Ω

Standard Electrical Specifications

CB02(100505) / Standard Type

Impedance (Ω)	Tolerance	Test Freq. (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	$\pm 25\%$	100	0.05	500
10	$\pm 25\%$	100	0.05	500
30	$\pm 25\%$	100	0.30	300
33	$\pm 25\%$	100	0.30	300
40	$\pm 25\%$	100	0.30	300
47	$\pm 25\%$	100	0.40	300
60	$\pm 25\%$	100	0.40	300
70	$\pm 25\%$	100	0.40	300
75	$\pm 25\%$	100	0.40	300
80	$\pm 25\%$	100	0.40	300
90	$\pm 25\%$	100	0.50	300
100	$\pm 25\%$	100	0.50	300
120	$\pm 25\%$	100	0.50	300
150	$\pm 25\%$	100	0.50	300
220	$\pm 25\%$	100	0.50	300
240	$\pm 25\%$	100	0.50	300
300	$\pm 25\%$	100	0.80	300
330	$\pm 25\%$	100	0.80	300
480	$\pm 25\%$	100	0.80	300
600	$\pm 25\%$	100	1.00	300
1000	$\pm 25\%$	100	1.50	100
1500	$\pm 25\%$	100	2.00	60

Standard Electrical Specifications

CB03(160808) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	$\pm 25\%$	100	0.05	500
7	$\pm 25\%$	100	0.05	500
10	$\pm 25\%$	100	0.05	500
11	$\pm 25\%$	100	0.05	500
15	$\pm 25\%$	100	0.08	500
17	$\pm 25\%$	100	0.08	500
19	$\pm 25\%$	100	0.08	500
20	$\pm 25\%$	100	0.10	400
22	$\pm 25\%$	100	0.10	400
25	$\pm 25\%$	100	0.10	400
26	$\pm 25\%$	100	0.10	400
30	$\pm 25\%$	100	0.10	400
31	$\pm 25\%$	100	0.10	400
32	$\pm 25\%$	100	0.10	400
33	$\pm 25\%$	100	0.10	400
40	$\pm 25\%$	100	0.10	400
47	$\pm 25\%$	100	0.10	400
50	$\pm 25\%$	100	0.10	400
52	$\pm 25\%$	100	0.10	400
55	$\pm 25\%$	100	0.10	400
56	$\pm 25\%$	100	0.10	400
60	$\pm 25\%$	100	0.10	400
68	$\pm 25\%$	100	0.15	400
70	$\pm 25\%$	100	0.15	400
75	$\pm 25\%$	100	0.15	400
80	$\pm 25\%$	100	0.15	400
90	$\pm 25\%$	100	0.20	400
100	$\pm 25\%$	100	0.20	400
120	$\pm 25\%$	100	0.25	400
140	$\pm 25\%$	100	0.25	300
150	$\pm 25\%$	100	0.30	200
180	$\pm 25\%$	100	0.30	200
200	$\pm 25\%$	100	0.30	200
220	$\pm 25\%$	100	0.30	200
240	$\pm 25\%$	100	0.40	200
300	$\pm 25\%$	100	0.40	200
330	$\pm 25\%$	100	0.50	200
400	$\pm 25\%$	100	0.50	200
420	$\pm 25\%$	100	0.50	200
450	$\pm 25\%$	100	0.50	200
470	$\pm 25\%$	100	0.50	200
500	$\pm 25\%$	100	0.50	200
600	$\pm 25\%$	100	0.50	200
750	$\pm 25\%$	100	0.70	200
800	$\pm 25\%$	100	0.70	200
1000	$\pm 25\%$	100	0.70	200
1200	$\pm 25\%$	100	1.00	50
1500	$\pm 25\%$	100	1.00	50
1700	$\pm 25\%$	100	1.20	50
2000	$\pm 25\%$	100	1.20	50
2200	$\pm 25\%$	100	1.20	50
2500	$\pm 25\%$	100	1.30	50
2700	$\pm 25\%$	100	1.30	50

Standard Electrical Specifications

CB05(201209) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
5	$\pm 25\%$	100	0.10	600
7	$\pm 25\%$	100	0.10	600
9	$\pm 25\%$	100	0.10	600
10	$\pm 25\%$	100	0.10	600
11	$\pm 25\%$	100	0.10	600
12	$\pm 25\%$	100	0.10	600
15	$\pm 25\%$	100	0.10	600
17	$\pm 25\%$	100	0.10	600
19	$\pm 25\%$	100	0.10	600
22	$\pm 25\%$	100	0.10	600
26	$\pm 25\%$	100	0.10	600
28	$\pm 25\%$	100	0.10	600
30	$\pm 25\%$	100	0.10	600
31	$\pm 25\%$	100	0.10	600
32	$\pm 25\%$	100	0.10	600
33	$\pm 25\%$	100	0.10	500
39	$\pm 25\%$	100	0.10	500
40	$\pm 25\%$	100	0.10	500
42	$\pm 25\%$	100	0.10	500
47	$\pm 25\%$	100	0.10	500
50	$\pm 25\%$	100	0.10	500
52	$\pm 25\%$	100	0.15	500
56	$\pm 25\%$	100	0.15	500
60	$\pm 25\%$	100	0.15	500
70	$\pm 25\%$	100	0.15	500
75	$\pm 25\%$	100	0.15	500
80	$\pm 25\%$	100	0.15	500
90	$\pm 25\%$	100	0.15	500
95	$\pm 25\%$	100	0.15	500
100	$\pm 25\%$	100	0.25	300
120	$\pm 25\%$	100	0.25	300
150	$\pm 25\%$	100	0.25	300
180	$\pm 25\%$	100	0.30	300
200	$\pm 25\%$	100	0.30	300
220	$\pm 25\%$	100	0.3	300
240	$\pm 25\%$	100	0.3	300
300	$\pm 25\%$	100	0.3	300
330	$\pm 25\%$	100	0.3	300
400	$\pm 25\%$	100	0.3	300
420	$\pm 25\%$	100	0.3	300
430	$\pm 25\%$	100	0.4	300
450	$\pm 25\%$	100	0.4	300
470	$\pm 25\%$	100	0.4	300
500	$\pm 25\%$	100	0.4	300
600	$\pm 25\%$	100	0.4	300
680	$\pm 25\%$	100	0.4	300
750	$\pm 25\%$	100	0.5	200
1000	$\pm 25\%$	100	0.5	200
1200	$\pm 25\%$	100	0.6	200
1500	$\pm 25\%$	100	0.6	200
2000	$\pm 25\%$	100	0.7	200
2200	$\pm 25\%$	100	0.7	200
2500	$\pm 25\%$	100	0.7	200
2700	$\pm 25\%$	100	0.7	200

Standard Electrical Specifications

CB04(321611) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated current (mA) max.
8	$\pm 25\%$	100	0.05	600
9	$\pm 25\%$	100	0.05	600
11	$\pm 25\%$	100	0.05	600
17	$\pm 25\%$	100	0.05	600
19	$\pm 25\%$	100	0.05	600
22	$\pm 25\%$	100	0.05	600
24	$\pm 25\%$	100	0.05	600
26	$\pm 25\%$	100	0.05	600
30	$\pm 25\%$	100	0.05	600
31	$\pm 25\%$	100	0.05	600
32	$\pm 25\%$	100	0.05	600
33	$\pm 25\%$	100	0.05	600
35	$\pm 25\%$	100	0.10	500
47	$\pm 25\%$	100	0.10	500
50	$\pm 25\%$	100	0.10	500
52	$\pm 25\%$	100	0.10	500
60	$\pm 25\%$	100	0.10	500
70	$\pm 25\%$	100	0.10	500
75	$\pm 25\%$	100	0.15	500
80	$\pm 25\%$	100	0.15	500
90	$\pm 25\%$	100	0.15	500
100	$\pm 25\%$	100	0.15	500
120	$\pm 25\%$	100	0.15	500
150	$\pm 25\%$	100	0.15	500
180	$\pm 25\%$	100	0.20	400
200	$\pm 25\%$	100	0.20	400
220	$\pm 25\%$	100	0.20	400
240	$\pm 25\%$	100	0.20	400
300	$\pm 25\%$	100	0.20	400
400	$\pm 25\%$	100	0.20	400
470	$\pm 25\%$	100	0.20	400
500	$\pm 25\%$	100	0.20	400
600	$\pm 25\%$	100	0.30	400
700	$\pm 25\%$	100	0.40	200
1000	$\pm 25\%$	50	0.40	200
1200	$\pm 25\%$	50	0.40	200
1500	$\pm 25\%$	50	0.45	200
2000	$\pm 25\%$	30	0.60	200
2700	$\pm 25\%$	30	0.60	200

■ Standard Electrical Specifications

CB06(321616) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
25	±25%	100	0.10	500
60	±25%	100	0.20	500
70	±25%	100	0.20	500

CB10(322513) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
32	±25%	100	0.20	500
60	±25%	100	0.20	500
90	±25%	100	0.20	500
120	±25%	100	0.20	500

CB08(451616) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
33	±25%	100	0.20	600
50	±25%	100	0.20	600
60	±25%	100	0.20	600
80	±25%	100	0.20	600
90	±25%	100	0.30	500
100	±25%	100	0.30	500
150	±25%	100	0.30	500
170	±25%	100	0.30	500

CB12(453215) / Standard Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
70	±25%	100	0.30	500
120	±25%	100	0.30	500

■ Standard Electrical Specifications(for High Current Use)

CB02(100505) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0.030	1000

CB03(160808) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
10	±25%	100	0.020	4000
11	±25%	100	0.020	4000
15	±25%	100	0.030	3000
17	±25%	100	0.030	3000
19	±25%	100	0.030	3000
20	±25%	100	0.030	3000
22	±25%	100	0.030	3000
25	±25%	100	0.030	3000
30	±25%	100	0.030	3000
31	±25%	100	0.030	3000
32	±25%	100	0.035	3000
33	±25%	100	0.035	3000
40	±25%	100	0.035	3000
47	±25%	100	0.040	3000
50	±25%	100	0.040	3000
56	±25%	100	0.040	3000
60	±25%	100	0.040	3000
68	±25%	100	0.050	2500
70	±25%	100	0.050	2500
75	±25%	100	0.050	2500
80	±25%	100	0.050	2500
90	±25%	100	0.050	2500
100	±25%	100	0.050	2500
120	±25%	100	0.080	2500
150	±25%	100	0.085	2000
180	±25%	100	0.090	2000
200	±25%	100	0.095	2000
220	±25%	100	0.100	2000
240	±25%	100	0.120	1500
300	±25%	100	0.120	1500
330	±25%	100	0.120	1500
400	±25%	100	0.120	1500
450	±25%	100	0.150	1500
470	±25%	100	0.150	1500
500	±25%	100	0.150	1500
600	±25%	100	0.200	1000
700	±25%	100	0.250	800
750	±25%	100	0.250	800
800	±25%	100	0.250	800
1000	±25%	100	0.250	800
1500	±25%	100	0.400	500

■ Standard Electrical Specifications(for High Current Use)

CB05(201209) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
11	±25%	100	0.010	6000
13	±25%	100	0.020	5000
15	±25%	100	0.020	5000
17	±25%	100	0.020	5000
19	±25%	100	0.020	4000
22	±25%	100	0.020	4000
26	±25%	100	0.020	4000
28	±25%	100	0.020	4000
30	±25%	100	0.020	4000
31	±25%	100	0.020	4000
32	±25%	100	0.020	4000
39	±25%	100	0.020	3000
40	±25%	100	0.020	3000
42	±25%	100	0.025	3000
50	±25%	100	0.025	3000
60	±25%	100	0.030	3000
70	±25%	100	0.040	3000
75	±25%	100	0.040	3000
80	±25%	100	0.040	3000
90	±25%	100	0.040	3000
100	±25%	100	0.040	3000
120	±25%	100	0.040	3000
130	±25%	100	0.050	2500
150	±25%	100	0.050	2500
180	±25%	100	0.050	2500
200	±25%	100	0.050	2500
220	±25%	100	0.080	2000
240	±25%	100	0.080	2000
250	±25%	100	0.080	2000
300	±25%	100	0.080	2000
330	±25%	100	0.080	2000
390	±25%	100	0.100	2000
400	±25%	100	0.100	2000
450	±25%	100	0.100	2000
470	±25%	100	0.100	2000
500	±25%	100	0.100	2000
600	±25%	100	0.100	2000
750	±25%	100	0.120	1500
1000	±25%	100	0.120	1500
1500	±25%	100	0.300	1000

■ Standard Electrical Specifications(for High Current Use)

CB04(321611) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
7	±25%	100	0.015	6000
8	±25%	100	0.015	6000
11	±25%	100	0.015	6000
19	±25%	100	0.015	6000
26	±25%	100	0.015	6000
30	±25%	100	0.015	4000
31	±25%	100	0.015	4000
32	±25%	100	0.015	4000
35	±25%	100	0.015	4000
40	±25%	100	0.015	4000
42	±25%	100	0.015	4000
48	±25%	100	0.020	4000
50	±25%	100	0.020	4000
52	±25%	100	0.020	4000
60	±25%	100	0.020	4000
68	±25%	100	0.020	4000
70	±25%	100	0.020	4000
75	±25%	100	0.025	3000
80	±25%	100	0.025	3000
90	±25%	100	0.030	3000
100	±25%	100	0.030	2500
120	±25%	100	0.030	2500
150	±25%	100	0.040	2000
200	±25%	100	0.050	2000
220	±25%	100	0.050	2000
300	±25%	100	0.060	2000
330	±25%	100	0.060	2000
390	±25%	100	0.060	2000
400	±25%	100	0.100	2000
500	±25%	100	0.100	2000
600	±25%	100	0.100	2000
1000	±25%	50	0.150	1200
1200	±25%	50	0.180	1000
1500	±25%	50	0.200	800

CB10(322513) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0.025	4000
32	±25%	100	0.025	4000
60	±25%	100	0.025	4000
90	±25%	100	0.025	3000

■ Standard Electrical Specifications(for High Current Use)

CB08(451616) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0.020	6000
40	±25%	100	0.020	6000
50	±25%	100	0.020	6000
60	±25%	100	0.020	5000
70	±25%	100	0.025	5000
75	±25%	100	0.025	5000
80	±25%	100	0.025	4000
90	±25%	100	0.100	2000
100	±25%	100	0.100	2000
150	±25%	100	0.100	2000
190	±25%	100	0.100	2000
300	±25%	100	0.100	2000
470	±25%	100	0.100	2000
600	±25%	100	0.100	2000
850	±25%	100	0.100	2000
1000	±25%	100	0.100	2000
1300	±25%	100	0.100	2000

CB12(453215) / High Current Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
19	±25%	100	0.030	6000
30	±25%	100	0.030	6000
47	±25%	100	0.030	6000
50	±25%	100	0.030	6000
60	±25%	100	0.030	6000
70	±25%	100	0.030	6000
80	±25%	100	0.030	4000
90	±25%	100	0.030	4000
120	±25%	100	0.030	4000
125	±25%	100	0.030	4000
150	±25%	100	0.030	4000
190	±25%	100	0.030	4000

■ Standard Electrical Specifications(for High Speed Signals Use)

CB02(100505) / High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	±25%	100	0.08	300
10	±25%	100	0.10	300
22	±25%	100	0.25	300
26	±25%	100	0.25	300
30	±25%	100	0.25	300
40	±25%	100	0.25	350
75	±25%	100	0.30	300
80	±25%	100	0.30	300
100	±25%	100	0.40	300
120	±25%	100	0.40	300
220	±25%	100	0.60	200

CB03(160808) / High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
6	±25%	100	0.05	500
7	±25%	100	0.05	400
10	±25%	100	0.07	400
19	±25%	100	0.20	300
20	±25%	100	0.20	300
22	±25%	100	0.20	300
30	±25%	100	0.20	300
40	±25%	100	0.20	300
47	±25%	100	0.20	300
50	±25%	100	0.25	300
60	±25%	100	0.25	300
68	±25%	100	0.25	300
70	±25%	100	0.25	300
75	±25%	100	0.25	300
80	±25%	100	0.25	300
100	±25%	100	0.30	300
120	±25%	100	0.30	300
130	±25%	100	0.30	300
140	±25%	100	0.30	300
150	±25%	100	0.30	200
160	±25%	100	0.30	200
180	±25%	100	0.35	200
200	±25%	100	0.35	200
220	±25%	100	0.35	200
240	±25%	100	0.35	200
300	±25%	100	0.40	200
400	±25%	100	0.50	200
420	±25%	100	0.50	200
470	±25%	100	0.50	200
480	±25%	100	0.50	200
600	±25%	100	0.50	200
1000	±25%	100	0.60	100
1200	±25%	100	0.60	100
1500	±25%	100	0.70	100
1800	±25%	100	0.80	100
2200	±25%	100	1.00	50
2500	±25%	100	1.50	50

■ Standard Electrical Specifications(for High Speed Signals Use)

CB05(201209) / High Speed Signals Type

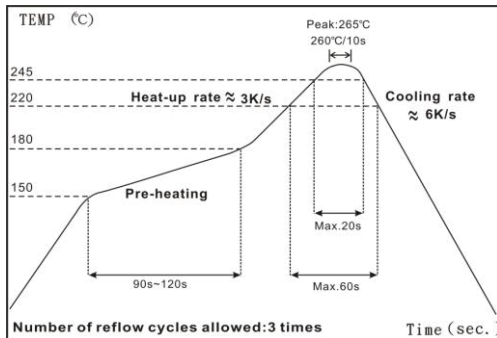
Impedance (Ω)	Tolerance	Test Frequency (MHz)	DC Resistance (Ω) max.	Rated current (mA) max.
5	±25%	100	0.07	800
6	±25%	100	0.07	800
7	±25%	100	0.10	700
11	±25%	100	0.10	700
26	±25%	100	0.15	600
30	±25%	100	0.15	600
32	±25%	100	0.15	600
40	±25%	100	0.15	500
60	±25%	100	0.15	500
70	±25%	100	0.15	500
75	±25%	100	0.15	500
90	±25%	100	0.15	500
100	±25%	100	0.20	400
120	±25%	100	0.20	400
150	±25%	100	0.20	400
170	±25%	100	0.30	400
200	±25%	100	0.30	300
220	±25%	100	0.30	300
240	±25%	100	0.30	300
300	±25%	100	0.30	300
400	±25%	100	0.30	300
420	±25%	100	0.30	300
470	±25%	100	0.35	200
500	±25%	100	0.35	200
600	±25%	100	0.35	200
750	±25%	100	0.40	200
1000	±25%	100	0.40	200
1200	±25%	100	0.45	200
1500	±25%	100	0.45	200
2000	±25%	100	0.50	200
2200	±25%	100	0.50	200
2500	±25%	100	0.60	200
2700	±25%	100	0.60	200

Standard Electrical Specifications(for High Speed Signals Use)

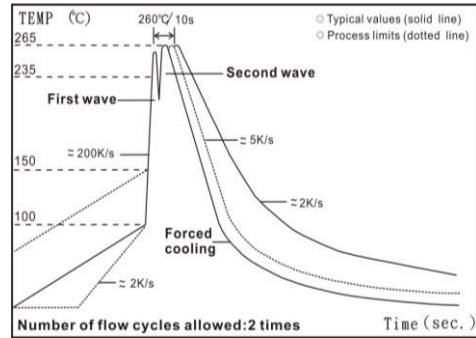
CB04(321611) / High Speed Signals Type

Impedance (Ω)	Tolerance	Test Frequency (MHz)	DCR (Ω) max.	Rated Current (mA) max.
15	±25%	100	0.15	600
17	±25%	100	0.15	600
19	±25%	100	0.15	600
30	±25%	100	0.15	600
32	±25%	100	0.15	600
50	±25%	100	0.15	500
60	±25%	100	0.15	500
80	±25%	100	0.15	500
90	±25%	100	0.15	500
120	±25%	100	0.20	400
150	±25%	100	0.20	400
200	±25%	100	0.25	300
220	±25%	100	0.30	300
300	±25%	100	0.30	300
350	±25%	100	0.30	300
400	±25%	100	0.30	300
600	±25%	100	0.35	300
1000	±25%	100	0.40	200
1200	±25%	100	0.40	200
1500	±25%	100	0.45	200

Soldering Condition



IR Reflow Soldering



Wave Soldering (Flow Soldering)

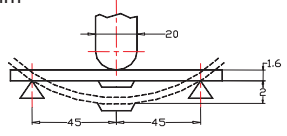

- (1) Time of IR reflow soldering at maximum temperature point 260 C : 10s
- (2) Time of wave soldering at maximum temperature point 260 C : 10s
- (3) Time of soldering iron at maximum temperature point 410 C : 5s

■ Environmental Characteristics

Electrical Performance Test

Item	Specification	Test Methods
Impedance	Refer to standard electrical spec.	HP4291B
DCR		Agilent 34401A

Mechanical Performance Test

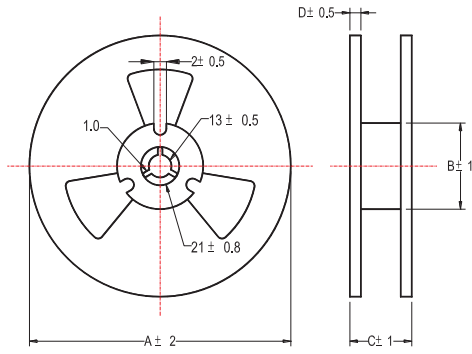
Item	Specification	Test Methods
Flexure Strength	The forces applied on the right conditions must not damage the terminal electrode and the ferrite	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 30sec 
Vibration		※ For 0402, substrate dimension is 100x40x0.8mm Test device shall be soldered on the substrate Oscillation Frequency : 10 to 55 to 10Hz for 1min Amplitude : 1.5mm Time : 2hrs for each axis (X,Y&Z), total 6hrs
Resistance to Soldering Heat	Appearance: No damage More than 75% of the terminal electrode should be covered with solder Impedance: within $\pm 30\%$ of initial value	Pre-heating: 150°C, 1min Solder Temperature: 260 \pm 5°C Immersion Time: 10 \pm 1sec
Solderability	The electrodes shall be at least 90% covered with new solder coating	Pre-heating: 150°C, 1min Solder Temperature: 245 \pm 5°C Immersion Time: 4 \pm 1sec
Terminal Strength Test	0402 series : ≥ 0.2 kg 0603series : ≥ 0.5 kg 0805 series : ≥ 1.0 kg other series : ≥ 2.0 kg	Test device shall be soldered on the substrate 
Temperature Cycle	Appearance: No damage Impedance: within $\pm 30\%$ of initial value	One cycle: One cycle/step1: -55 \pm 3°C for 30min step2: 25 \pm 2°C for 3.0min step3: 125 \pm 3°C for 30min step4: 25 \pm 2°C for 3.0min Total: 100cycles Measured after exposure in the room condition for 24hrs
Humidity Resistance		Temperature: 40 \pm 2°C Relative Humidity: 90 ~ 95% time: 1000hrs Measured after exposure in the room condition for 24hrs
High Temperature Resistance		Temperature: 125 \pm 3°C Relative Humidity : 0% Applied Current: Rated Current time: 1000hrs Measured after exposure in the room condition for 24hrs
Low Temperature Resistance		Temperature: -55 \pm 3°C TR elative Humidity : 0% time: 1000hrs Measured after exposure in the room condition for 24hrs

■ Operating Temperature: -55°C ~ 125°C

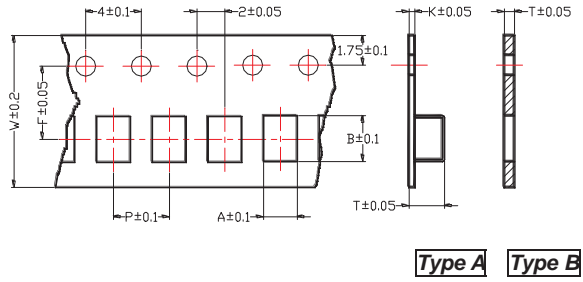
■ Storage Temperature: 25 \pm 3°C ; Humidity < 80%RH

■ Packaging

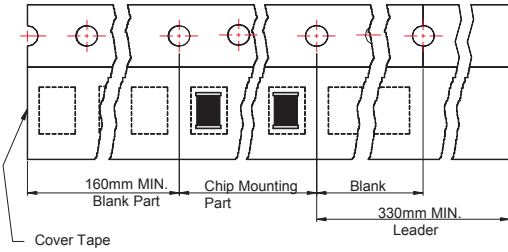
Reel Specifications



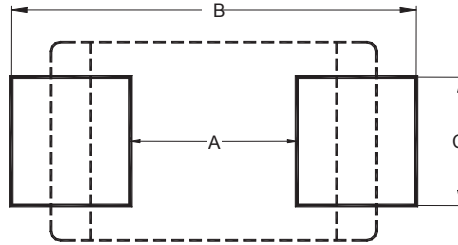
Tape Specifications



Tape Material



Recommended Pattern

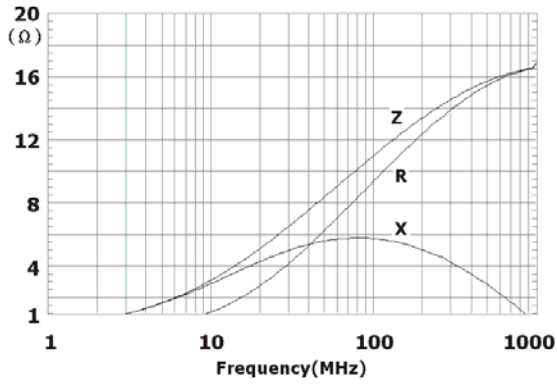


- Don't apply narrower pattern than listed above to CB□□TYH .
Narrow pattern might cause excessive heat or open circuit.

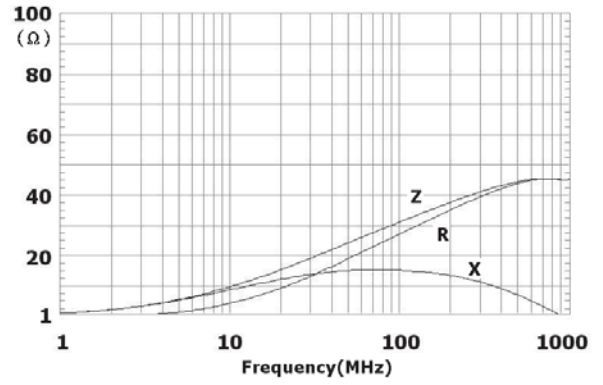
Unit : mm

Type	Tape Dimensions								Reel Dimensions				Recommended Pattern			Quantity (EA)
	A	B	T	W	P	F	K	Tape Type	A	B	C	D	A	B	C	
CB02	0.65	1.15	0.7	8.0	2.0	3.5	-	B	178	60	10	2	0.4	1.2 ~ 1.4	0.4	10000
CB03	1.10	1.85	0.95	8.0	4.0	3.5	-	B	178	60	10	2	0.8	2.4 ~ 3.4	0.6	4000
CB05	1.58	2.42	0.95	8.0	4.0	3.5	-	B	178	60	10	2	1.2	3.0 ~ 4.0	1.0	4000
CB03	1.05	1.95	1.05	8.0	4.0	3.5	0.23	A	178	60	10	2	0.8	2.4 ~ 3.4	0.6	4000
CB05	1.42	2.25	1.04	8.0	4.0	3.5	0.22	A	178	60	10	2	1.2	3.0 ~ 4.0	1.0	4000
CB04	1.88	3.50	1.27	8.0	4.0	3.5	0.2	A	178	60	10	2	2.0	4.2 ~ 5.2	1.2	3000
CB06	1.88	3.64	1.90	8.0	4.0	3.5	0.2	A	178	60	10	2	2.0	4.2 ~ 5.2	1.2	2000
CB10	2.77	3.42	1.65	8.0	4.0	3.5	0.2	A	178	60	10	2	2.0	5.5 ~ 6.5	1.8	2000
CB08	1.88	4.95	1.90	12	4.0	5.5	0.3	A	178	60	14	2	3.0	5.5 ~ 6.5	1.2	2000
CB12	3.66	4.95	1.85	12	8.0	5.5	0.3	A	178	60	14	2	3.0	5.5 ~ 6.5	2.4	1000

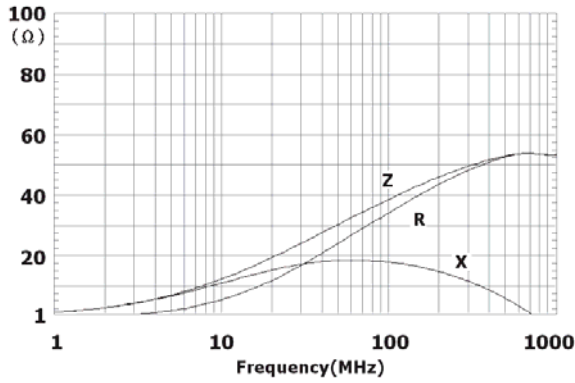
CB02YTYN100



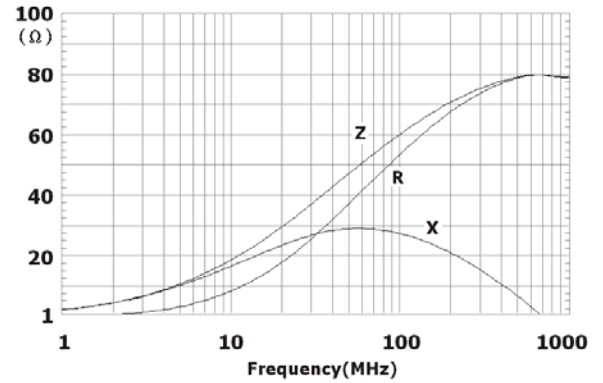
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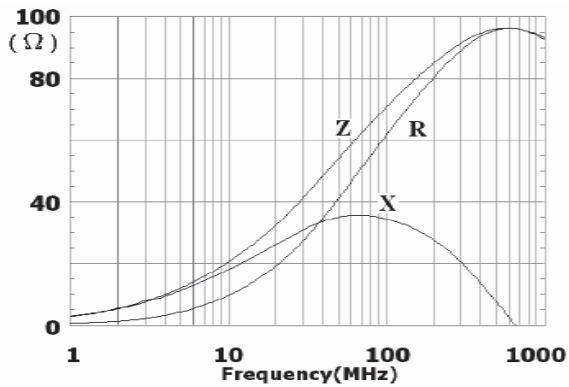
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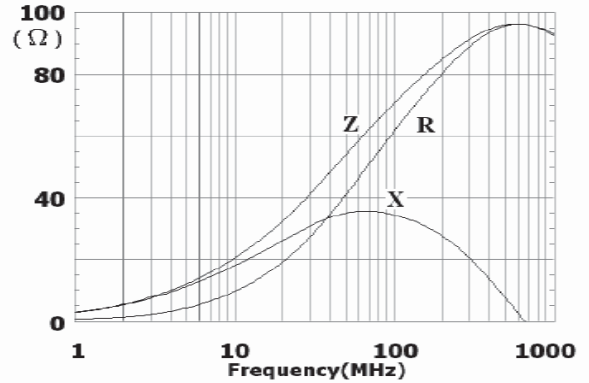
CB02YTYN600



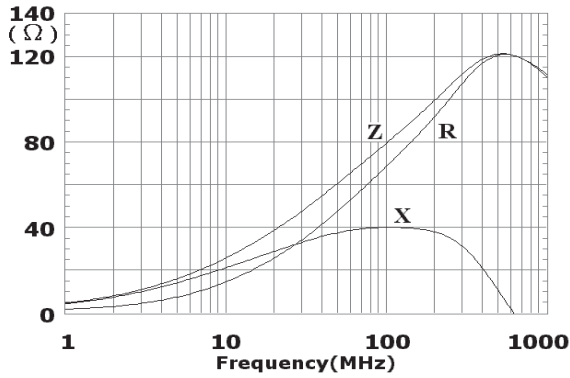
CB02YTYN700



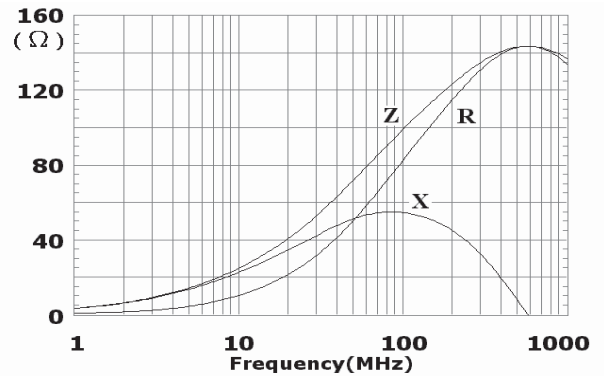
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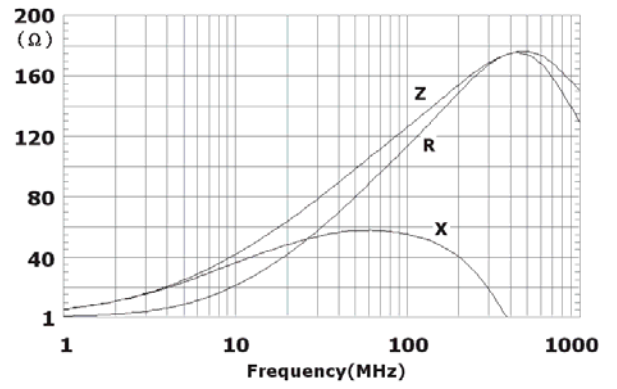
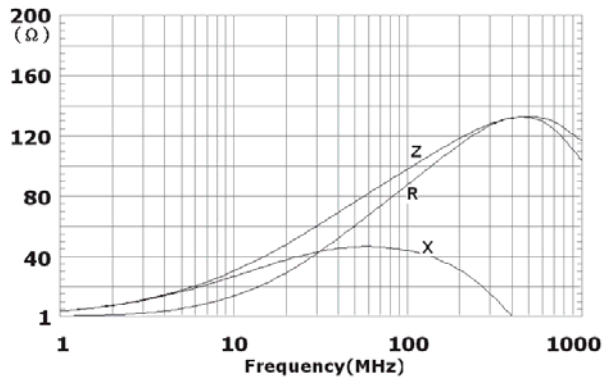


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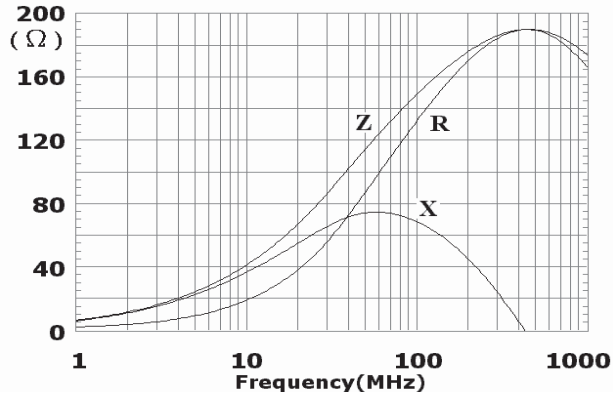


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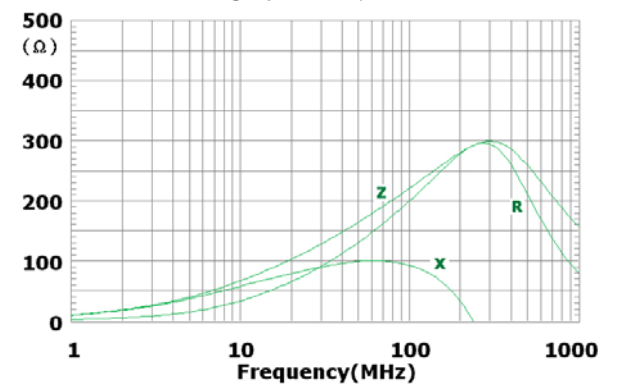




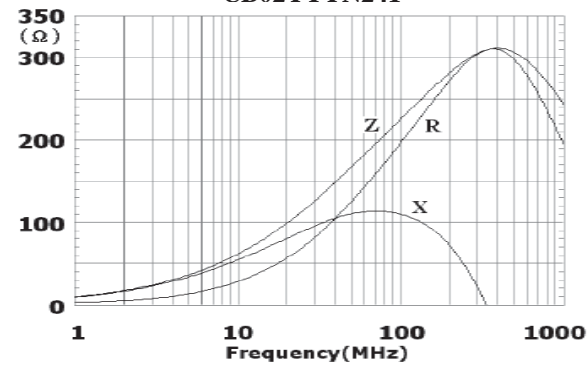
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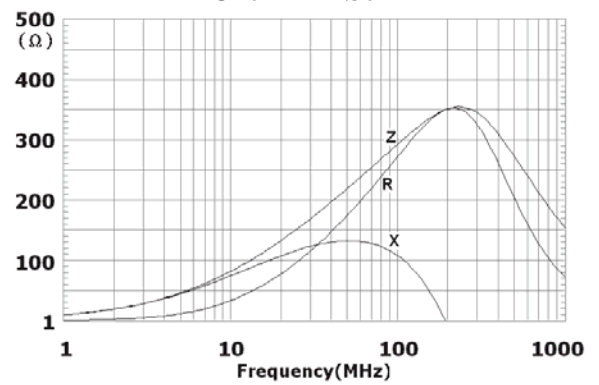
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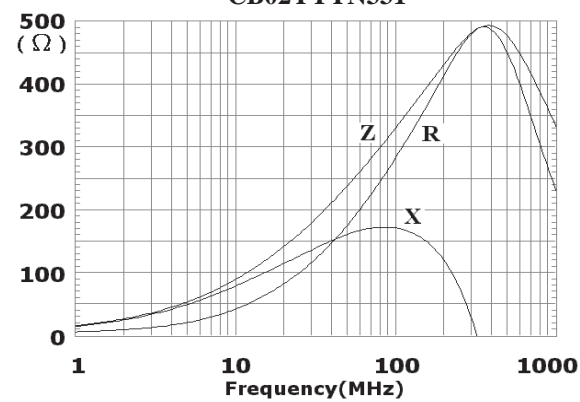
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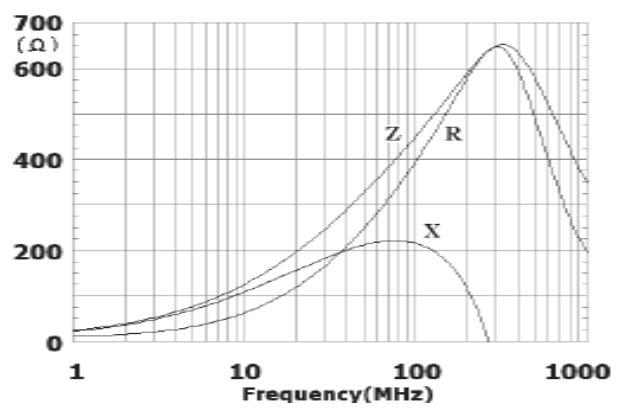
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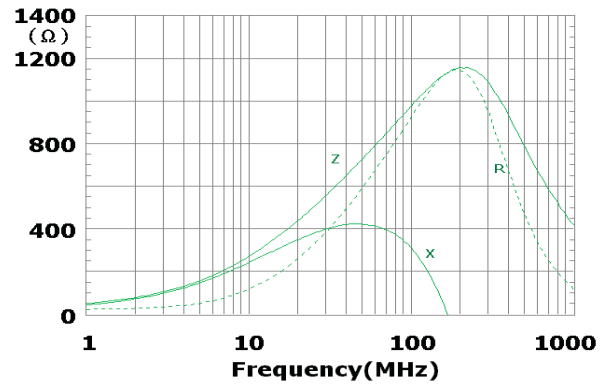
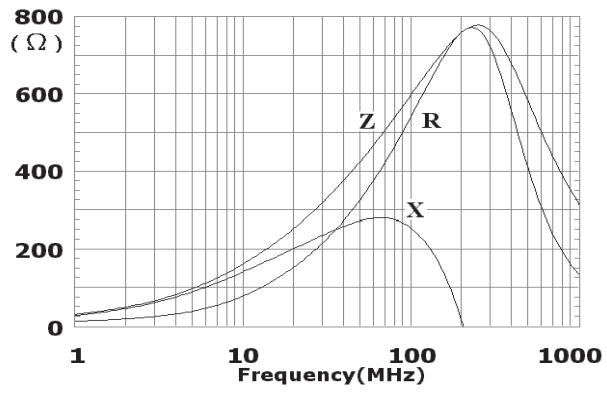


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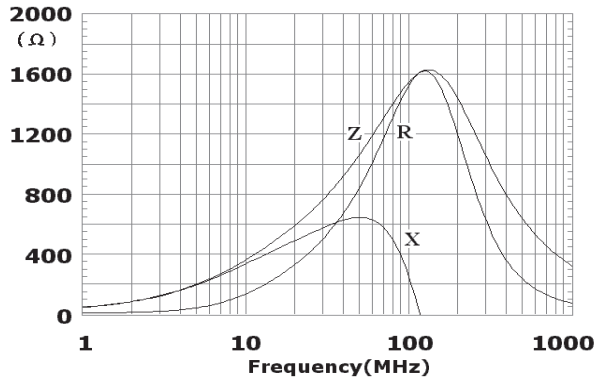


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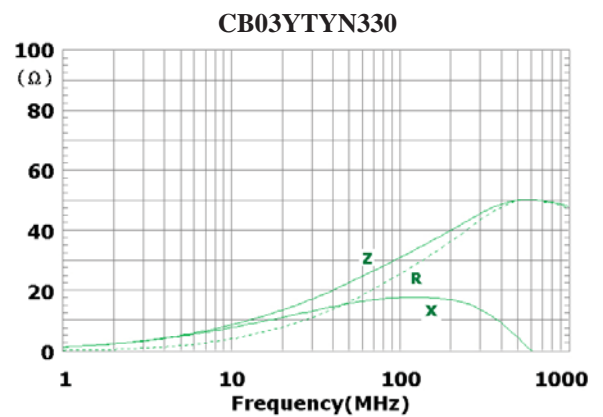
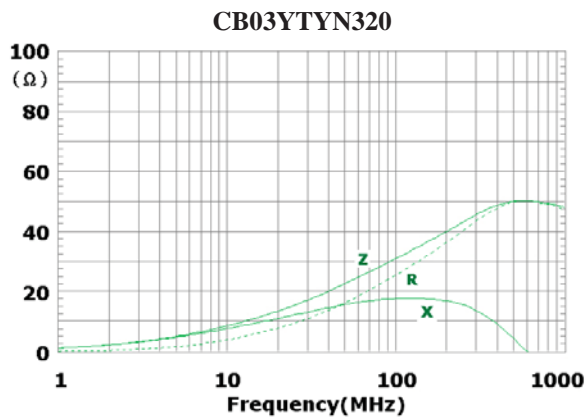
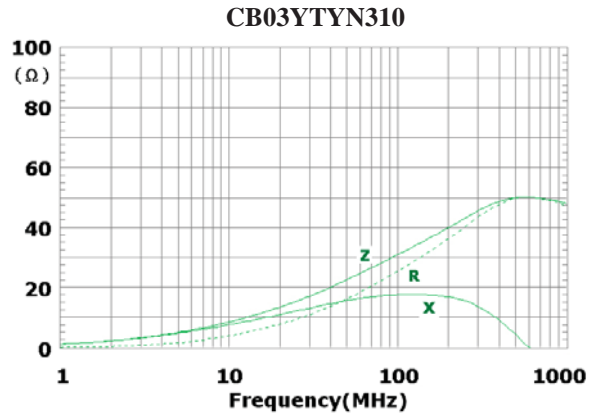
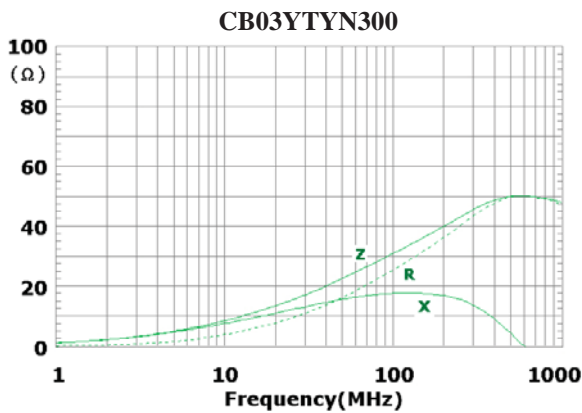
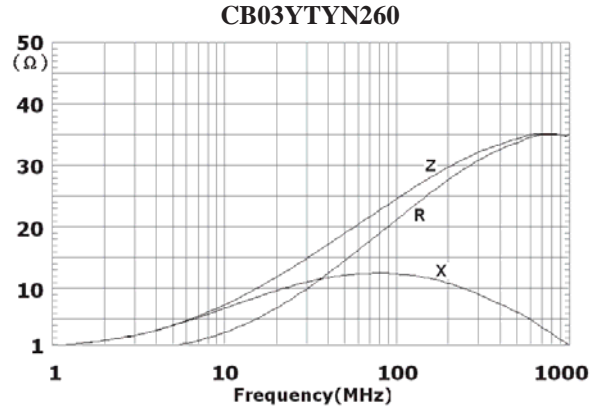
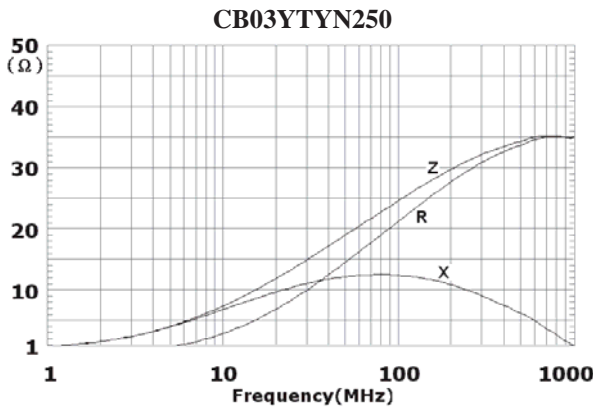
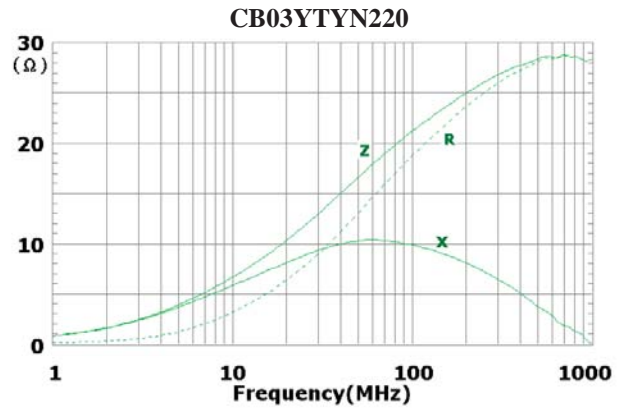
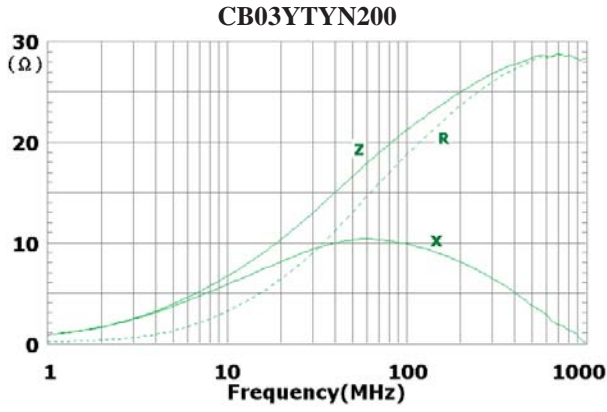


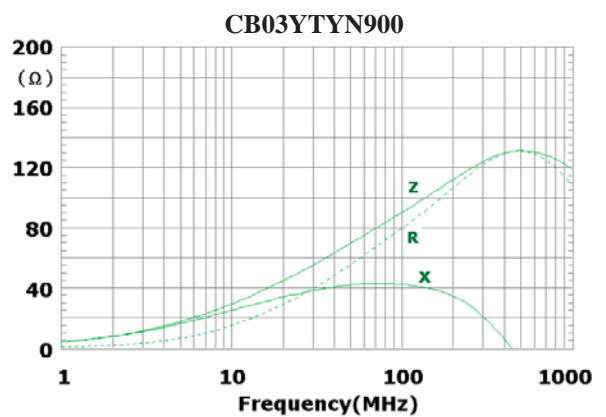
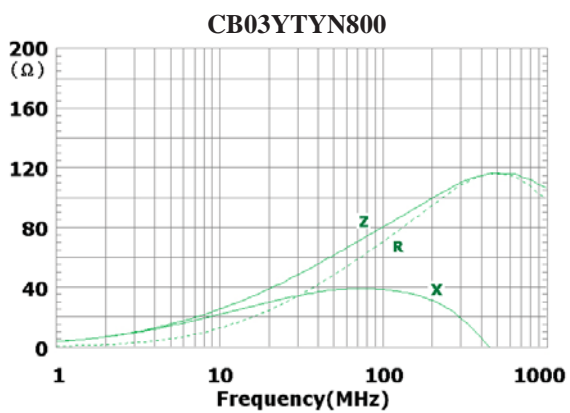
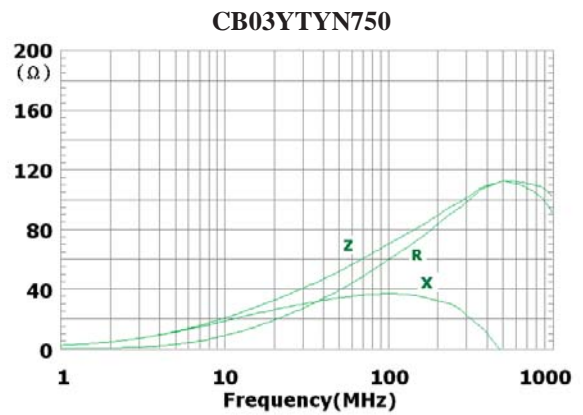
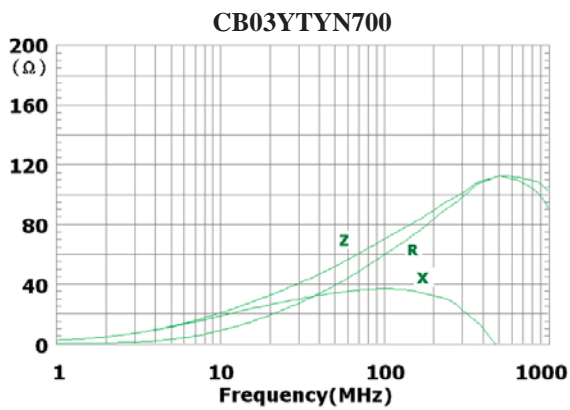
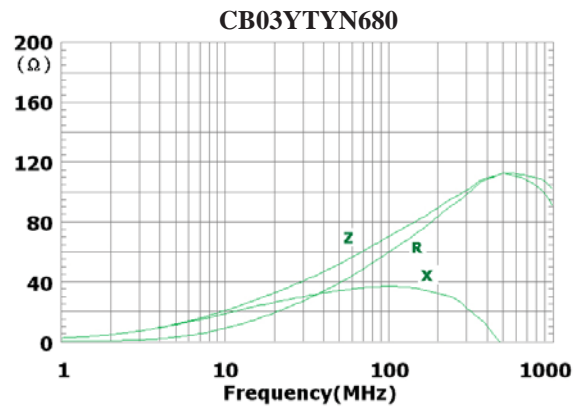
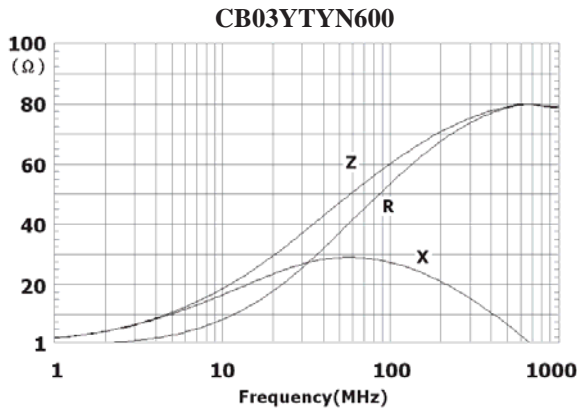
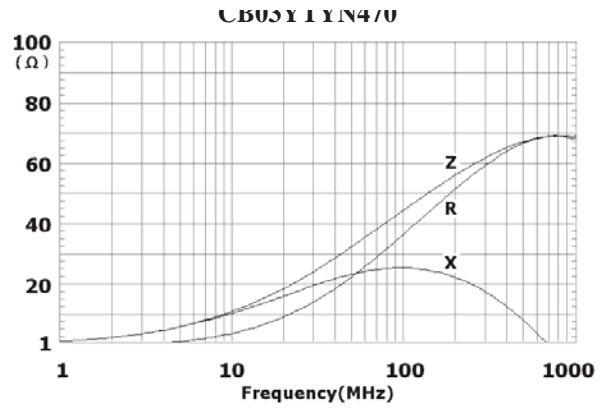
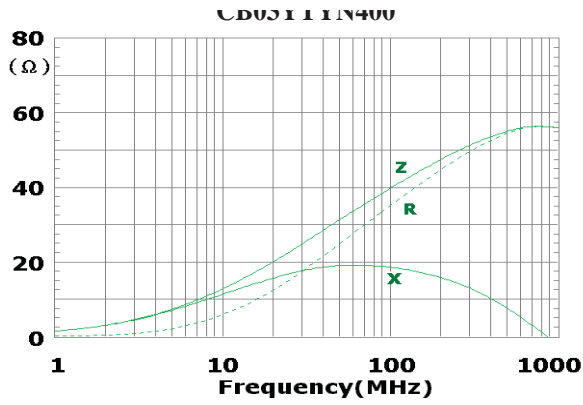


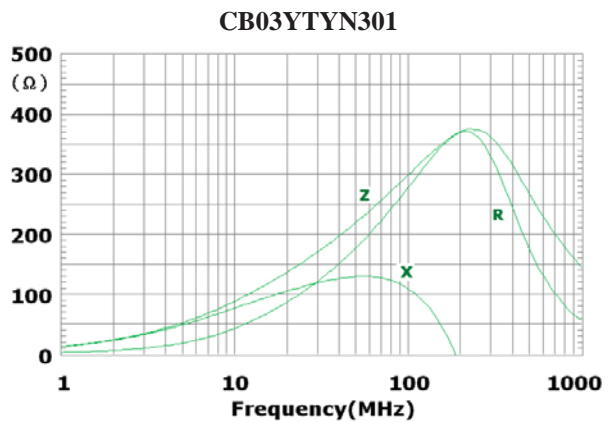
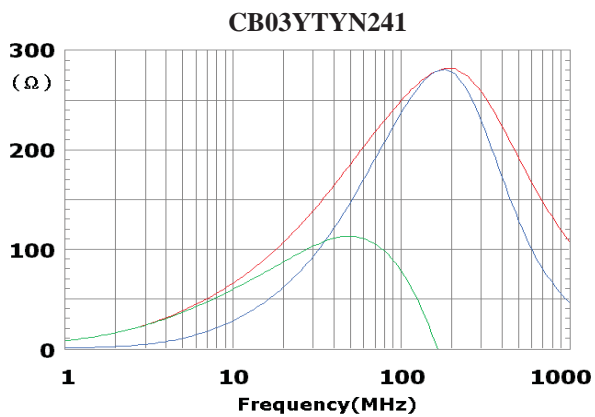
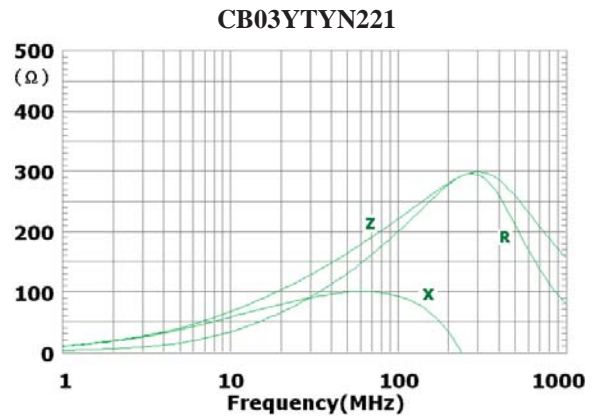
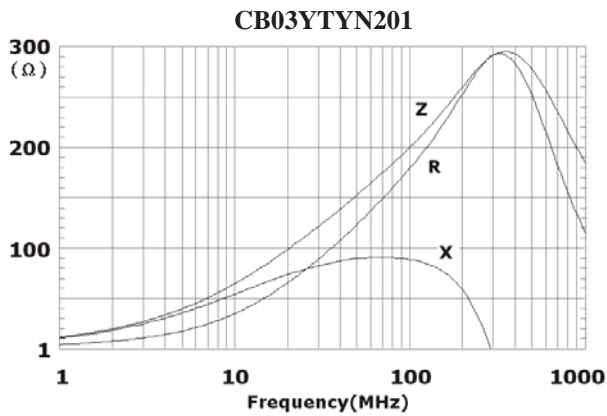
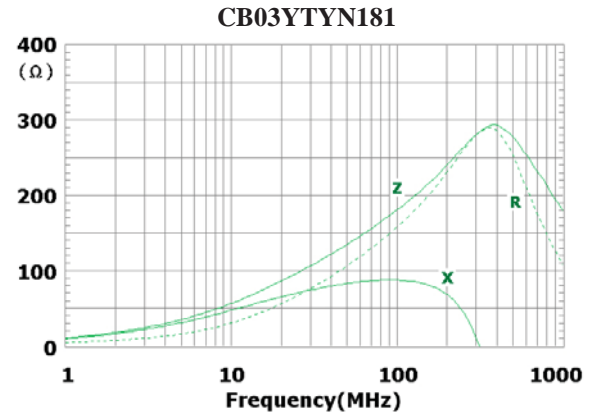
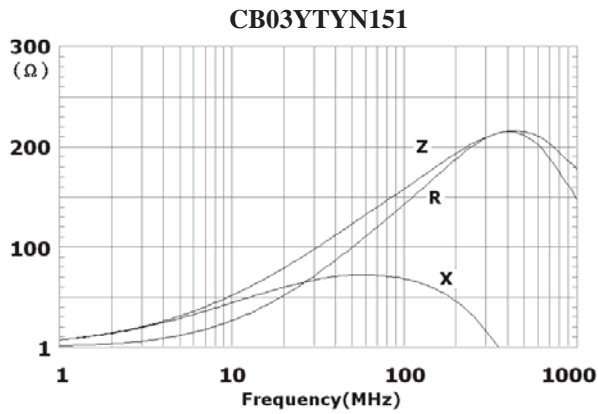
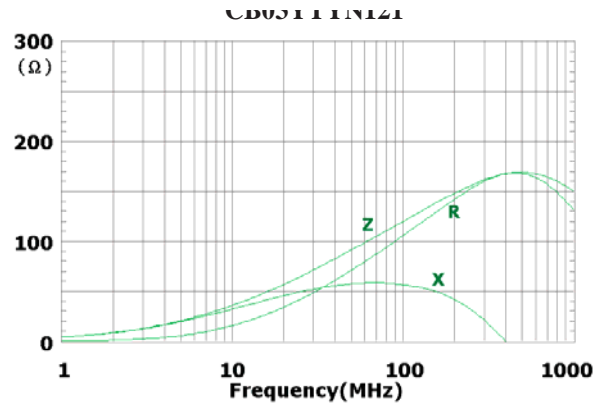
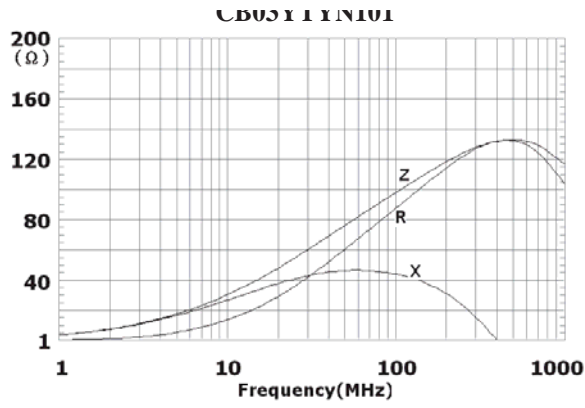
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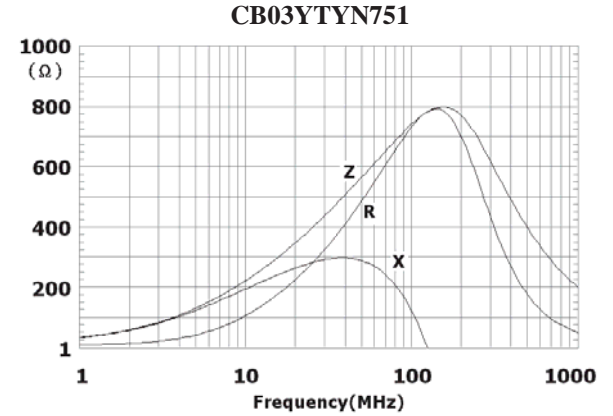
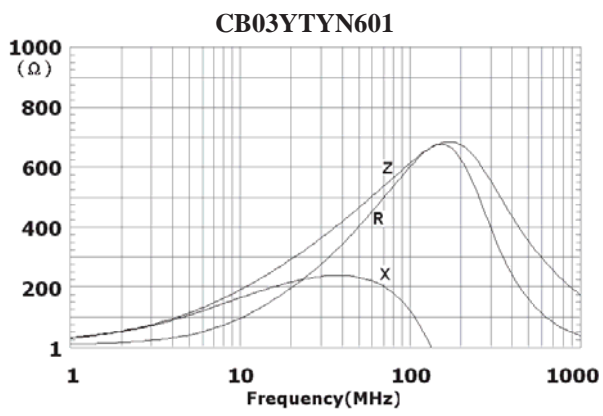
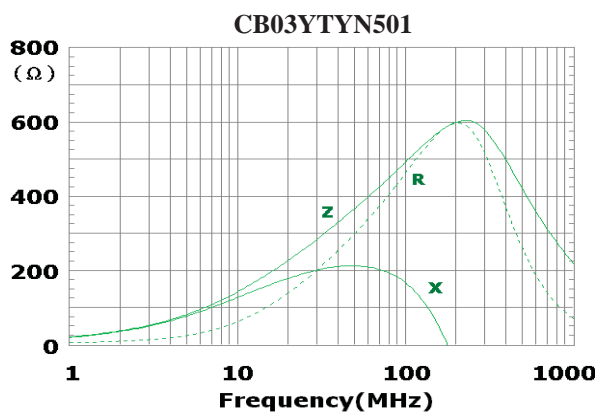
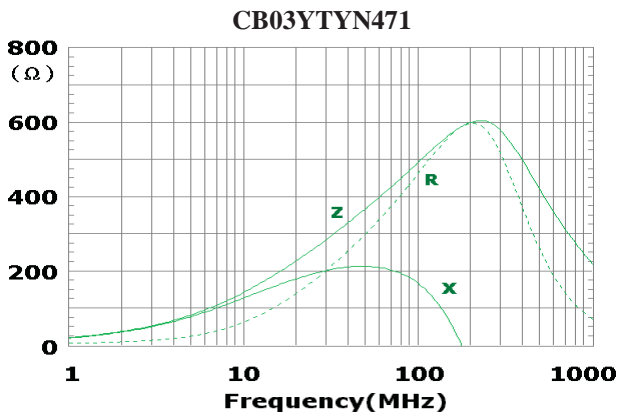
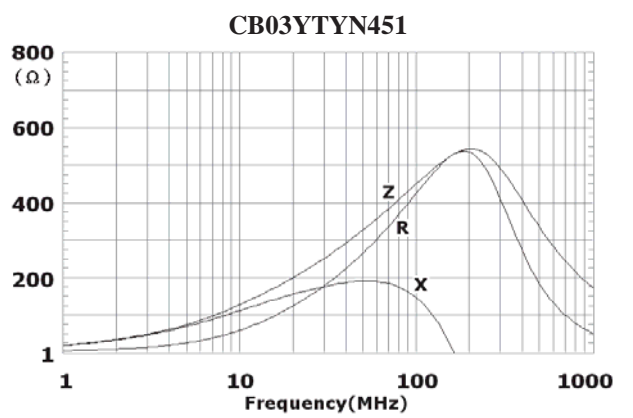
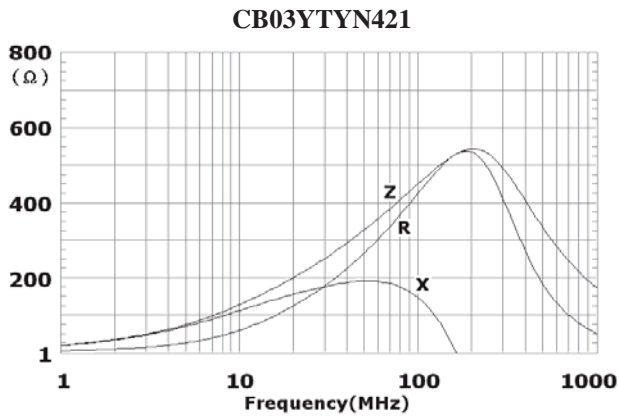
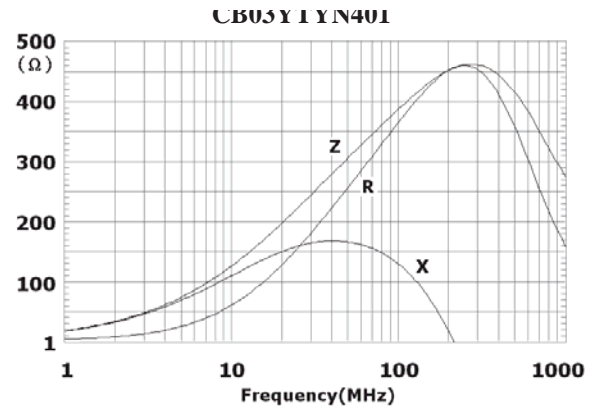
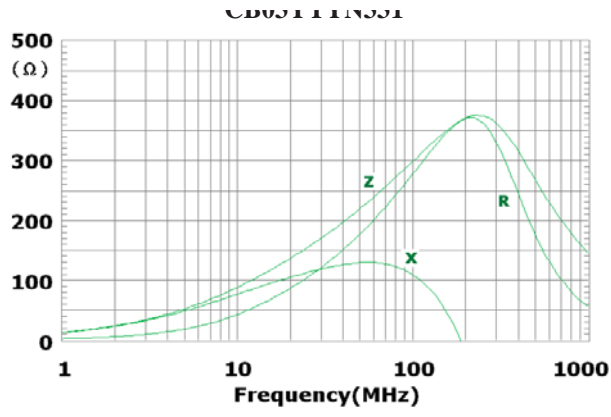


■ Characteristics (Impedance vs. Frequency) - - CB03YTYN

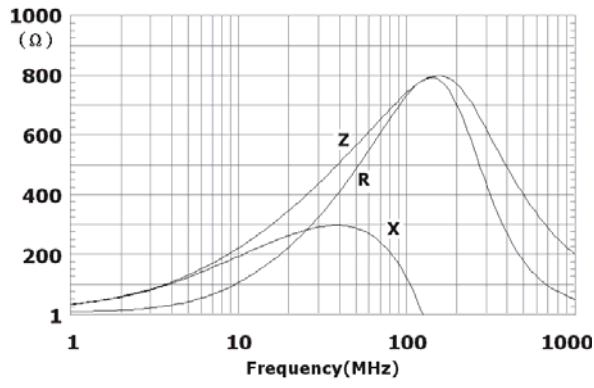




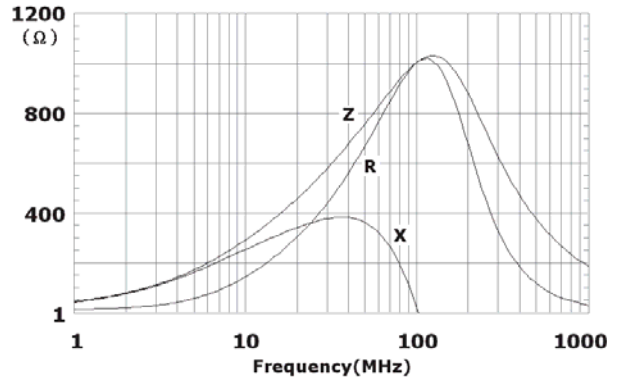




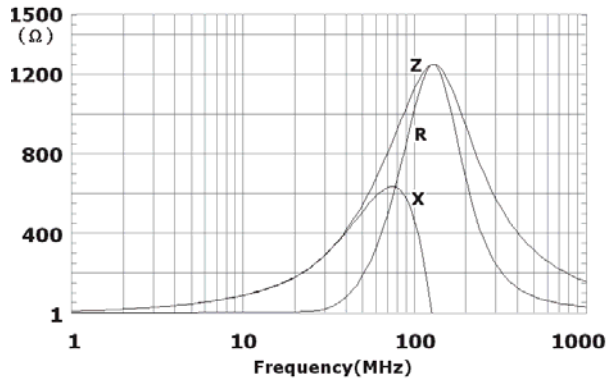
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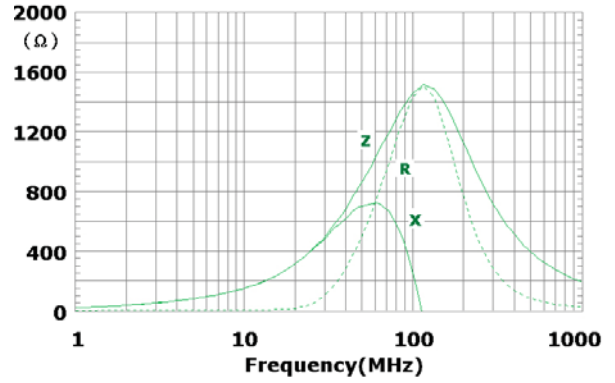
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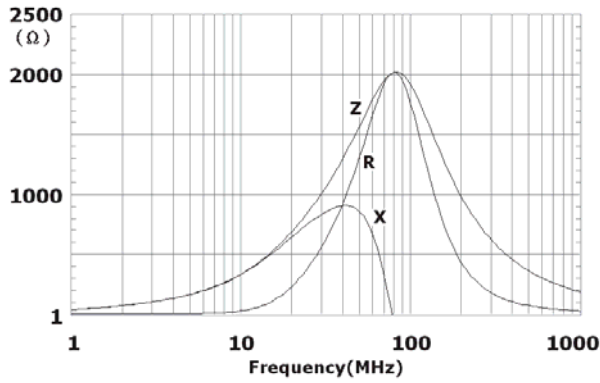
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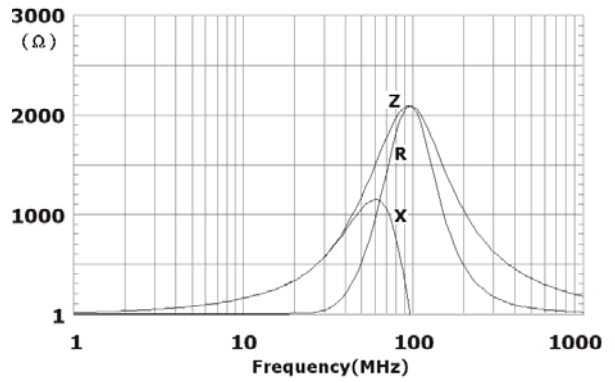
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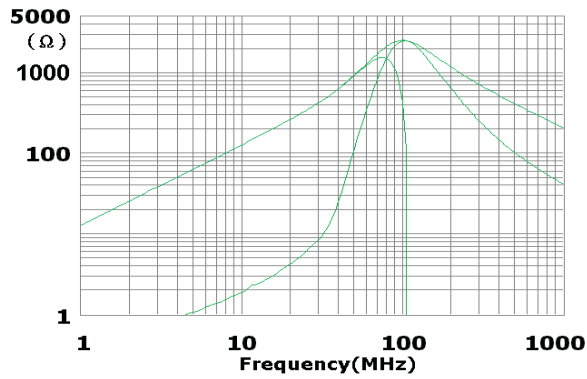
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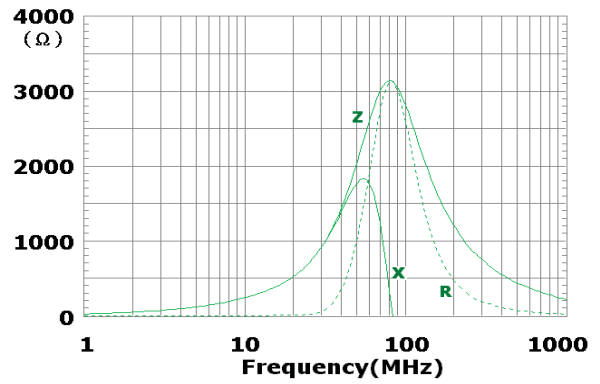
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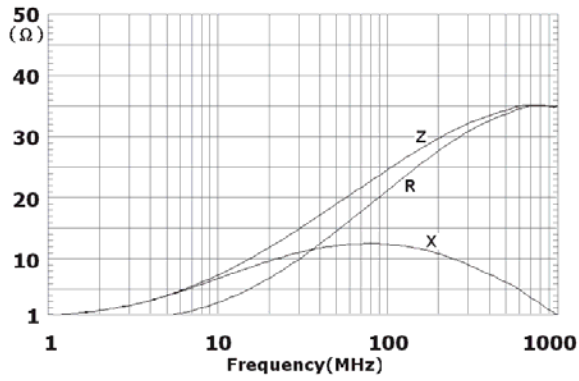
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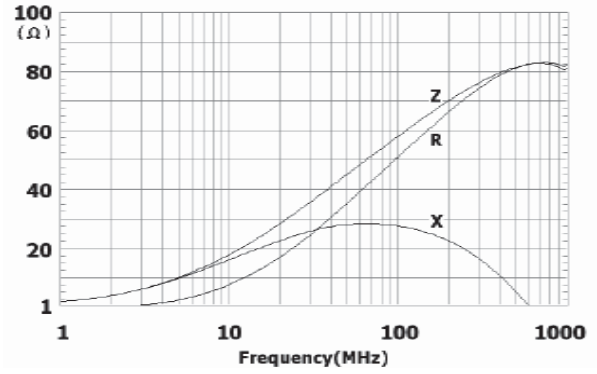
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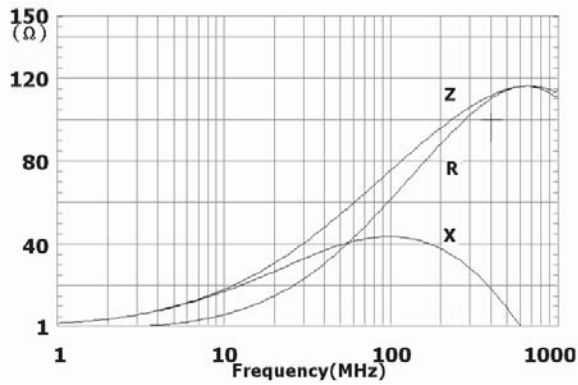
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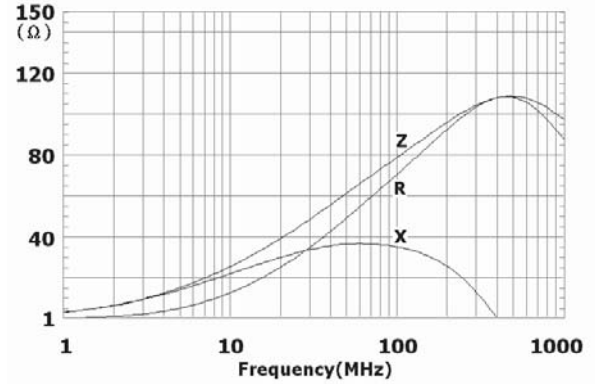
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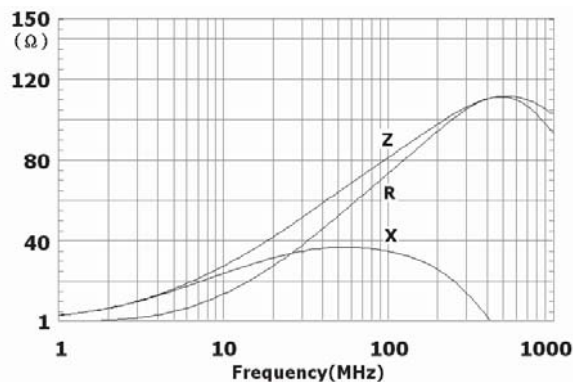
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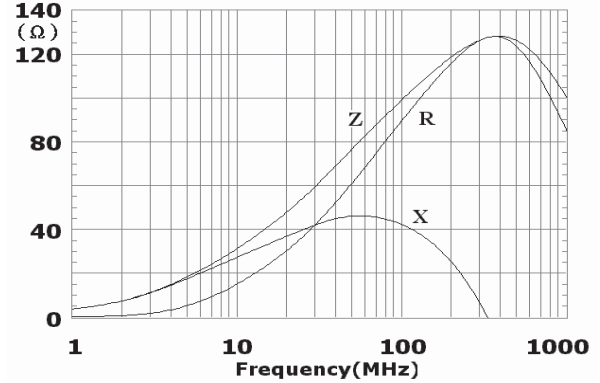
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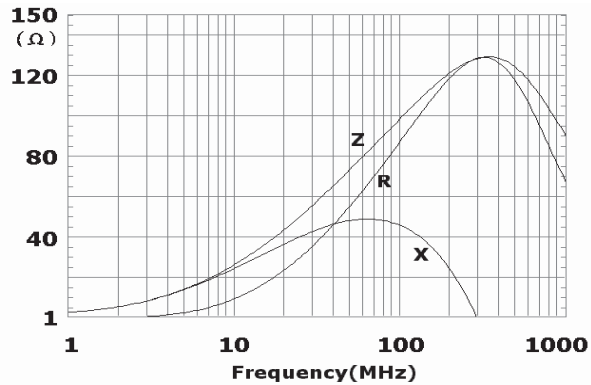
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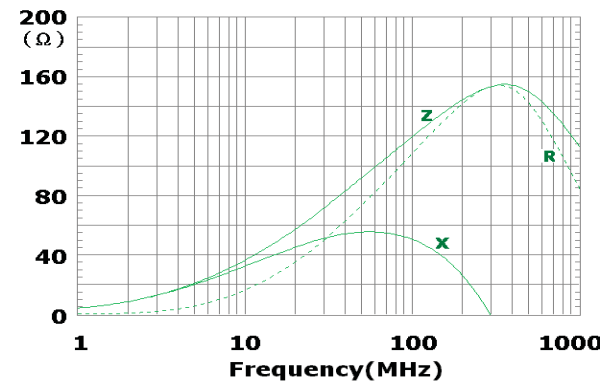
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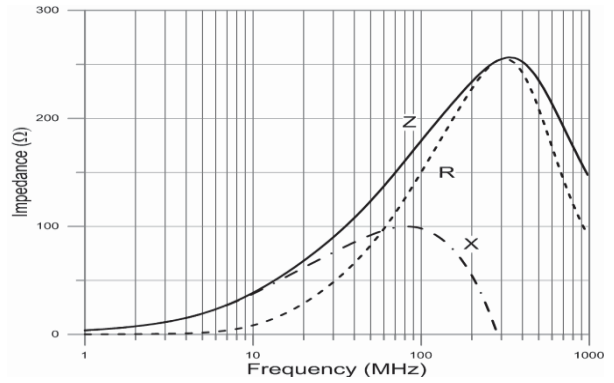
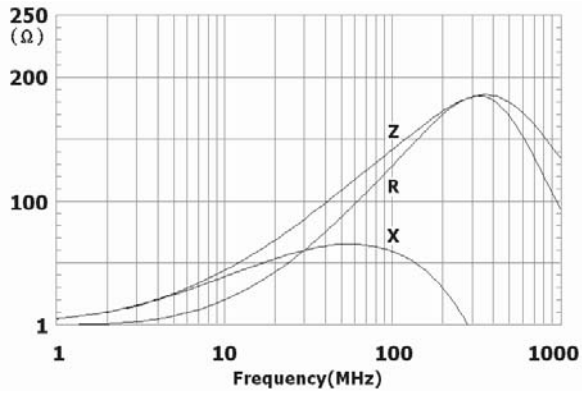


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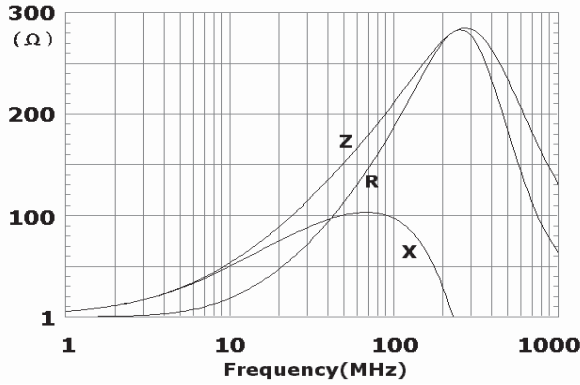


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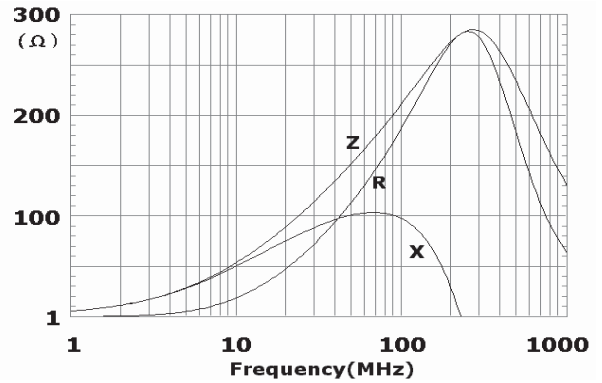




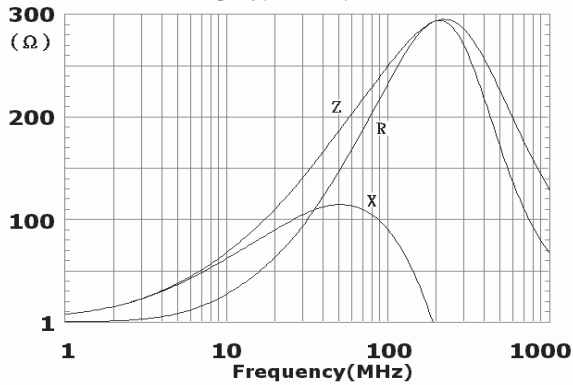
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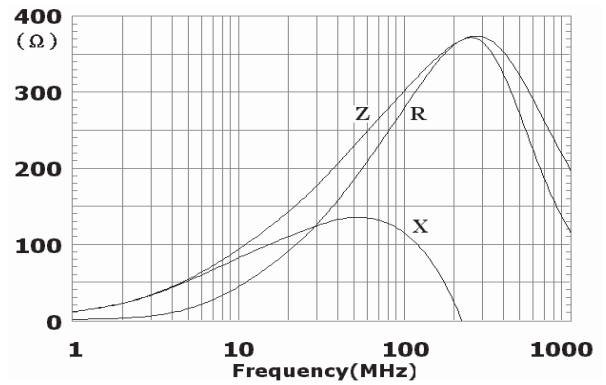
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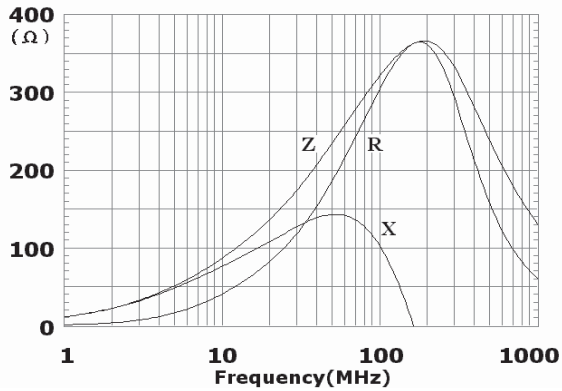
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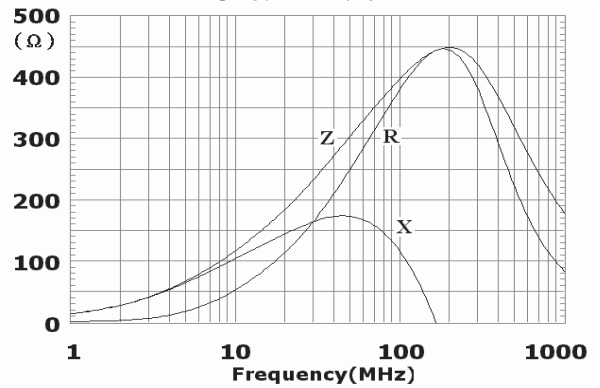
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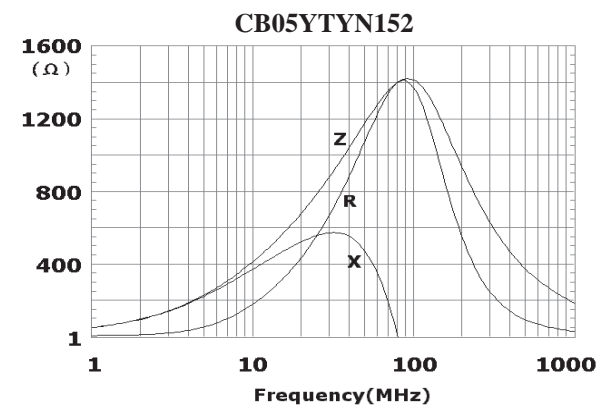
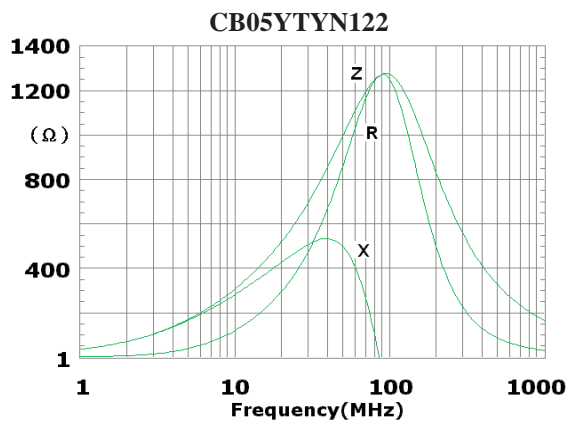
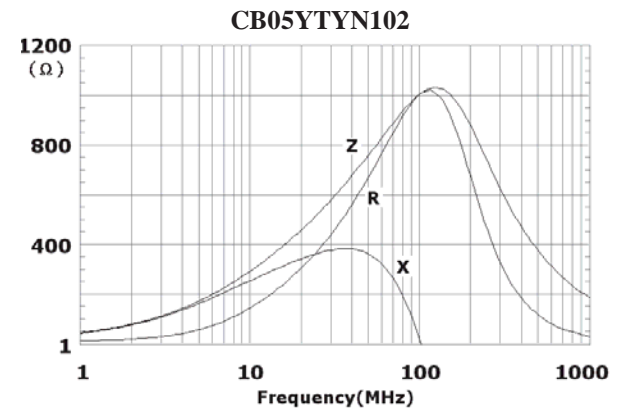
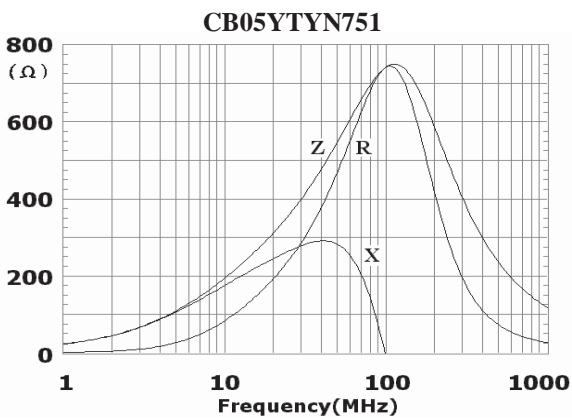
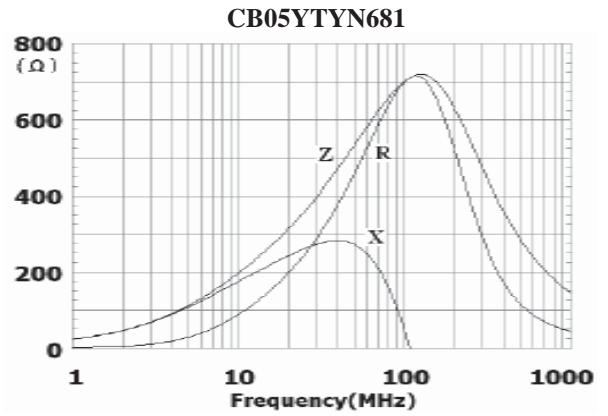
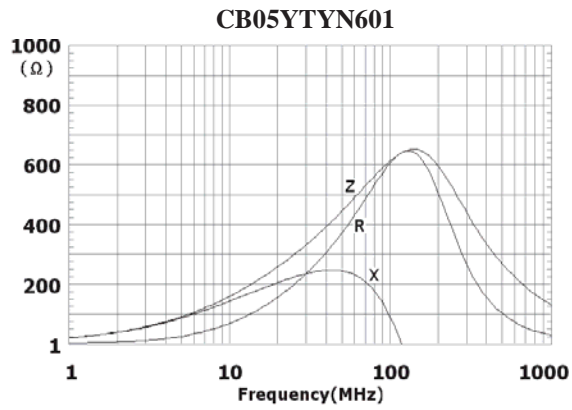
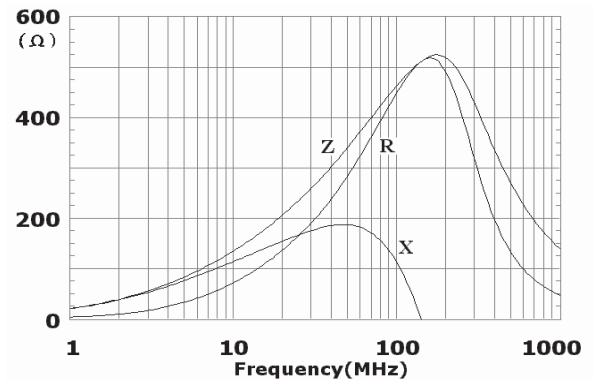
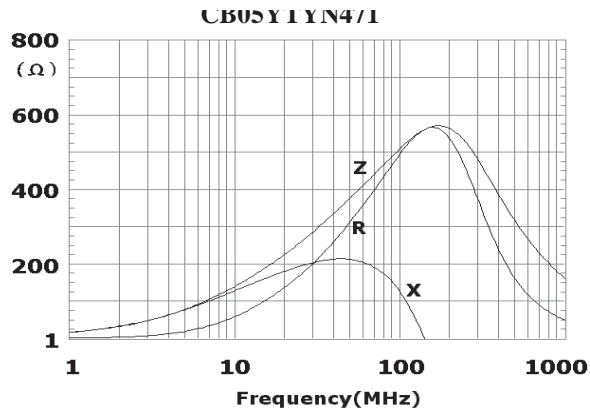


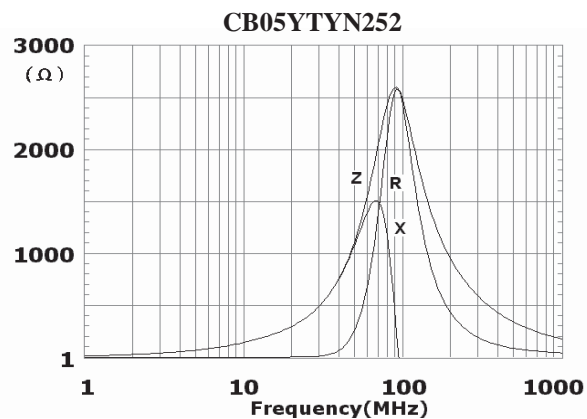
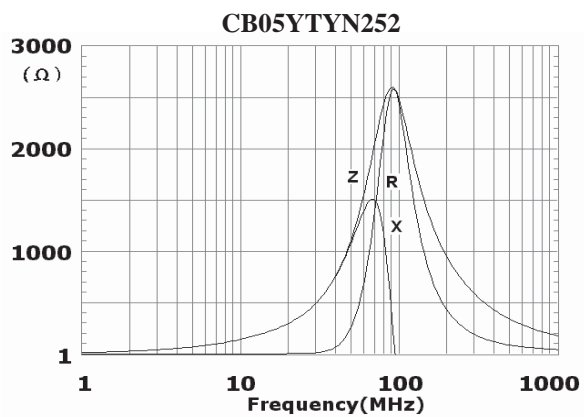
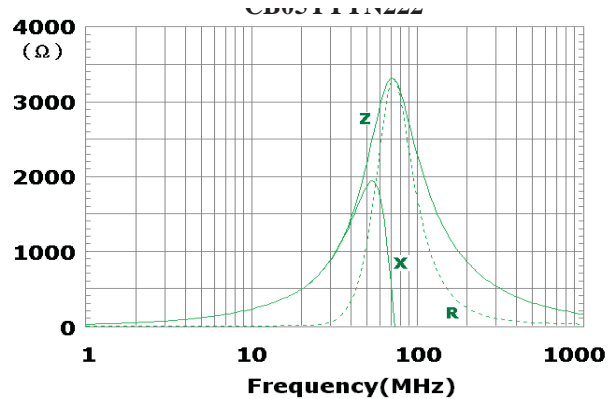
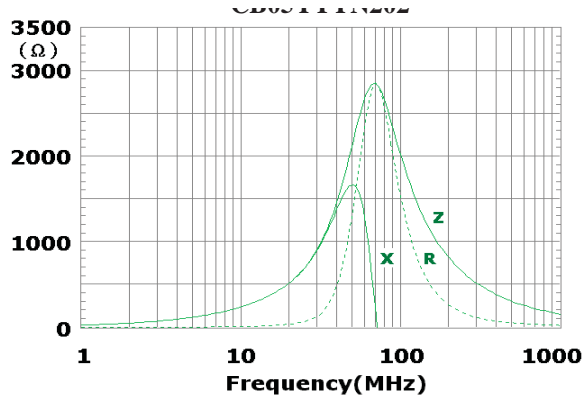
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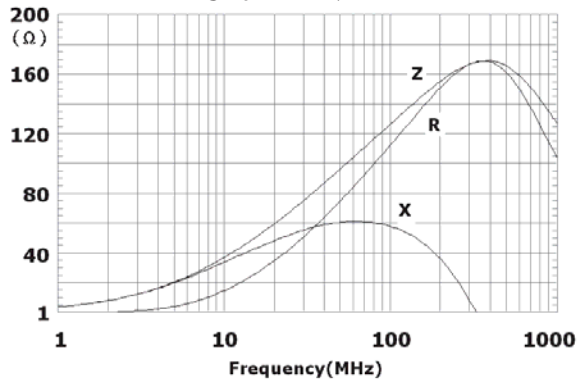
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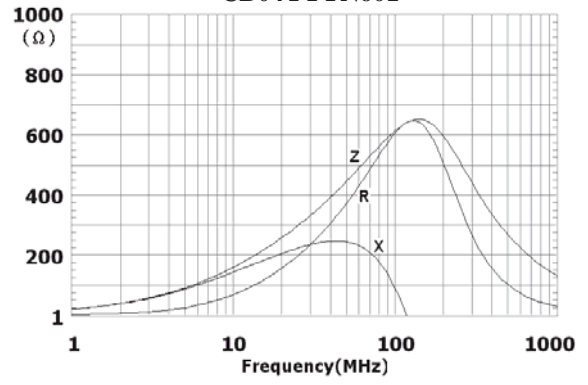




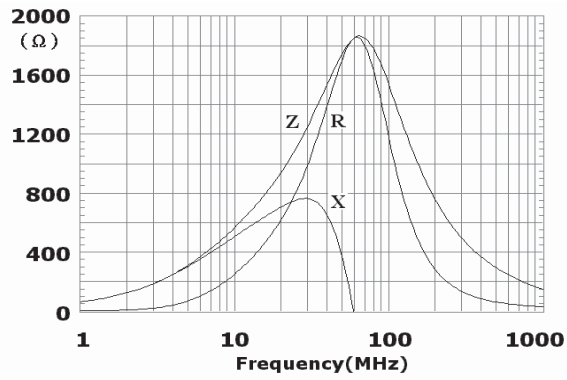
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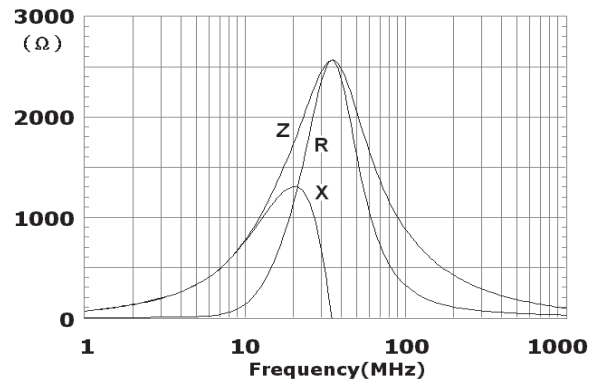
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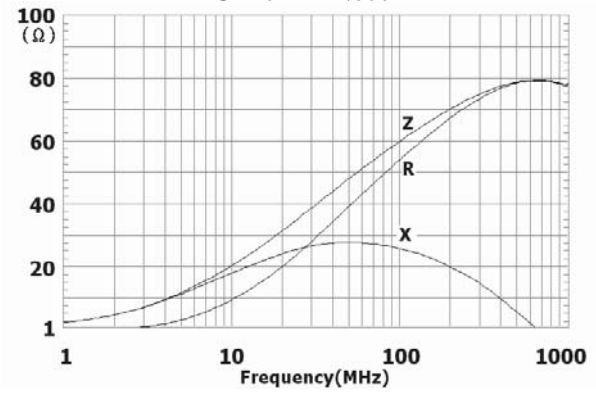
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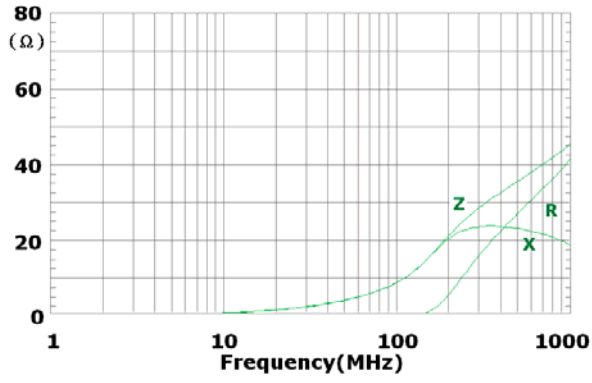
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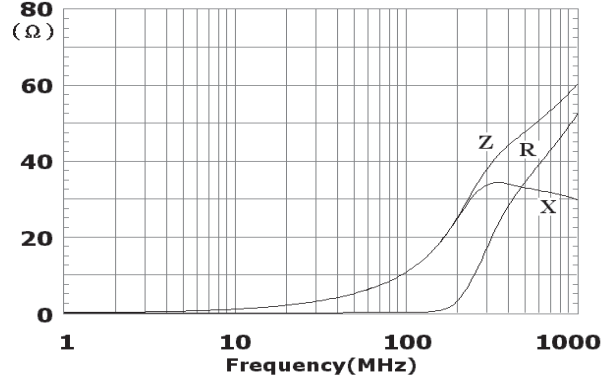
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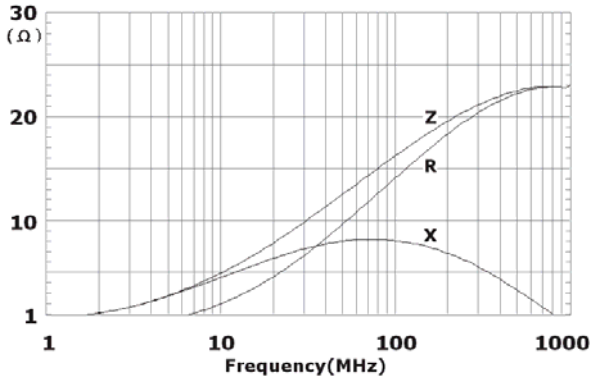
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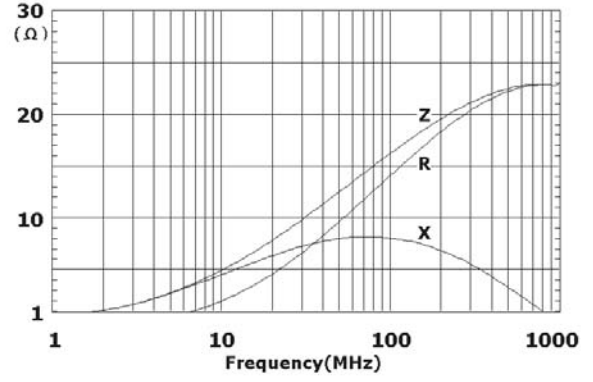
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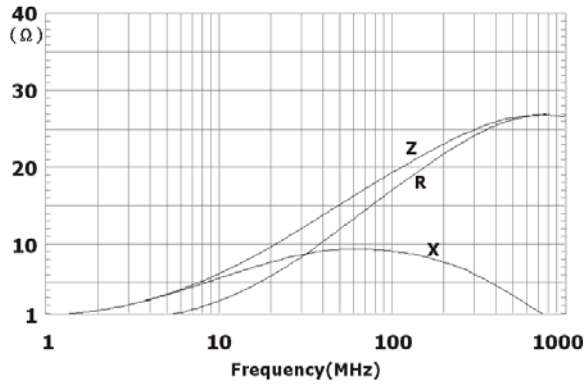
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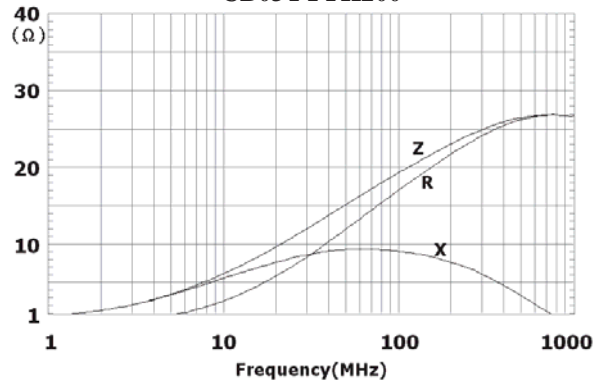
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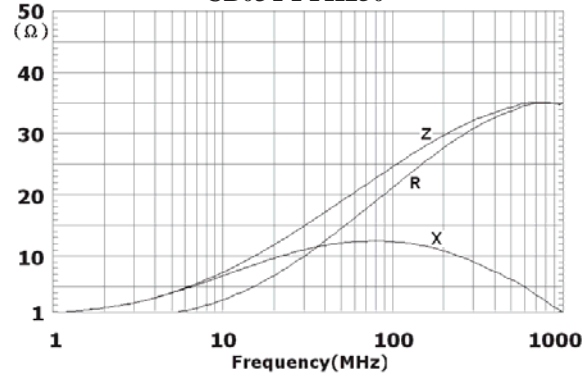
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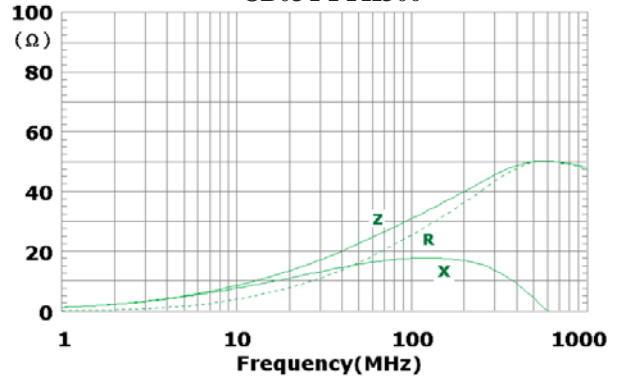
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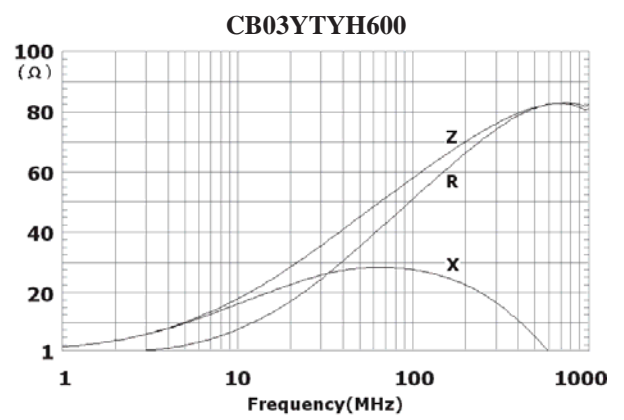
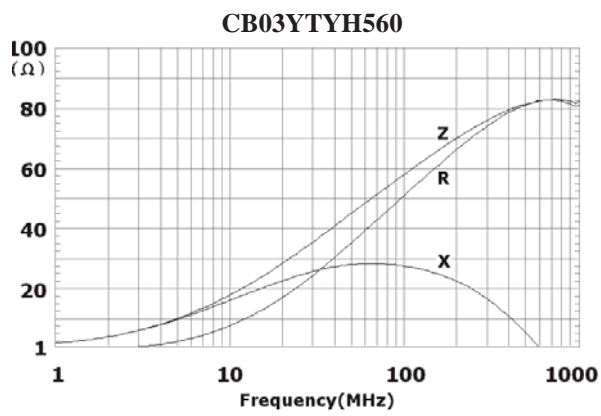
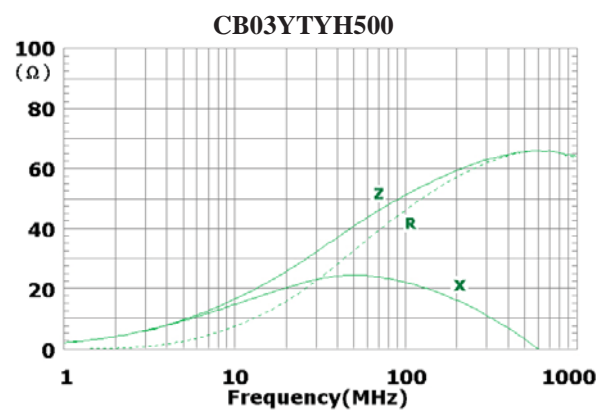
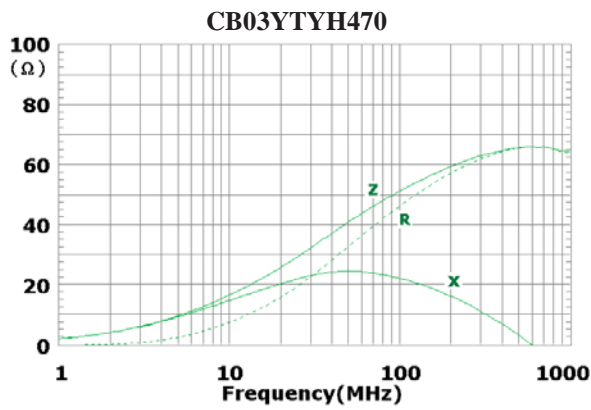
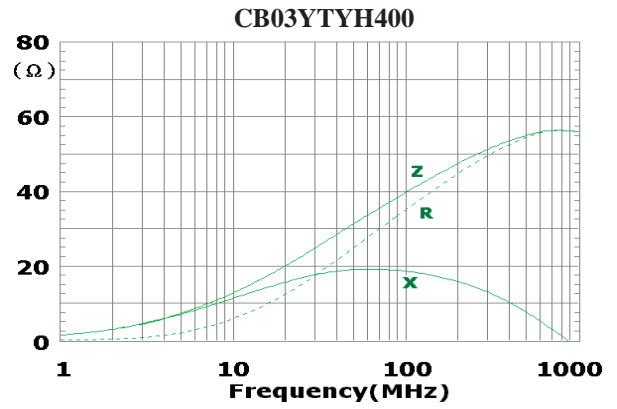
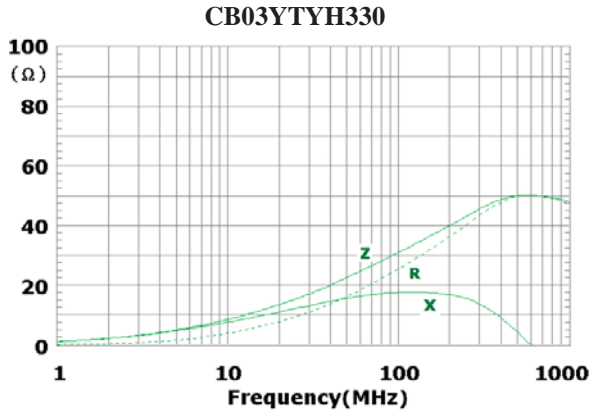
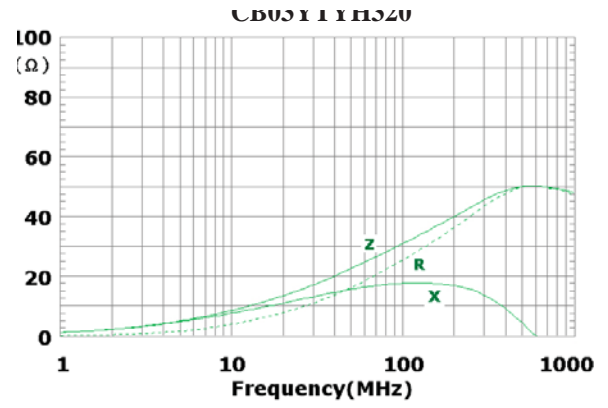
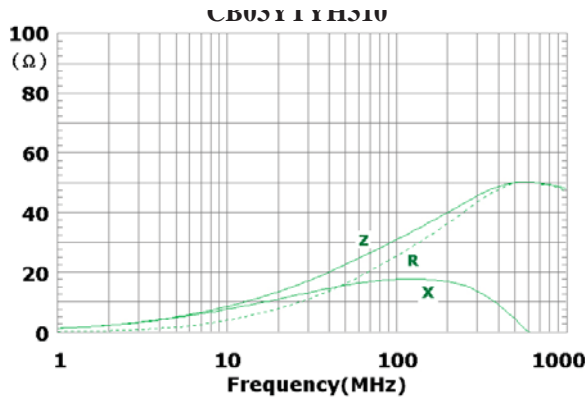


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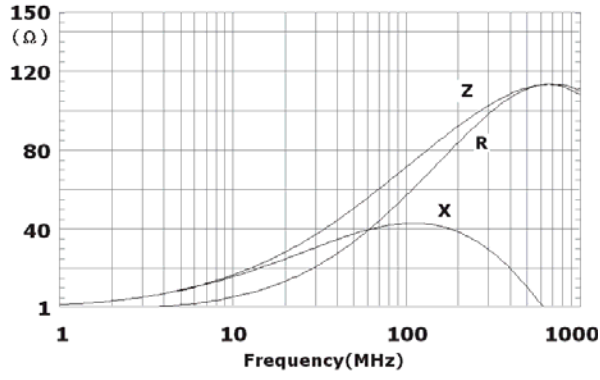


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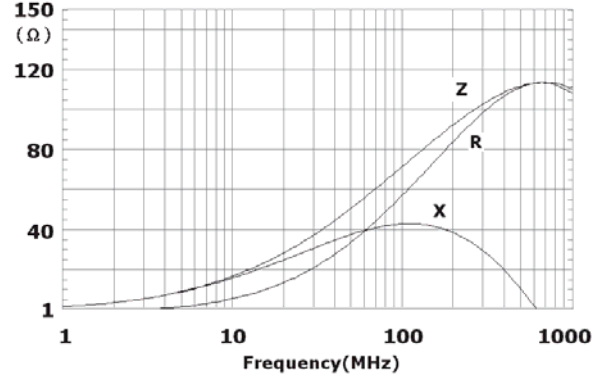




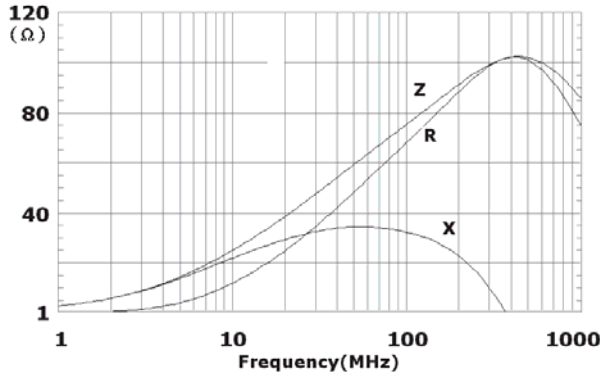
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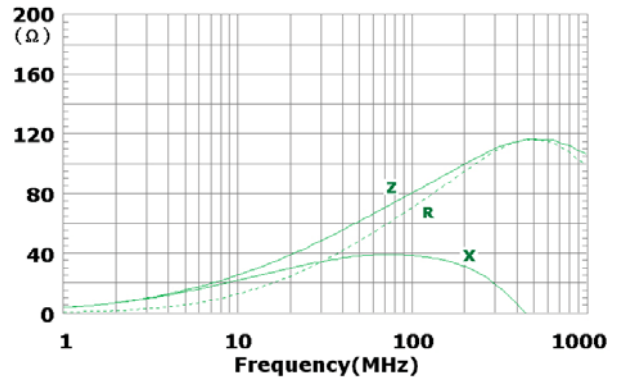
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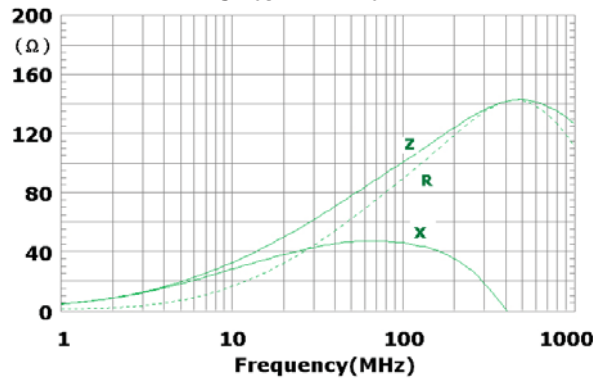
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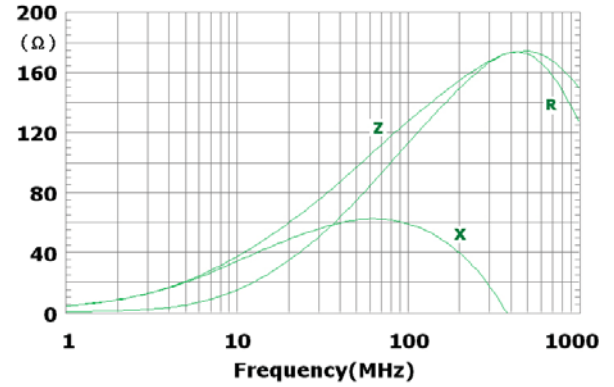
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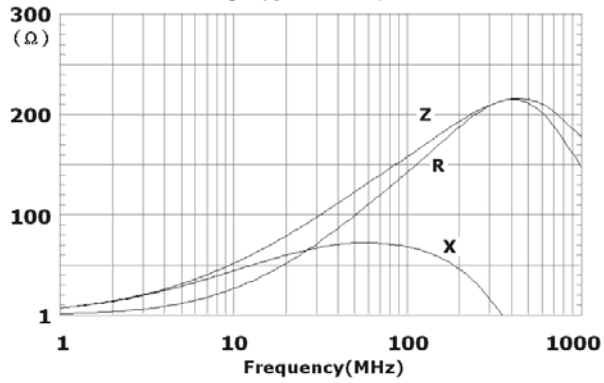
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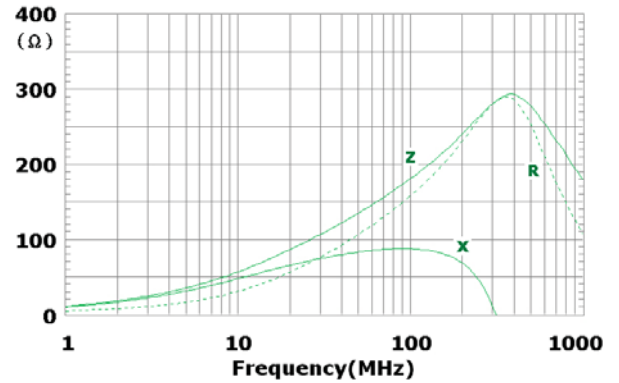
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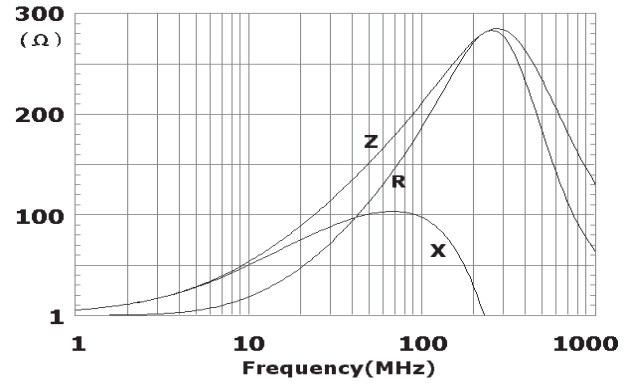
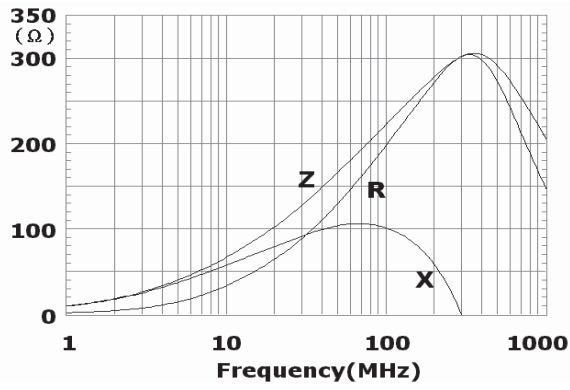


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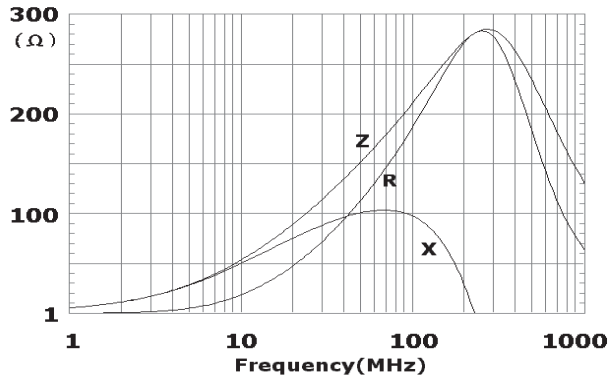


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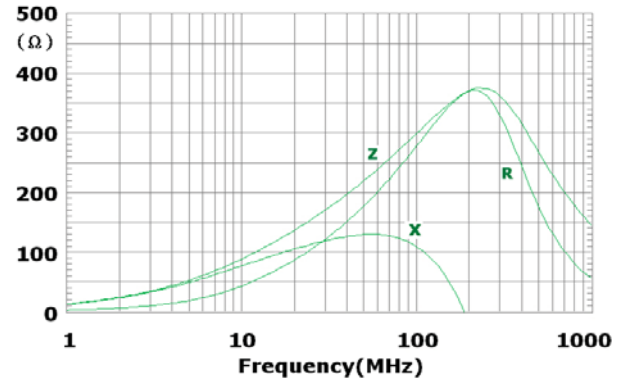




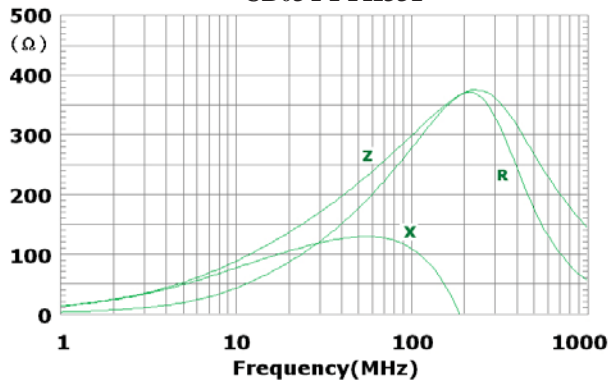
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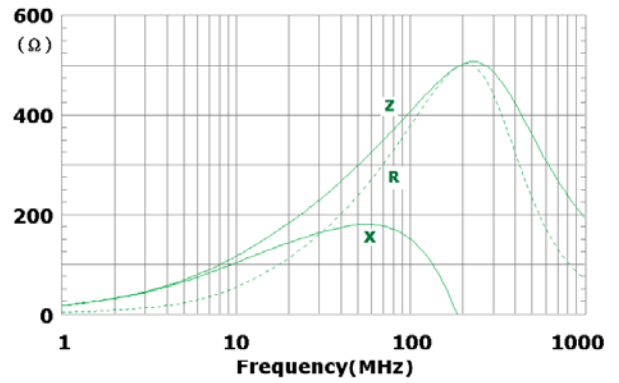
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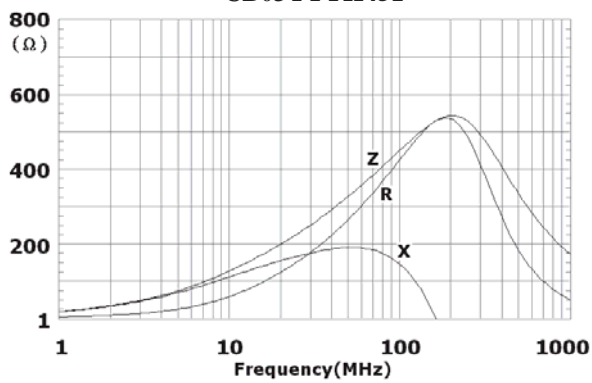
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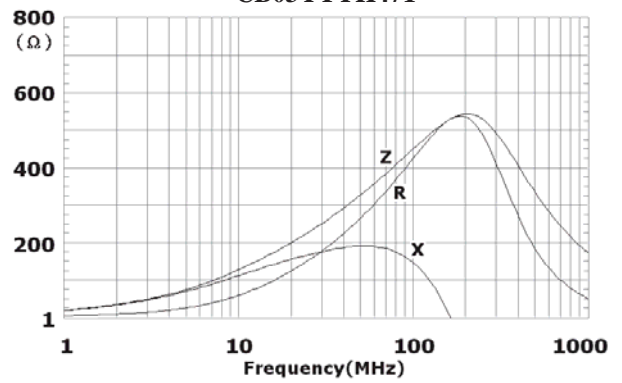
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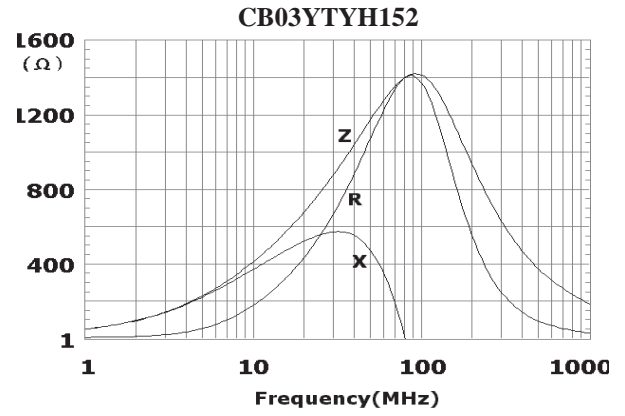
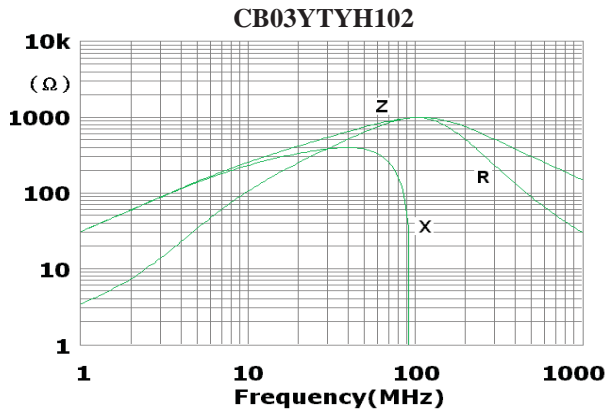
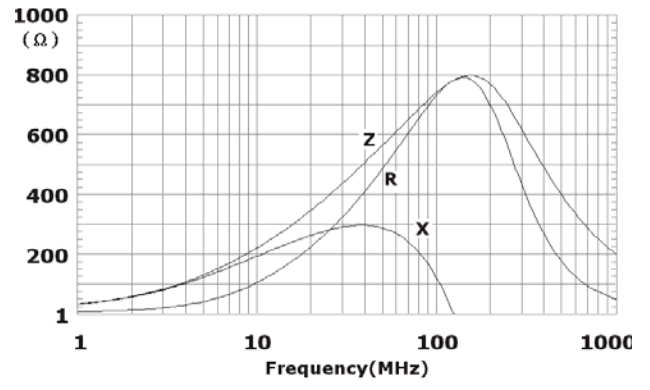
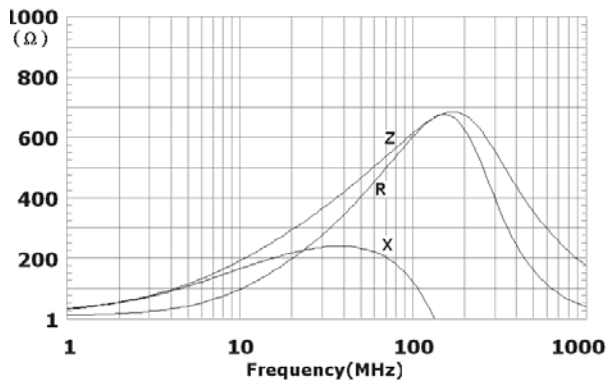


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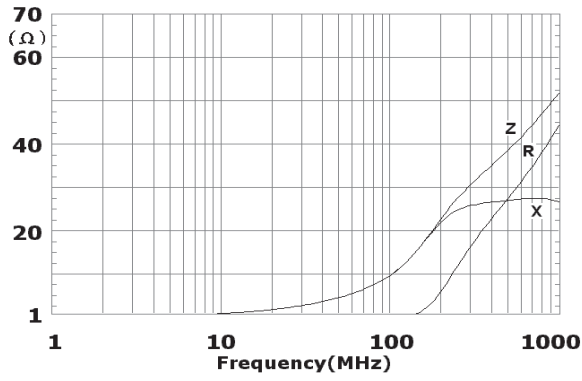


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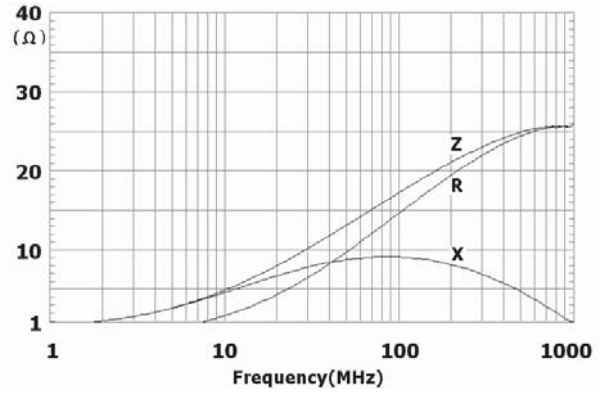




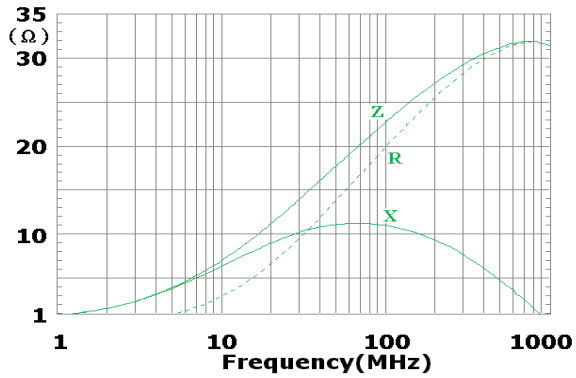
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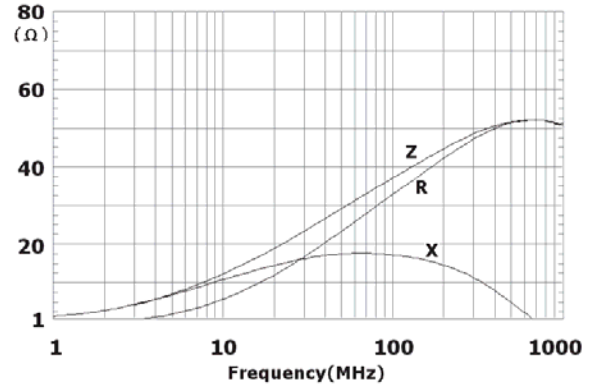
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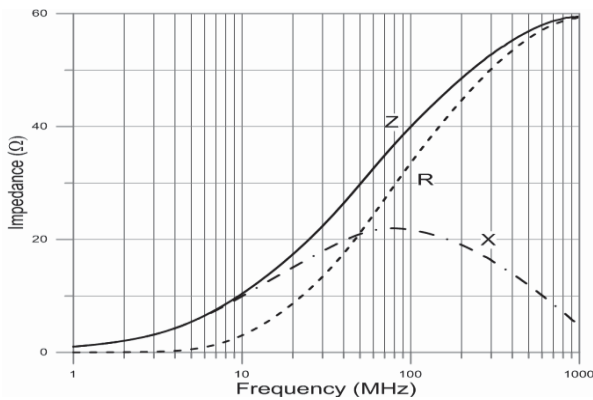
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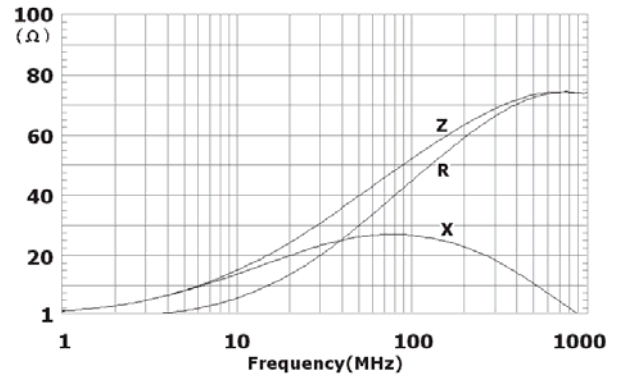
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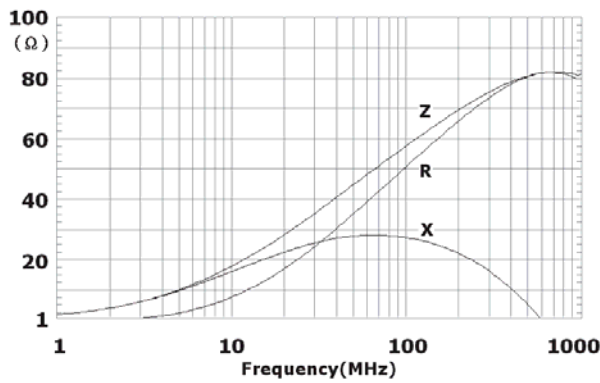
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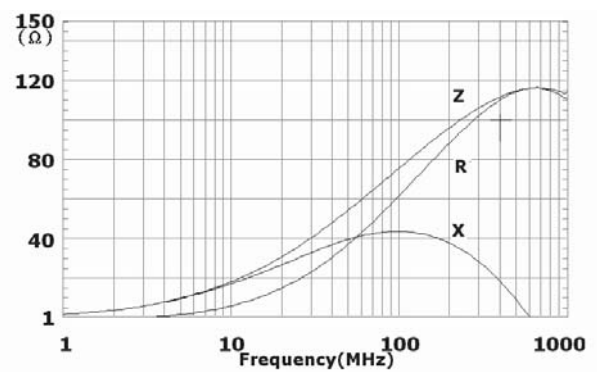
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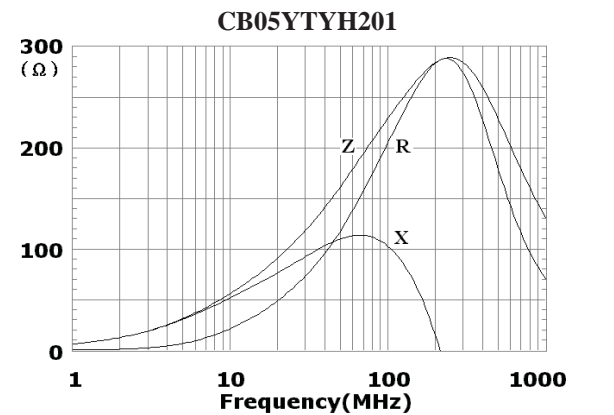
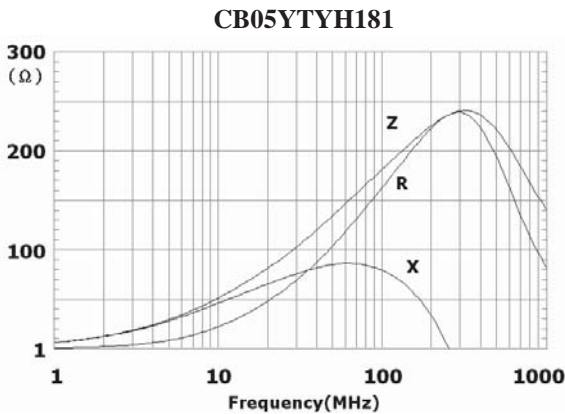
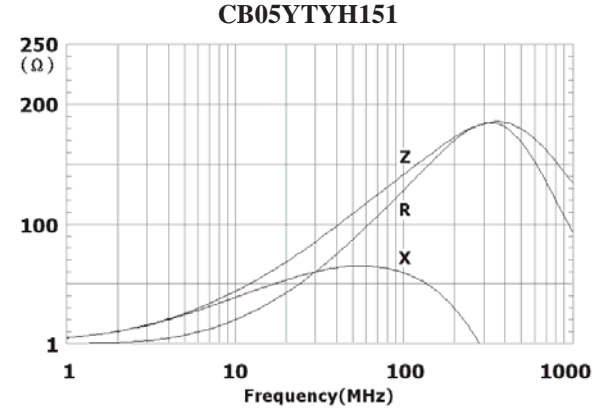
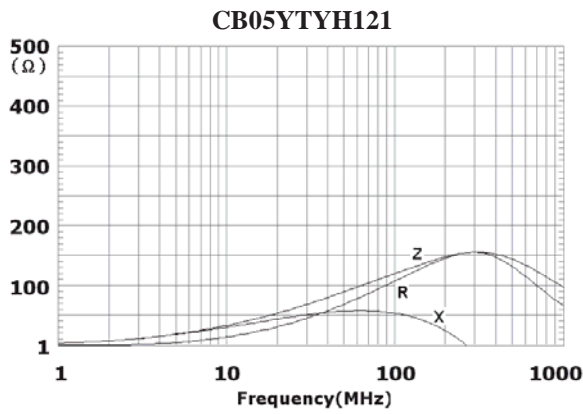
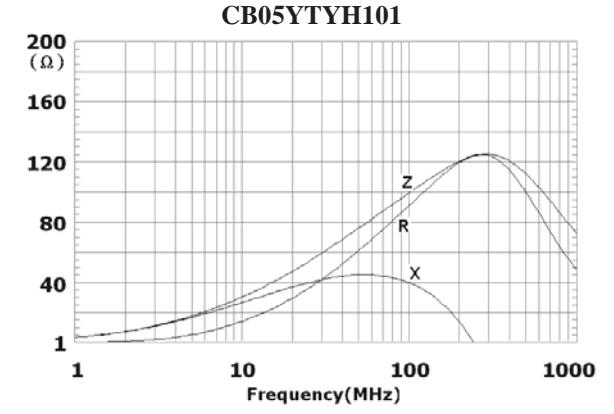
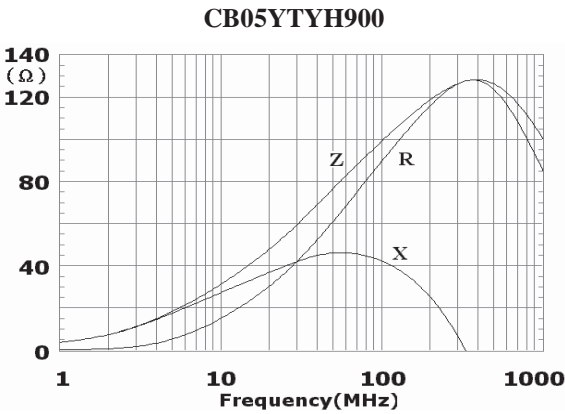
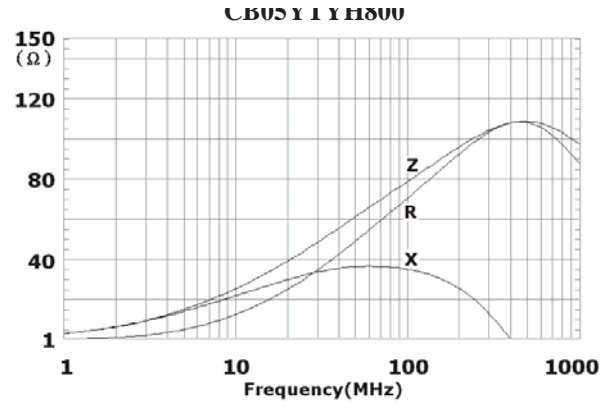
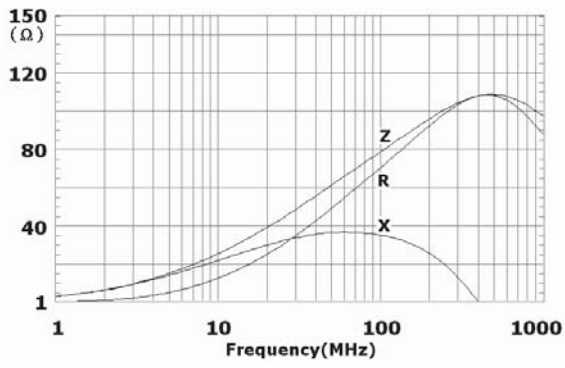


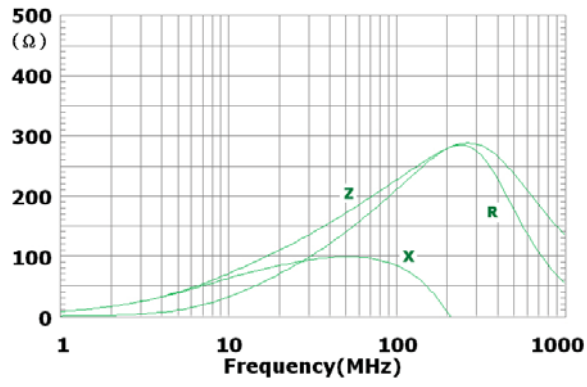
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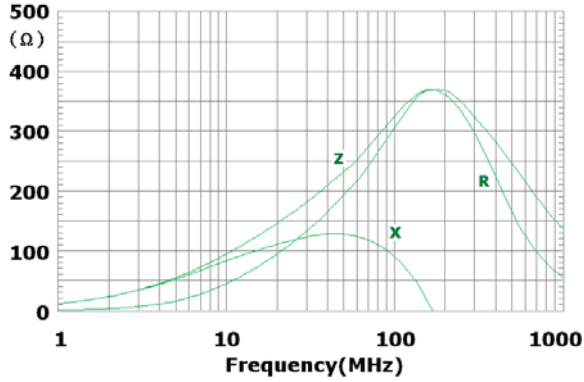
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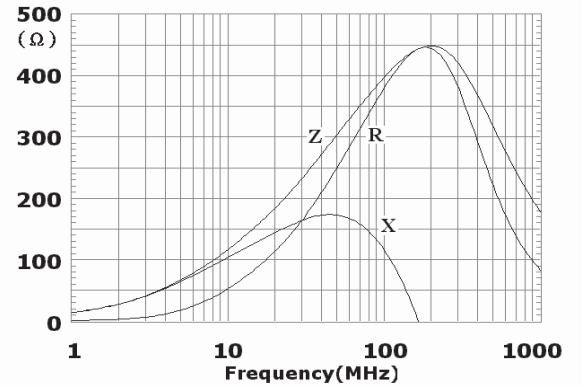




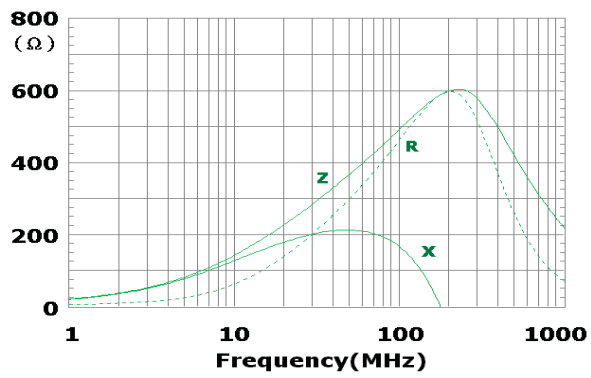
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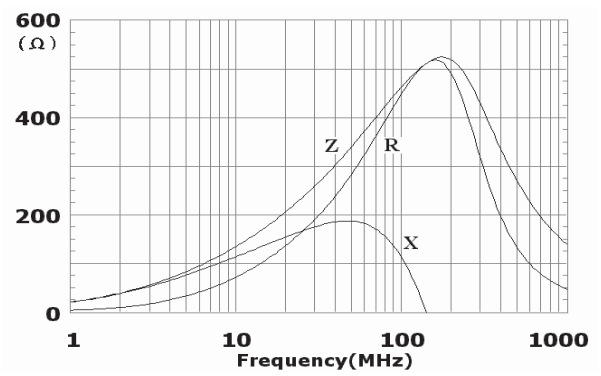
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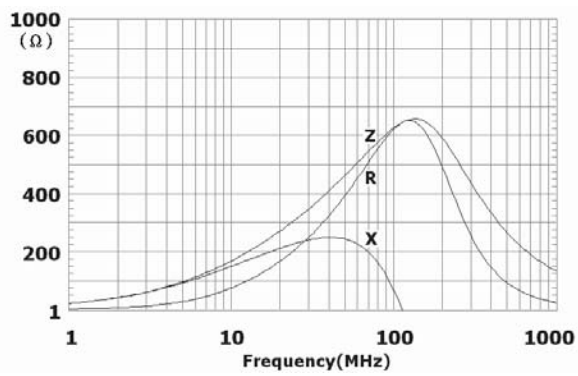
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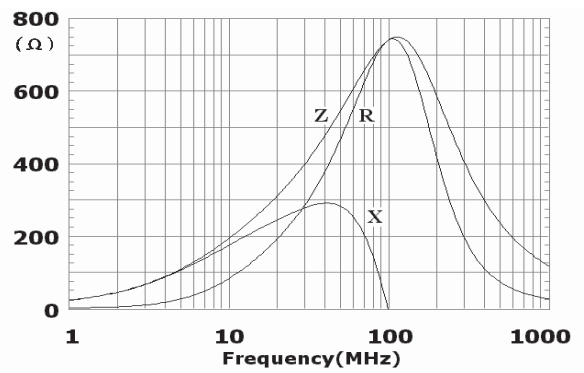
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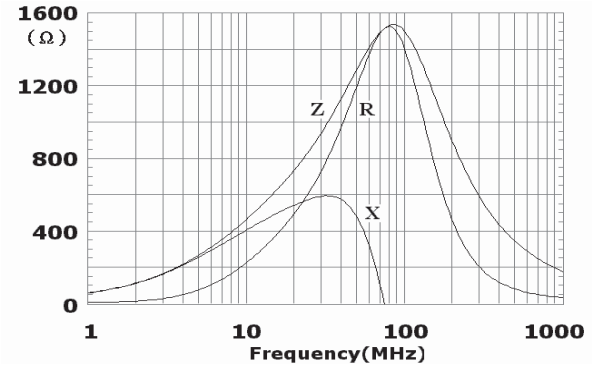
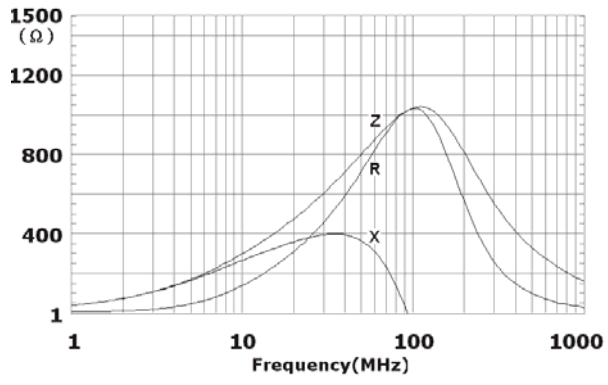


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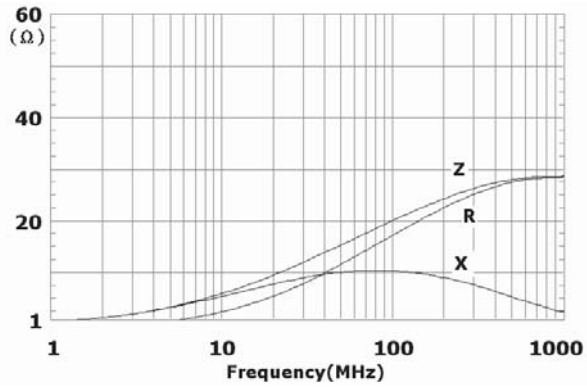


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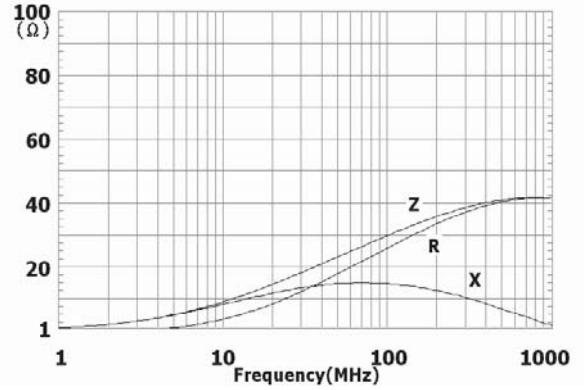




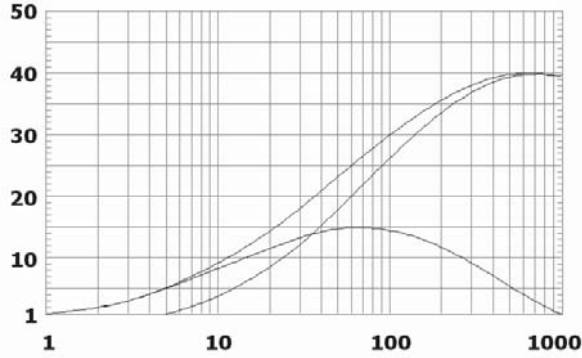
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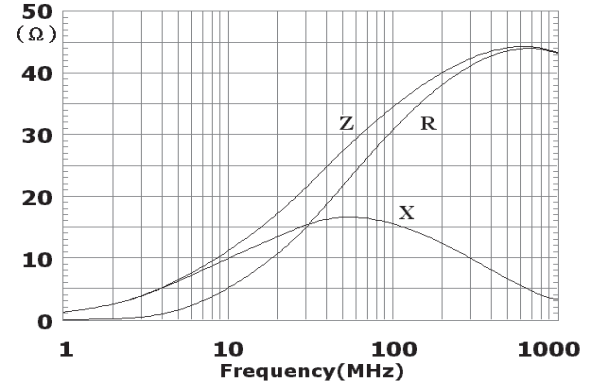
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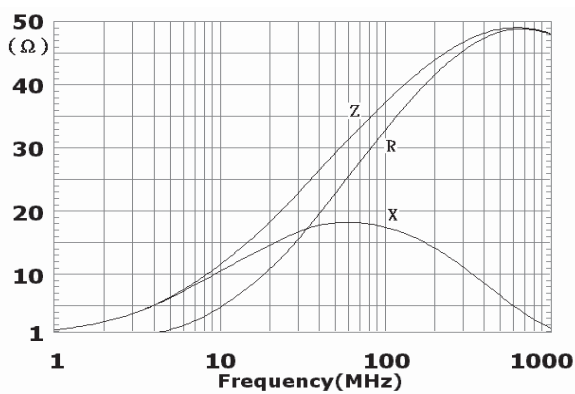
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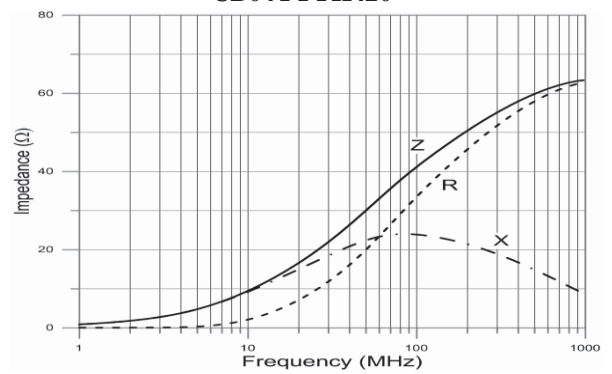
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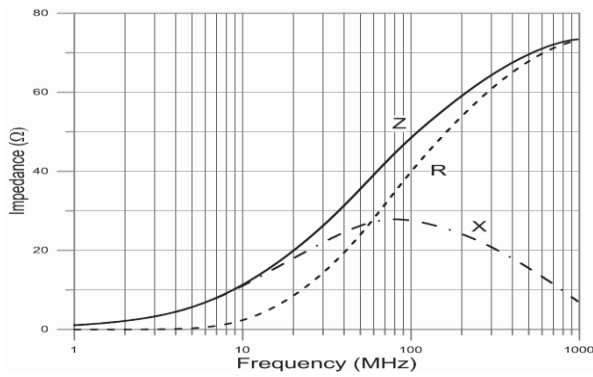
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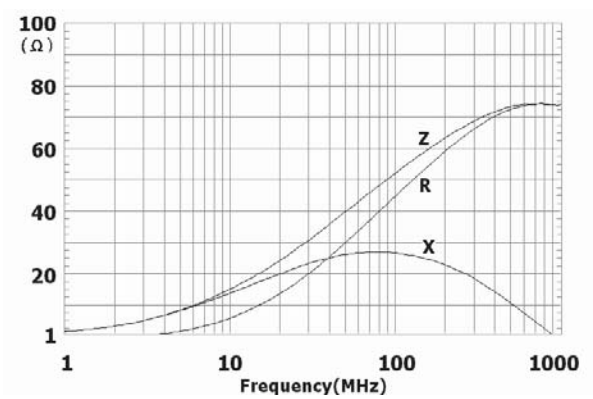
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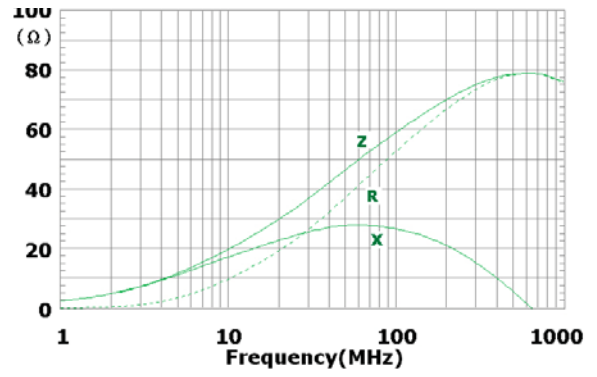
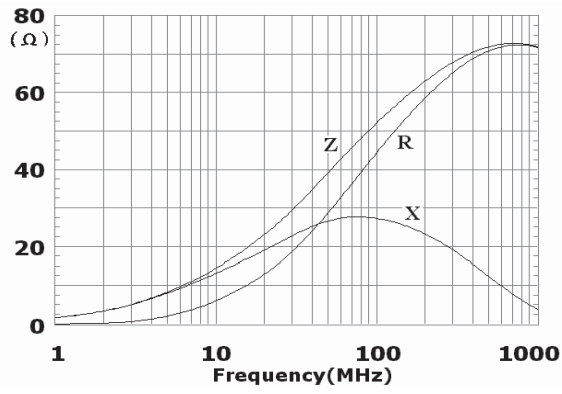


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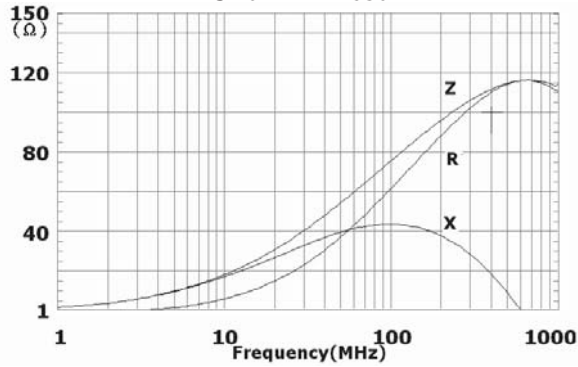


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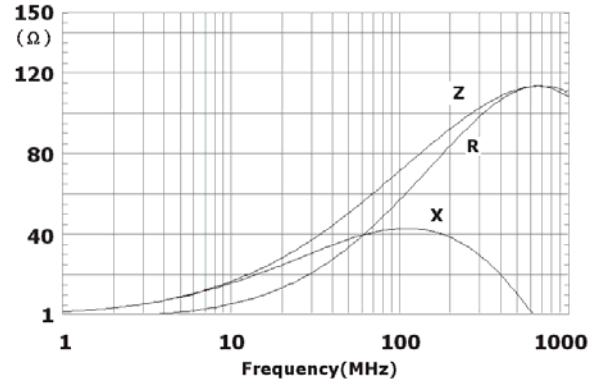




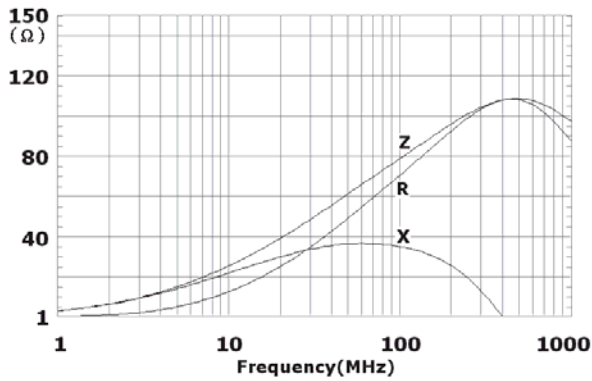
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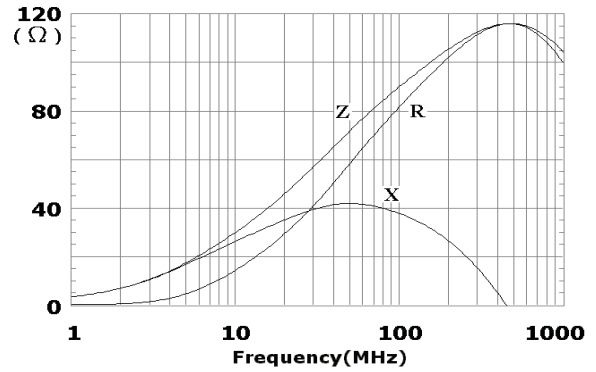
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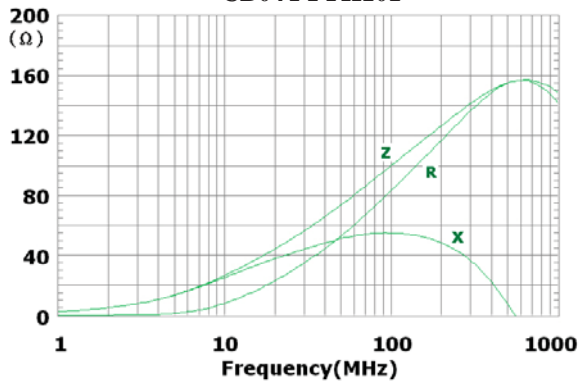
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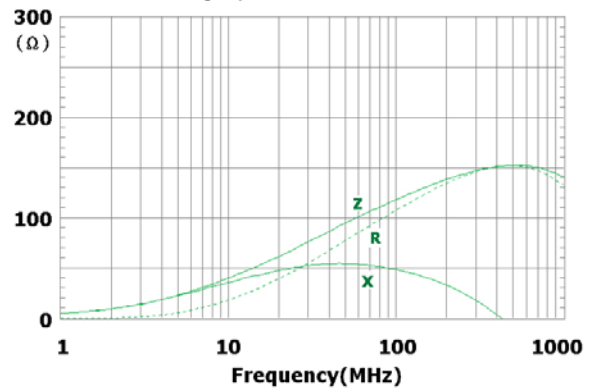
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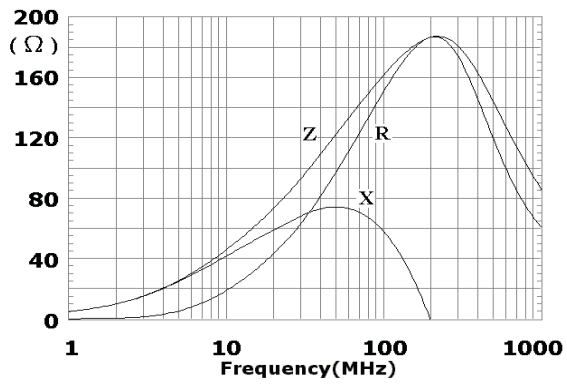


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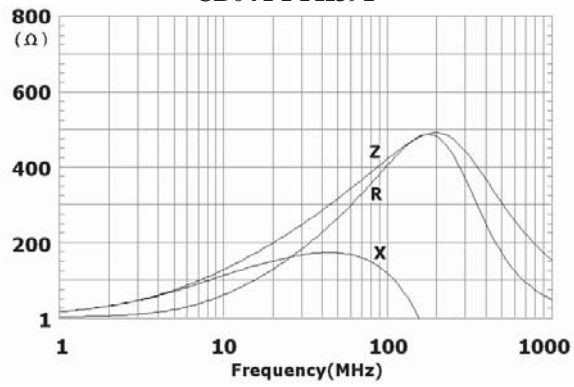


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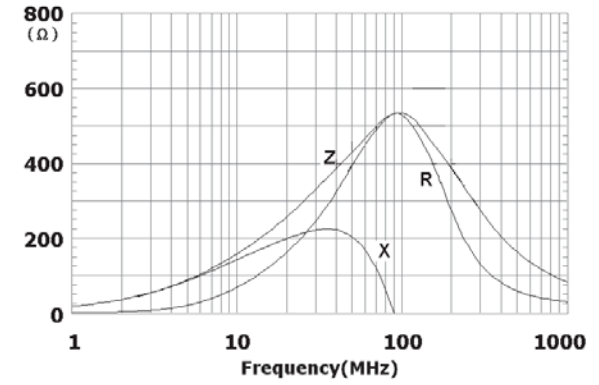




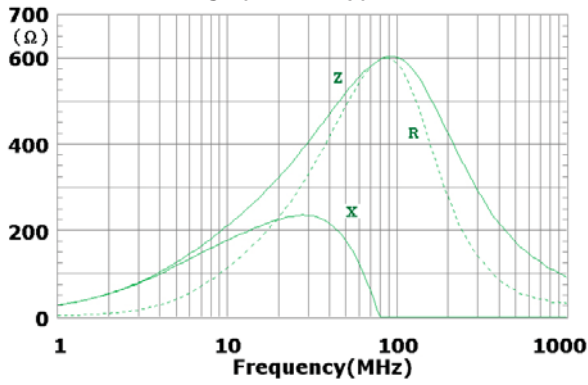
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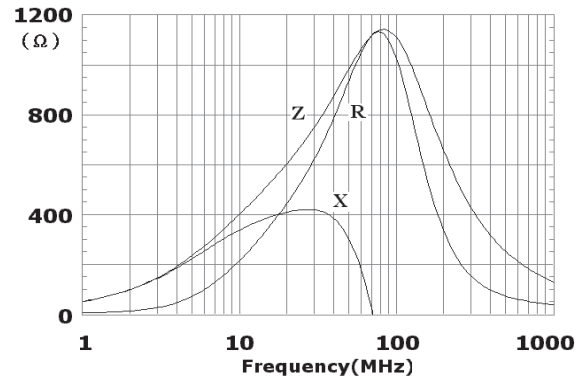
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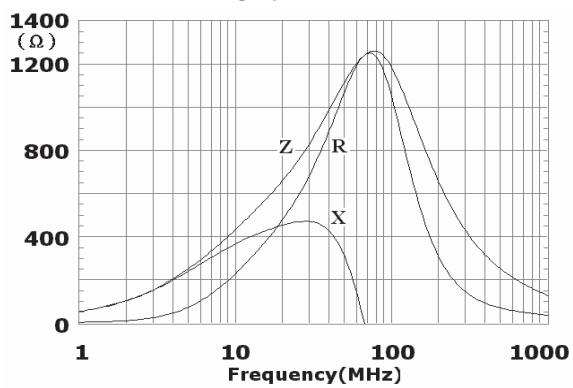
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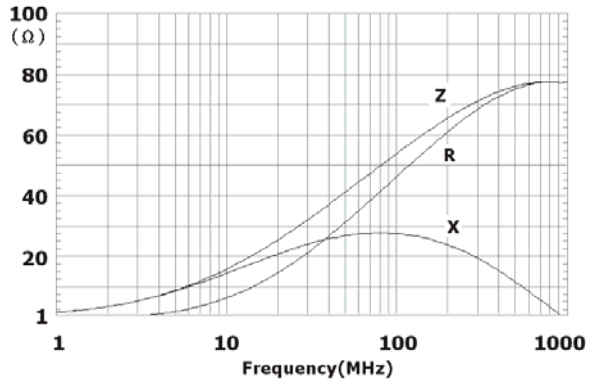
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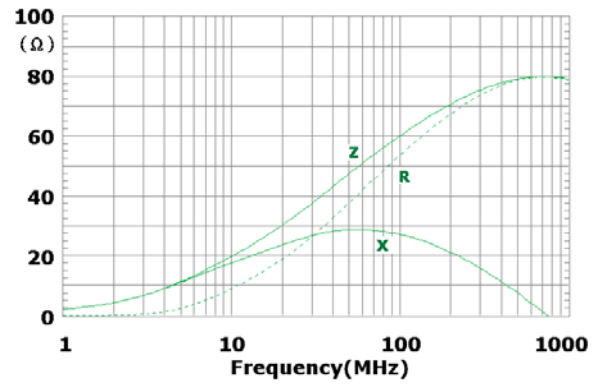
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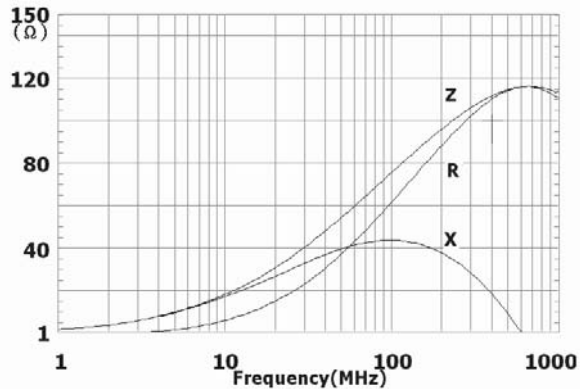
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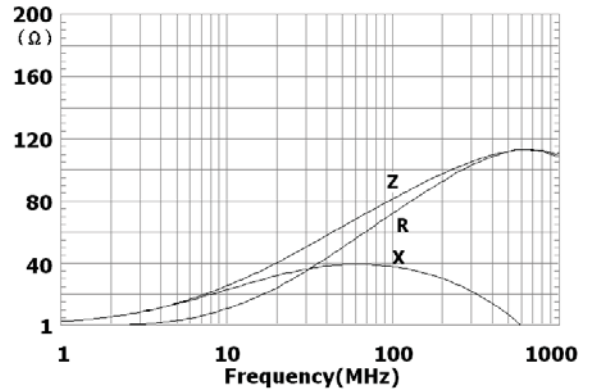
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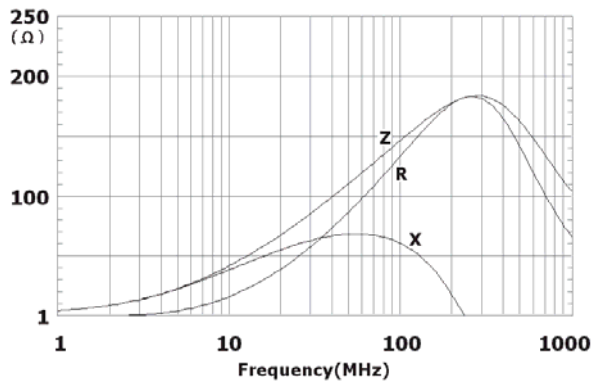
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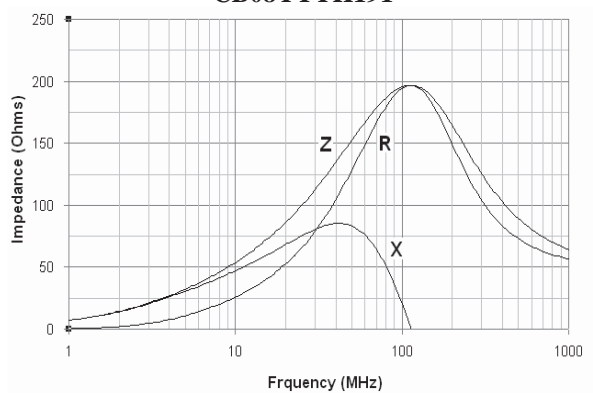
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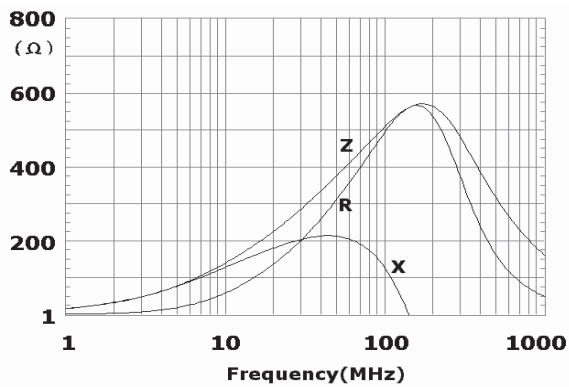
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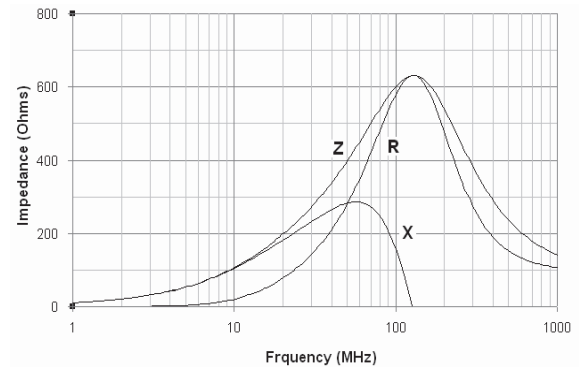
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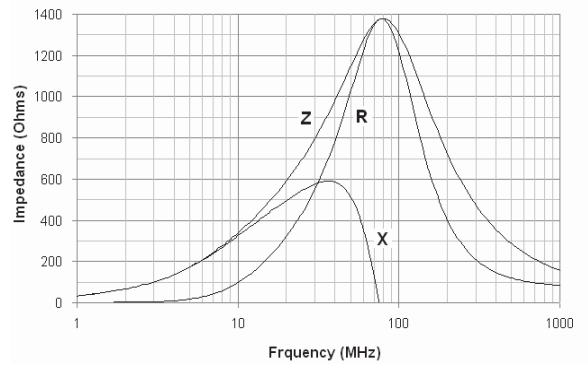
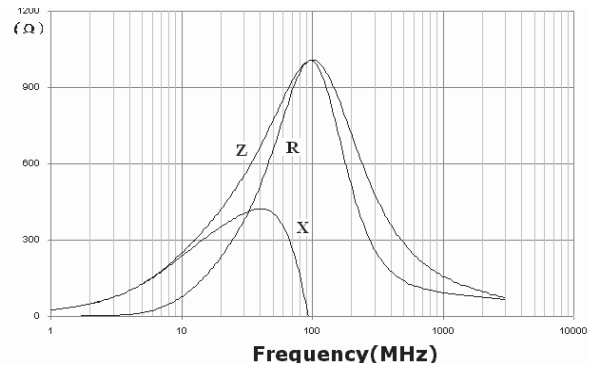


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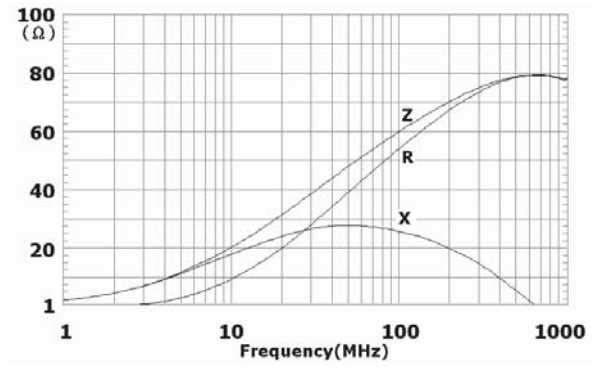


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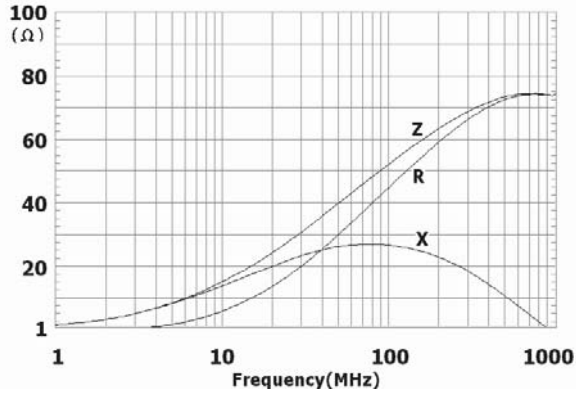




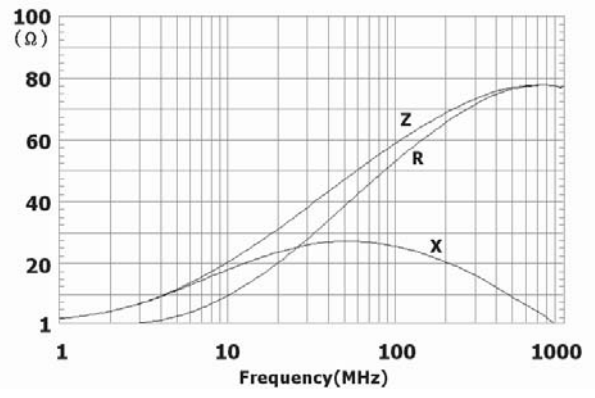
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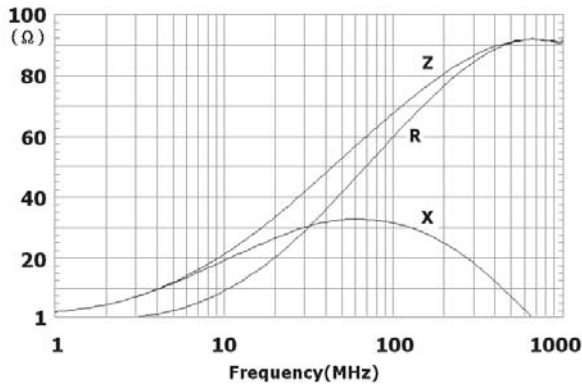
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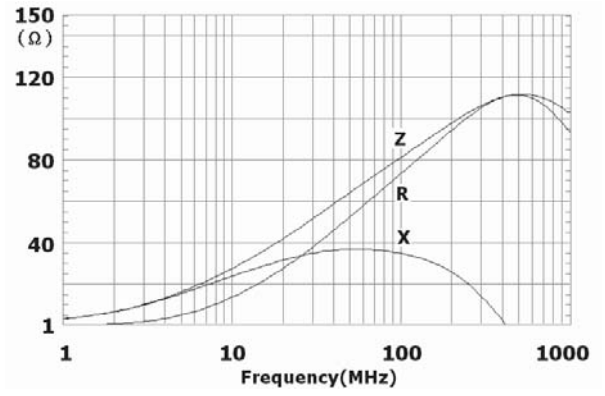
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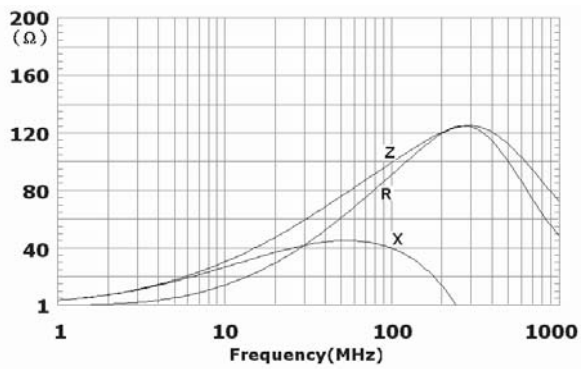
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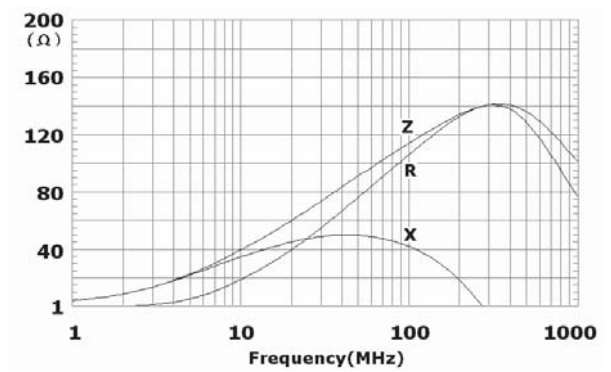
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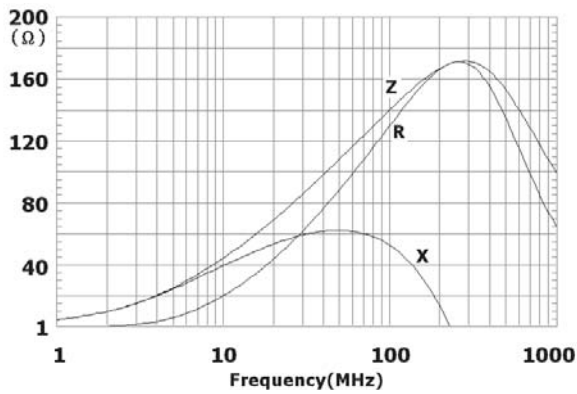
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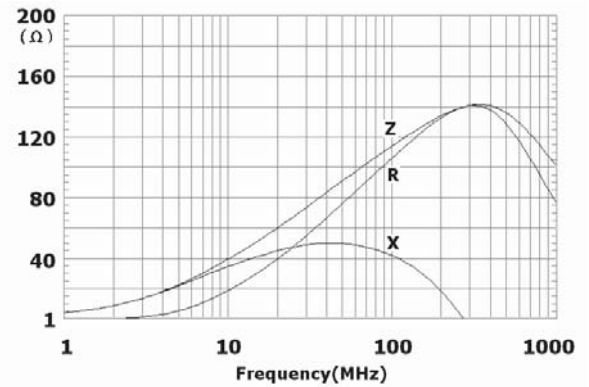
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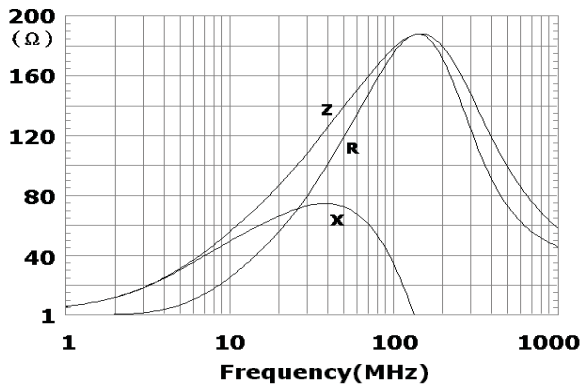


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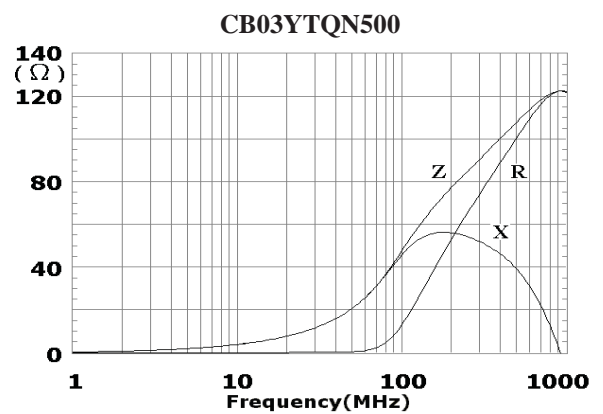
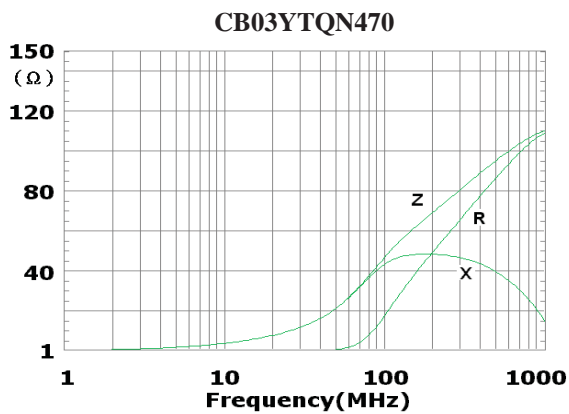
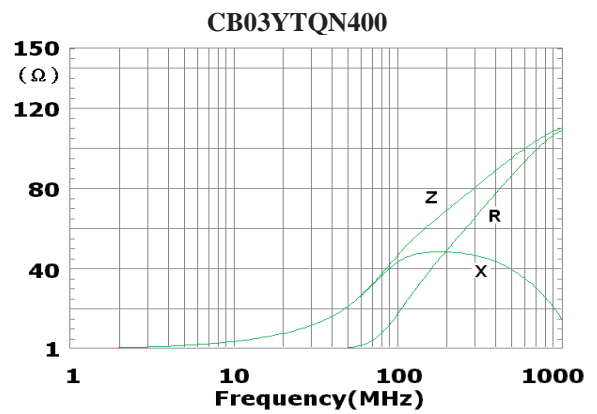
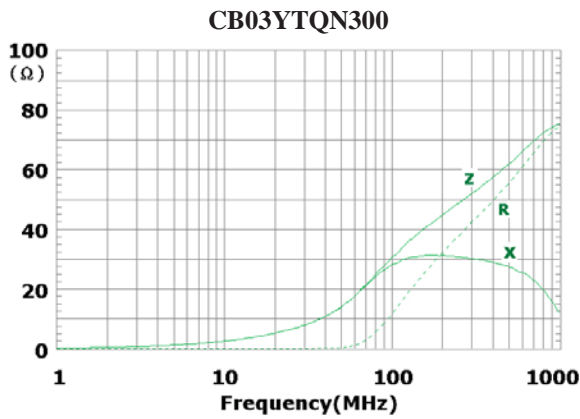


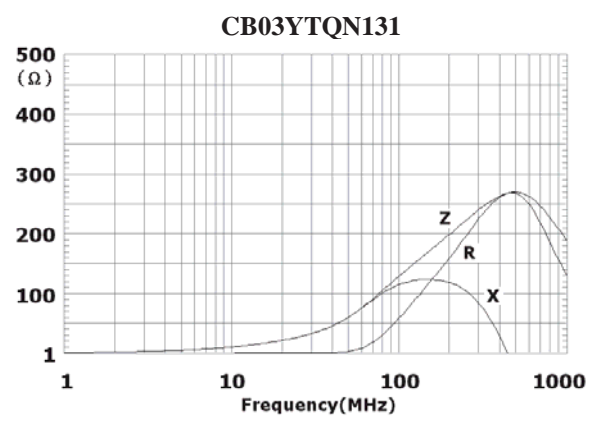
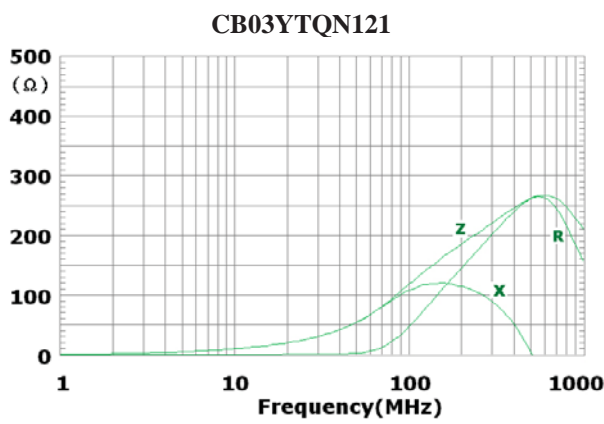
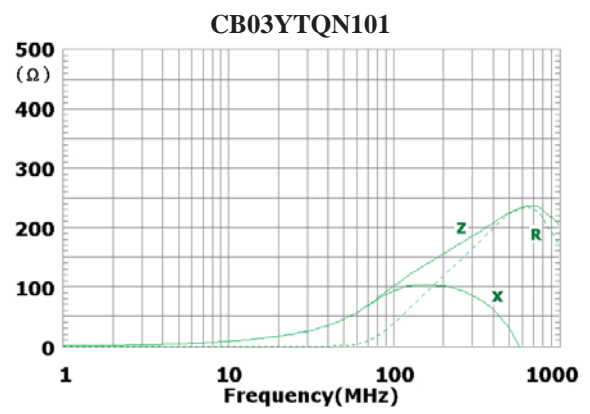
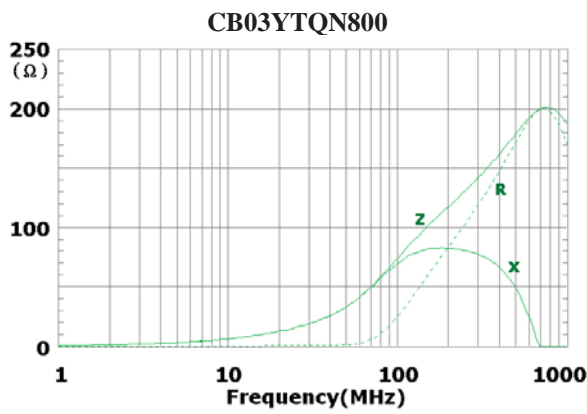
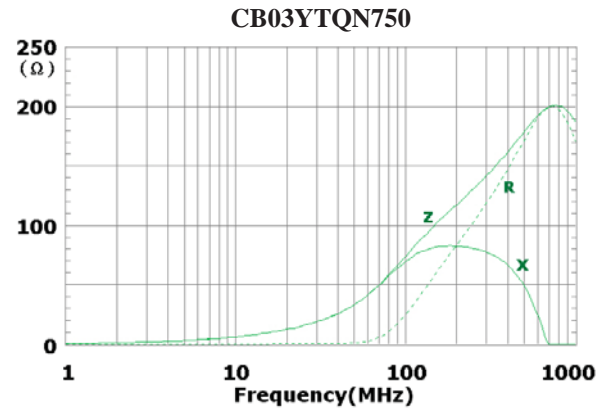
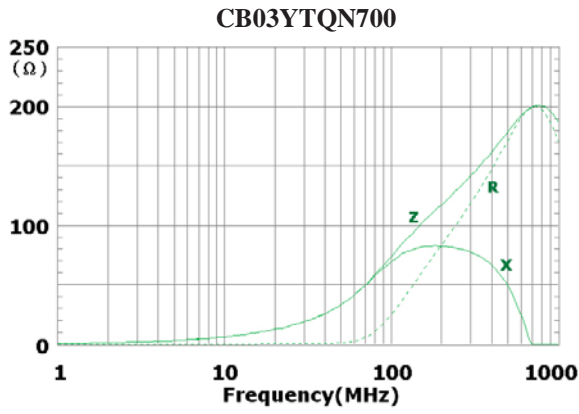
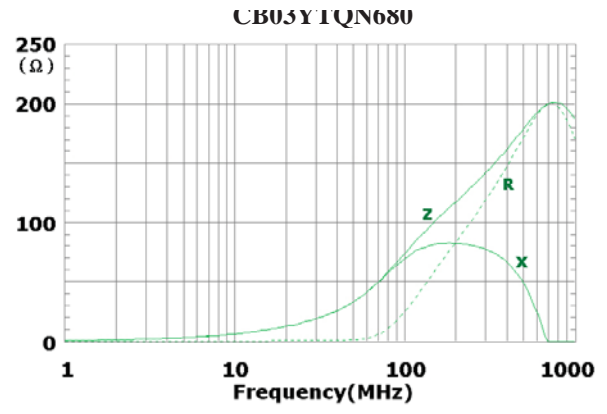
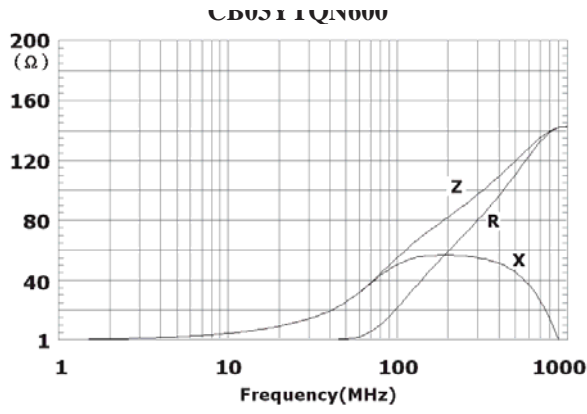
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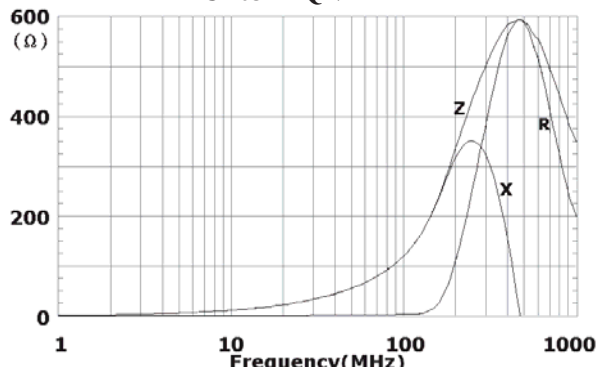


■ Characteristics (Impedance vs. Frequency) - - CB03YTQN

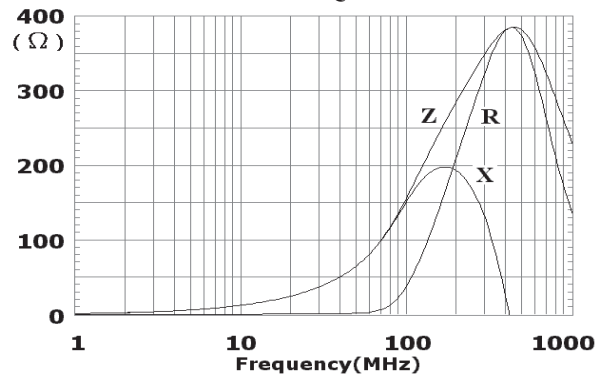




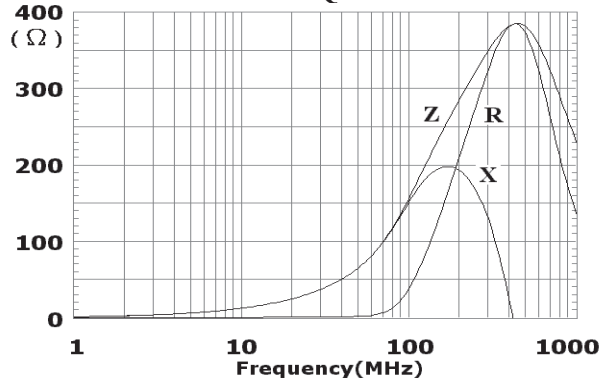
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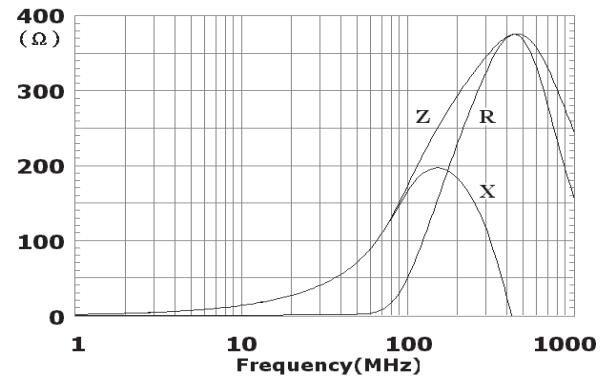
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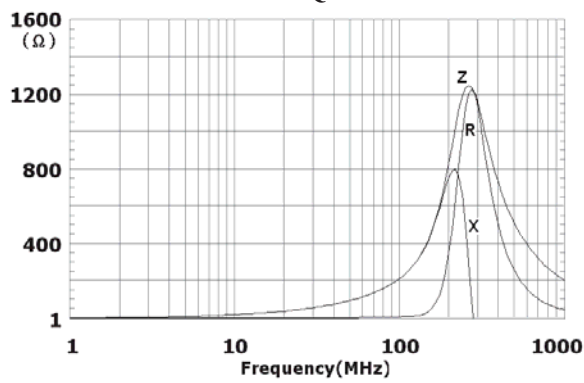
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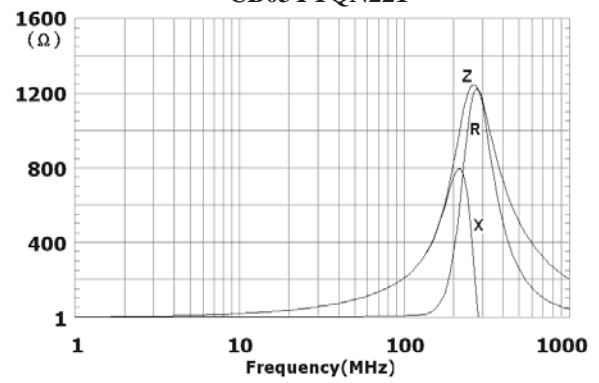
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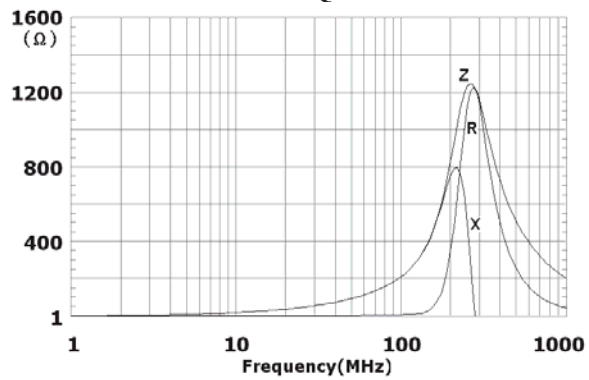
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CB03YTQN241



CB03YTQN301

