

Surface Mount EMI Filters

Ferrite Chip Beads



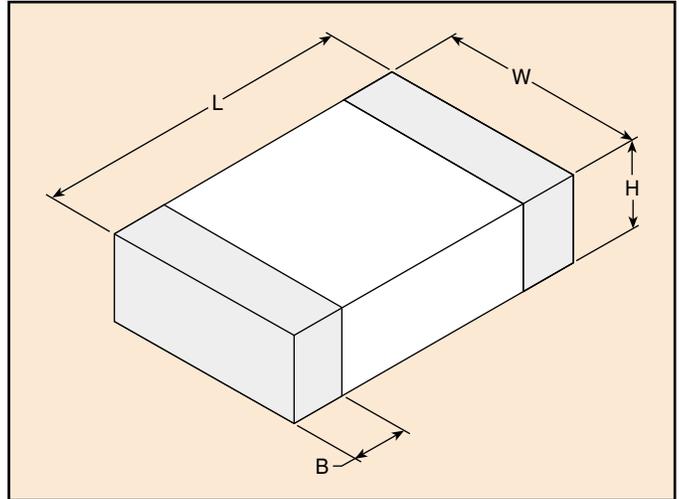
Ferrite Chip Beads

Features

- Multilayer design
- Available in standard EIA/EIAJ chip sizes (0402/1005, 0603/1608, 0805/2012, 1206/3216, etc.)
- Excellent solderability is achieved from a nickel barrier with a solder overplate
- Provides EMI attenuation without grounding
- Broad range of impedance values available (standard line has values of 5 Ω to 2,000 Ω at 100 MHz)
- Closed magnetic circuit
- Parts are suitable for flow or re-flow soldering
- Available in tape and reel for easy placement
- Operational temperature range of -55°C to +125°C

Applications

- Telecommunications equipment (cellular phones, cordless phones, faxes and ISDN's)
- Digital audio/visual equipment (TV, HDTV, VTR, DVD, CATV tuners and etc.)
- GPS and car navigation equipment
- High speed clocks
- Consumer electronics
- Signal lines
- LAN and WAN hardware



Part Numbering System

Example: **FCB-0603-B102P7**

| | | | | | | | |
|--------------------------|---|------------------------------|---|--|---|--|---|
| FCB | - | 0603 | - | B | 102 | P | 7 |
| Series | | Part Size | | Material Characteristic | Impedance Value | Tolerance Code | Packaging |
| Ferrite Chip Beads | | EIA Size (Length x Width) | | Determined by the desired electrical characteristic | 10(2) (2) = the # of zeros that will follow the first two digits Example: 10(2) = 10 followed by 2 zeros = 1,000 Ohms | Standard Value is P P = $\pm 25\%$ M = $\pm 20\%$ K = $\pm 10\%$ J = $\pm 5\%$ | 7 = 7 inch reel 3 = 13 inch reel B = Bulk |

Land Patterns and Soldering Temperature Profiles

- See page 33.

Packaging Specifications and Storage Requirements

- See page 34.

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Physical Characteristics

| Size | | Physical Dimensions | | | |
|------|------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| EIA | EIAJ | Length (L) | Width (W) | Height (H) | Termination Band (B) |
| 0402 | 1005 | 0.039 ± 0.004 (1.00 ± 0.10) | 0.020 ± 0.004 (0.50 ± 0.10) | 0.020 ± 0.004 (0.50 ± 0.10) | 0.010 ± .004 (0.25 ± 0.10) |
| 0603 | 1608 | 0.063 ± 0.006 (1.60 ± 0.15) | 0.031 ± 0.006 (0.80 ± 0.15) | 0.031 ± 0.006 (0.80 ± 0.15) | 0.014 ± 0.006 (0.36 ± 0.15) |
| 0805 | 2012 | 0.079 ± 0.008 (2.00 ± 0.20) | 0.049 ± 0.008 (1.25 ± 0.20) | 0.035 ± 0.008 (0.90 ± 0.20) | 0.020 ± 0.010 (0.51 ± 0.25) |
| 1206 | 3216 | 0.126 ± 0.008 (3.20 ± 0.20) | 0.063 ± 0.008 (1.60 ± 0.20) | 0.043 ± 0.008 (1.10 ± 0.20) | 0.020 ± 0.010 (0.51 ± 0.25) |
| 1806 | 4516 | 0.177 ± 0.010 (4.50 ± 0.25) | 0.063 ± 0.008 (1.60 ± 0.20) | 0.055 ± 0.010 (1.40 ± 0.25) | 0.020 ± 0.010 (0.51 ± 0.25) |
| 1812 | 4532 | 0.177 ± 0.010 (4.50 ± 0.25) | 0.126 ± 0.010 (3.20 ± 0.25) | 0.055 ± 0.010 (1.40 ± 0.25) | 0.020 ± 0.010 (0.51 ± 0.25) |

Dimensions in inches (mm)

Electrical Characteristics

Standard FCB-0402 Sizes

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|---------------------------|---------------|--------------------|
| FCB-0402-B100P* | 10 | 0.05 | 500 |
| FCB-0402-B150P* | 15 | 0.07 | 300 |
| FCB-0402-B700P* | 70 | 0.40 | 200 |
| FCB-0402-B121P* | 120 | 0.50 | 200 |
| FCB-0402-B221P* | 220 | 0.70 | 100 |
| FCB-0402-B601P* | 600 | 1.10 | 50 |
| FCB-0402-B102P* | 1,000 | 1.50 | 50 |

Notes: * Please add packaging code at the end of part.
To change Tolerance Code, replace P with other tolerance values.

FCB-0603 High Speed Beads

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|---------------------------|---------------|--------------------|
| FCB-0603-H180P* | 18 | 0.10 | 400 |
| FCB-0603-H121P* | 120 | 0.40 | 200 |
| FCB-0603-H141P* | 140 | 0.30 | 200 |
| FCB-0603-H421P* | 420 | 0.50 | 200 |
| FCB-0603-H601P* | 600 | 0.65 | 150 |
| FCB-0603-H721P* | 720 | 0.70 | 150 |
| FCB-0603-H102P* | 1,000 | 0.60 | 50 |

Notes: * Please add packaging code at the end of part.
To change Tolerance Code, replace P with other tolerance values.

Standard FCB-0603 Sizes

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|---------------------------|---------------|--------------------|
| FCB-0603-B300P* | 30 | 0.10 | 400 |
| FCB-0603-B400P* | 40 | 0.10 | 400 |
| FCB-0603-B600P* | 60 | 0.20 | 300 |
| FCB-0603-B750P* | 75 | 0.20 | 300 |
| FCB-0603-B800P* | 80 | 0.20 | 300 |
| FCB-0603-B900P* | 90 | 0.20 | 300 |
| FCB-0603-B101P* | 100 | 0.30 | 250 |
| FCB-0603-B121P* | 120 | 0.30 | 250 |
| FCB-0603-B141P* | 140 | 0.30 | 250 |
| FCB-0603-B151P* | 150 | 0.30 | 250 |
| FCB-0603-B181P* | 180 | 0.30 | 250 |
| FCB-0603-B221P* | 220 | 0.35 | 230 |
| FCB-0603-B301P* | 300 | 0.35 | 230 |
| FCB-0603-B421P* | 420 | 0.40 | 210 |
| FCB-0603-B601P* | 600 | 0.45 | 210 |
| FCB-0603-B102P* | 1,000 | 0.60 | 190 |

Notes: * Please add packaging code at the end of part.
To change Tolerance Code, replace P with other tolerance values.



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Electrical Characteristics *continued*

Standard FCB-0805 Sizes

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|----------------------------------|----------------------|--------------------|
| FCB-0805-A050P* | 5 | 0.07 | 800 |
| FCB-0805-A070P* | 7 | | |
| FCB-0805-A100P* | 10 | | |
| FCB-0805-A110P* | 11 | | |
| FCB-0805-A300P* | 30 | 0.10 | 800 |
| FCB-0805-A400P* | 40 | | |
| FCB-0805-A500P* | 50 | | |
| FCB-0805-A600P* | 60 | | |
| FCB-0805-A750P* | 75 | | |
| FCB-0805-A800P* | 80 | | |
| FCB-0805-B900P* | 90 | 0.15 | 400 |
| FCB-0805-B101P* | 100 | | |
| FCB-0805-B121P* | 120 | | |
| FCB-0805-B151P* | 150 | | |
| FCB-0805-B181P* | 180 | | |
| FCB-0805-B201P* | 200 | | |
| FCB-0805-B301P* | 300 | 0.30 | 200 |
| FCB-0805-B401P* | 400 | | |
| FCB-0805-B421P* | 420 | | |
| FCB-0805-B601P* | 600 | | |
| FCB-0805-B751P* | 750 | 0.40 | 200 |
| FCB-0805-B102P* | 1,000 | | |
| FCB-0805-B152P* | 1,500 | 0.55 | 200 |
| FCB-0805-B202P* | 2,000 | 0.70 | 200 |
| FCB-0805-E202P* | 2,000 | 0.30 | 100 |

FCB-0805 High Speed Beads

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|----------------------------------|----------------------|--------------------|
| FCB-0805-H180P* | 18 | 0.10 | 600 |
| FCB-0805-H201P* | 200 | 0.40 | |
| FCB-0805-H601P* | 600 | 0.40 | 200 |
| FCB-0805-H751P* | 750 | 0.70 | |
| FCB-0805-H102P* | 1,000 | 0.75 | 100 |

Notes: * Please add packaging code at the end of part.
To change Tolerance Code, replace P with other tolerance values.
Consult factory for other impedance values of the 0805 footprint that are available from Spectrum Control.

Standard FCB-1206 Sizes

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|----------------------------------|----------------------|--------------------|
| FCB-1206-A190P* | 19 | | |
| FCB-1206-A260P* | 26 | | |
| FCB-1206-A300P* | 30 | 0.10 | 600 |
| FCB-1206-A310P* | 31 | | |
| FCB-1206-A500P* | 50 | | |
| FCB-1206-A600P* | 60 | | |
| FCB-1206-A700P* | 70 | | |
| FCB-1206-A800P* | 80 | | |
| FCB-1206-A900P* | 90 | 0.20 | 400 |
| FCB-1206-A101P* | 100 | | |
| FCB-1206-A121P* | 120 | | |
| FCB-1206-A201P* | 200 | 0.30 | |
| FCB-1206-A301P* | 300 | 0.40 | 300 |
| FCB-1206-A601P* | 600 | 0.50 | 200 |
| FCB-1206-B102P* | 1,000 | 0.70 | 150 |
| FCB-1206-B152P* | 1,500 @ 50 MHz | 0.90 | |
| FCB-1206-B202P* | 2,000 @ 30 MHz | 0.60 | 100 |

FCB-1206 High Speed Beads

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|----------------------------------|----------------------|--------------------|
| FCB-1206-H300P* | 30 | 0.10 | 600 |
| FCB-1206-H181P* | 180 | 0.30 | 300 |
| FCB-1206-H601P* | 600 | 0.30 | 200 |

Notes: * Please add packaging code at the end of part.
To change Tolerance Code, replace P with other tolerance values.
Consult factory for other impedance values of the 1206 footprint that are available from Spectrum Control.

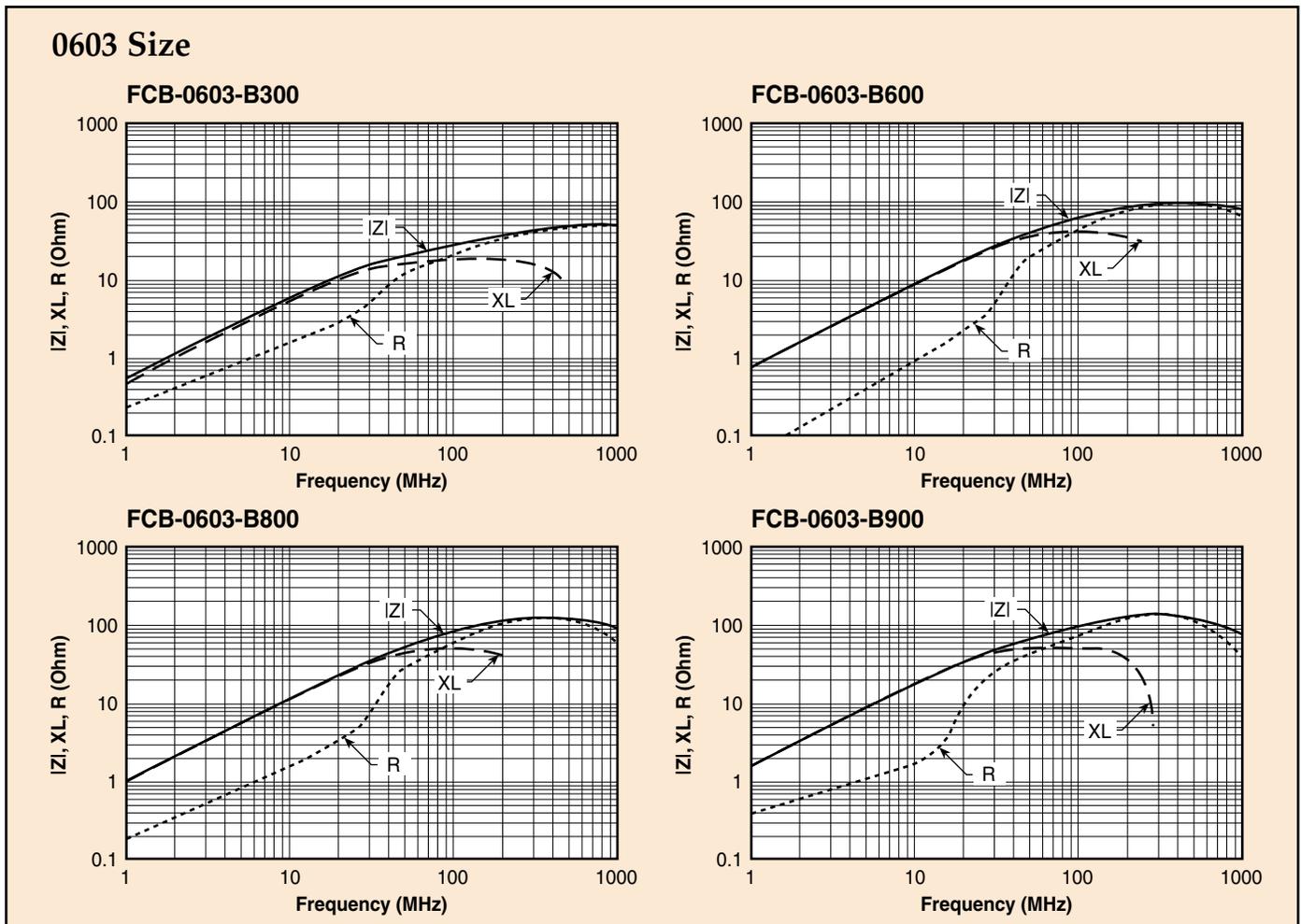
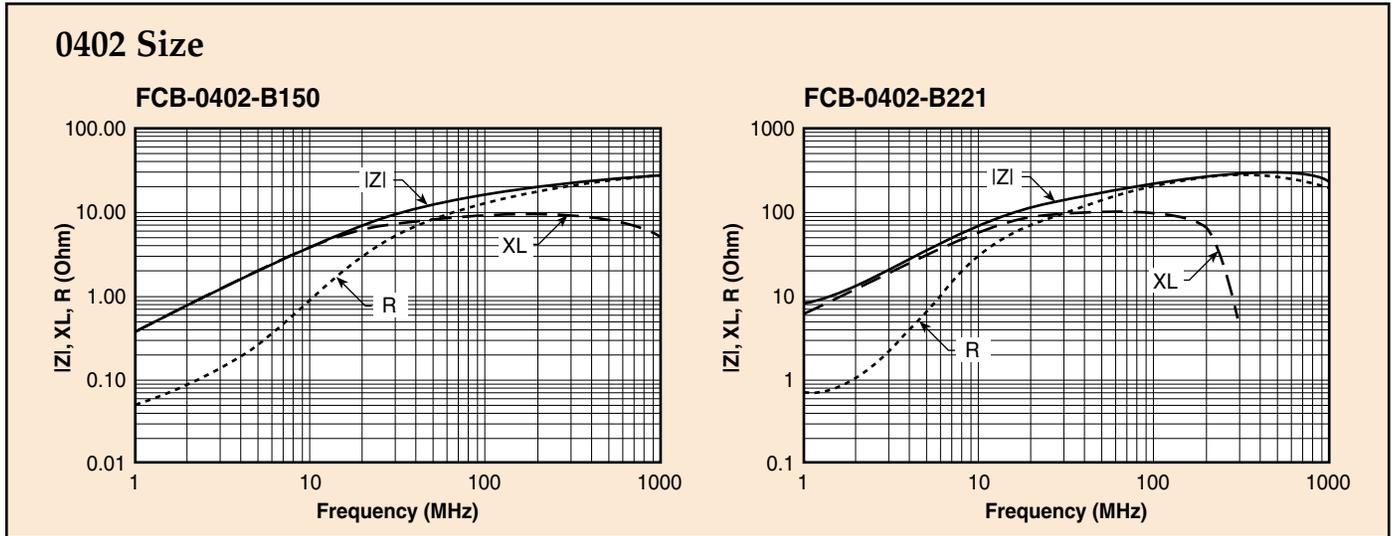
Standard FCB-1806 and FCB-1812 Sizes

| Part Number | Impedance Ω at 100 MHz | Max. DCR Ω | Max. Current mA |
|-----------------|----------------------------------|----------------------|--------------------|
| FCB-1806-A800P* | 80 | 0.30 | 300 |
| FCB-1806-A101P* | 100 | 0.30 | 200 |
| FCB-1812-B121P* | 120 | 0.30 | 300 |

Notes: * Please add packaging code at the end of part.
To change Tolerance Code, replace P with other tolerance values.
Consult factory for other impedance values of the 1806 and 1812 footprint that are available from Spectrum Control.

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Typical Impedance Characteristics (Curves not listed are available upon request or at our website.)

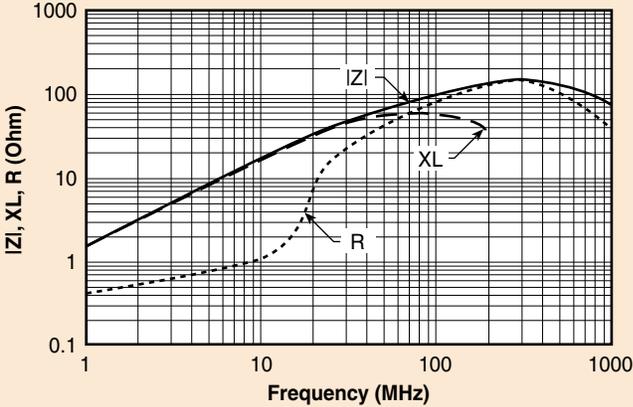


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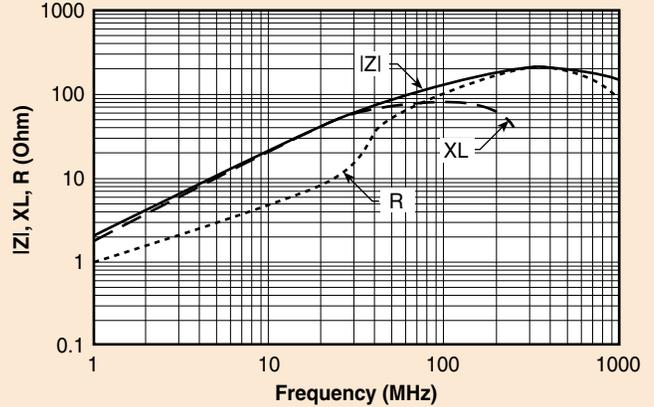
Typical Impedance Characteristics (Curves not listed are available upon request or at our website.)

0603 Size *continued*

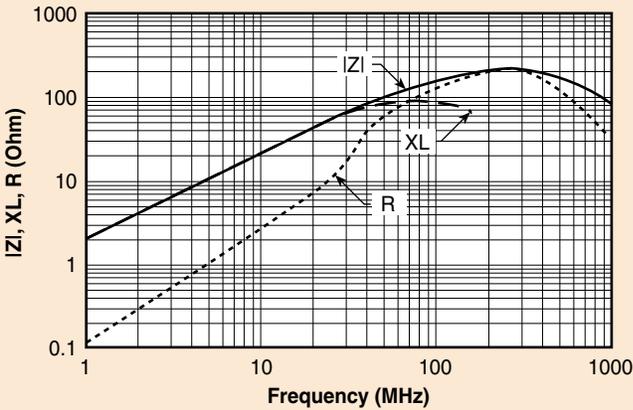
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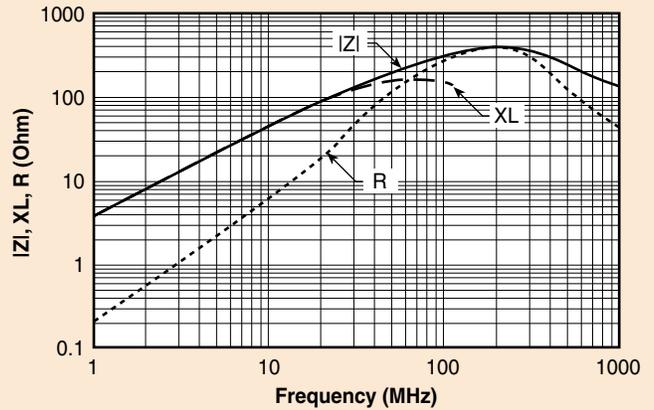
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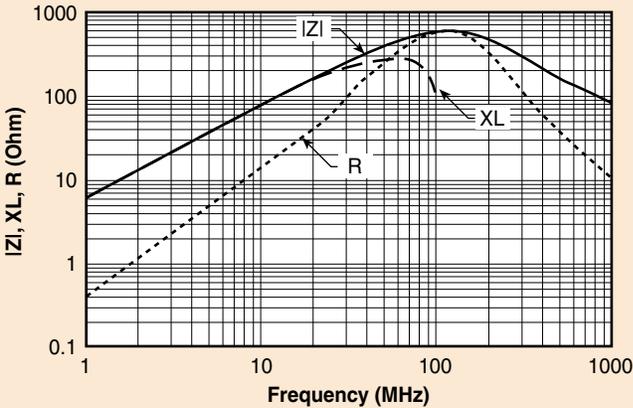
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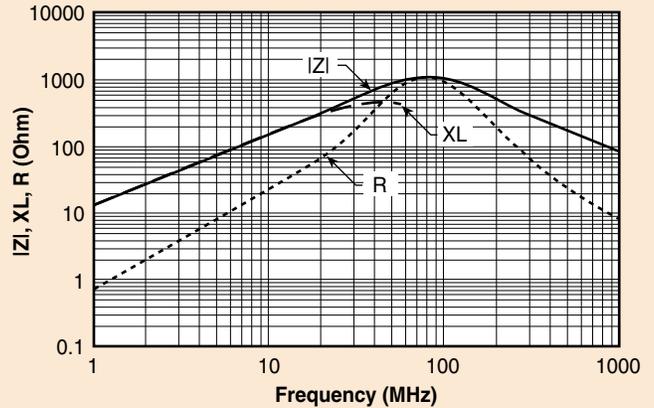
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FCB-0603-B601



FCB-0603-B102

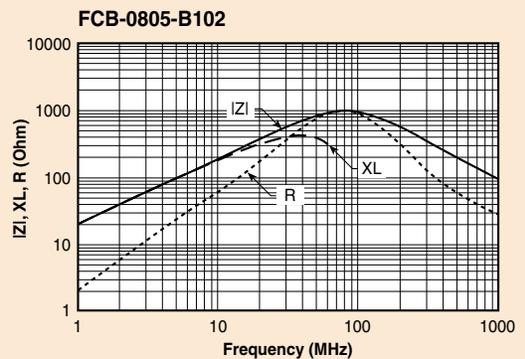
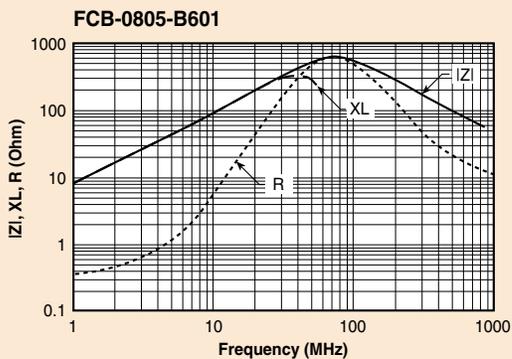
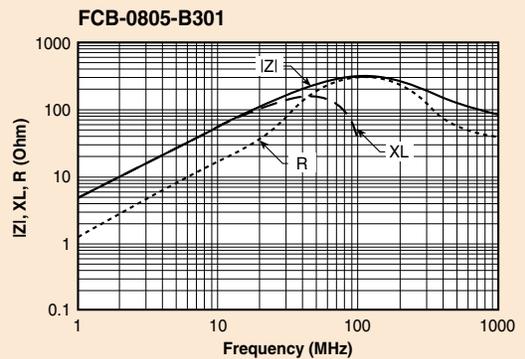
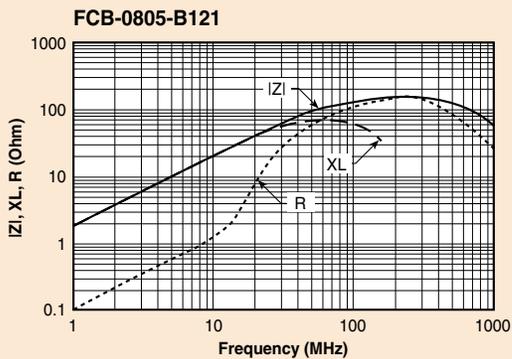
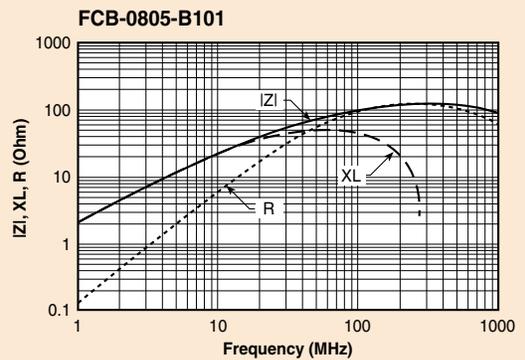
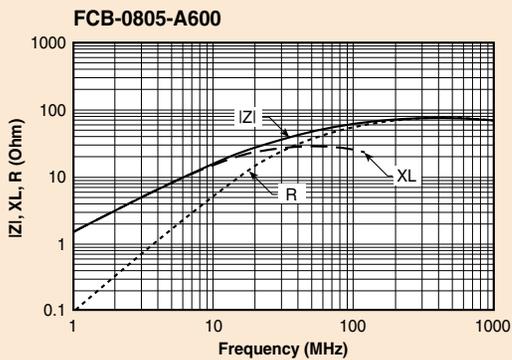
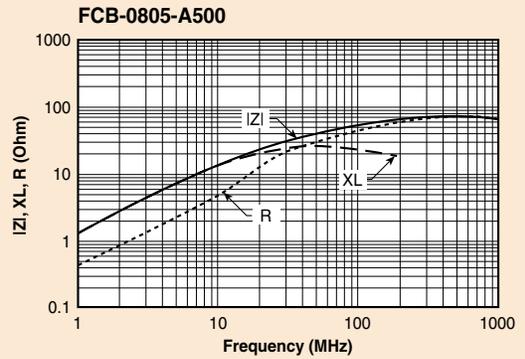
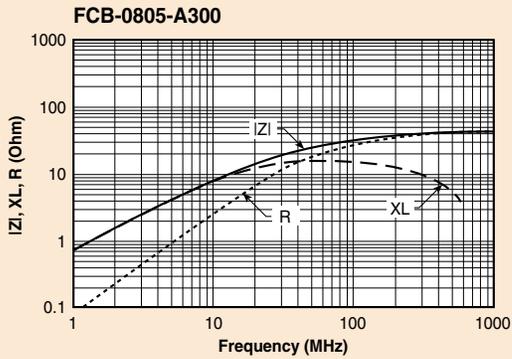


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Typical Impedance Characteristics (Curves not listed are available upon request or at our website.)



0805 Size



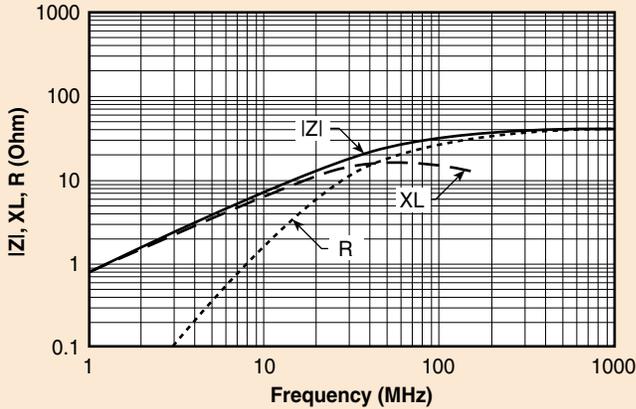
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Ferrite Chip Beads

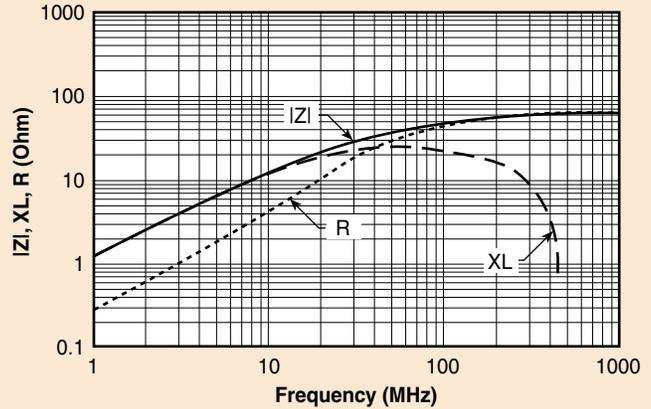
Typical Impedance Characteristics (Curves not listed are available upon request or at our website.)

1206 Size

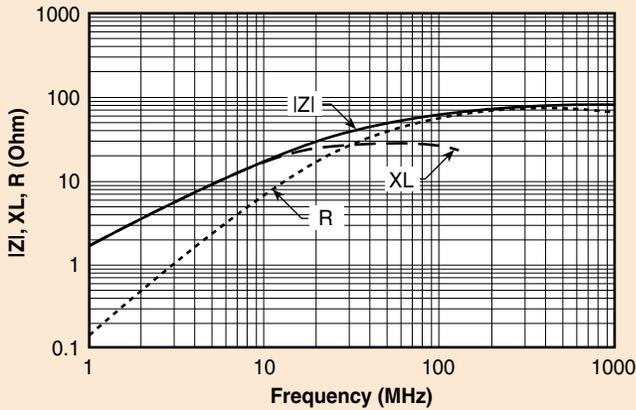
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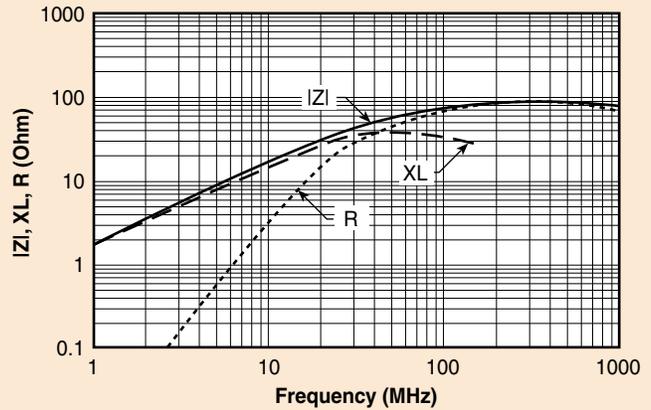
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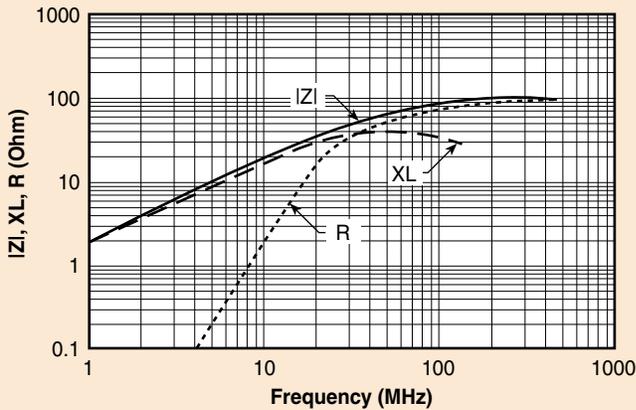
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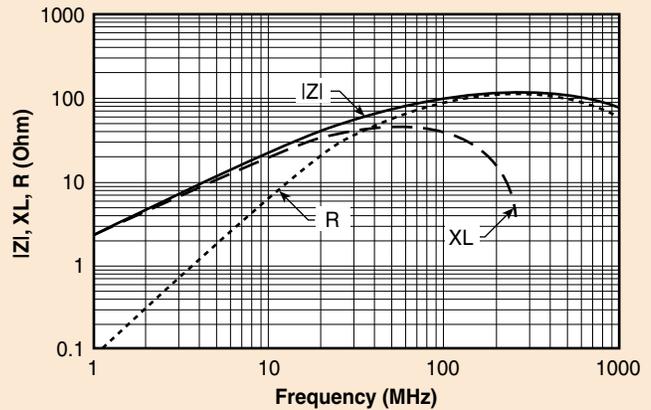
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FCB-1206-A800



FCB-1206-A900



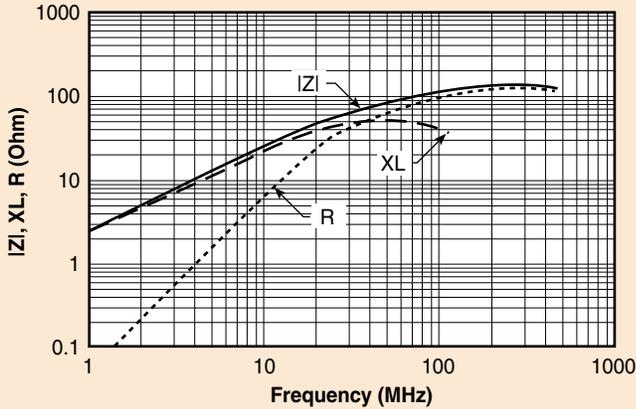
Surface Mount EMI Filters Ferrite Chip Beads

Typical Impedance Characteristics (Curves not listed are available upon request or at our website.)

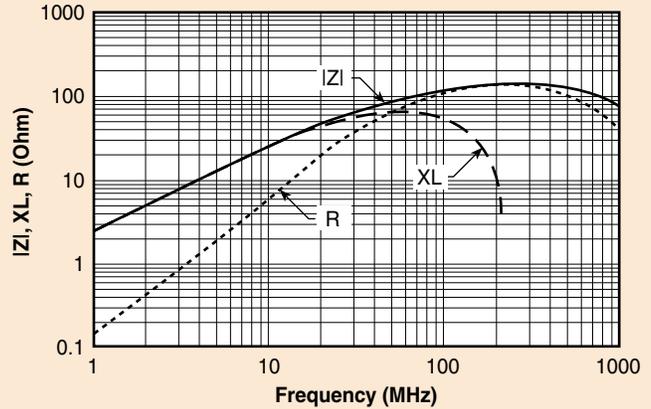


1206 Size *continued*

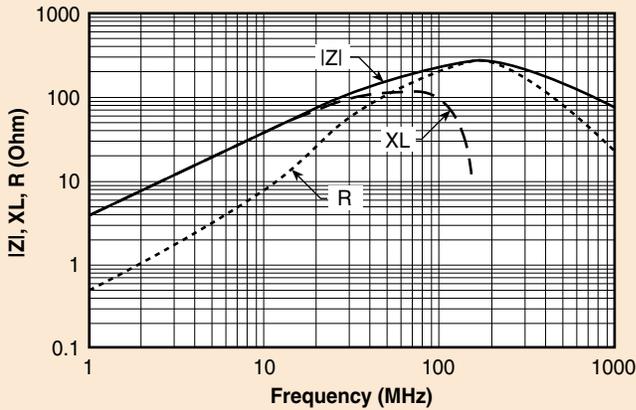
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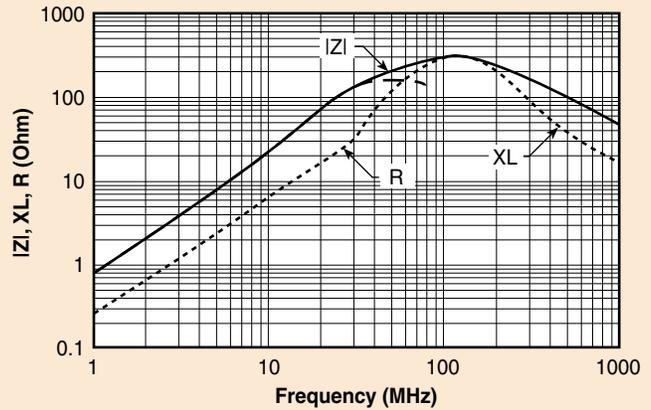
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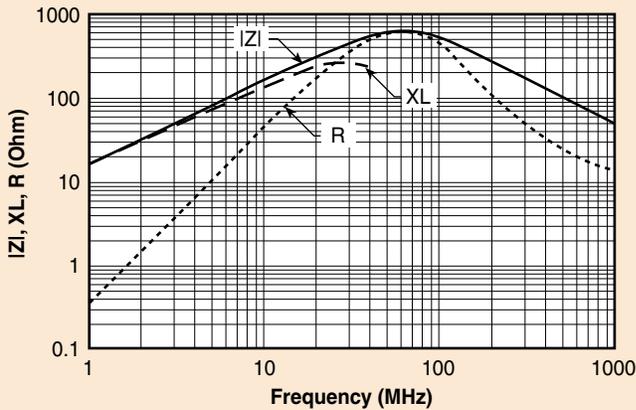
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FCB-1206-A301



FCB-1206-A601



FCB-1206-B102

