

## Multilayer Ferrite Chip Beads

### OUTLINE

• Cal-Chip ferrite chip EMI suppressors provide a powerful means of EMI/RFI attenuation for electronic equipment. These products are highly produced with the use of magnetic material and, multilayered technology.

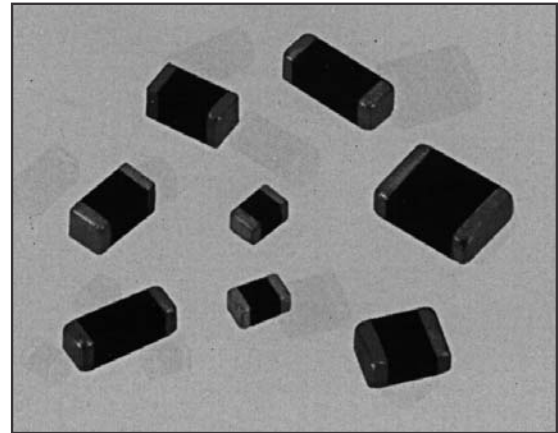
• These components contain tremendous electrode strength, solder heat resistance and outstanding solderability. These products are specially designed for flow, reflow and wave soldering required for surface mounting application.

### FEATURES

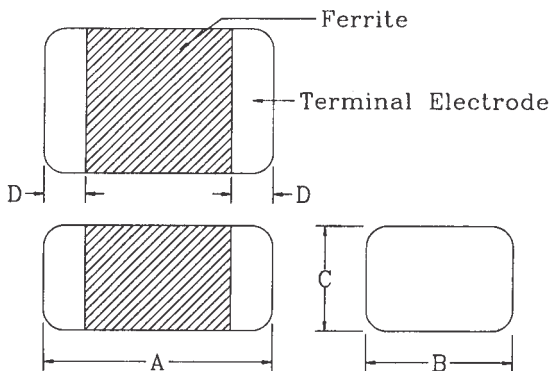
- Unlike conventional beads, these beads do not require wiring: simply mount them onto the PCB to eliminate the EMI/RFI.
- Specially designed for surface mounting equipment, available in various size which allows them to be applied in a wide range of applications and usage.
- Best designed and tested to offer high impedance for volume.

### RECOMMENDED APPLICATIONS

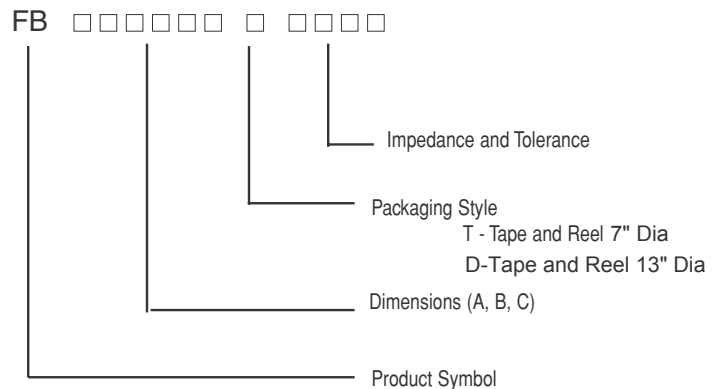
• Prevention of high frequency EMI from computers, printers, VCRs, TVs, wireless telephone and other related equipment.



### SHAPES AND DIMENSIONS



### PRODUCT IDENTIFICATION



TYPE	A	B	C	D
*FB100505	1.0±0.10	0.50±0.10	0.5±0.10	.25±0.10
FB160808	1.6±0.20	0.80±0.15	0.8±0.15	0.4±0.2
FB201209	2.0±0.20	1.25±0.20	0.9±0.20	0.5±0.3
FB321611	3.2±0.20	1.60±0.20	1.1±0.20	0.5±0.3
FB321616	3.2±0.20	1.60±0.20	1.6±0.20	0.5±0.3
FB322513	3.2±0.20	2.50±0.20	1.3±0.20	0.5±0.3
FB451616	4.5±0.25	1.60±0.20	1.6±0.20	0.5±0.3
FB453215	4.5±0.25	3.20±0.20	1.5±0.20	0.5±0.3

DIMENSIONS IN MM

\* Cal-Chip now offers 0402 Ferrite Beads. Please refer to the bottom of this document for the complete specs.

Multilayer Ferrite Chip Beads

**ELECTRICAL CHARACTERISTICS**

Part No.	Test Frequency (MHz)	Impedance ( $\Omega$ )	DC Resistance ( $\Omega$ ) max.	Rate Current (mA) max.
FB160808T-300Y-S	100	30 $\pm$ 25%	0.20	200
FB160808T-600Y-S	100	60 $\pm$ 25%	0.20	200
FB160808T-800Y-S	100	80 $\pm$ 25%	0.30	200
FB160808T-121Y-S	100	120 $\pm$ 25%	0.30	200
FB160808T-221Y-S	100	220 $\pm$ 25%	0.50	100
FB160808T-241Y-S	100	240 $\pm$ 25%	0.40	150
FB160808T-301Y-S	100	300 $\pm$ 25%	0.60	100
FB160808T-451Y-S	100	450 $\pm$ 25%	0.70	100
FB160808T-601Y-S	100	600 $\pm$ 25%	0.80	100
FB160808T-751Y-S	100	750 $\pm$ 25%	1.00	100
FB160808T-102Y-S	100	1000 $\pm$ 25%	0.80	50
FB160808T-152Y-S	100	1500 $\pm$ 25%	0.80	50
FB201209T-110Y-S	100	11 $\pm$ 25%	0.10	600
FB201209T-170Y-S	100	17 $\pm$ 25%	0.10	500
FB201209T-260Y-S	100	26 $\pm$ 25%	0.20	500
FB201209T-320Y-S	100	32 $\pm$ 25%	0.30	500
FB201209T-800Y-S	100	80 $\pm$ 25%	0.40	400
FB201209T-121Y-S	100	120 $\pm$ 25%	0.40	200
FB201209T-151Y-S	100	150 $\pm$ 25%	0.50	200
FB201209T-221Y-S	100	220 $\pm$ 25%	0.60	200
FB201209T-301Y-S	100	300 $\pm$ 25%	0.90	200
FB201209T-401Y-S	100	400 $\pm$ 25%	0.90	200
FB201209T-601Y-S	100	600 $\pm$ 25%	1.00	200
FB201209T-102Y-S	100	1000 $\pm$ 25%	1.00	100

Multilayer Ferrite Chip Beads

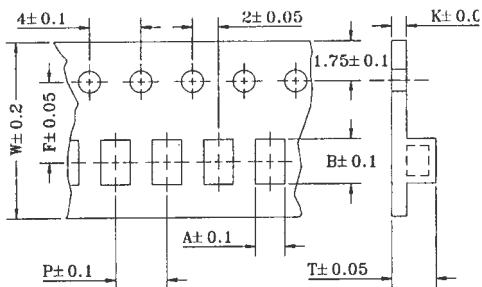
**ELECTRICAL CHARACTERISTICS**

Part No.	Test Frequency (MHz)	Impedance ( $\Omega$ )	DC Resistance ( $\Omega$ ) max.	Rate Current (mA) max.
FB321611T-190Y-S	100	19±25%	0.15	500
FB321611T-260Y-S	100	26±25%	0.15	500
FB321611T-310Y-S	100	31±25%	0.20	500
FB321611T-320Y-S	100	32±25%	0.15	500
FB321611T-500Y-S	100	50±25%	0.20	400
FB321611T-550Y-S	100	55±25%	0.20	500
FB321611T-700Y-S	100	70±25%	0.30	400
FB321611T-900Y-S	100	90±25%	0.30	400
FB321611T-121Y-S	100	120±25%	0.40	400
FB321611T-151Y-S	100	150±25%	0.50	200
FB321611T-201Y-S	100	200±25%	0.50	200
FB321611T-401Y-S	100	400±25%	0.50	200
FB321611T-501Y-S	100	500±25%	0.50	200
FB321611T-601Y-S	100	600±25%	0.50	200
FB321611T-102Y-S	100	1000±25%	0.60	100
FB321611T-122Y-S	100	1200±25%	1.00	100
FB321611T-202Y-S	100	2000±25%	1.50	100
FB321616T-600Y-S	100	60±25%	0.50	200
FB321616T-700Y-S	100	70±25%	0.50	200
FB322513T-320Y-S	100	32±25%	0.30	400
FB322513T-600Y-S	100	60±25%	0.30	400
FB322513T-900Y-S	100	90±25%	0.30	400
FB322513T-202Y-S	100	2000±25%	1.50	100
FB451616T-600Y-S	100	60±25%	0.30	400
FB451616T-800Y-S	100	80±25%	0.30	400
FB451616T-101Y-S	100	100±25%	0.40	300
FB451616T-151Y-S	100	150±25%	0.50	200
FB453215T-700Y-S	100	70±25%	0.40	300
FB453215T-121Y-S	100	120±25%	0.40	300
FB453215T-151Y-S	100	150±25%	0.40	300

**Note:** Other sizes and impedances are available. *Please consult factory.*

## Multilayer Ferrite Chip Beads

### TAPE DIMENSIONS

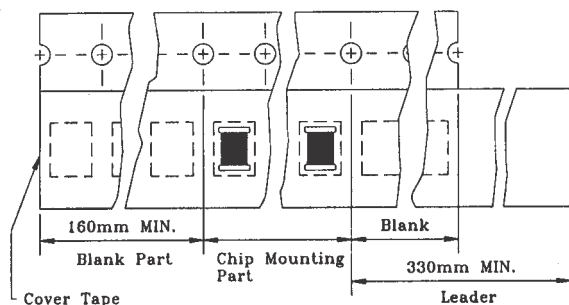


Dimensions in mm

TYPE	A	B	T	W	P	F	K
FB160808	1.14	1.75	1.15	8.0	4.0	3.5	0.2
FB201209	1.54	2.32	1.15	8.0	4.0	3.5	0.2
FB321611	1.94	3.54	1.29	8.0	4.0	3.5	0.2
FB321616	1.94	3.64	1.90	8.0	4.0	3.5	0.2
FB322513	2.80	3.42	1.64	8.0	4.0	3.5	0.2
FB451616	1.94	4.94	1.90	12.0	4.0	5.5	0.3
FB453215	3.64	4.94	1.80	12.0	8.0	5.5	0.3

### TAPE MATERIAL

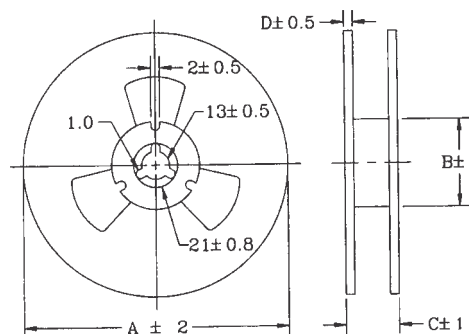
Carrier Tape: Polystyrene  
Cover Tape: Polyethylene



### PACKAGING QUANTITY

TYPE	BULK	PCS./REEL
FB160808	√	4000
FB201209	√	4000
FB321611	√	3000
FB321616	√	2000
FB322513	√	2500
FB451616	√	2000
FB453215	√	1000

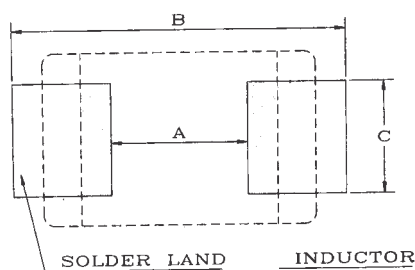
### REEL DIMENSIONS



Dimensions in mm

TYPE	A	B	C	D
FB160808	178	60	10	2
FB201209	178	60	10	2
FB321611	178	60	10	2
FB321616	178	60	10	2
FB322513	178	60	10	2
FB451616	178	60	14	2
FB453215	178	60	14	2

### RECOMMENDED PATTERN



Dimensions in mm

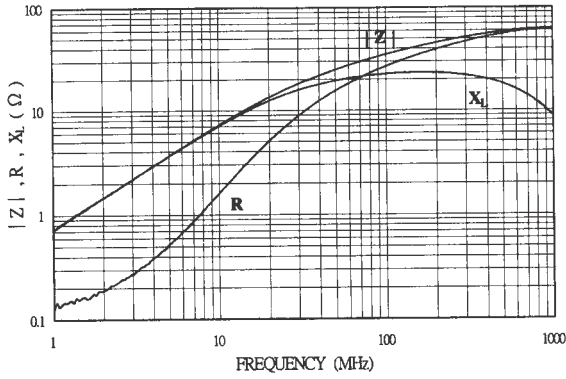
TYPE	A	B	C
FB160808	0.8	2.4~3.4	0.6
FB201209	1.2	3.0~4.0	1.0
FB321611	2.0	4.2~5.2	1.2
FB321616	2.0	4.2~5.2	1.2
FB322513	2.0	5.5~6.5	1.8
FB451616	3.0	5.5~6.5	1.2
FB453215	3.0	5.5~6.5	2.4

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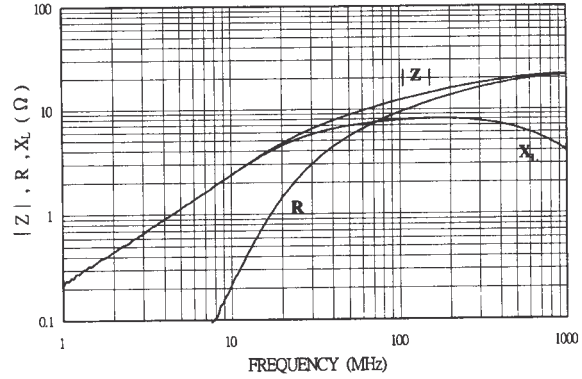
### TYPICAL ELECTRICAL CHARACTERISTIC

Test Instruments: HP4291A Impedance / Material Analyzer

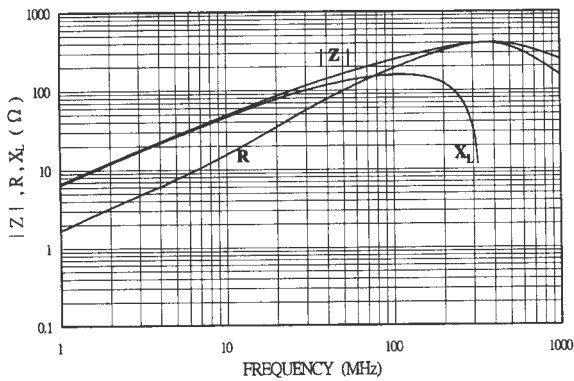
**FB160808T-300Y-S**



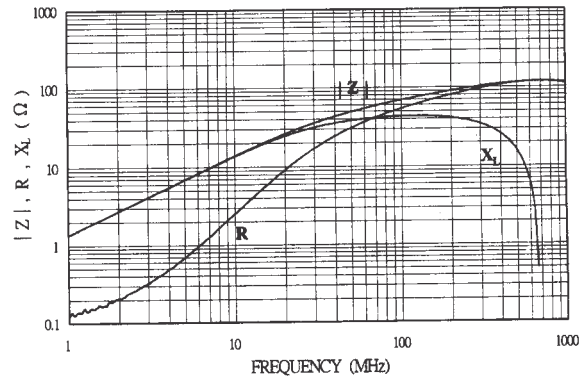
**FB201209T-110Y-S**



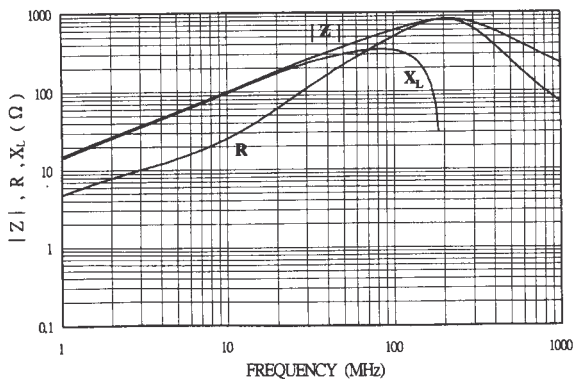
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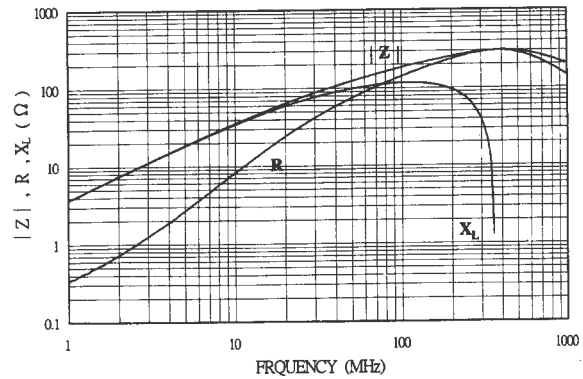
**FB201209T-800Y-S**



**FB160808T-601Y-S**



**FB201209T-151Y-S**

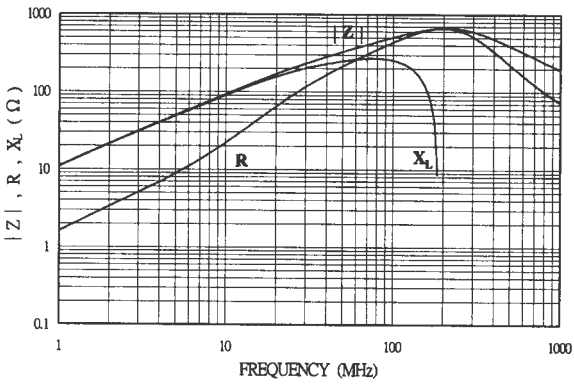


## Multilayer Ferrite Chip Beads

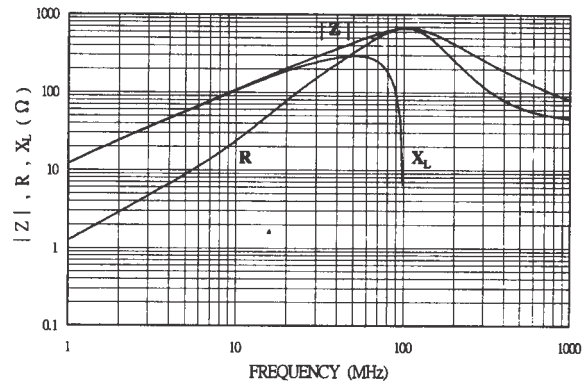
### TYPICAL ELECTRICAL CHARACTERISTIC

Test Instruments: HP4291A Impedance / Material Analyzer

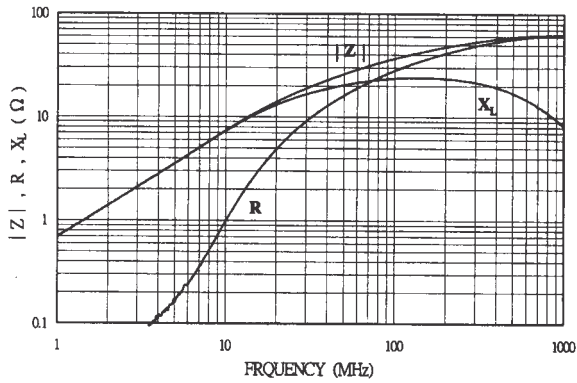
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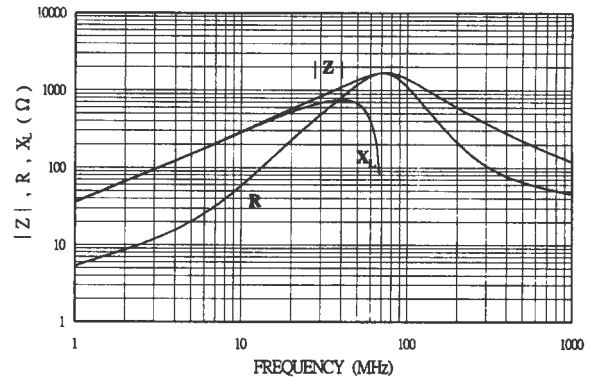
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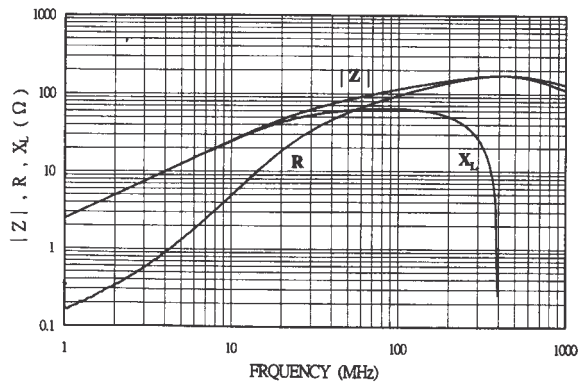
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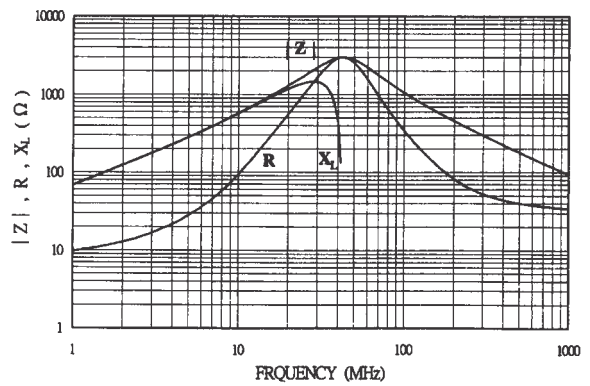
**FB321611T-122Y-S**



**FB321611T-121Y-S**



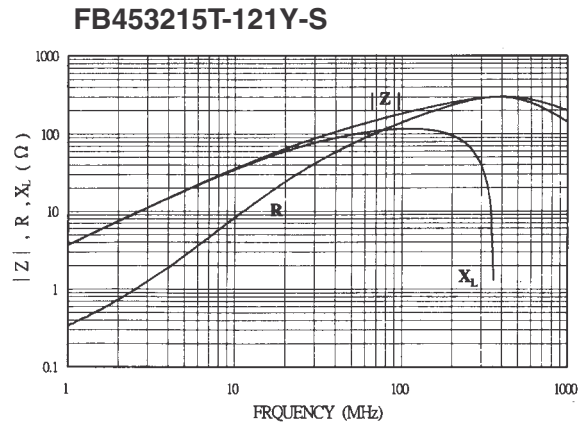
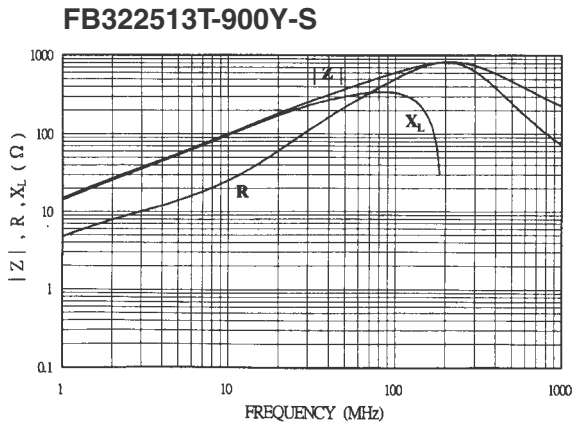
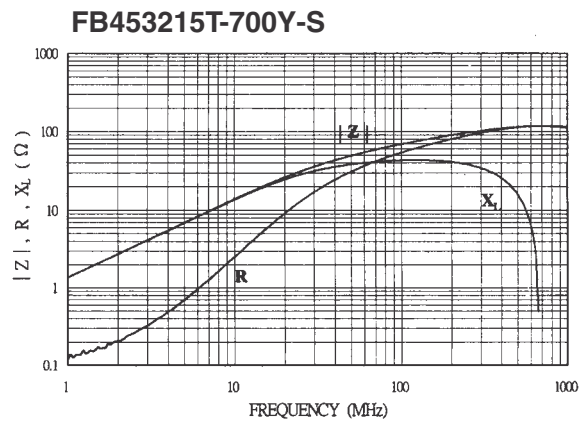
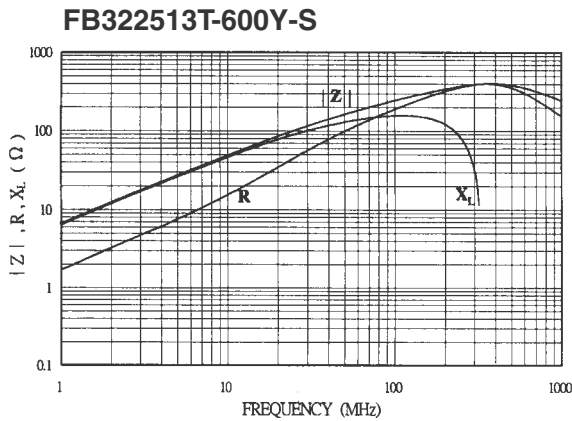
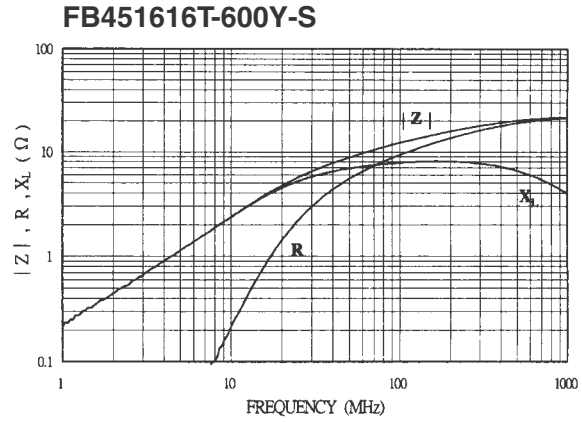
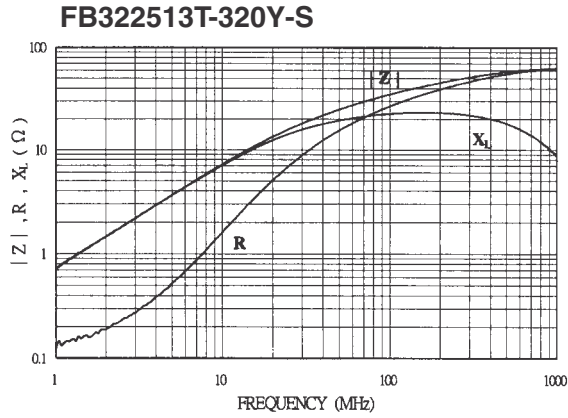
**FB321611T-202Y-S**



## Multilayer Ferrite Chip Beads

### TYPICAL ELECTRICAL CHARACTERISTIC

Test Instruments: HP4291A Impedance / Material Analyzer



## Electrical Characteristics

Part Number	Test Frequency (MHz)	Impedance ( $\pm 25\%$ )	DC Resistance ( ) max.	Rated current (mA) max.
FB100505T-060Y-S	100	6	0.05	500
FB100505T-100Y-S	100	10	0.05	500
FB100505T-400Y-S	100	40	0.30	300
FB100505T-800Y-S	100	80	0.40	200
FB100505T-121Y-S	100	120	0.50	200
FB100505T-241Y-S	100	240	0.50	200
FB100505T-481Y-S	100	480	0.80	200
FB100505T-601Y-S	100	600	1.00	200
FB100505T-102Y-S	100	1000	1.50	100
FB100505T-152Y-S	100	1500	2.00	60

## Test Instruments HP4291A Impedance / Material Analyzer

