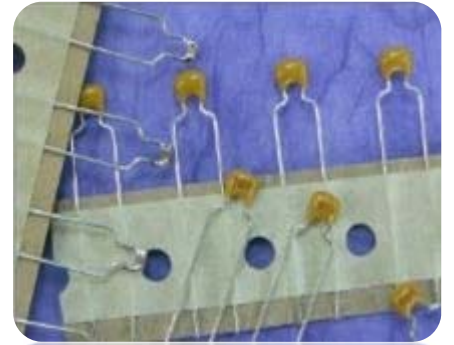
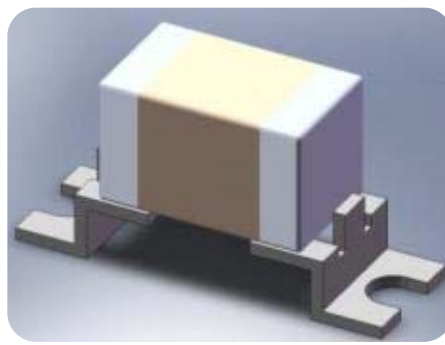




EMI Suppression Filters



EMI



Electro

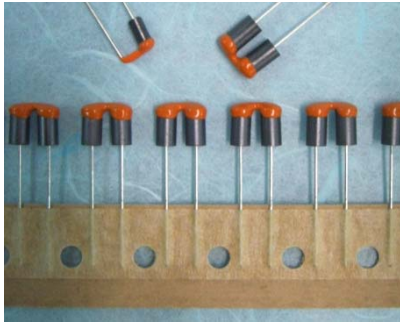
Magnetic

Interference

CONTENTS

	AXIAL BEAD _____	2 ~ 15
	RADIAL BEAD _____	16 ~ 33
	SMD-BEAD _____	34 ~ 37
	AXIAL MLCC _____	38 ~ 47
	RADIAL MLCC _____	48 ~ 59
	SMD-MLCC _____	60 ~ 61
	LC FILTER _____	62 ~ 65
	CHOKE COIL _____	66 ~ 69

EMI SUPPRESSION FILTERS



Features

- ☞ Available in Various configurations to conform to the wiring materials in use characteristics as required.
- ☞ Absorbs noise effectively because of the impedance over 30Ω in high frequency band.
- ☞ Automatic insertion type of taping is available.

Applications

- ☞ Computers and Peripheral equipment, wore processors, facsimiles.
- ☞ Digital controlled equipment and electronic type writer, program controllers.
- ☞ Automotive engine control units, car electronics.
- ☞ TVs, VCRs, electronic music instruments, video games etc.

Specifications

SPEC	Impedance [Ω]	DC Resistance [$m\Omega$]	Insulation (At DC 100V, $M\Omega$)	Allowable DC Current (A Max)
HBR S 2550 PT	50	10	1	3
HBR D 2550 PT	100	10	1	3
HBR S 3550 PT	65	10	1	6
HBR D 3550 PT	130	10	1	6
HBR S 3565 PT	80	10	1	6
HBR D 3565 PT	160	10	1	6
HBR S 3580 PT	103	10	1	6
HBR D 3580 PT	206	10	1	6
HBR S 3510 PT	120	10	1	6
HBR D 3510 PT	240	10	1	6
HBR D 3512 PT	296	10	1	6
HBR D 3514 PT	340	10	1	6

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Product Code

HB

R

S

3550

P

T

Radial Bead

HB

Bead Filter

SMD Bead

R

Radial Leaded Type

Axial MLCC

S

S: Single Bead

D: Double Bead

Radial MLCC

3550

Physical Dimensions

Code	Size O.D X L	Code	Size O.D X L
2070	2.0X7.0	3565	3.5X6.5
2550	2.5X5.0	3580	3.5X8.0
3550	3.5X5.0	3510	3.5X10.0
3557	3.5X5.7	3512	3.5X12.0
3560	3.5X6.0	3514	3.5X14.0

[O.D : Out Diameter, L : Length]

Lead Frame MLC

P

5mm Pitch

LC-FILTER

T

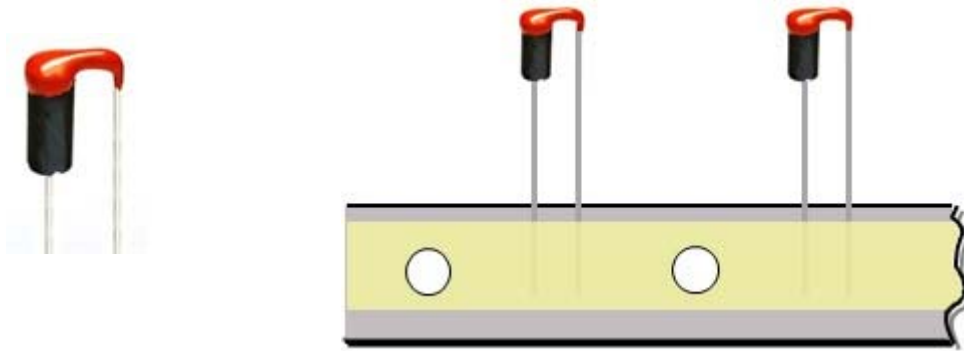
T : Taping Type Flat Pack (Radial)

B : Bulk Packing

Choke Coil

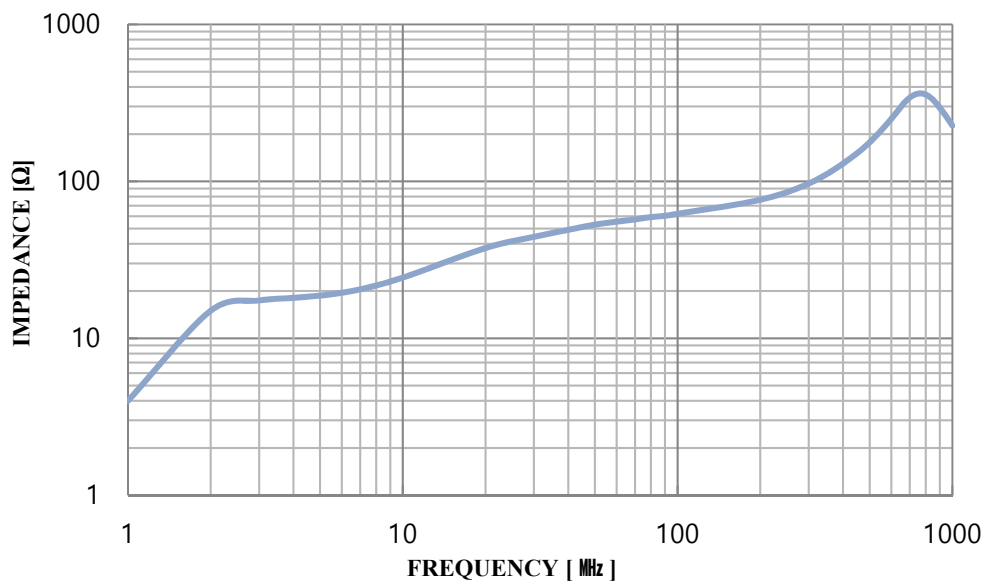
EMI SUPPRESSION FILTERS

HBR S 2550 P T



• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	50 Ω Min [Typical 65]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩ Min
• Allowable DC Current (A Max.)	3
• Test Frequency	100 MHz
• Quantity	3,000 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

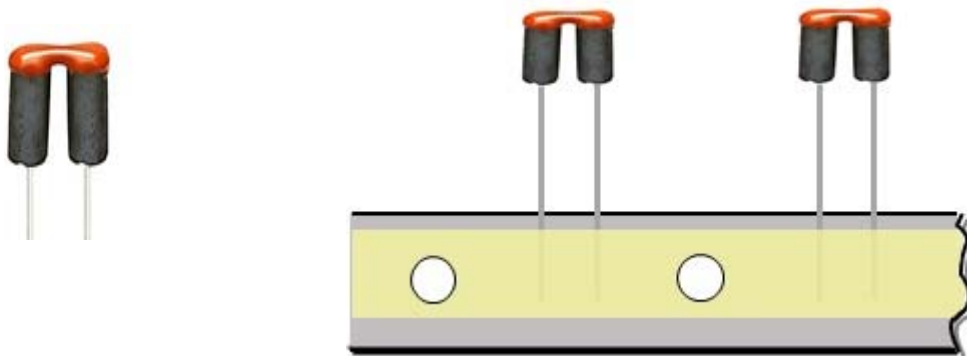
Radial MLCC

Lead Frame MLC

LC-FILTER

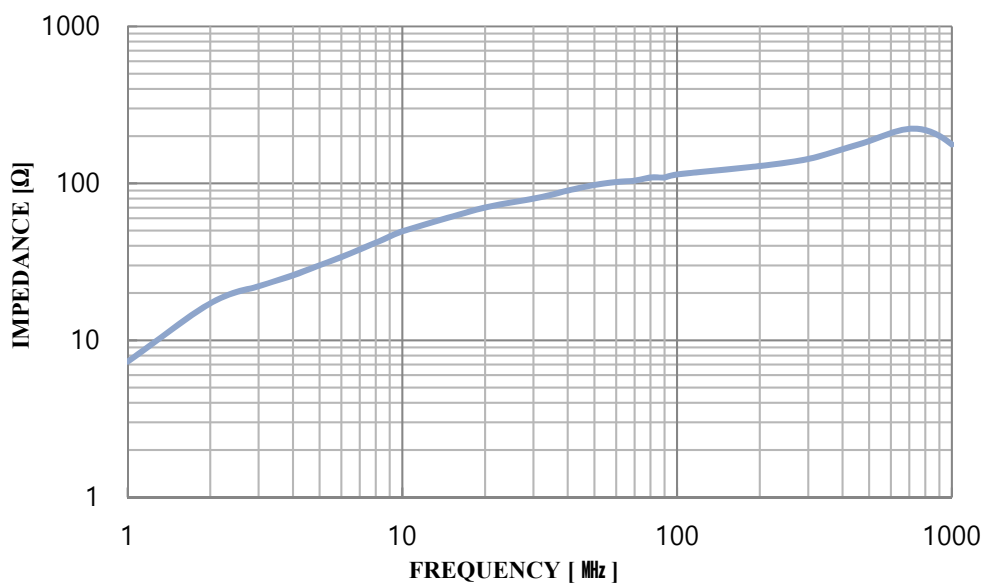
Choke Coil

HBR D 2550 P T



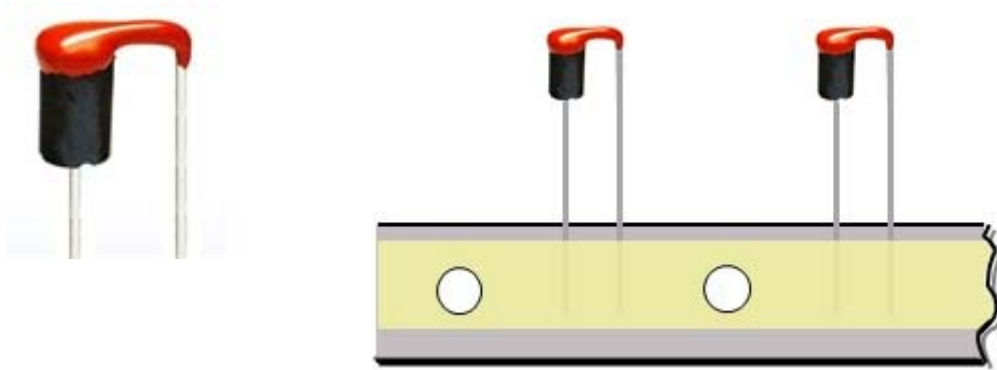
• Operating Temperature	-25 ~ +85°C
• Impedance [Z] Ω (100MHz)	100 Ω Min [Typical 130]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	3
• Test Frequency	100 MHz
• Quantity	2,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



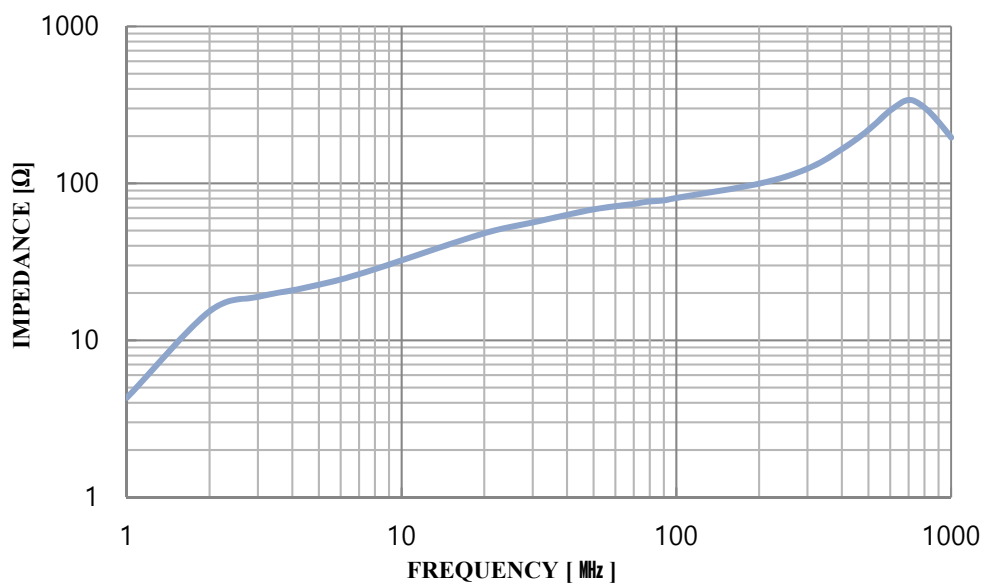
EMI SUPPRESSION FILTERS

HBR S 3550 P T



• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	65 Ω Min [Typical 70]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩ Min
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	2,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

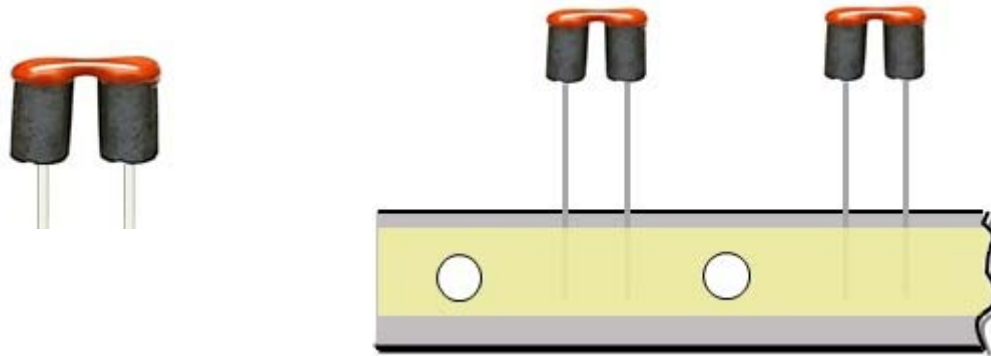
Radial MLCC

Lead Frame MLC

LC-FILTER

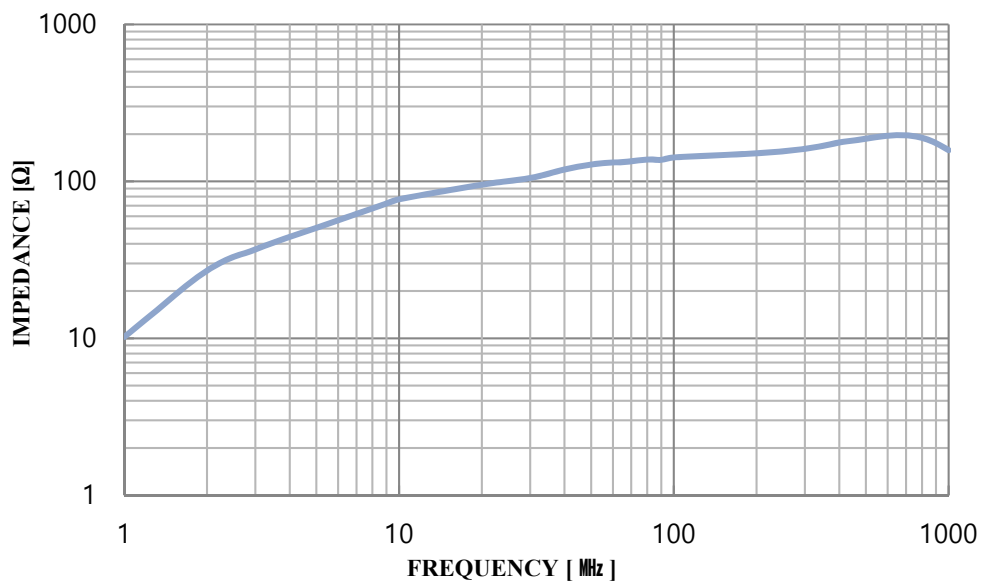
Choke Coil

HBR D 3550 P T



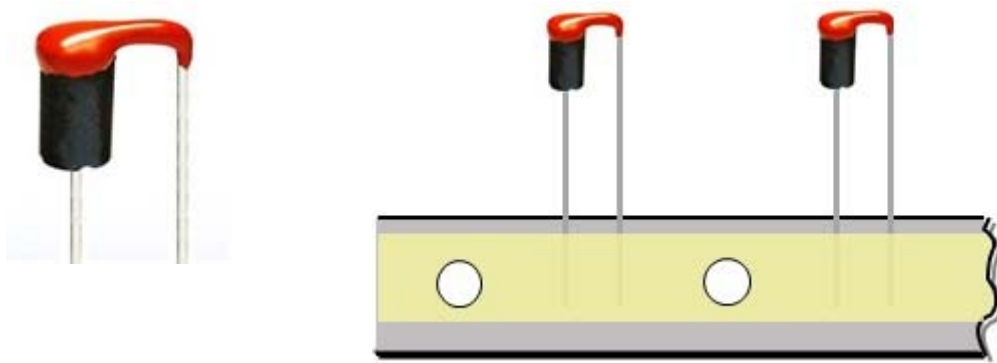
• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	130 Ω Min [Typical 140]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	1,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



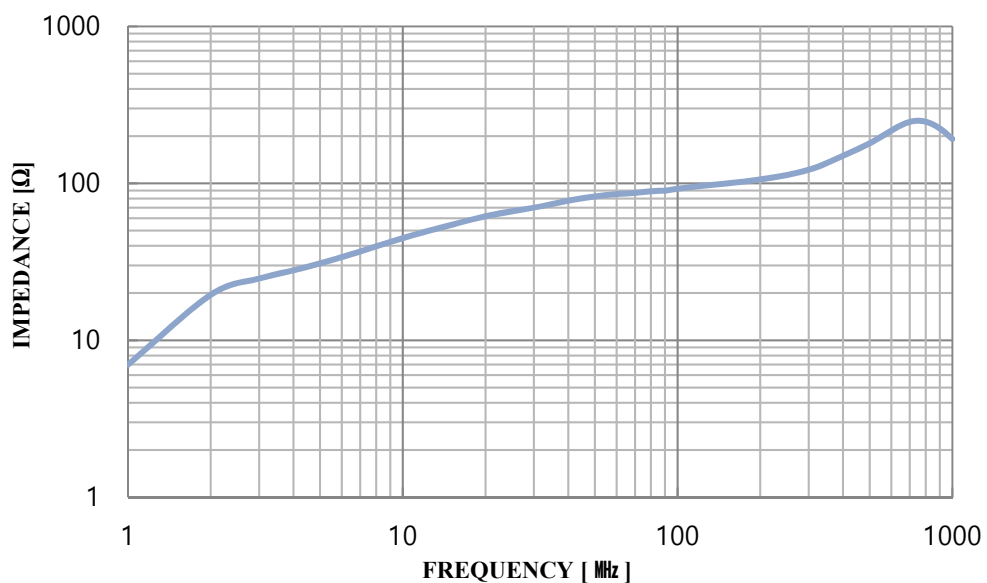
EMI SUPPRESSION FILTERS

HBR S 3565 P T



• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	80 Ω Min [Typical 100]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩ Min
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	2,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

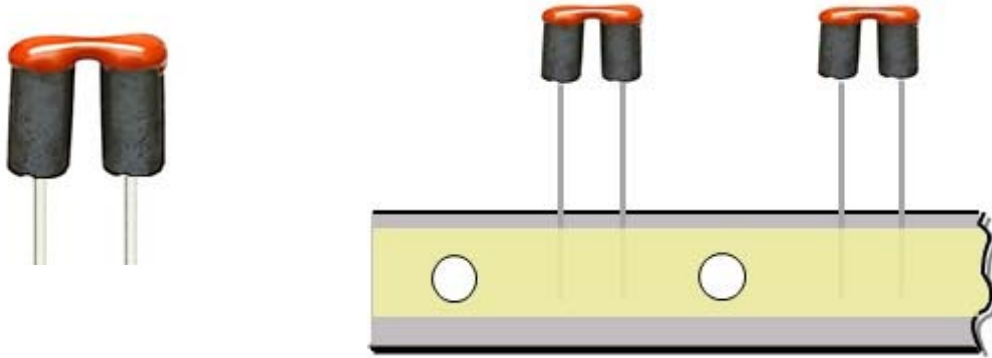
Radial MLCC

Lead Frame MLC

LC-FILTER

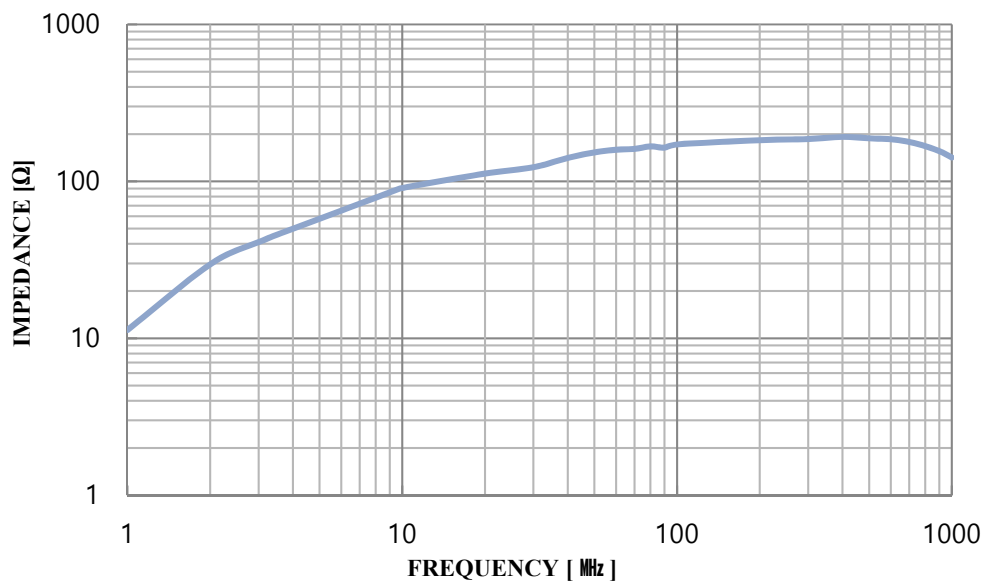
Choke Coil

HBR D 3565 P T



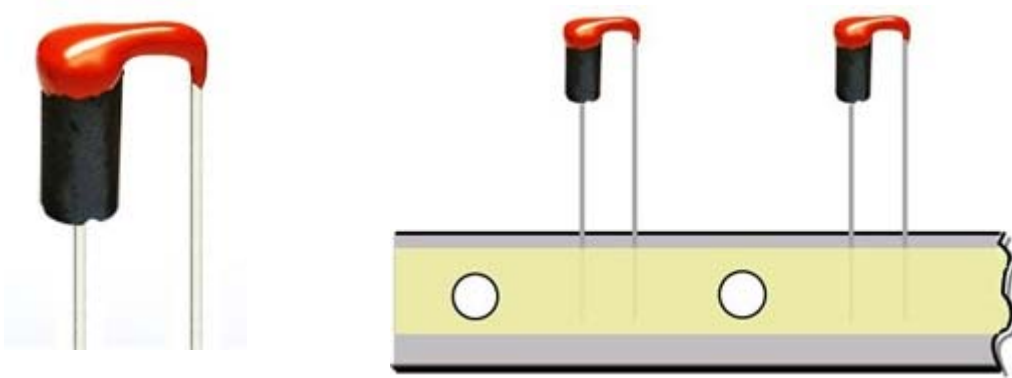
• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	160 Ω Min [Typical 200]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	1,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



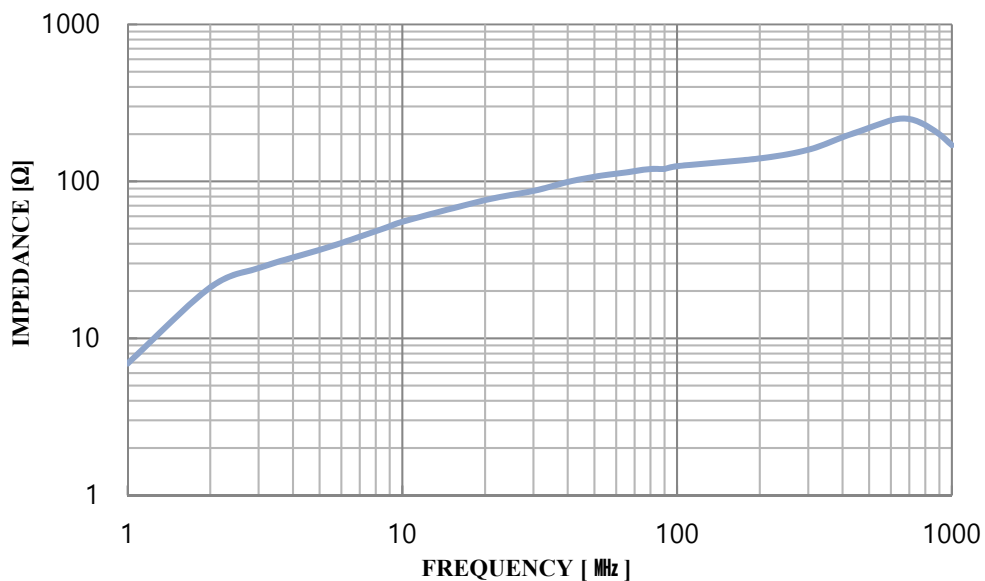
EMI SUPPRESSION FILTERS

HBR S 3580 P T



• Operating Temperature	-25 ~ +85°C
• Impedance [Z] Ω (100MHz)	103 Ω Min [Typical 120]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩ Min
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	2,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

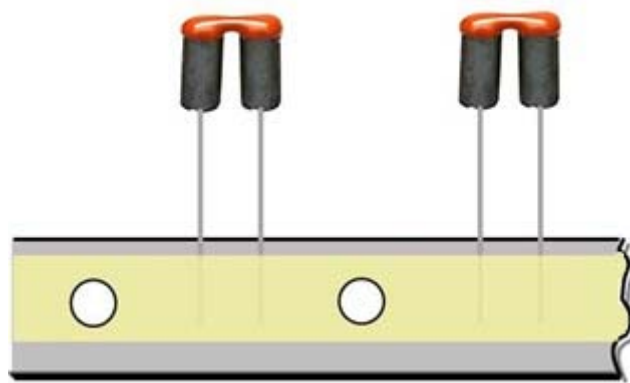
Radial MLCC

Lead Frame MLC

LC-FILTER

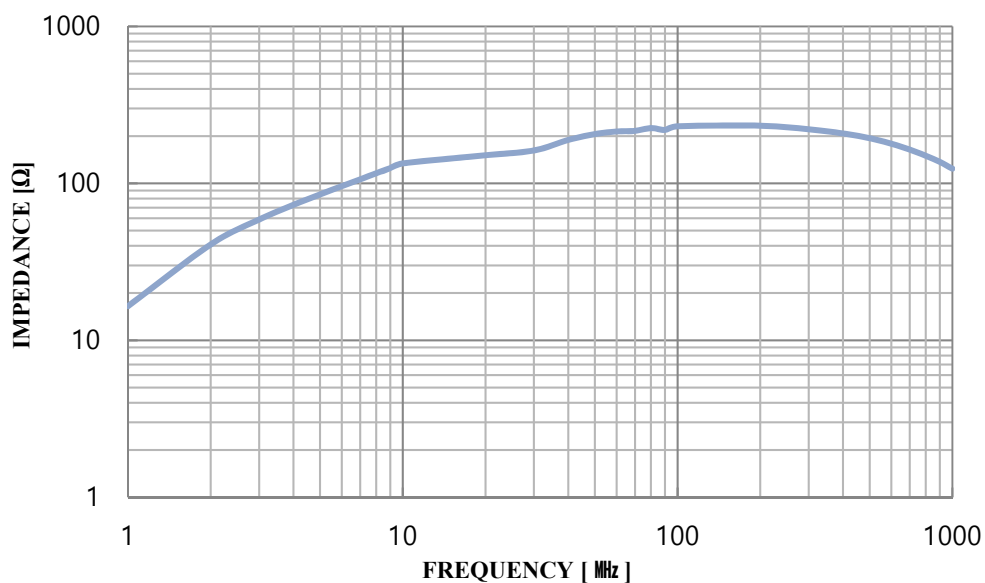
Choke Coil

HBR D 3580 P T



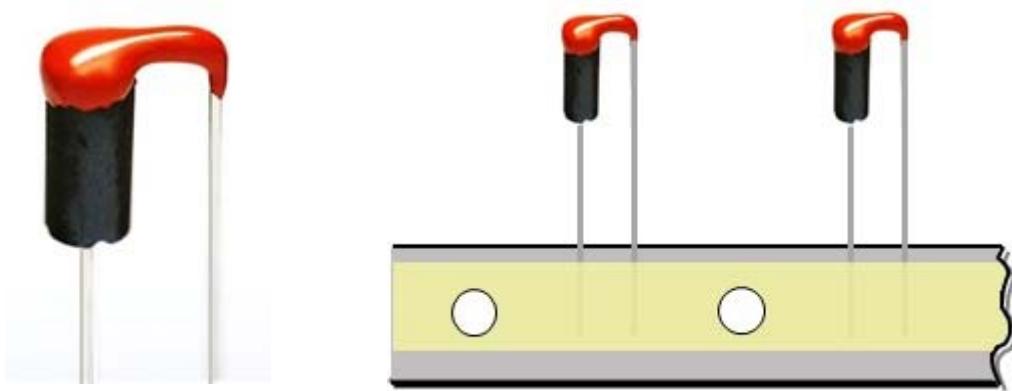
• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	206 Ω Min [Typical 240]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	1,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



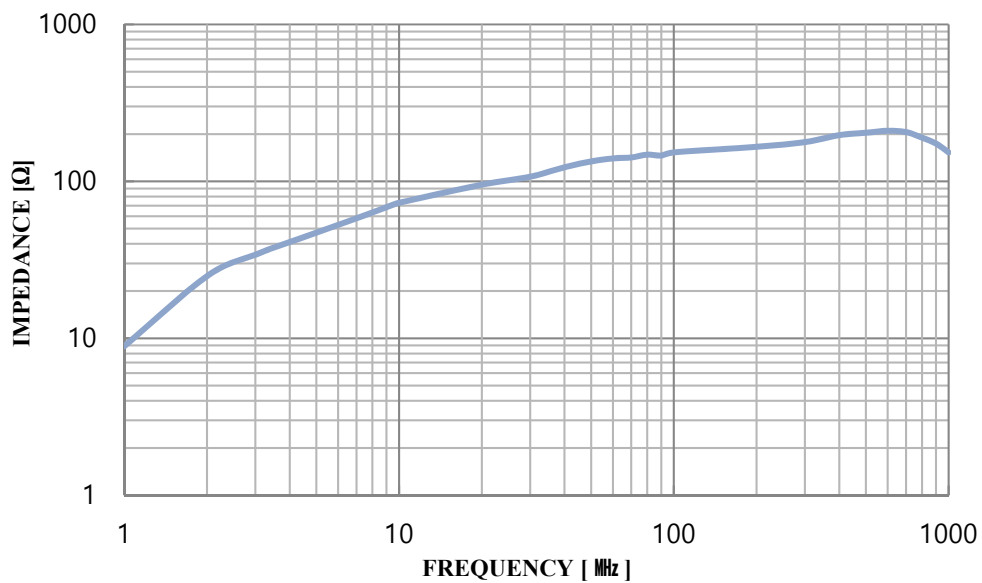
EMI SUPPRESSION FILTERS

HBR S 3510 P T



• Operating Temperature	-25 ~ +85 °C
• Impedance [Z] Ω (100MHz)	120 Ω Min [Typical 150]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩ Min
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	2,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

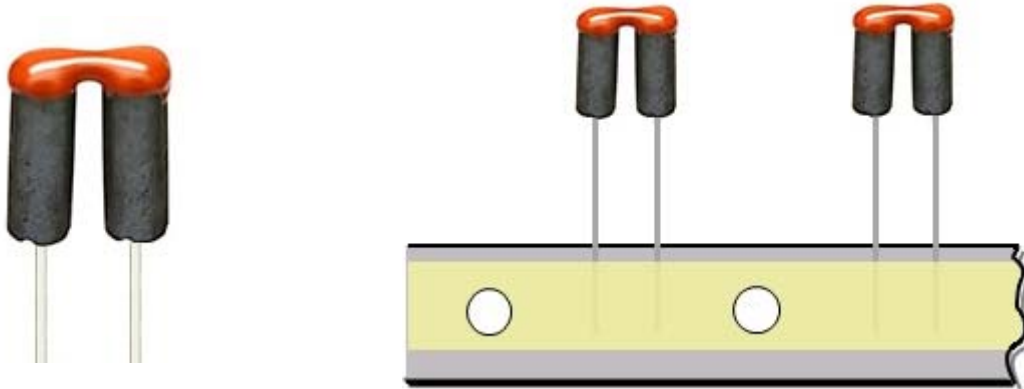
Radial MLCC

Lead Frame MLC

LC-FILTER

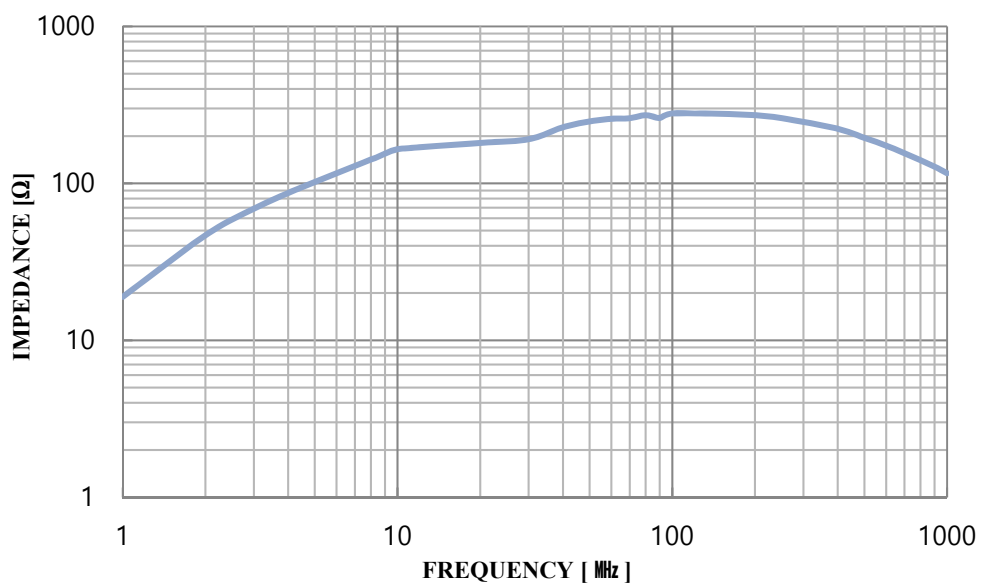
Choke Coil

HBR D 3510 P T



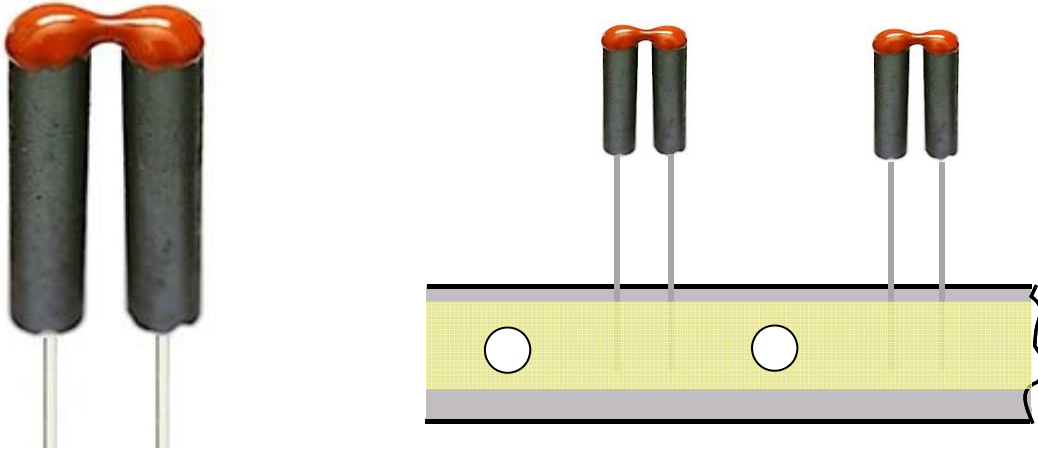
• Operating Temperature	-25 ~ +85°C
• Impedance [Z] Ω (100MHz)	240 Ω Min [Typical 300]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	1,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



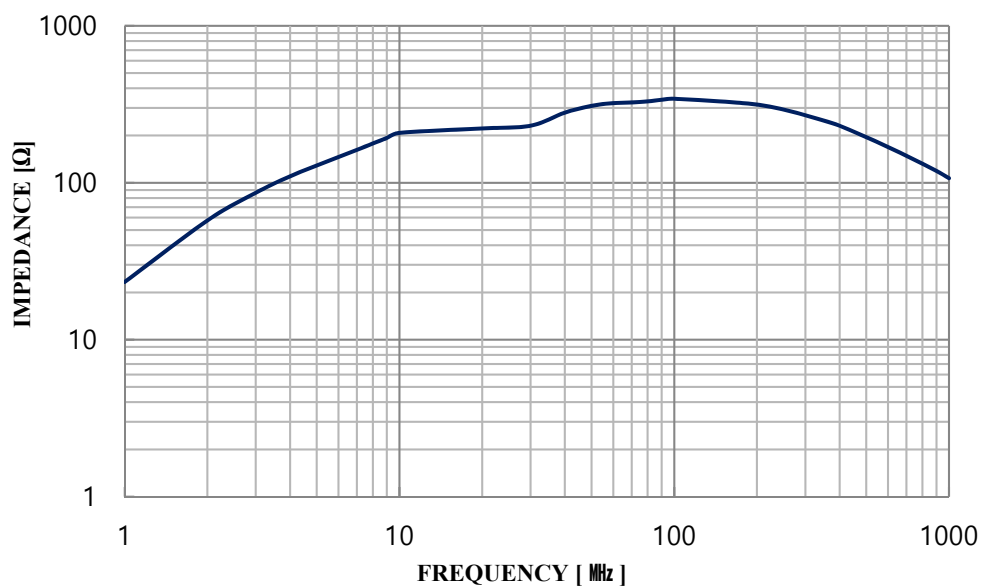
EMI SUPPRESSION FILTERS

HBR D 3512 P T



• Operating Temperature	-25 ~ +85℃
• Impedance [Z] Ω (100MHz)	296 Ω Min [Typical 360]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	1,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

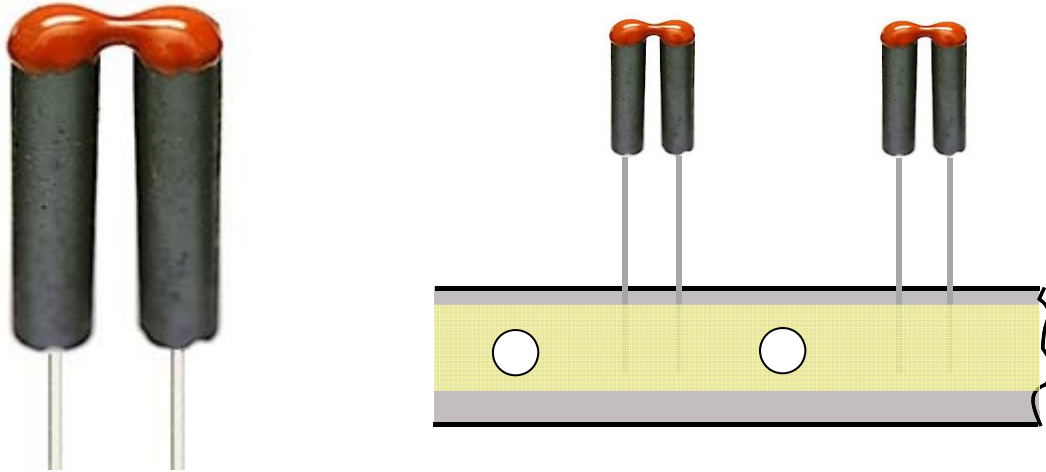
Radial MLCC

Lead Frame MLC

LC-FILTER

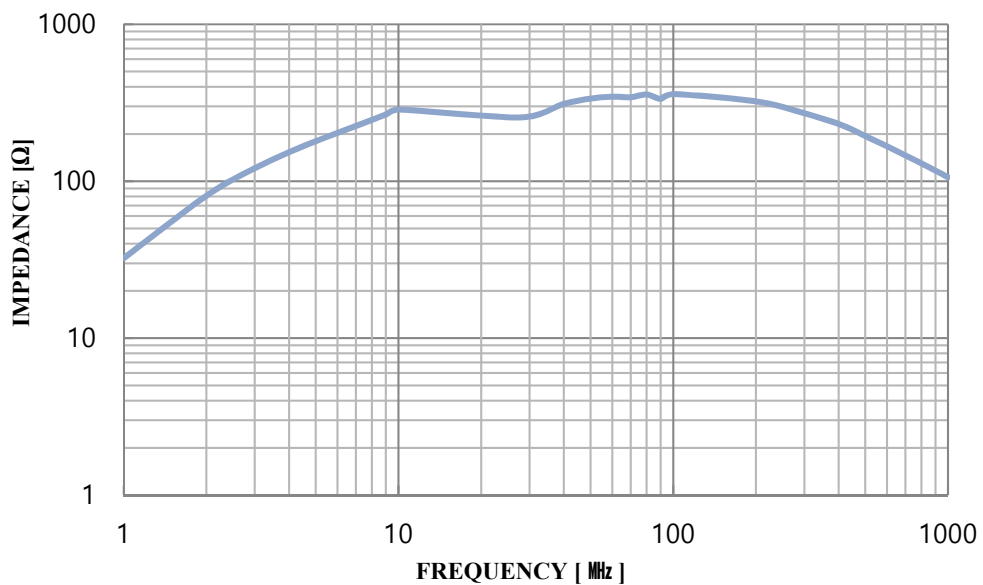
Choke Coil

HBR D 3514 P T



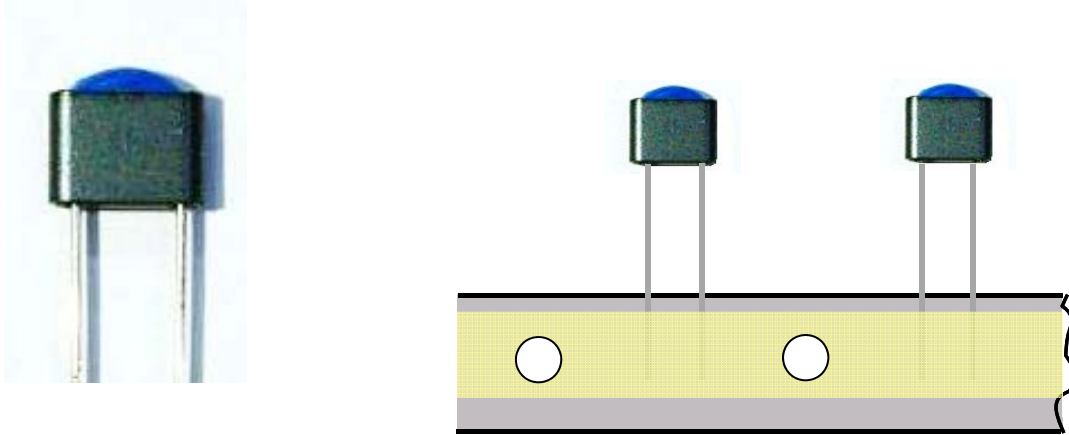
• Operating Temperature	-25 ~ +85°C
• Impedance [Z] Ω (100MHz)	340 Ω Min [Typical 420]
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	100 MHz
• Quantity	1,500 Pieces / Box

|Z|-FREQUENCY CHARACTERISTICS

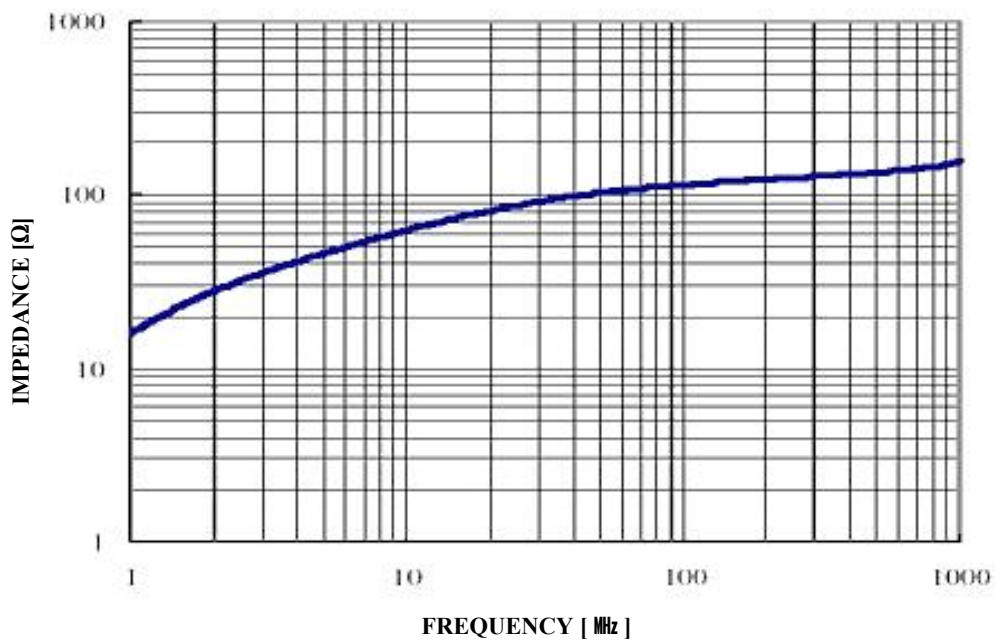


EMI SUPPRESSION FILTERS

HBR D 7555 P T



• Operating Temperature	-25 ~ +85°C
• Impedance [Z] Ω	5 to 15 MHz 30Ω min 15 to 300MHz 50Ω min
• DC Resistance [mΩ]	10
• Insulation Resistance (At DC 100V 60 Sec)	1 MΩMin
• Allowable DC Current (A Max.)	6
• Test Frequency	15 MHz
• Quantity	2,000 Pieces / Box



Axial Bead

Radial Bead

SMD Bead

Axial MLCC

Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

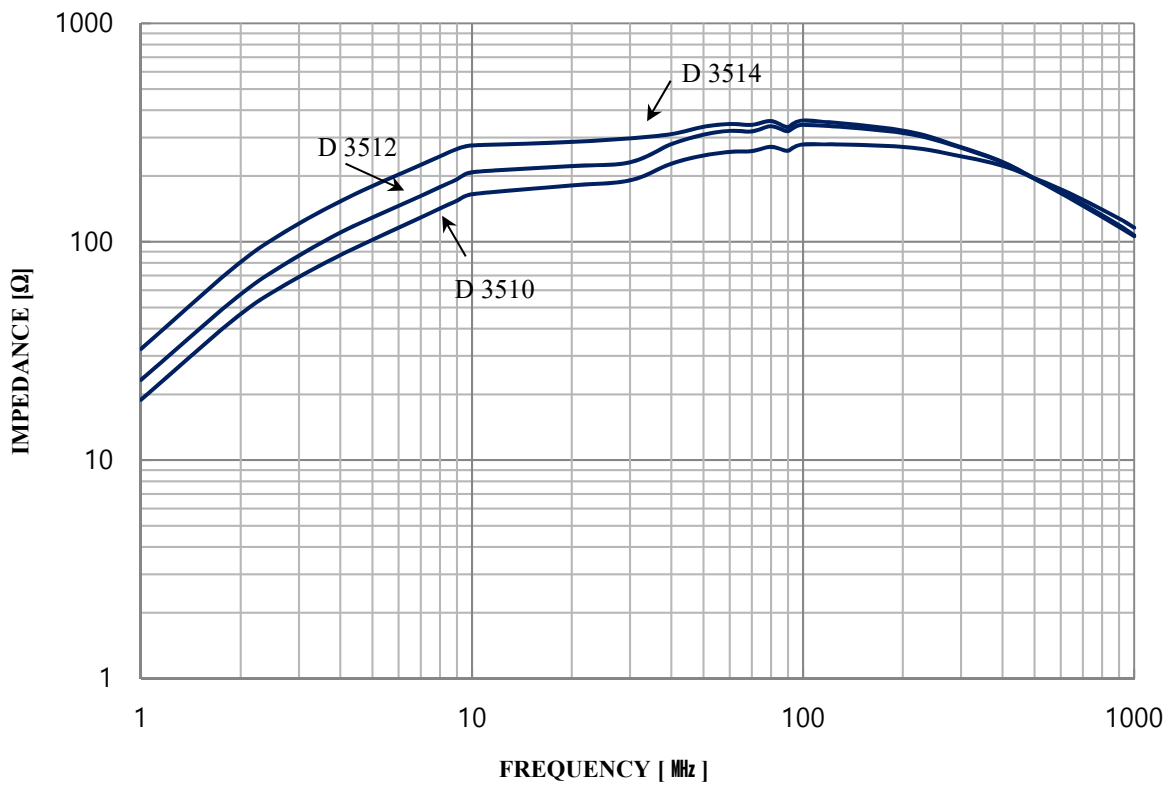
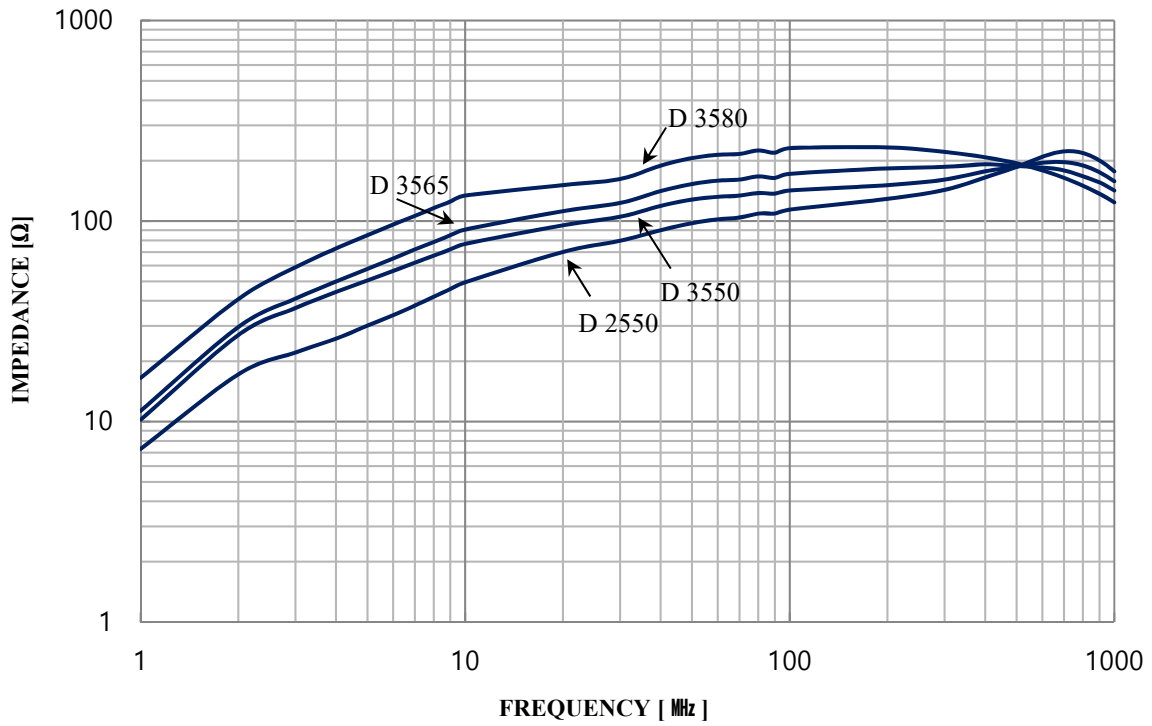
Radial MLCC

Lead Frame MLC

LC-FILTER

Choke Coil

Z Characteristics



EMI SUPPRESSION FILTERS

Reliability Test

☞ Operating temperature range

-25°C ~ +85°C.

☞ Storage temperature range

-40°C ~ +85°C

☞ Resistance to soldering heat test

Filter shall be immersed into solder which is at $260 \pm 5^\circ\text{C}$ for 5.0 ± 0.3 seconds to the depth $1.8 \pm 0.8\text{mm}$ from the end of the filter and measured within 4 to 24 hours. Than the filter no visible damaged.

☞ Humidity test

It shall be subjected to an atmosphere of $40 \pm 2^\circ\text{C}$ and 90 to 95% RH for 500 -0, +24 hours and then measured within 4 hours.

Than the filter in no visible damaged shall not exceed $\pm 15\%$

☞ High temperature test

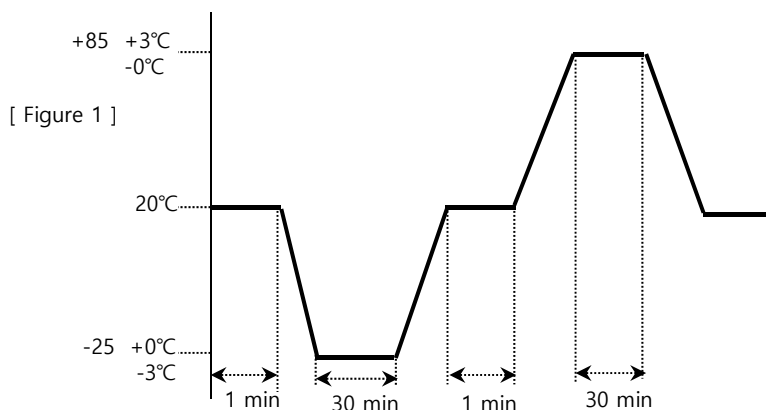
It shall be subjected to an atmosphere of $85 \pm 3^\circ\text{C}$ for 500 -0, +24 hours and then measured within 4 to 24 hours.

Than the filter is no visible damaged not exceed $\pm 15\%$

☞ Thermal shock test

It shall be tested in accordance with [figure 1] as follows for 10 cycle and then measured within 4 to 24 hours.

Than the filter is no visible damaged not exceed $\pm 15\%$



EMI SUPPRESSION FILTERS

Axial Bead

Radial Bead

SMD Bead

Axial MLCC

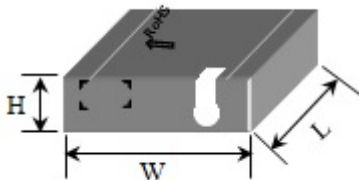
Radial MLCC

Lead Frame MLC

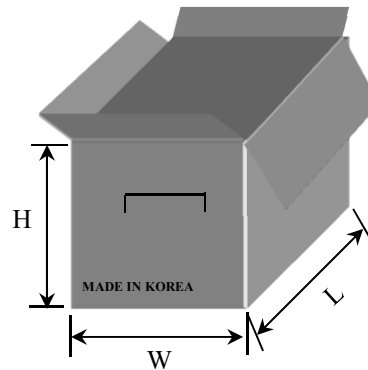
LC-FILTER

Choke Coil

Packing



Inner Box



Outer Box

Division	SIZE		
	L	W	H
Inner	326	251	45
Outer	350	275	310

SPEC	Inner Box [PCS]	Outer Box [PCS]
HBR S 2550 PT	3,000	18,000
HBR D 2550 PT	3,000	18,000
HBR S 3550 PT	2,500	15,000
HBR D 3550 PT	1,500	9,000
HBR S 3565 PT	2,500	15,000
HBR D 3565 PT	1,500	9,000
HBR S 3580 PT	2,500	15,000
HBR D 3580 PT	1,500	9,000
HBR S 3510 PT	2,500	15,000
HBR D 3510 PT	1,500	9,000
HBR D 3512 PT	1,500	7,500
HBR D 3514 PT	1,500	7,500
HBR D 7555 PT	2,000	12,000