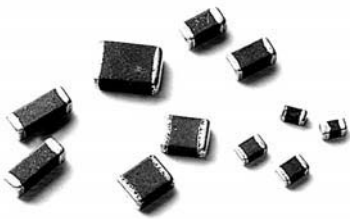


# Multilayer Ferrite Chip Beads

# SB/PB/UP/NB/GB Series

[ SB Series for General Purpose / PB Series for Large Current / UP Series for Ultra High Current / NB Series for Data Line, Digital Signals, etc. / GB Series for Medium Current ]

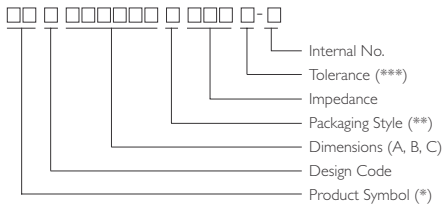


## OUTLINE

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

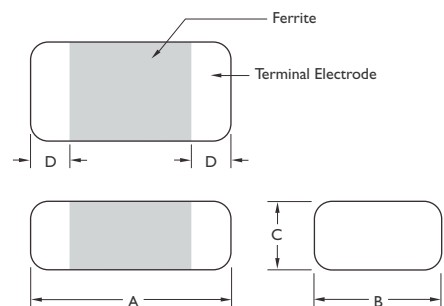
Three formulas of ferrite comprise several types of EMI suppression chip beads that are classified into six categories – SB, GB, PB, UP, NB and BA series.

## PRODUCT IDENTIFICATION



\* SB, PB, UP, NB, GB  
 \*\* T : Tape and Reel; B : Bulk  
 \*\*\* Y = ±25%; M = ±20%

## SHAPES AND DIMENSIONS



Dimensions : mm

TYPE		A	B	C	D
SB/PB/NB	100505	1.0 ± 0.10	0.50 ± 0.10	0.5 ± 0.10	0.25 ± 0.10
SB/PB/UP/NB/GB	160808	1.6 ± 0.20	0.80 ± 0.15	0.8 ± 0.15	0.3 ± 0.2
SB/PB/UP/NB/GB	201209	2.0 ± 0.20	1.25 ± 0.20	0.9 ± 0.20	0.5 ± 0.3
SB/PB/UP/NB/GB	321611	3.2 ± 0.20	1.60 ± 0.20	1.1 ± 0.20	0.5 ± 0.3
SB/GB	321616	3.2 ± 0.20	1.60 ± 0.20	1.6 ± 0.20	0.5 ± 0.3
SB/GB	322513	3.2 ± 0.20	2.50 ± 0.20	1.3 ± 0.20	0.5 ± 0.3
SB/PB/GB	451616	4.5 ± 0.25	1.60 ± 0.20	1.6 ± 0.20	0.5 ± 0.3
SB/PB/GB	453215	4.5 ± 0.25	3.20 ± 0.20	1.5 ± 0.20	0.5 ± 0.3



## SB SERIES, FOR GENERAL USE

### APPLICATIONS

I/O Ports, DC Power Lines, and Signal Lines  
 Computer and Peripheral Products  
 Consumer Electronic Products

### FEATURES

Standard type used to suppress lower-frequency, lower current signals.  
 Impedance over a Broad Frequency Range  
 Suitable for Flow and Reflow Soldering  
 Available in 8 Sizes

## ELECTRICAL CHARACTERISTICS

PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.	PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.
SBY100505T-060Y-S	6	0.05	500	SBK201209T-751Y-S	750	0.50	200
SBY100505T-100Y-S	10	0.05	500	SBK201209T-102Y-S	1000	0.50	200
SBY100505T-400Y-S	40	0.30	300	SBK201209T-152Y-S	1500	0.60	200
SBY100505T-800Y-S	80	0.40	200	SBK201209T-202Y-S	2000	0.80	100
SBY100505T-121Y-S	120	0.50	200	SBK201209T-222Y-S	2200	1.00	100
SBY100505T-241Y-S	240	0.50	200	SBK201209T-252Y-S	2500	1.00	100
SBY100505T-481Y-S	480	0.80	100	SBK201209T-272Y-S	2700	1.50	100
SBY100505T-601Y-S	600	1.00	100	SBY321611T-190Y-S	19	0.05	600
SBY100505T-102Y-S	1000	1.50	100	SBY321611T-260Y-S	26	0.05	600
SBY100505T-152Y-S	1500	2.00	60	SBY321611T-320Y-S	32	0.05	600
SBK160808T-110Y-S	11	0.05	500	SBY321611T-500Y-S	50	0.10	500
SBK160808T-190Y-S	19	0.08	500	SBY321611T-600Y-S	60	0.10	500
SBK160808T-300Y-S	30	0.10	400	SBK321611T-700Y-S	70	0.10	500
SBK160808T-400Y-S	40	0.10	400	SBK321611T-900Y-S	90	0.15	500
SBK160808T-600Y-S	60	0.10	300	SBK321611T-121Y-S	120	0.15	500
SBK160808T-800Y-S	80	0.15	300	SBK321611T-151Y-S	150	0.15	500
SBK160808T-121Y-S	120	0.25	300	SBK321611T-201Y-S	200	0.20	400
SBK160808T-221Y-S	220	0.30	200	SBK321611T-401Y-S	400	0.20	400
SBK160808T-301Y-S	300	0.40	200	SBK321611T-501Y-S	500	0.20	400
SBK160808T-451Y-S	450	0.50	200	SBK321611T-601Y-S	600	0.30	400
SBK160808T-601Y-S	600	0.50	200	SBK321611T-102Y-S	1000 *	0.40	200
SBK160808T-751Y-S	750	0.70	200	SBK321611T-122Y-S	1200 *	0.40	200
SBK160808T-102Y-S	1000	0.70	200	SBK321611T-152Y-S	1500 *	0.45	200
SBK160808T-152Y-S	1500	1.00	50	SBK321611T-202Y-S	2000 **	0.60	200
SBK160808T-222Y-S	2200	1.20	50	SBK321611T-272Y-S	2700 **	0.60	200
SBK160808T-272Y-S	2700	1.30	50	SBY321616T-250Y-S	25	0.10	500
SBY201209T-070Y-S	7	0.10	600	SBY321616T-600Y-S	60	0.20	500
SBY201209T-090Y-S	9	0.10	600	SBK321616T-700Y-S	70	0.20	500
SBY201209T-110Y-S	11	0.10	600	SBY322513T-320Y-S	32	0.20	500
SBY201209T-170Y-S	17	0.10	600	SBY322513T-600Y-S	60	0.20	500
SBY201209T-320Y-S	32	0.10	600	SBY322513T-900Y-S	90	0.20	500
SBK201209T-600Y-S	60	0.15	500	SBY451616T-500Y-S	50	0.20	600
SBK201209T-700Y-S	70	0.15	500	SBY451616T-600Y-S	60	0.20	600
SBK201209T-800Y-S	80	0.15	500	SBY451616T-800Y-S	80	0.20	600
SBK201209T-121Y-S	120	0.25	300	SBY451616T-101Y-S	100	0.30	500
SBK201209T-151Y-S	150	0.25	300	SBK451616T-151Y-S	150	0.30	500
SBK201209T-221Y-S	220	0.30	300	SBK451616T-171Y-S	170	0.30	500
SBK201209T-301Y-S	300	0.30	300	SBY453215T-700Y-S	70	0.30	500
SBK201209T-401Y-S	400	0.30	300	SBY453215T-121Y-S	120	0.30	500
SBK201209T-501Y-S	500	0.40	300				
SBK201209T-601Y-S	600	0.40	300				

Note : \* at 50MHz      \*\* at 30MHz



## PB SERIES, FOR HIGH CURRENT USE

### APPLICATIONS

High current DC power lines for USB interface circuitry, personal computers, electronic games, hard disk drives, and other general electronic equipments.

### FEATURES

Suitable for High Current Applications  
Small Package Size-EIA STD 0402/0603/0805/1206/1806 and 1812  
Nickel Barrier Terminations Provide Excellent Solder Heat Resistance  
Current Rating up to 6 AMPS (Max) (High Current Handling Capacity)  
Low DCR  
Suitable for Flow and Reflow Soldering  
Available in 6 Sizes

## ELECTRICAL CHARACTERISTICS

PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.
PBY100505T-100Y-S	10	0.03	1000
PBY160808T-110Y-S	11	0.02	4000
PBY160808T-250Y-S	25	0.03	3000
PBY160808T-400Y-S	40	0.035	3000
PBY160808T-600Y-S	60	0.04	3000
PBY160808T-121Y-S	120	0.08	2500
PBY160808T-301Y-S	300	0.10	2000
PBY160808T-501Y-S	500	0.15	1500
PBY160808T-601Y-S	600	0.20	1000
PBY160808T-102Y-S	1000	0.25	800
PBY201209T-110Y-S	11	0.01	6000
PBY201209T-170Y-S	17	0.02	5000
PBY201209T-300Y-S	30	0.02	4000
PBY201209T-500Y-S	50	0.025	3000
PBY201209T-600Y-S	60	0.03	3000
PBY201209T-800Y-S	80	0.04	3000
PBY201209T-121Y-S	120	0.04	3000
PBY201209T-201Y-S	200	0.05	2500
PBY201209T-301Y-S	300	0.08	2000
PBY201209T-601Y-S	600	0.10	2000
PBY201209T-102Y-S	1000	0.12	1500
PBY321611T-190Y-S	19	0.015	6000
PBY321611T-320Y-S	32	0.015	4000
PBY321611T-500Y-S	50	0.02	4000
PBY321611T-800Y-S	80	0.025	3000
PBY321611T-101Y-S	100	0.03	2500
PBY321611T-301Y-S	300	0.06	2000
PBY321611T-601Y-S	600	0.10	1800
PBY321611T-102Y-S	1000 *	0.15	1200
PBY321611T-122Y-S	1200 *	0.18	1000
PBY321611T-152Y-S	1500 *	0.20	800
PBY322513T-600Y-S	60	0.025	4000
PBY322513T-900Y-S	90	0.025	3000
PBY451616T-500Y-S	50	0.020	6000
PBY451616T-600Y-S	60	0.020	5000
PBY451616T-800Y-S	80	0.025	4000
PBY451616T-151Y-S	150	0.100	2000
PBY453215T-700Y-S	70	0.03	6000
PBY453215T-121Y-S	120	0.03	4000

Note : \* at 50MHz



## UPB SERIES, FOR ULTRA HIGH CURRENT USE

### APPLICATIONS

Preventing of Electronics Magnet Interference in Power Line of PC, Printer, & CD ROM

High Frequency Filtering of Medium Speed Clocks and Video Signals

### FEATURES

High Current Performance

Low D.C. Resistance Minute  $m\Omega$  Typically

Impedance Character of Broad Frequency

## ELECTRICAL CHARACTERISTICS

PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.
UPB160808T-250Y-S	25	0.015	4500
UPB160808T-300Y-S	30	0.015	4500
UPB201209T-400Y-S	40	0.015	5000
UPB201209T-500Y-S	50	0.015	5000
UPB201209T-600Y-S	60	0.020	4500
UPB321611T-600Y-S	60	0.012	6000
UPB321611T-800Y-S	80	0.012	6000
UPB321611T-101Y-S	100	0.012	6000
UPB321611T-121Y-S	120	0.012	6000
UPB321611T-151Y-S	150	0.020	4500



## NB SERIES, FOR HIGH SPEED SIGNALS USE

### APPLICATIONS

High Speed Circuits for Computer & Peripheral Equipments and Communication Devices

Cellular Phone

Suitable for Circuits with Unstable Ground

### FEATURES

Exhibiting High Impedance with Sharp Increase at High Speed Signal Frequencies with Minimal Diminishing the Desired Wave Form

Suitable for Flow and Reflow Soldering

Available in 4 Sizes

## ELECTRICAL CHARACTERISTICS

PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.
NBQ100505T-060Y-S	6	0.10	300
NBQ100505T-100Y-S	10	0.20	200
NBQ100505T-400Y-S	40	0.40	150
NBQ100505T-800Y-S	80	0.60	100
NBQ100505T-121Y-S	120	0.80	50
NBQ160808T-060Y-S	6	0.05	500
NBQ160808T-100Y-S	10	0.07	400
NBQ160808T-400Y-S	40	0.30	300
NBQ160808T-600Y-S	60	0.30	300
NBQ160808T-800Y-S	80	0.40	300
NBQ160808T-121Y-S	120	0.40	300
NBQ160808T-241Y-S	240	0.40	200
NBQ160808T-301Y-S	300	0.50	200
NBQ160808T-481Y-S	480	0.60	150
NBQ160808T-601Y-S	600	0.60	100
NBQ160808T-102Y-S	1000	0.70	100
NBQ160808T-122Y-S	1200	0.70	100
NBQ160808T-152Y-S	1500	0.80	100
NBQ160808T-182Y-S	1800	0.95	100
NBQ201209T-060Y-S	6	0.07	800
NBQ201209T-110Y-S	11	0.10	700
NBQ201209T-260Y-S	26	0.20	600
NBQ201209T-320Y-S	32	0.20	600
NBQ201209T-600Y-S	60	0.30	500
NBQ201209T-750Y-S	75	0.30	500
NBQ201209T-900Y-S	90	0.30	500
NBQ201209T-121Y-S	120	0.40	400
NBQ201209T-151Y-S	150	0.40	400
NBQ201209T-171Y-S	170	0.50	400
NBQ201209T-221Y-S	220	0.50	300
NBQ201209T-301Y-S	300	0.50	300
NBQ201209T-401Y-S	400	0.50	300
NBQ201209T-501Y-S	500	0.50	200
NBQ201209T-601Y-S	600	0.50	200
NBQ201209T-102Y-S	1000	0.60	100
NBQ201209T-122Y-S	1200	0.70	100
NBQ201209T-152Y-S	1500	0.70	100
NBQ201209T-222Y-S	2200	0.75	100
NBQ201209T-272Y-S	2700	0.85	100
NBQ321611T-320Y-S	32	0.20	600
NBQ321611T-600Y-S	60	0.30	500
NBQ321611T-800Y-S	80	0.30	500
NBQ321611T-900Y-S	90	0.30	500
NBQ321611T-121Y-S	120	0.40	400
NBQ321611T-151Y-S	150	0.40	400
NBQ321611T-201Y-S	200	0.50	300
NBQ321611T-221Y-S	220	0.50	300
NBQ321611T-351Y-S	350	0.60	300
NBQ321611T-401Y-S	400	0.60	300
NBQ321611T-601Y-S	600	0.80	300
NBQ321611T-122Y-S	1200	1.00	200
NBQ321611T-152Y-S	1500	1.20	150



## GB SERIES, FOR MID CURRENT USE

### APPLICATIONS

- Computers • Modems • CD-ROMs • Hard Drives
- Televisions • Wireless Device

### FEATURES

This series exhibits a low DC resistance across a wide range of impedances. Low DC resistance characteristics make the chip beads suitable for use on signal lines handling larger currents.

## ELECTRICAL CHARACTERISTICS

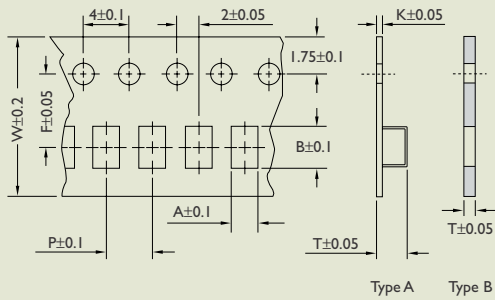
PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.	PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.
GBK160808T-110Y-S	11	0.03	1000	GBY321611T-190Y-S	19	0.03	1000
GBK160808T-190Y-S	19	0.05	1000	GBY321611T-260Y-S	26	0.03	1000
GBK160808T-300Y-S	30	0.06	800	GBY321611T-320Y-S	32	0.03	1000
GBK160808T-400Y-S	40	0.06	800	GBY321611T-500Y-S	50	0.06	800
GBK160808T-600Y-S	60	0.06	600	GBY321611T-600Y-S	60	0.06	800
GBK160808T-800Y-S	80	0.10	600	GBK321611T-700Y-S	70	0.06	800
GBK160808T-121Y-S	120	0.15	600	GBK321611T-900Y-S	90	0.10	800
GBK160808T-221Y-S	220	0.18	400	GBK321611T-121Y-S	120	0.10	800
GBK160808T-301Y-S	300	0.25	400	GBK321611T-151Y-S	150	0.10	800
GBK160808T-451Y-S	450	0.30	400	GBK321611T-201Y-S	200	0.15	600
GBK160808T-601Y-S	600	0.30	400	GBK321611T-401Y-S	400	0.15	600
GBK160808T-751Y-S	750	0.45	300	GBK321611T-501Y-S	500	0.15	600
GBK160808T-102Y-S	1000	0.45	300	GBK321611T-601Y-S	600	0.20	500
GBY201209T-070Y-S	7	0.06	1000	GBK321611T-102Y-S	1000 *	0.25	400
GBY201209T-090Y-S	9	0.06	1000	GBK321611T-122Y-S	1200 *	0.25	400
GBY201209T-110Y-S	11	0.06	1000	GBK321611T-202Y-S	2000 **	0.35	400
GBY201209T-170Y-S	17	0.06	1000	GBY321616T-250Y-S	25	0.10	1000
GBY201209T-320Y-S	32	0.06	1000	GBY321616T-600Y-S	60	0.10	1000
GBK201209T-600Y-S	60	0.10	800	GBK321616T-700Y-S	70	0.10	1000
GBK201209T-700Y-S	70	0.10	800	GBY322513T-320Y-S	32	0.10	1000
GBK201209T-800Y-S	80	0.10	800	GBY322513T-600Y-S	60	0.10	1000
GBK201209T-121Y-S	120	0.15	600	GBY322513T-900Y-S	90	0.10	1000
GBK201209T-151Y-S	150	0.15	600	GBY451616T-500Y-S	50	0.10	1000
GBK201209T-221Y-S	220	0.18	600	GBY451616T-600Y-S	60	0.10	1000
GBK201209T-301Y-S	300	0.18	600	GBY451616T-800Y-S	80	0.10	1000
GBK201209T-401Y-S	400	0.18	600	GBY451616T-101Y-S	100	0.18	800
GBK201209T-501Y-S	500	0.25	500	GBK451616T-151Y-S	150	0.18	800
GBK201209T-601Y-S	600	0.25	500	GBK451616T-171Y-S	170	0.18	800
GBK201209T-751Y-S	750	0.30	400	GBY453215T-700Y-S	70	0.18	800
GBK201209T-102Y-S	1000	0.30	400	GBY453215T-121Y-S	120	0.18	800
GBK201209T-152Y-S	1500	0.40	300				
GBK201209T-202Y-S	2000	0.55	200				

Note : \* at 50MHz      \*\* at 30MHz



## TAPE DIMENSIONS

Dimensions : mm



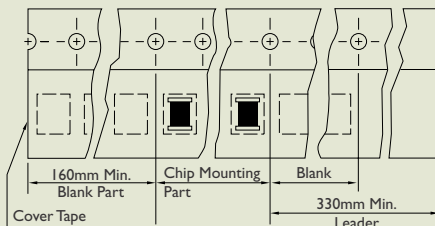
TYPE		A	B	T	W	P	F	K	TAPE TYPE
SB/PB/NB	100505	0.62	1.15	0.70	8.0	2.0	3.5	—	B
SB/PB/UP/NB/GB	160808	1.05	1.80	0.95	8.0	4.0	3.5	—	B
SB/PB/UP/NB/GB	201209	1.42	2.30	1.05	8.0	4.0	3.5	0.2	A
SB/PB/UP/NB/GB	321611	1.88	3.50	1.27	8.0	4.0	3.5	0.2	A
SB/GB	321616	1.88	3.64	1.90	8.0	4.0	3.5	0.2	A
SB/GB	322513	2.77	3.42	1.65	8.0	4.0	3.5	0.2	A
SB/PB/GB	451616	1.88	4.95	1.90	12.0	4.0	5.5	0.3	A
SB/PB/GB	453215	3.66	4.95	1.85	12.0	8.0	5.5	0.3	A

## TAPE MATERIAL

Carrier Tape : Polystyrene (for 201209, 201211, 321611, etc.)

Paper (for 160808, 100505)

Cover Tape : Polyethylene

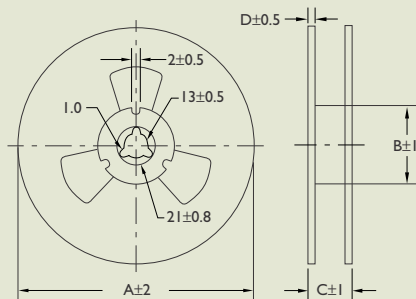


## PACKAGING QUANTITY

TYPE		BULK	QUANTITY/REEL
SB/PB/NB	100505	√	10000
SB/PB/UP/NB/GB	160808	√	4000
SB/PB/UP/NB/GB	201209	√	4000
SB/PB/UP/NB/GB	321611	√	3000
SB/GB	321616	√	2000
SB/GB	322513	√	2500
SB/PB/GB	451616	√	2000
SB/PB/GB	453215	√	1000

## REEL DIMENSIONS

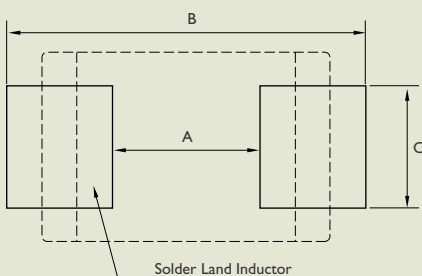
Dimensions : mm



TYPE		A	B	C	D
SB/PB/NB	100505	178	60	10	2
SB/PB/UP/NB/GB	160808	178	60	10	2
SB/PB/UP/NB/GB	201209	178	60	10	2
SB/PB/UP/NB/GB	321611	178	60	10	2
SB/GB	321616	178	60	10	2
SB/GB	322513	178	60	10	2
SB/PB/GB	451616	178	60	14	2
SB/PB/GB	453215	178	60	14	2

## RECOMMENDED PATTERN

Dimensions : mm



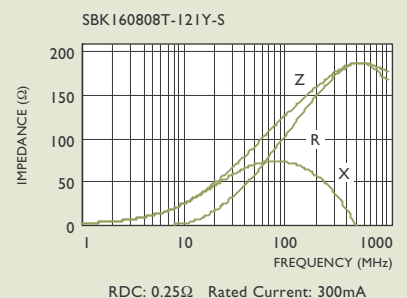
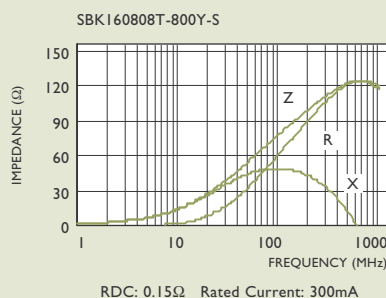
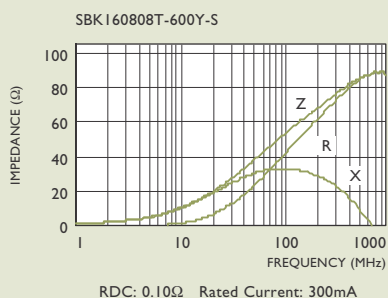
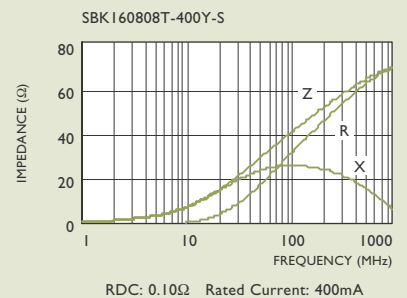
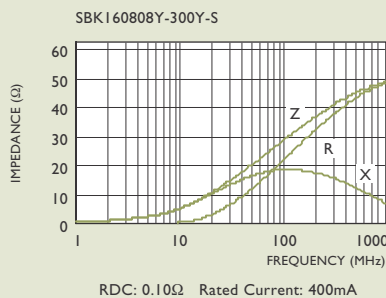
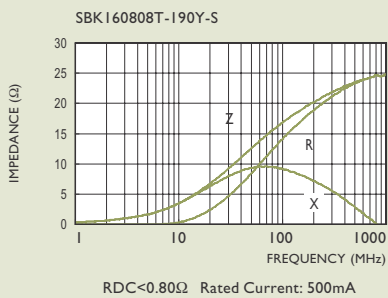
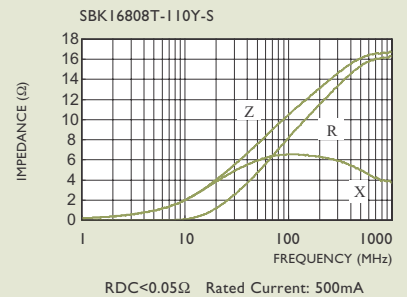
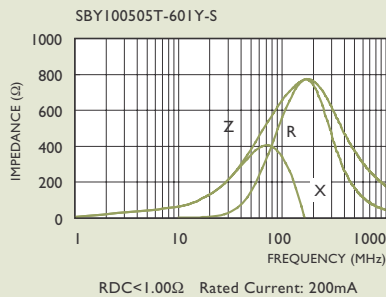
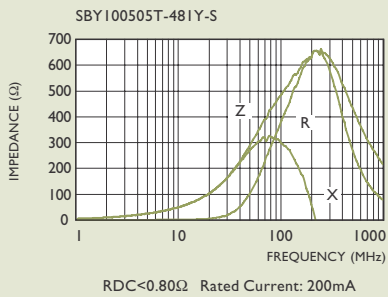
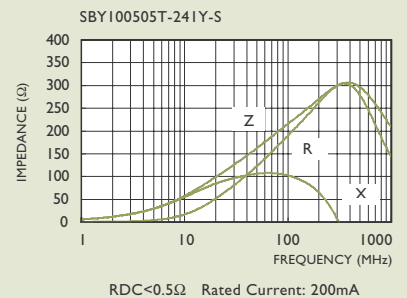
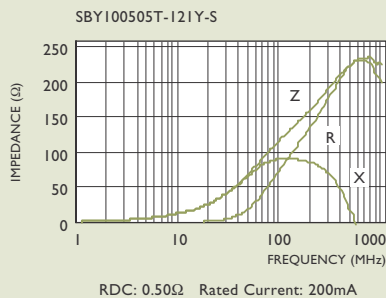
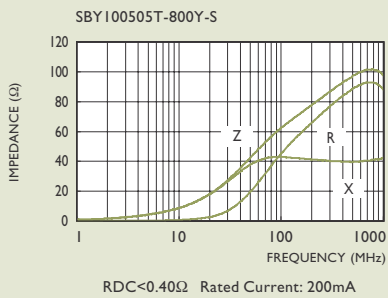
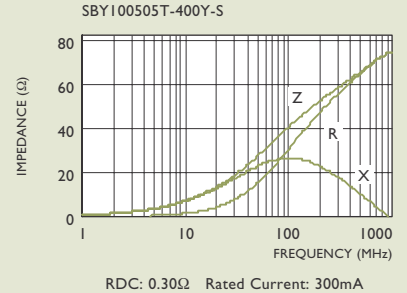
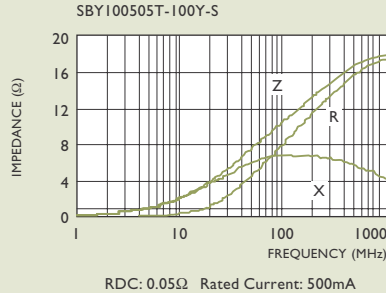
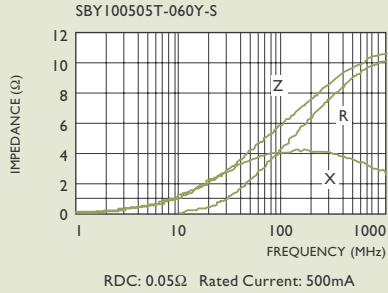
TYPE		A	B	C
SB/PB/NB	100505	0.4	1.2 ~ 1.4	0.4
SB/PB/UP/NB/GB	160808	0.8	2.4 ~ 3.4	0.6
SB/PB/UP/NB/GB	201209	1.2	3.0 ~ 4.0	1.0
SB/PB/UP/NB/GB	321611	2.0	4.2 ~ 5.2	1.2
SB/GB	321616	2.0	4.2 ~ 5.2	1.2
SB/GB	322513	2.0	5.5 ~ 6.5	1.8
SB/PB/GB	451616	3.0	5.5 ~ 6.5	1.2
SB/PB/GB	453215	3.0	5.5 ~ 6.5	2.4

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



# TYPICAL ELECTRICAL CHARACTERISTICS

Test Instruments : HP4291A Impedance / Material Analyzer

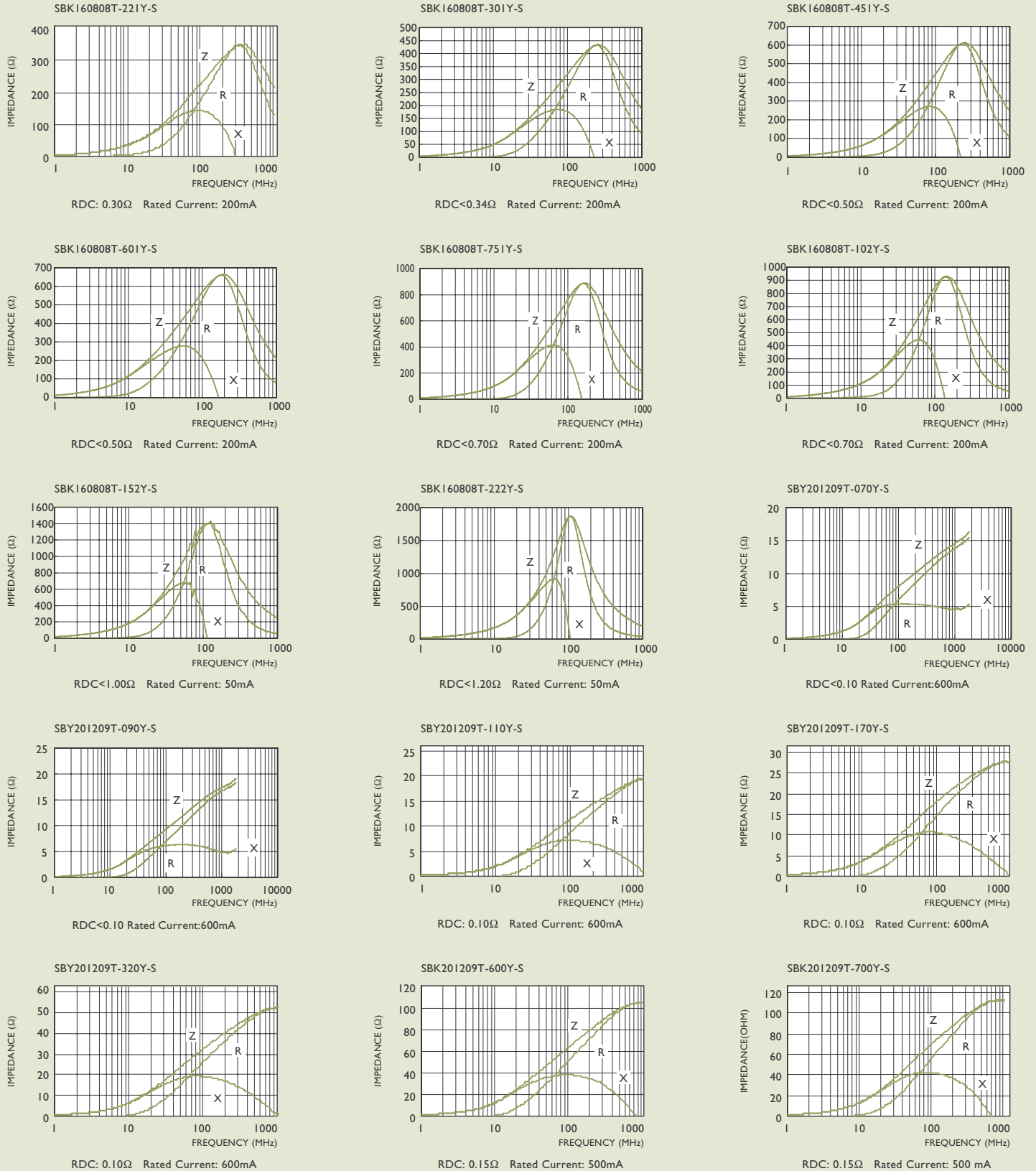






# TYPICAL ELECTRICAL CHARACTERISTICS

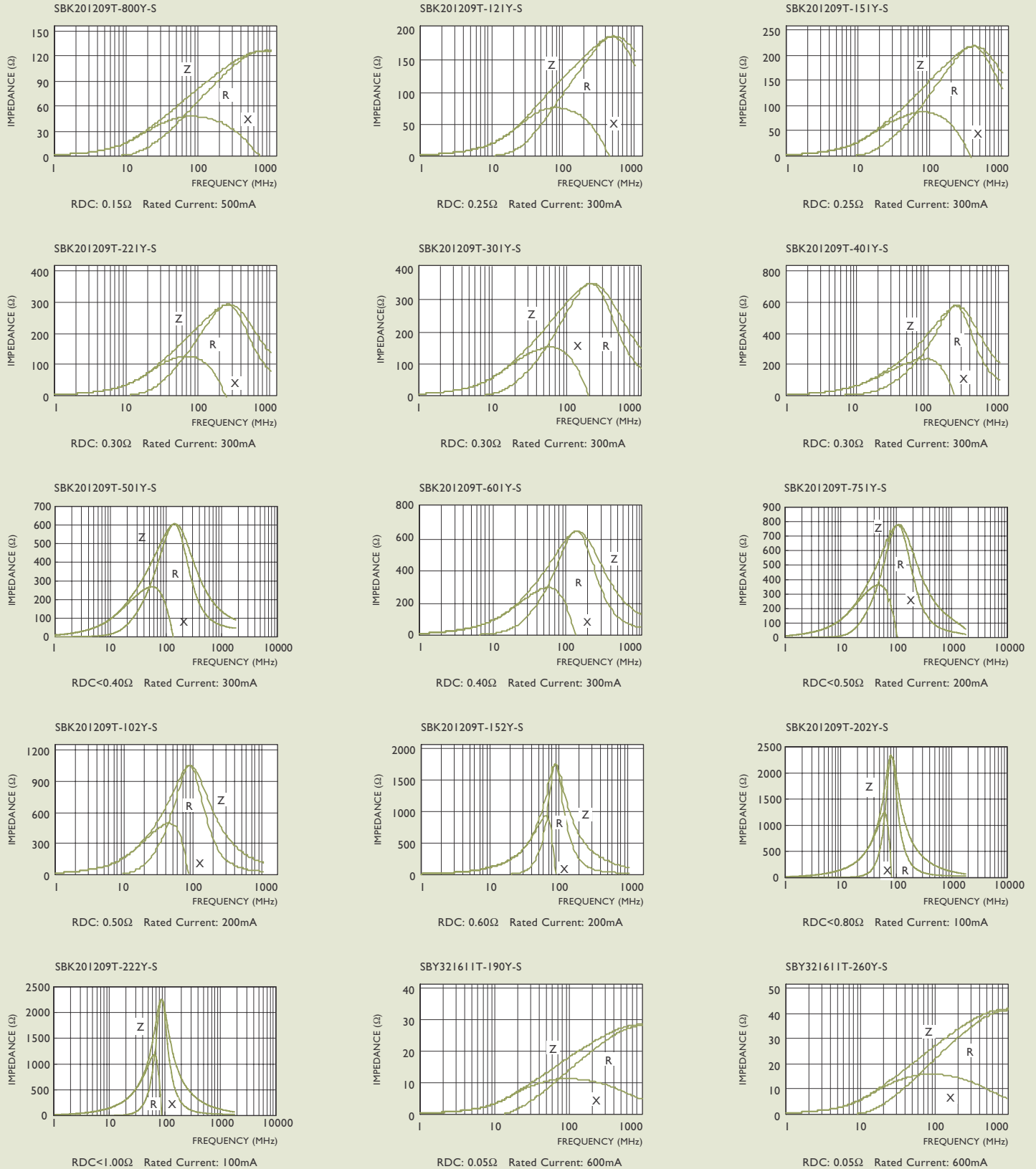
Test Instruments : HP4291A Impedance / Material Analyzer





# TYPICAL ELECTRICAL CHARACTERISTICS

Test Instruments : HP4291A Impedance / Material Analyzer

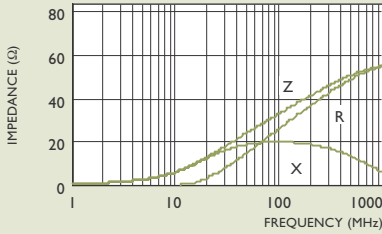




# TYPICAL ELECTRICAL CHARACTERISTICS

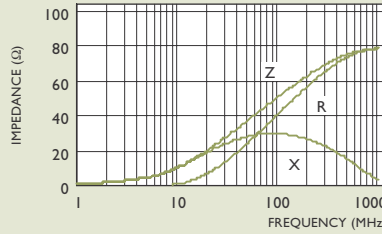
Test Instruments : HP4291A Impedance / Material Analyzer

SBY321611T-320Y-S



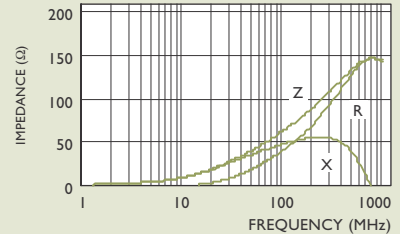
RDC: 0.05Ω Rated Current: 600mA

SBY321611T-500Y-S



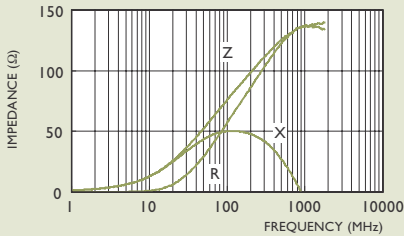
RDC: 0.10Ω Rated Current: 500mA

SBY321611T-600Y-S



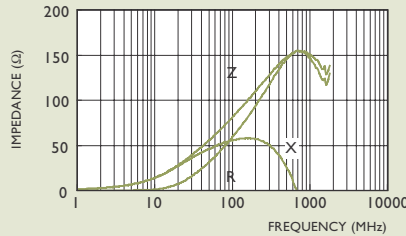
RDC: 0.10Ω Rated Current: 500mA

SBK321611T-700Y-S



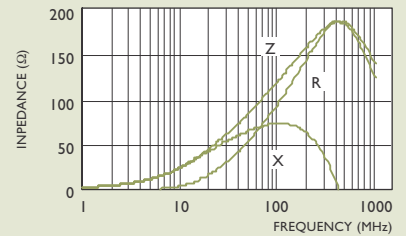
RDC<0.20Ω Rated Current: 500mA

SBK321611T-900Y-S



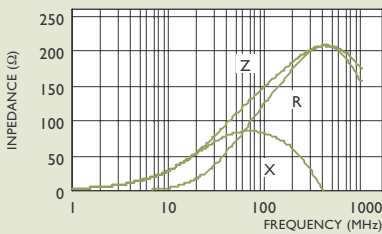
RDC<0.20Ω Rated Current: 500mA

SBK321611T-121Y-S



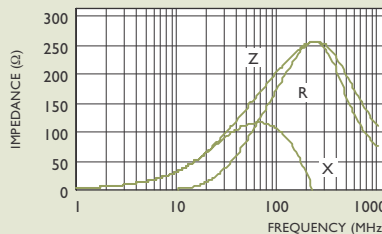
RDC: 0.15Ω Rated Current: 500mA

SBK321611T-151Y-S



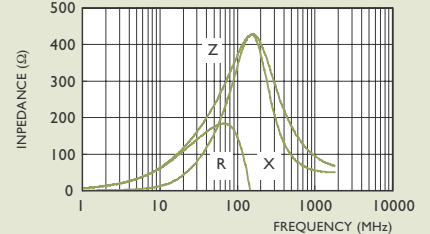
RDC: 0.15Ω Rated Current: 500mA

SBK321611T-201Y-S



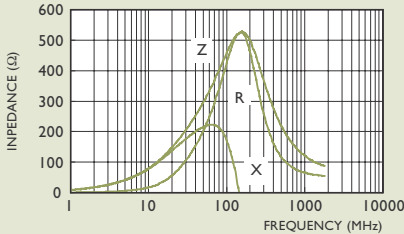
RDC: 0.20Ω Rated Current: 400mA

SBK321611T-401Y-S



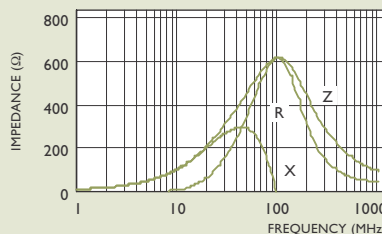
RDC<0.20Ω Rated Current: 400mA

SBK321611T-501Y-S



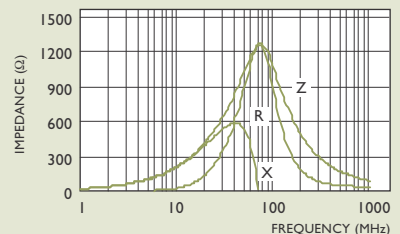
RDC<0.20Ω Rated Current: 400mA

SBK321611T-601Y-S



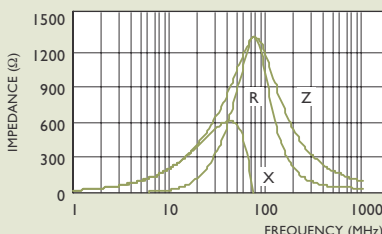
RDC: 0.30Ω Rated Current: 400mA

SBK321611T-102Y-S



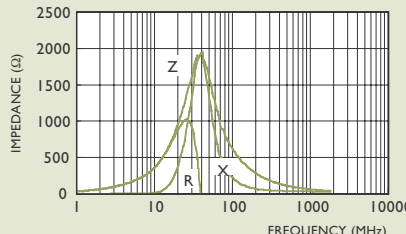
RDC: 0.40Ω Rated Current: 200mA

SBK321611T-122Y-S



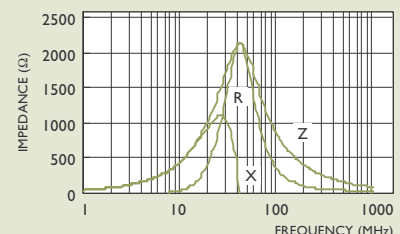
RDC: 0.40Ω Rated Current: 200mA

SBK321611T-152Y-S



RDC<0.45Ω Rated Current: 200mA

SBK321611T-202Y-S

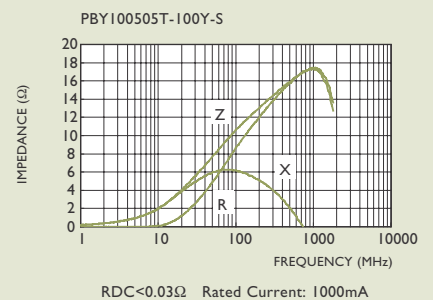
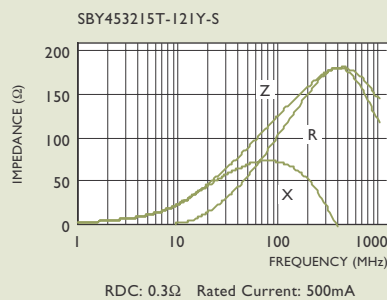
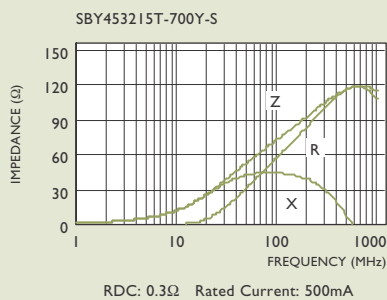
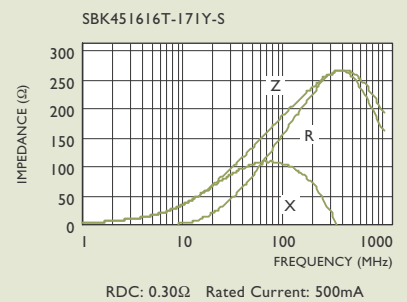
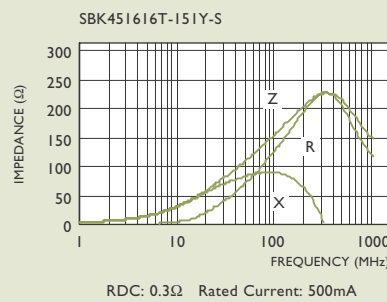
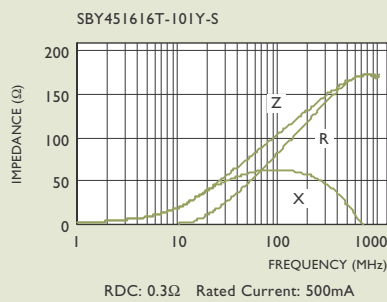
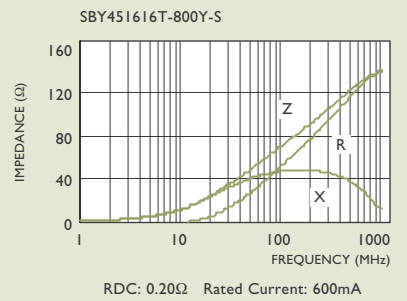
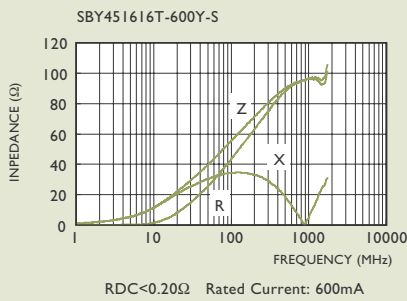
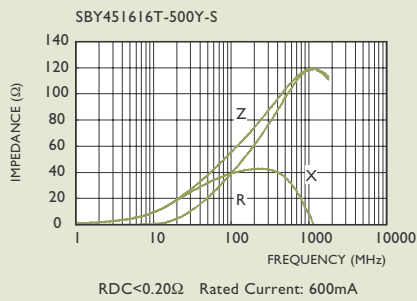
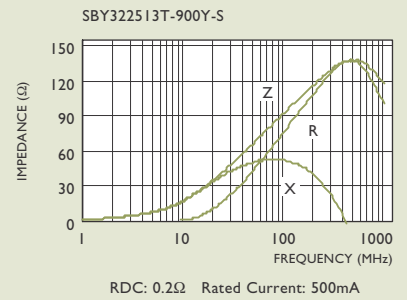
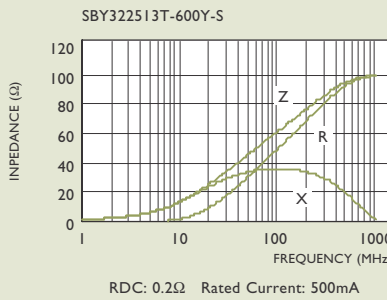
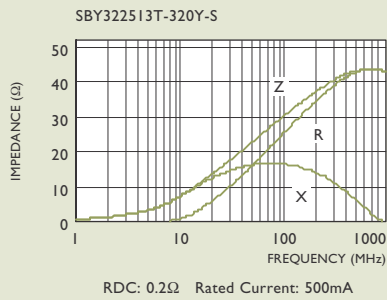
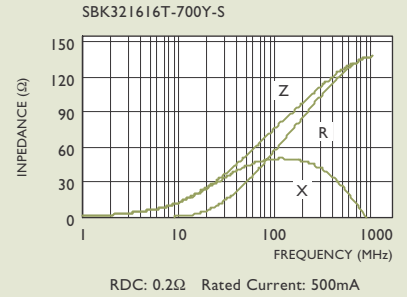
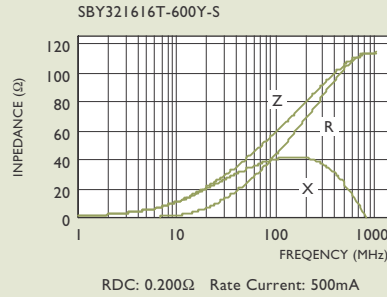
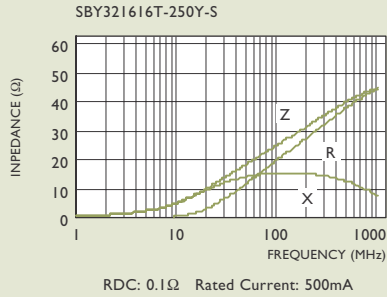


RDC: 0.60Ω Rated Current: 200mA



# TYPICAL ELECTRICAL CHARACTERISTICS

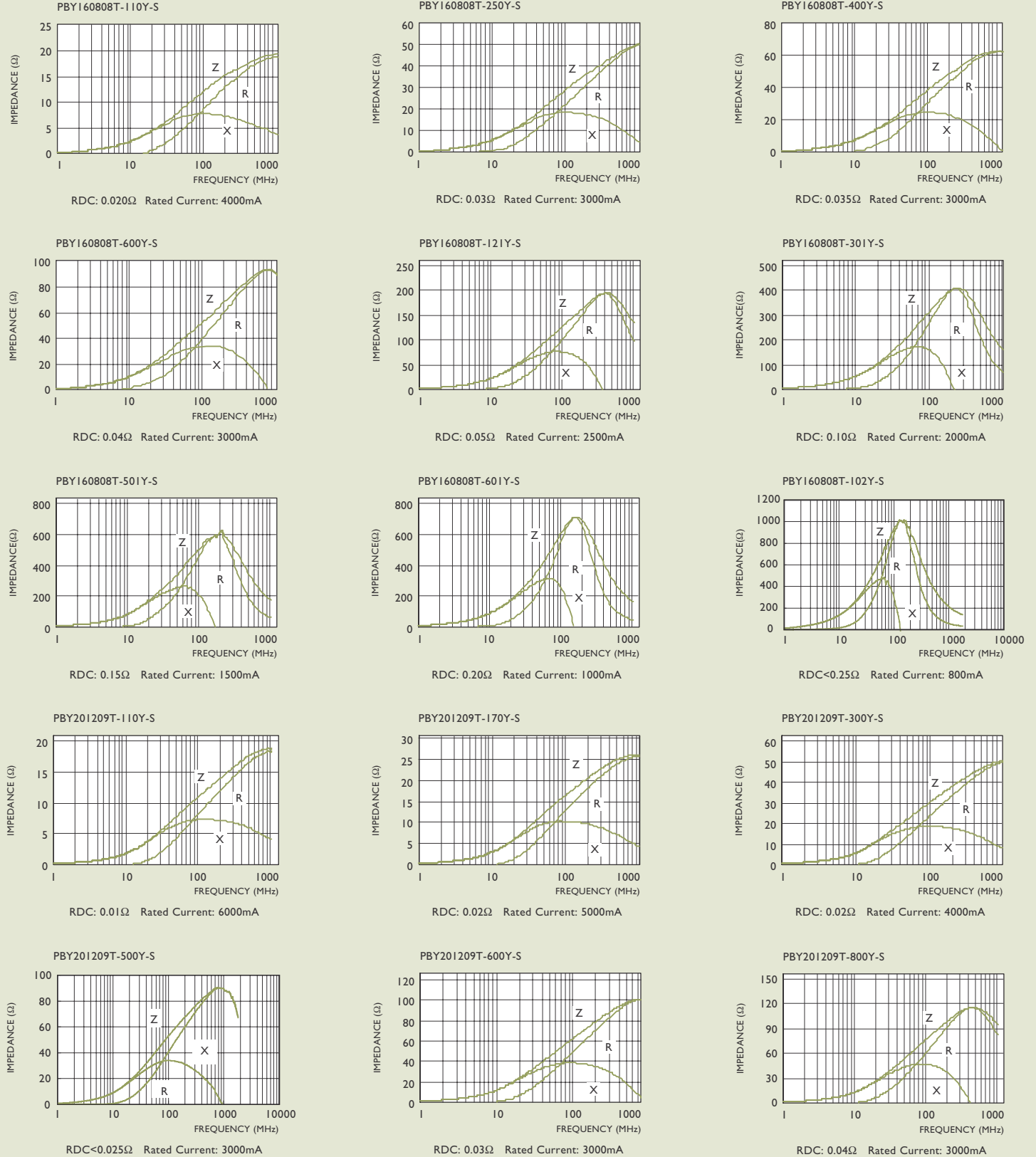
Test Instruments : HP4291A Impedance / Material Analyzer





# TYPICAL ELECTRICAL CHARACTERISTICS

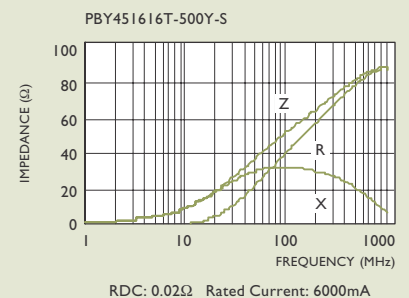
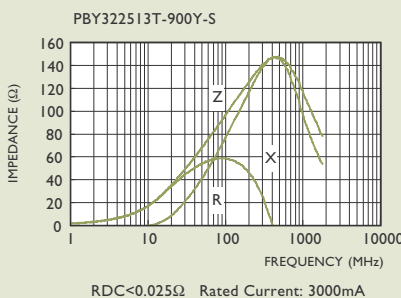
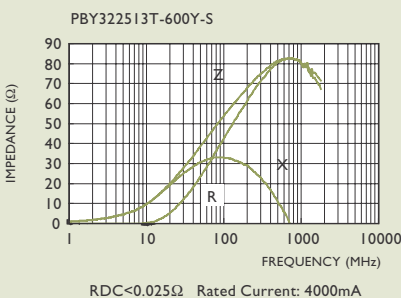
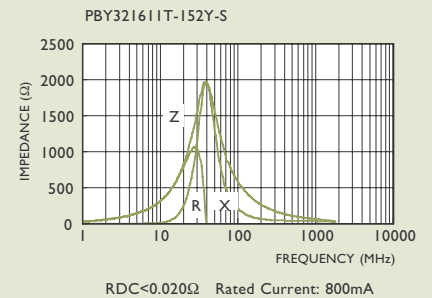
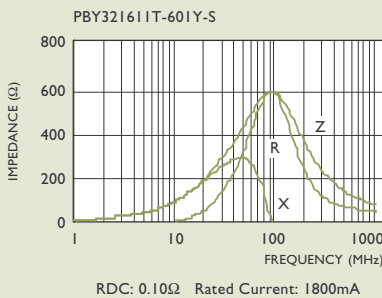
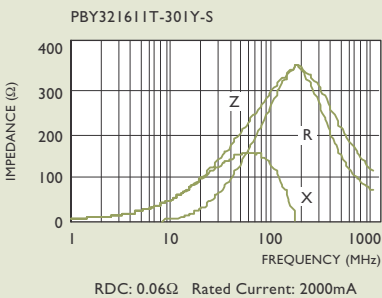
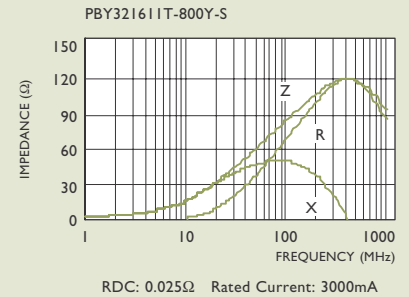
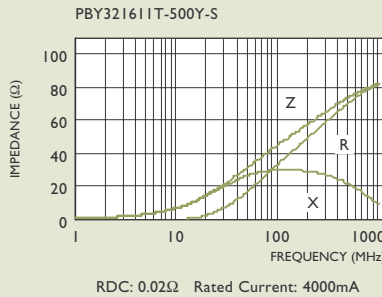
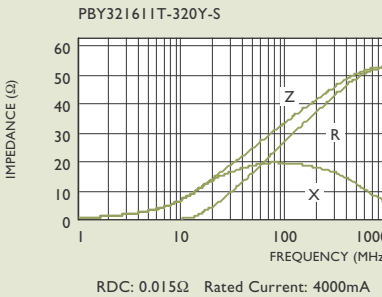
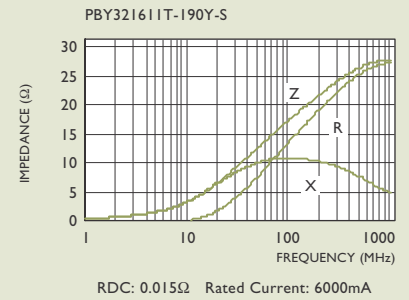
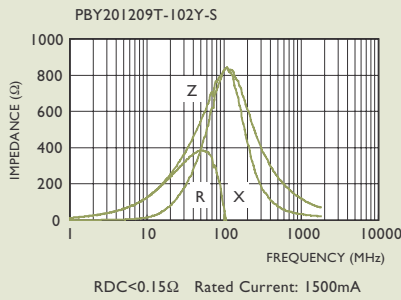
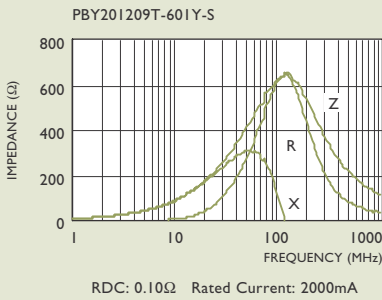
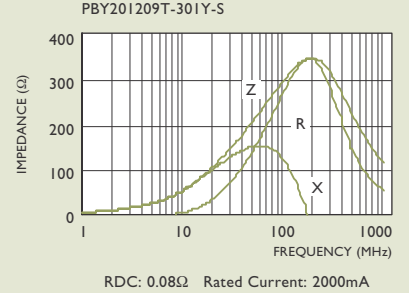
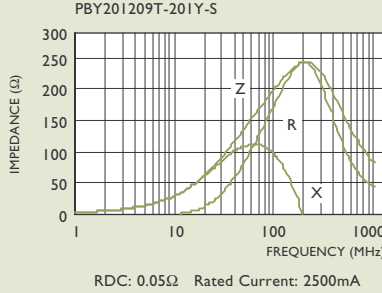
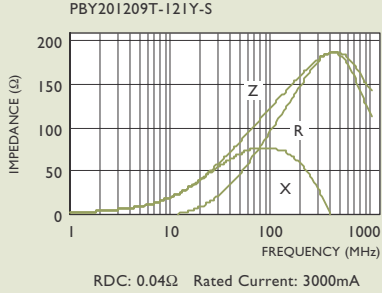
Test Instruments : HP4291A Impedance / Material Analyzer





# TYPICAL ELECTRICAL CHARACTERISTICS

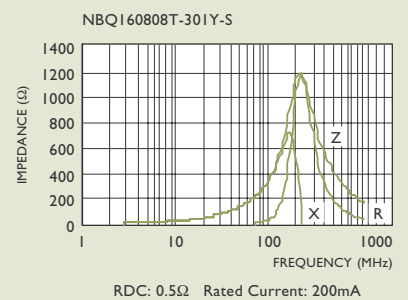
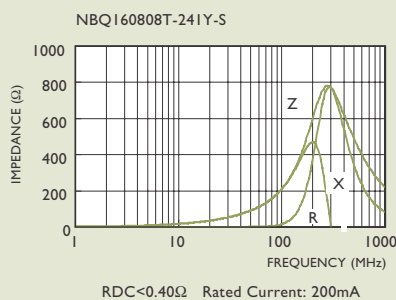
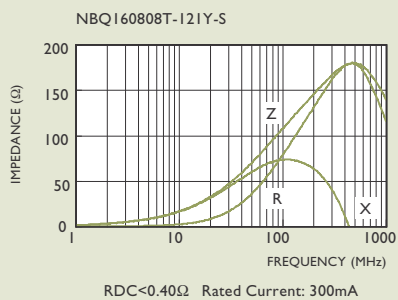
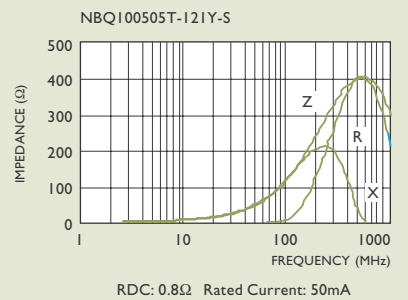
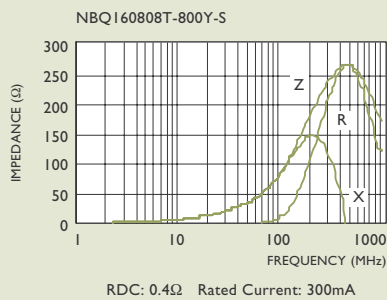
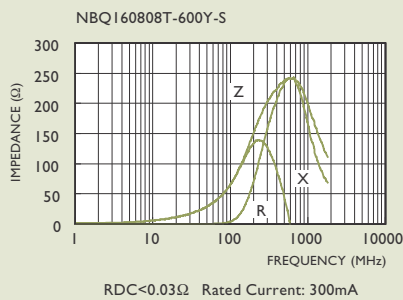
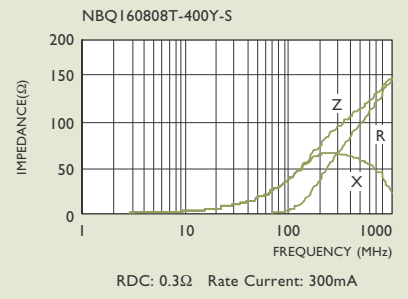
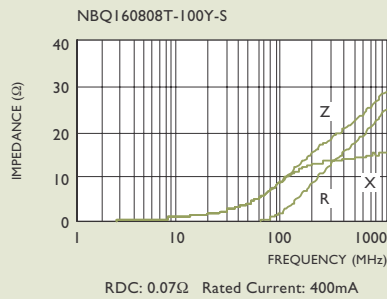
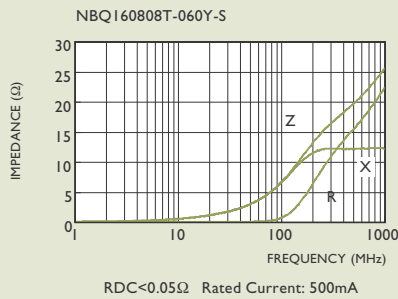
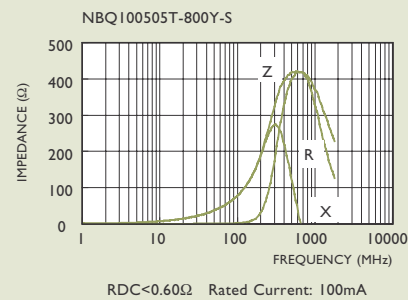
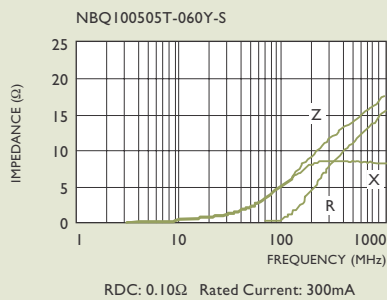
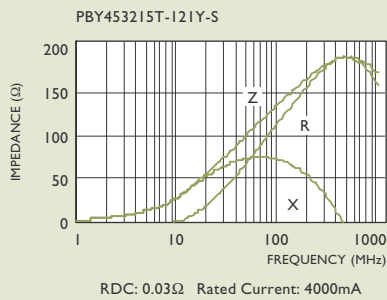
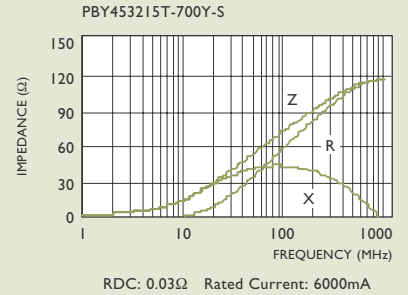
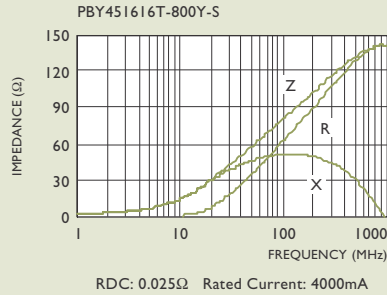
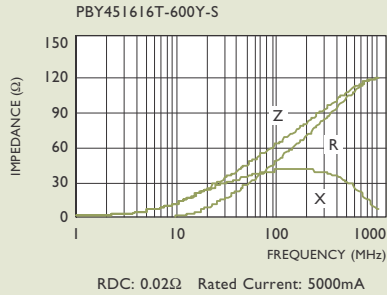
Test Instruments : HP4291A Impedance / Material Analyzer





# TYPICAL ELECTRICAL CHARACTERISTICS

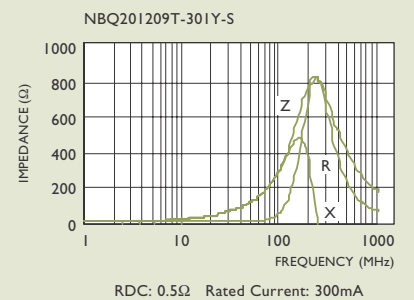
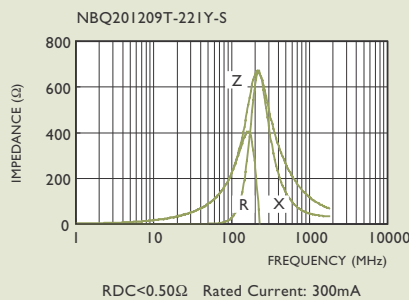
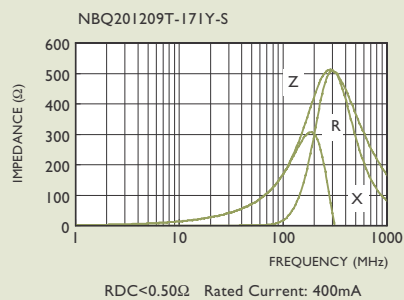
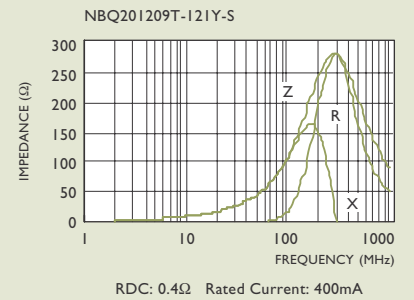
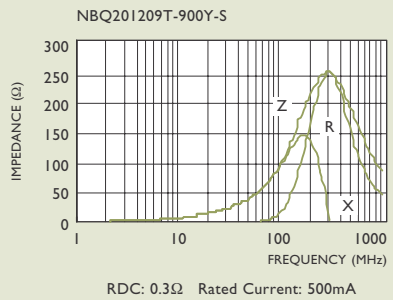
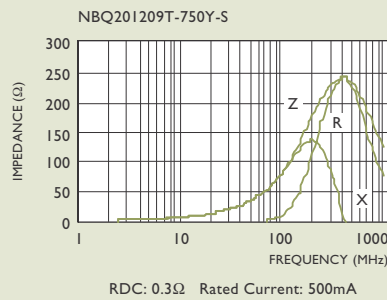
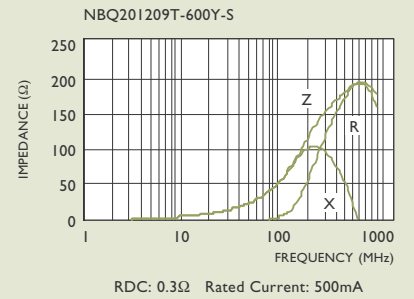
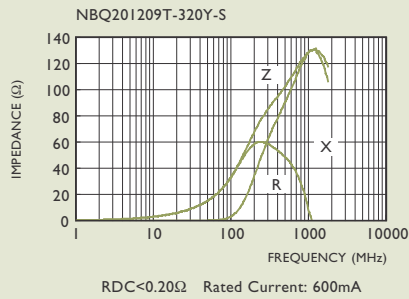
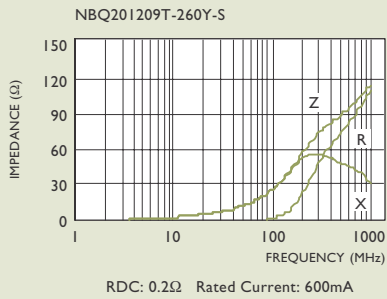
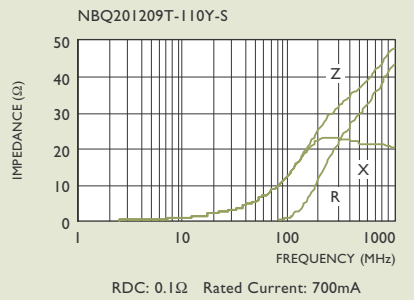
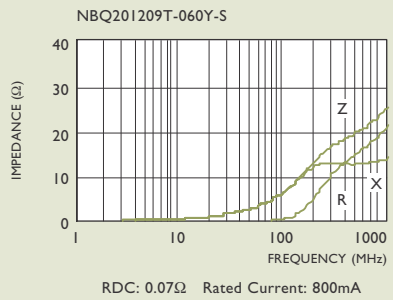
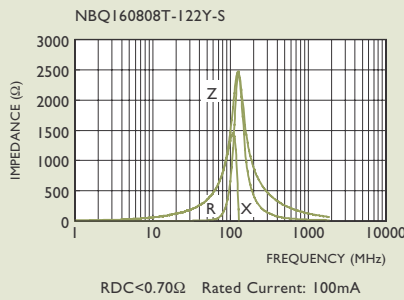
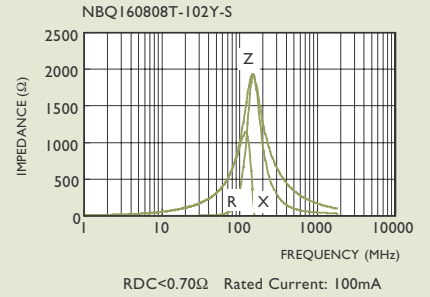
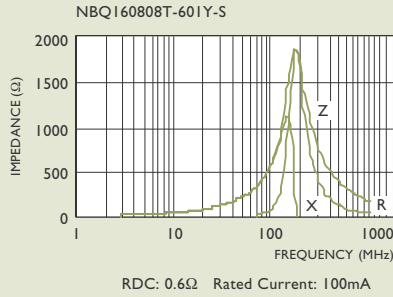
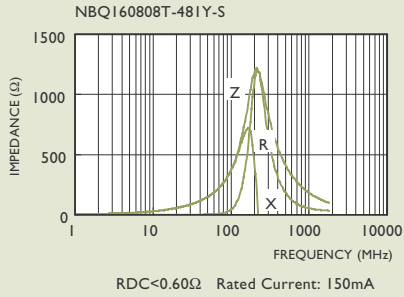
Test Instruments : HP4291A Impedance / Material Analyzer





## TYPICAL ELECTRICAL CHARACTERISTICS

Test Instruments : HP4291A Impedance / Material Analyzer

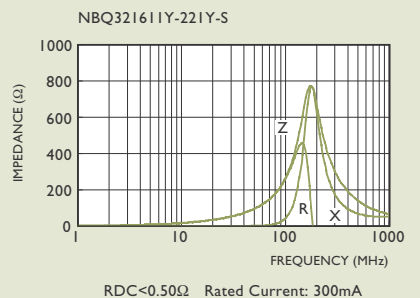
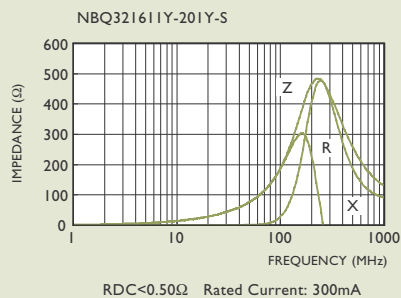
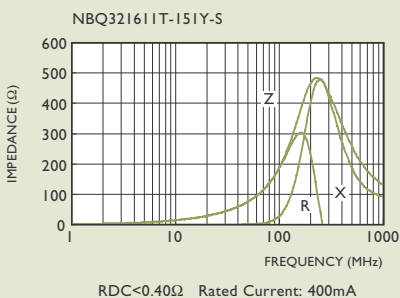
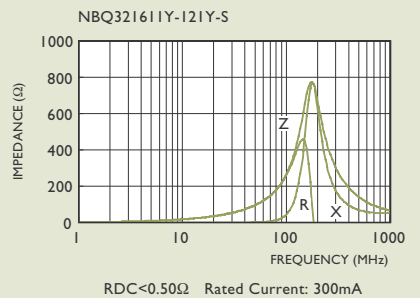
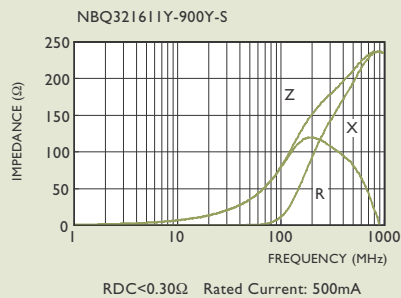
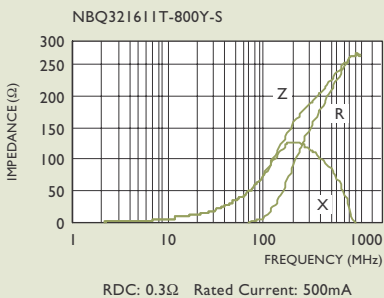
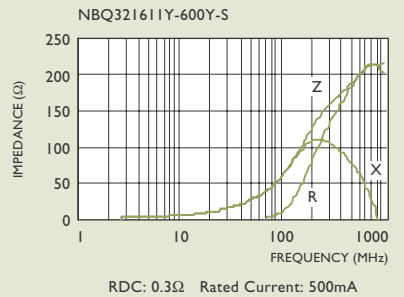
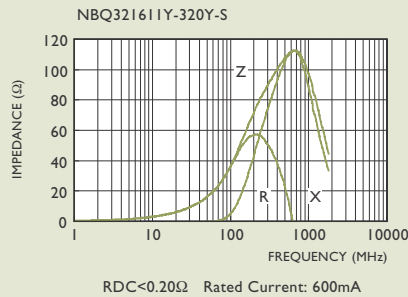
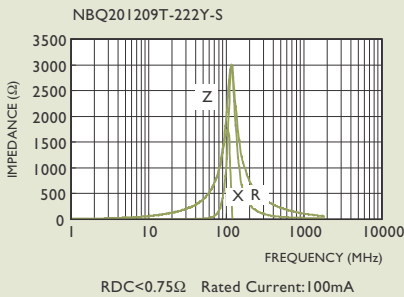
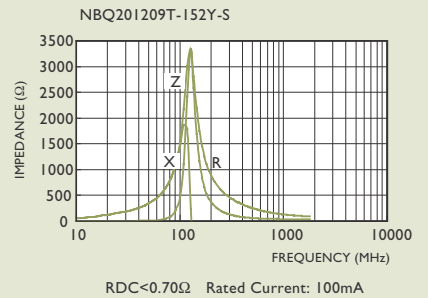
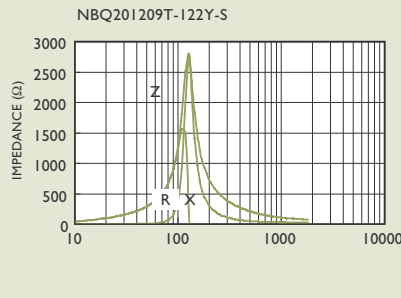
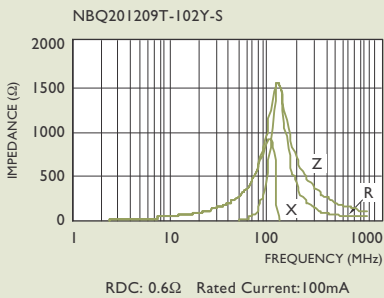
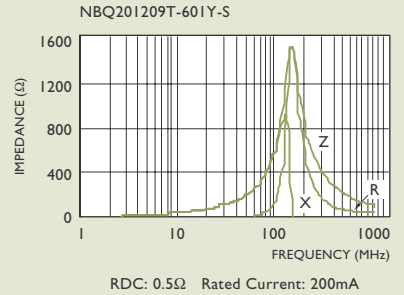
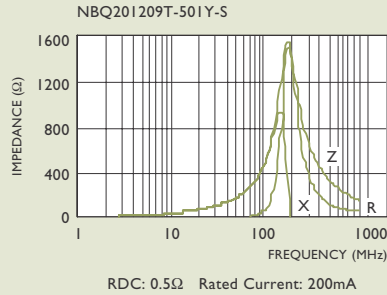
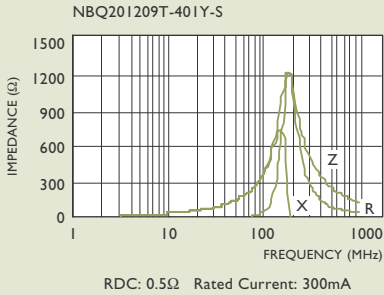






# TYPICAL ELECTRICAL CHARACTERISTICS

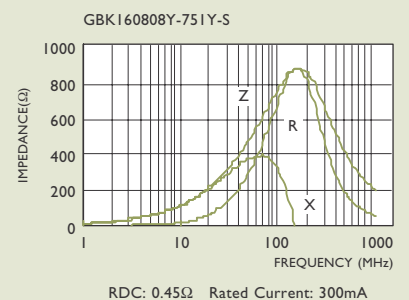
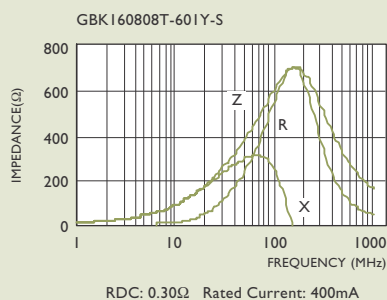
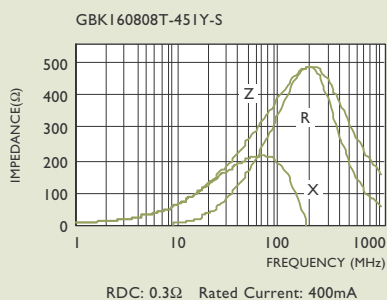
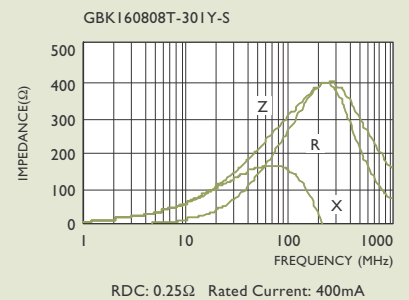
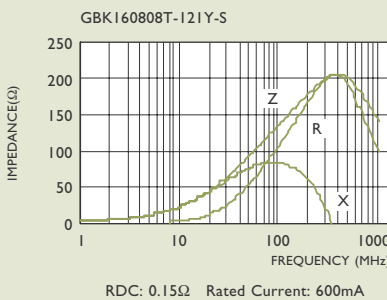
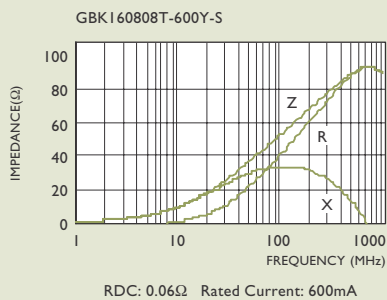
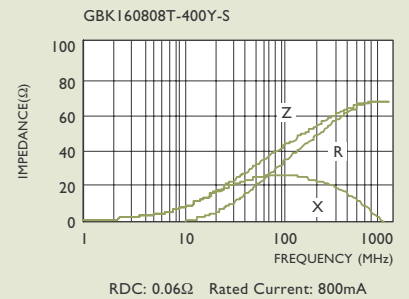
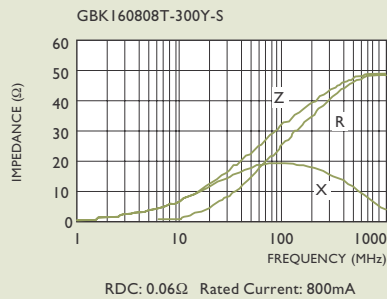
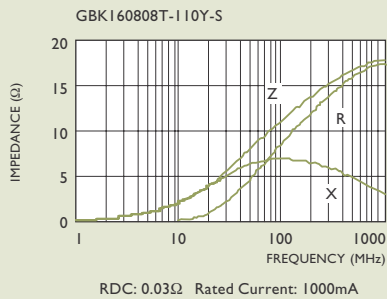
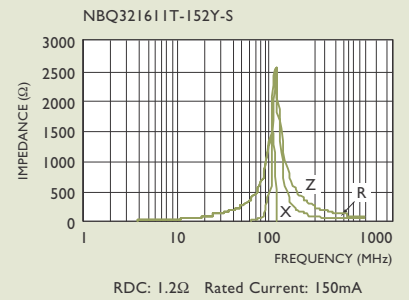
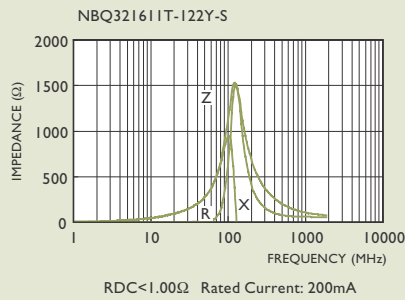
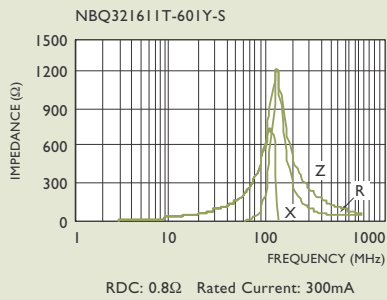
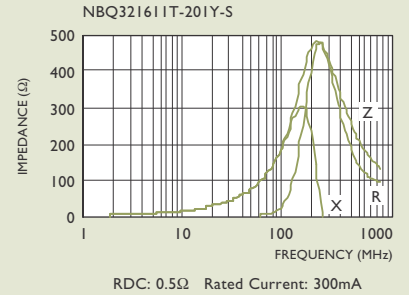
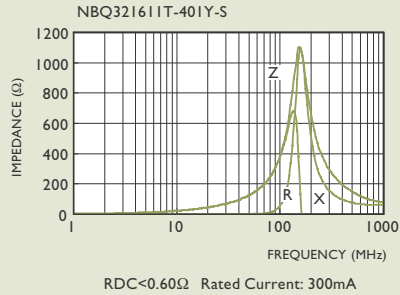
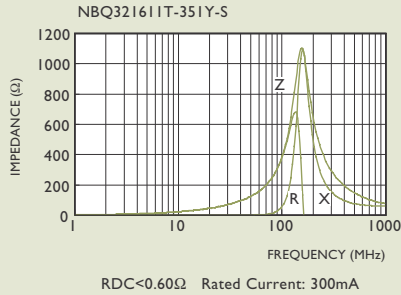
Test Instruments : HP4291A Impedance / Material Analyzer





## TYPICAL ELECTRICAL CHARACTERISTICS

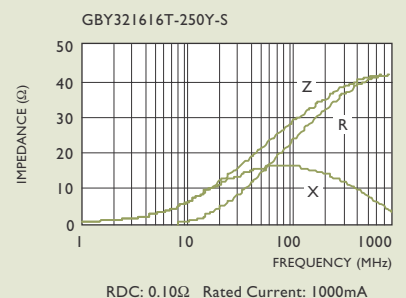
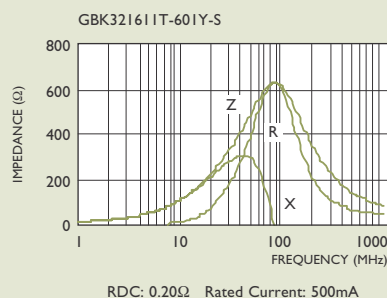
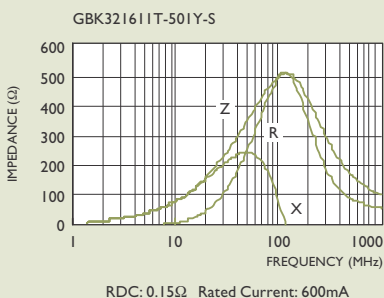
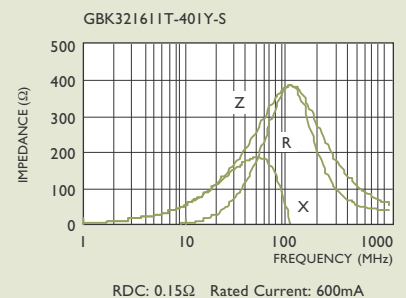
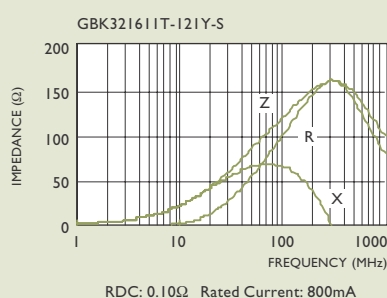
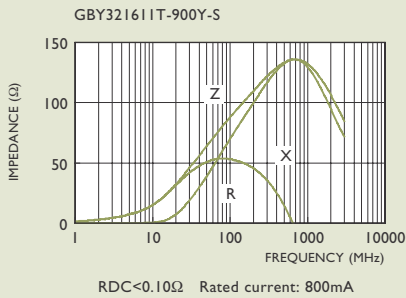
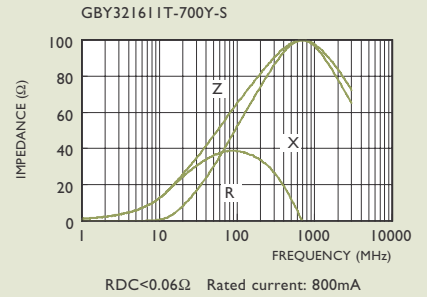
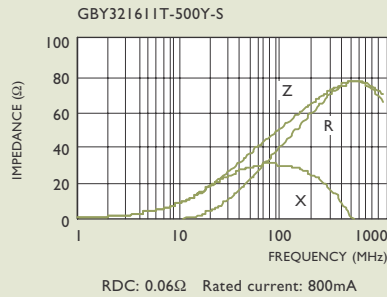
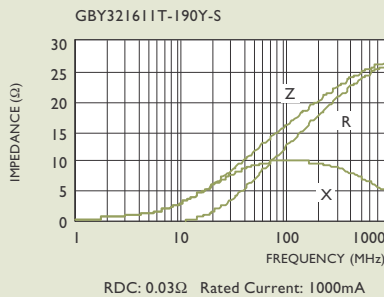
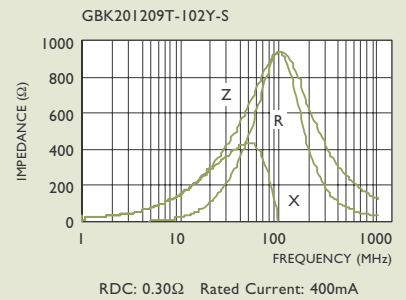
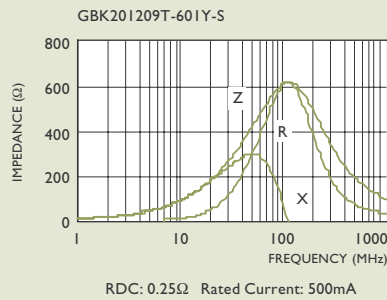
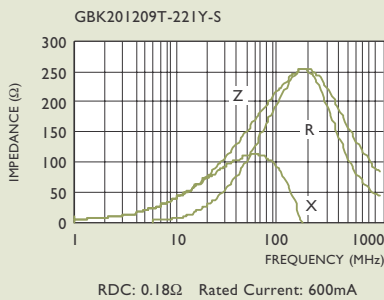
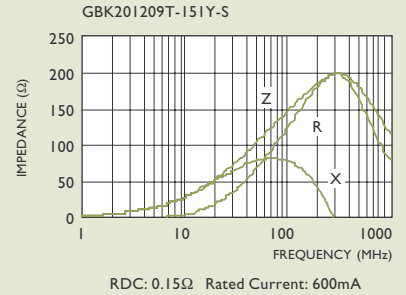
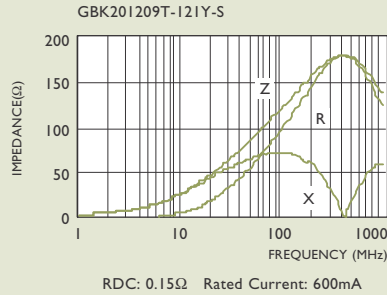
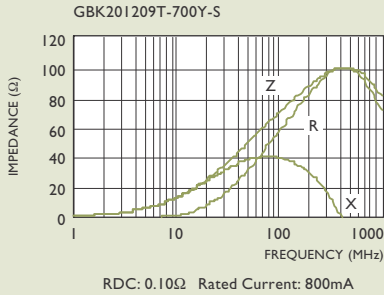
Test Instruments : HP4291A Impedance / Material Analyzer





## TYPICAL ELECTRICAL CHARACTERISTICS

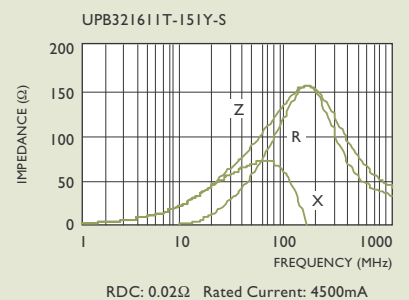
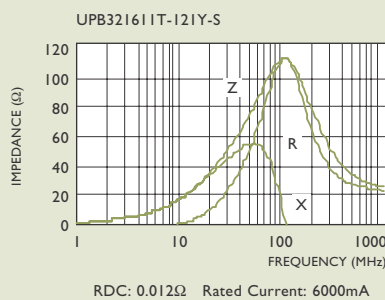
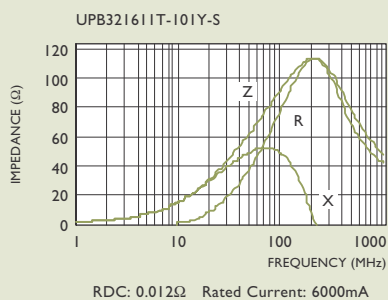
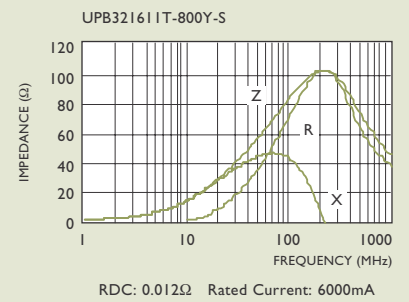
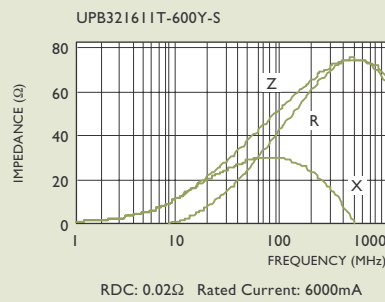
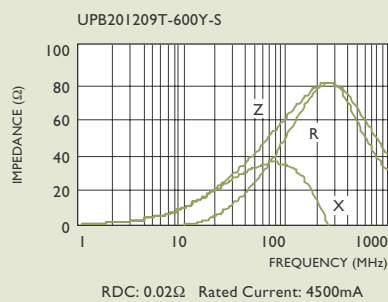
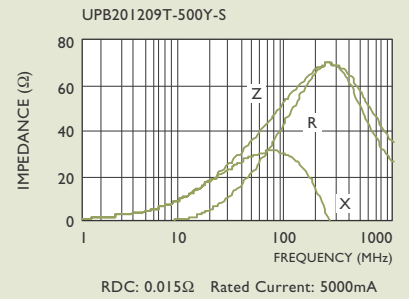
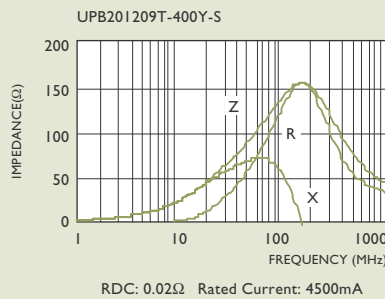
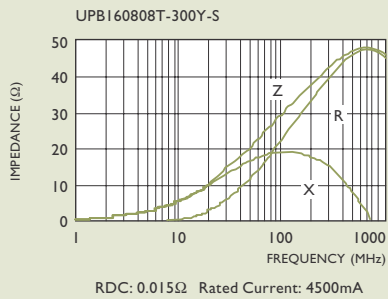
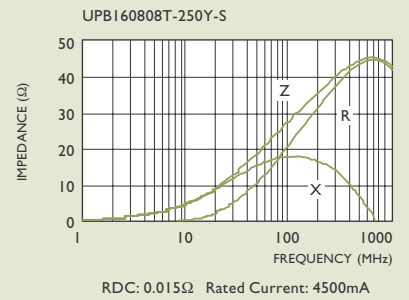
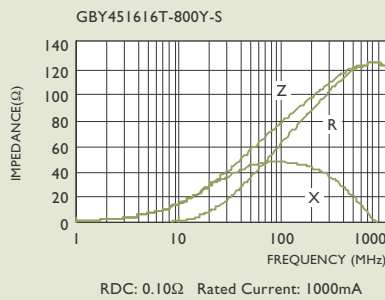
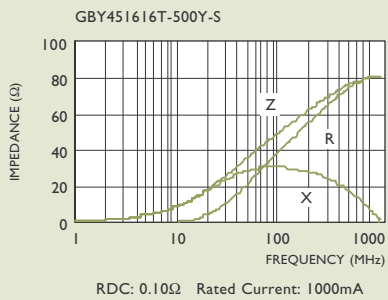
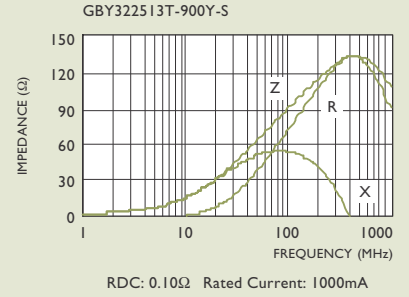
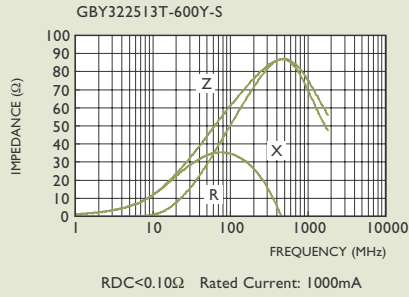
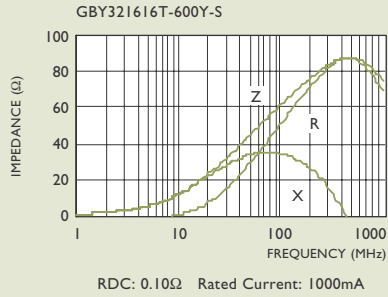
Test Instruments : HP4291A Impedance / Material Analyzer





# TYPICAL ELECTRICAL CHARACTERISTICS

Test Instruments : HP4291A Impedance / Material Analyzer





# Multilayer Ferrite Chip Beads

# BA Series

## [ For Higher Density Circuit Design ]

### APPLICATIONS

- Computers • LCD Monitor • Hard Disk Drives • CD-ROMs • Motherboard

### FEATURES

These multi-layered chip bead arrays are surface mounting EMI components.

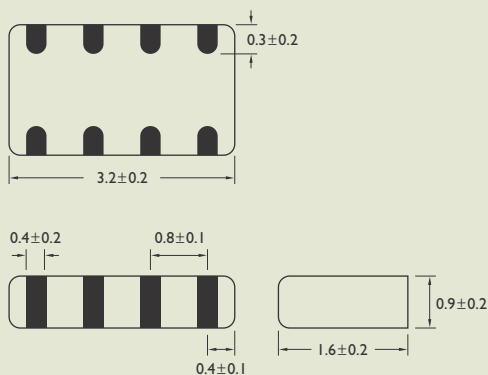
For suppressing noise of four line in one chip.

It suited for higher density circuit design.

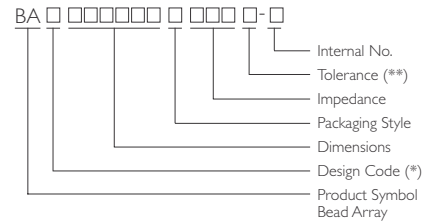
### ELECTRICAL CHARACTERISTICS

PART NO.	IMPEDANCE at 100MHz ( $\Omega \pm 25\%$ )	DC RESISTANCE ( $\Omega$ ) Max.	RATED CURRENT (mA) Max.
BAY321609T-300Y-S	30	0.4	350
BAY321609T-600Y-S	60	0.4	250
BAY321609T-121Y-S	120	0.8	150
BAY321609T-241Y-S	240	0.8	150
BAY321609T-301Y-S	300	0.8	150
BAY321609T-471Y-S	470	1	100
BAY321609T-601Y-S	600	1.5	100
BAY321609T-102Y-S	1000	1.7	50
BAQ321609T-600Y-S	60	0.8	150
BAQ321609T-121Y-S	120	0.8	150
BAQ321609T-221Y-S	220	0.8	150
BAQ321609T-471Y-S	470	1	150
BAQ321609T-601Y-S	600	1.5	100
BAQ321609T-102Y-S	1000	1.8	100

### SHAPES AND DIMENSIONS

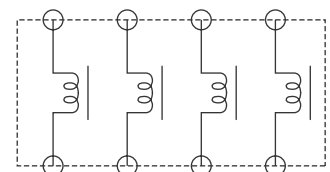


### PRODUCT IDENTIFICATION



\*Y = General Purpose; Q = Narrow Band  
 \*\*Y =  $\pm 25\%$

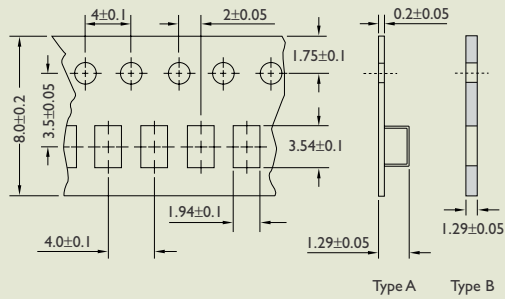
Parts Dimensions : 3.20 x 1.60 x 0.90 mm





## TAPE DIMENSIONS

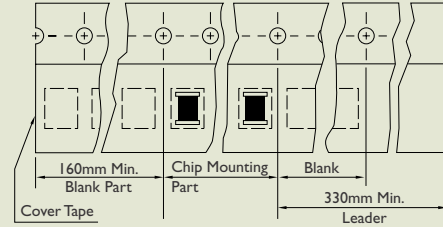
Dimensions : mm



## TAPE MATERIAL

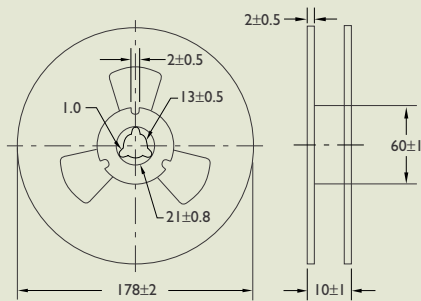
Carrier Tape : Polystyrene for 321609

Cover Type : Polyethyene



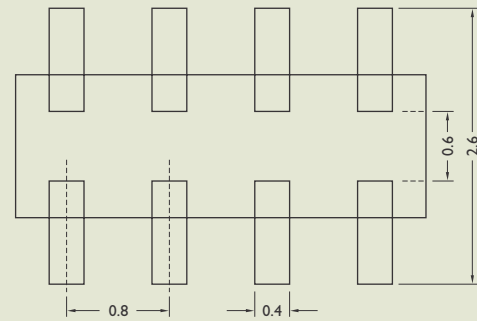
## REEL DIMENSIONS

Dimensions : mm



## RECOMMENDED PATTERN

Dimensions : mm

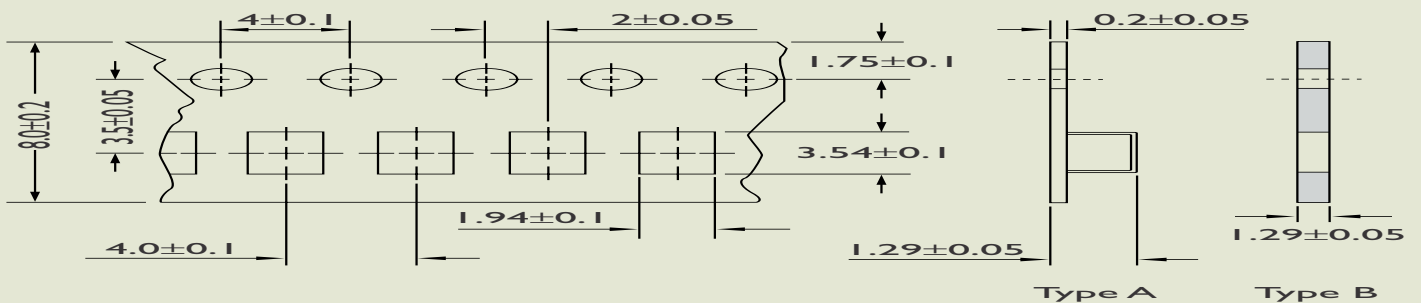


## PACKAGING QUANTITY

TYPE	QUANTITY/REEL
BAY321609	3000
BAQ321609	3000

## TYPICAL ELECTRICAL CHARACTERISTICS

Test Instruments : HP4291A Impedance / Material Analyzer

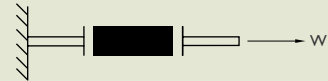
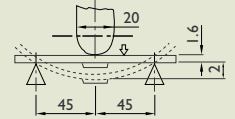




## SB/PB/UP/NB/GB/BA SERIES RELIABILITY TEST

### I-1 MECHANICAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS
I-1-1	Flexure Strength	Appearance : No Damage Z Change : within $\pm 20\%$ RDC : within Specification	Test device shall be soldered on the substrate. Substrate Dimension : 100 x 40 x 1.6mm Deflection : 2.0mm Keeping Time : 30Sec. * For 100505, substrate dimension is 100 x 40 x 0.8mm.
I-1-2	Vibration		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.
I-1-3	Resistance to Soldering Heat	Appearance : No Damage	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : 260 $\pm$ 5°C Immersion Time : 10 $\pm$ 1Sec.
I-1-4	Solderability	The electrodes shall be at least 90% covered with new solder coating.	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : 230 $\pm$ 5°C Immersion Time : 4 $\pm$ 1Sec.
I-1-5	Terminal Strength Test	100505 Series : $\geq$ 0.2kg 160808 Series : $\geq$ 0.5kg 201209 Series : $\geq$ 1.0kg Other Series : $\geq$ 2.0kg	Test device shall be soldered on the substrate.



### I-2 ENVIRONMENTAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS															
I-2-1	Temperature Cycle	Appearance : No Damage Z Change : within $\pm 20\%$ RDC : within Specification	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>-55 <math>\pm</math> 3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25 <math>\pm</math> 2</td> <td>3</td> </tr> <tr> <td>3</td> <td>125 <math>\pm</math> 3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25 <math>\pm</math> 2</td> <td>3</td> </tr> </tbody> </table> Total : 100 Cycles Measured after Exposure in the Room Condition for 24Hrs.	Step	Temperature (°C)	Time (Min.)	1	-55 $\pm$ 3	30	2	25 $\pm$ 2	3	3	125 $\pm$ 3	30	4	25 $\pm$ 2	3
Step	Temperature (°C)	Time (Min.)																
1	-55 $\pm$ 3	30																
2	25 $\pm$ 2	3																
3	125 $\pm$ 3	30																
4	25 $\pm$ 2	3																
I-2-2	Humidity Resistance		Temperature : 40 $\pm$ 2°C Relative Humidity : 90 ~ 95% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-3	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.															
I-2-4	Low Temperature Resistance		Temperature : -55 $\pm$ 3°C Relative Humidity : 0% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															



## Multilayer Ferrite Bead Array - BA Series

Test Instruments : HP4291A Impedance / Material Analyzer

