

EMI Core



Vol. 01



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Introduction of EMI Core

| | Series Name | Shape | Model | Material | Outer Diameter (mm) | Inner Diameter (mm) | Height (mm) | Page | |
|--------------|---|--|---|---------------------------|---------------------|---------------------|----------------|---------------|----|
| Solid | for Round Cables | | | | | | | | |
| | Bare type | Toroidal Cores (Bare Type) |  | ESD-R | Mn-Zn & Ni-Zn | 9.5~38.1 | 5.0~19.0 | 3.0~28.5 | 14 |
| | Coated type | Toroidal Cores (Coated Type) |  | ESD-R | Mn-Zn & Ni-Zn | 12.0~32.0 | 6.2~19.0 | 3.0~28.8 | 18 |
| | with Case | Toroidal Cores with Case |  | ESD-R | Mn-Zn & Ni-Zn | 12.9~61.0 | 6.0~32.4 | 6.4~24.0 | 20 |
| | with High Heat Resistance | Toroidal Cores with High Heat Resistance |  | ESD-R-H | Mn-Zn & Ni-Zn | 15.0~61.0 | 5.0~33.2 | 9.0~25.0 | 11 |
| | with Snail-shaped Case | Toroidal Cores with Snail-shaped Case |  | ESD-R-B | Mn-Zn & Ni-Zn | 21.5~51.5 | 8.8~25.5 | 13.0~17.5 | 22 |
| | Cores suitable for a low frequency noise | ESD-R-SR, ESD-R-47H, etc. |  | ESD-R-SR, ESD-R-47H, etc. | Mn-Zn, etc. | 57, 52.5, etc. | 36, 22.7, etc. | 20, 8.5, etc. | 6 |
| | for Flat Cables | | | | | | | | |
| | Bare type | Solid Core for Flat Cables |  | ESD-FPL | Ni-Zn | 14.5~80.0 | 0.55~2.2 | 2.75~12.0 | 26 |
| Split | for Round Cables | | | | | | | | |
| | with Case | Snap-on Core for Round Cables (ESD-SR series) |  | ESD-SR | Ni-Zn | — | φ6~φ14.5 | — | 24 |
| | with High Heat Resistance and Cable Holding Mechanism | Snap-on Core for Round Cables (ESD-SR-H/HL series) |  | ESD-SR-H/HL | Ni-Zn | — | φ9~φ13 | — | 13 |
| | with Metal Clamp | Split Core for Flat Cables |  | ESD-FPD | Ni-Zn | 37.0~80.0 | 2.0~2.6 | 10 | 26 |
| | with Plastic | Split Core for Flat Cables |  | ESD-FPD-1 | Ni-Zn | 37.0~80.0 | 2.0~2.6 | 10 | 26 |
| Beads | Single Piece Core | Beads Core |  | B-20 | Mn-Zn & Ni-Zn | 2.8~9.7 | 0.8~4.8 | 1.2~8.0 | 34 |

Case by case product guide

- **When you have worry about damages to cable covering and insulation.**
Coated Type, with Case, with High Heat Resistance..... page 11,18~21
- **When you want to retrofit the core**
Hinged-Clamp Core
 - For Round Cable: ESD-SR, ESD-SR-H/HL series page 13,24~25
 - For Flat Cable: ESD-FPD series page 26
- **When you want to fix the core**
with Snail Shaped Case
 - For Round Cable: ESD-R-H, ESD-R-B series..... page 9,22~23
 - For Flat Cable: ESD-FPD-1 series page 26



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Tips on EMI Core Usages

■ Characteristics and how to count turns

Number of turns are counted by how many times the lead wire passes through the inner hole of the core. Do not count the number of lead wire winding outside the core, as it results in different turn count. (Fig. 1)

When desired performance can not be obtained just by 1 turn, impedance characteristics value can be raised by increasing the turn. In this case, the effective frequency band should be checked that it is in the desired range as adding turns results in lowering down the effective band range. (Fig. 2)

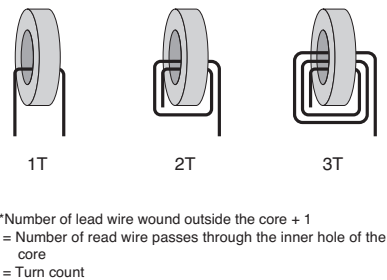


Fig.1 How to count turns

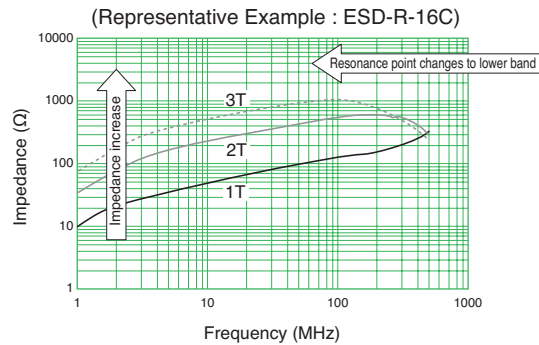


Fig.2 Relationship between impedance and turn counts

■ Effective band range depending on core material

There are two materials of ferrite, Ni-Zn series and Mn-Zn series. Ni-Zn series is effective for MHz band range such as FM band while Mn-Zn series is effective for kHz band range.

Note that above effective band range is a reference only. Examination of effectiveness with actual instrument is necessary.

As Mn-Zn series has lower resistance compared to Ni-Zn series, make sure to provide adequate insulation before use.

Mn-Zn series vs Ni-Zn series | Z | -f Characteristics (representative example)
 (measurement condition: measured with same-dimension ring core)

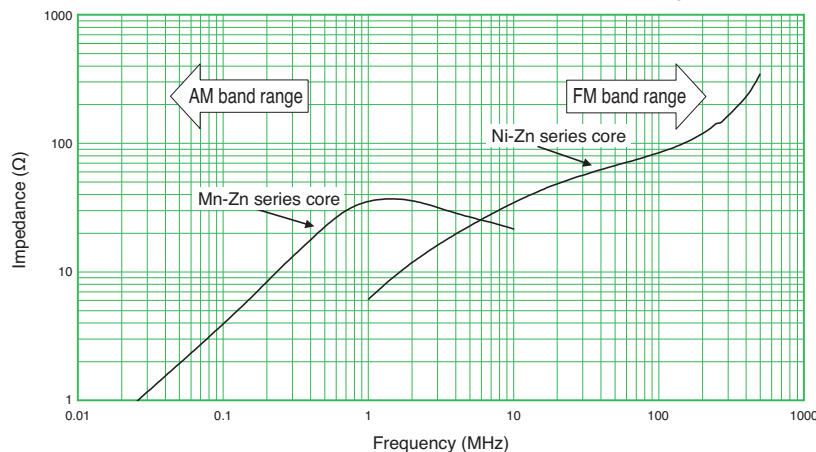


Fig.3 Effective Band Range of Mn-Zn series / Ni-Zn series ferrite



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Cores Suitable for a Low Frequency Noise (High Impedance Type) ESD-R-SR Series [RoHS Compliant]



Features

- ① High impedance from using materials with the industry's highest level of magnetic permeability. (Approx. 40% increase in Z-score as compared with previous material <at 150kHz>)
- ② Effectively suppresses radiation and transfer noise on harnesses. Especially well-suited for the medium wave band (300kHz or above)
- ③ Large-size ring type.
- ④ Coated type also available. (See below)

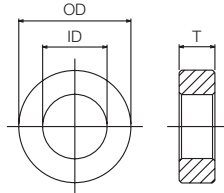
Applications

- Power conditioners
- Air conditioners
- Multifunction printers for business use
- HEV/PHV
- Industrial equipment

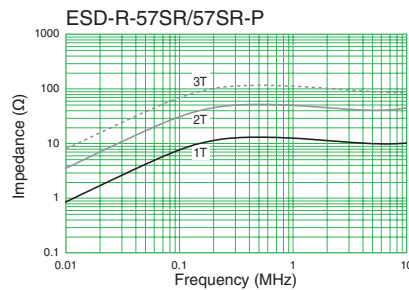
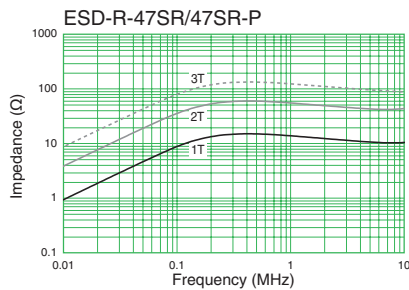
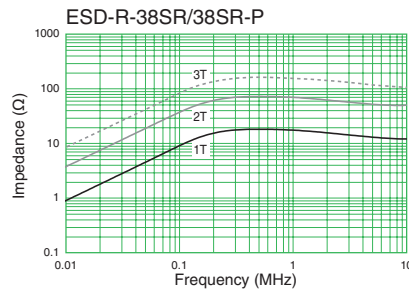
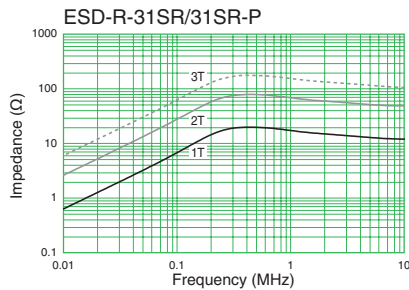
| Model (Bare type) | Model (Coated type) | Dimensions(mm) | | |
|----------------------|------------------------|----------------|---------|-----------|
| | | OD | ID | T |
| ESD-R-31SR | ESD-R-31SR-P | 31 (32) | 20 (19) | 14.9 (16) |
| ESD-R-38SR | ESD-R-38SR-P | 38 (39.5) | 19 (18) | 12.7 (14) |
| ESD-R-47SR | ESD-R-47SR-P | 47 (48.5) | 27 (26) | 15 (16) |
| ESD-R-57SR | ESD-R-57SR-P | 57 (59) | 36 (34) | 20 (21) |

Note: Coated type dimensions in parentheses ()

Shape and Dimensions

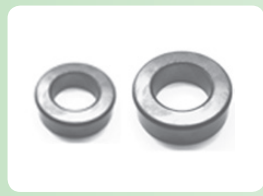


Impedance vs. Frequency



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Cores Suitable for a Low Frequency Noise (Large-size Ring Type) [RoHS Compliant]



Features

- ① Large-size ring type. (High permeability material : Mn-Zn ferrite)
- ② Effectively suppresses radiation and transfer noise on harnesses.
- ③ Coated type also available. (See below)

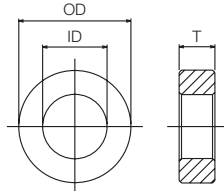
Applications

- Power conditioners
- Air conditioners
- Multifunction printers for business use
- HEV/PHV
- Industrial equipment

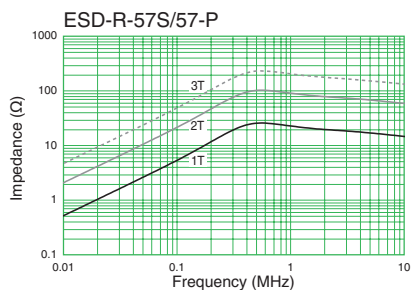
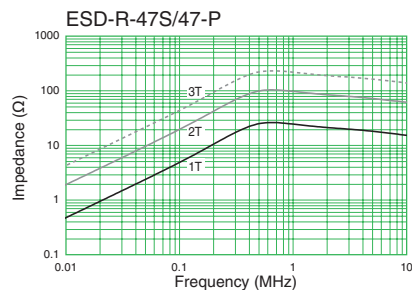
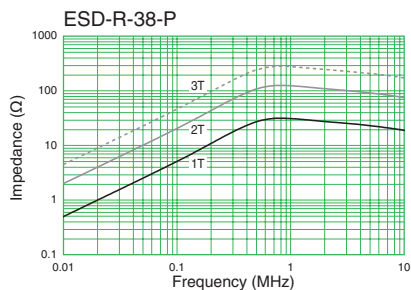
| Model (Bare type) | Model (Coated type) | Dimensions(mm) | | |
|-------------------|---------------------|----------------|---------|---------|
| | | OD | ID | T |
| — * | ESD-R-38-P | — (39.5) | — (18) | — (14) |
| ESD-R-47S | ESD-R-47-P | 47 (48.5) | 27 (26) | 15 (16) |
| ESD-R-57S | ESD-R-57-P | 57 (59) | 36 (34) | 20 (21) |

Note: Coated type dimensions in parentheses ()
 * Correspond to ESD-R-38D (see page 8)

Shape and Dimensions



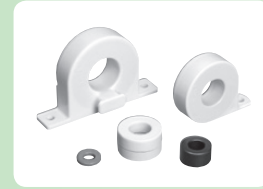
Impedance vs. Frequency



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Cores Suitable for a Low Frequency Noise

[RoHS Compliant]



Features

- ① Performs effectively in a low frequency range, mainly in the AM band (from 535 to 1605 kHz), by using a high permeability material (Mn-Zn ferrite).
- ② Available in various shapes and sizes depending on applications.

Applications

- Consumer electronics (air conditioners, refrigerators, etc.)
- Industrial equipment (INV, robots, etc.)

◎Toroidal cores (bare type)

| Model | Dimensions(mm) | | |
|------------------|----------------|------|------|
| | OD | ID | T |
| ESD-R-16 | 15.8 | 11.6 | 8.4 |
| ESD-R-19S | 18.5 | 10.0 | 10.0 |
| ESD-R-25S | 25.0 | 15.0 | 12.0 |
| ESD-R-38D | 38.1 | 19.0 | 12.7 |

◎Toroidal cores (coated type)

| Model | Dimensions(mm) | | | Color of coating | Compatible toroidal core (bare type) |
|-------------------|----------------|------|------|------------------|--------------------------------------|
| | OD | ID | T | | |
| ESD-R-14A | 15.0 | 6.2 | 3.5 | Green | — |
| ESD-R-31-P | 32.0 | 19.0 | 15.8 | Green | — |

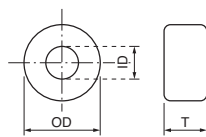
◎Toroidal cores with case

| Model | Dimensions(mm) | | | Color of case | Compatible toroidal core (bare type) |
|-----------------|----------------|------|------|---------------|--------------------------------------|
| | OD | ID | T | | |
| ESD-R-19 | 19.0 | 9.0 | 11.0 | White | ESD-R-19S |
| ESD-R-25 | 26.0 | 14.0 | 15.0 | White | ESD-R-25S |
| ESD-R-38 | 39.0 | 17.5 | 14.0 | White | ESD-R-38D |
| ESD-R-47 | 48.0 | 25.5 | 16.0 | White | ESD-R-47S |
| ESD-R-57 | 61.0 | 32.4 | 24.0 | White | ESD-R-57S |

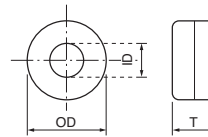
* Flame resistant grade of the case : UL94 V-2

Shape and Dimensions

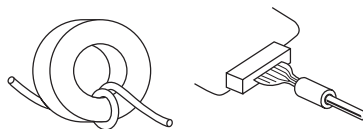
●ESD-R Series



●ESD-R Series (with case)



Installation Example



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◎Toroidal cores with snail-shaped case

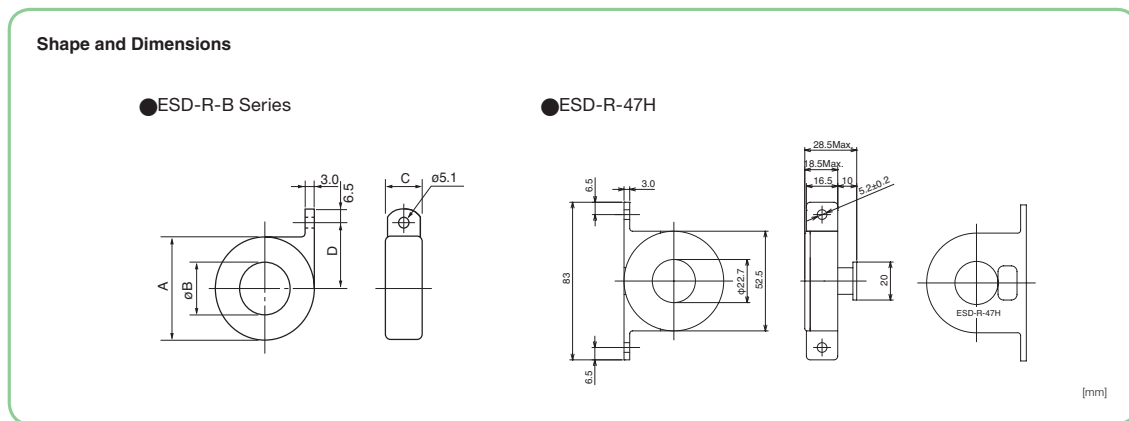
| Model | Dimensions(mm) | | | | Color of case | Compatible toroidal core (bare type) |
|------------------|----------------|------|------|------|---------------|--------------------------------------|
| | A | B | C | D | | |
| ESD-R-19B | 21.5 | 8.8 | 13.0 | 18.5 | White | ESD-R-19S |
| ESD-R-25B | 29.3 | 13.9 | 15.0 | 23.0 | White | ESD-R-25S |
| ESD-R-38B | 42.4 | 17.9 | 16.0 | 28.0 | White | ESD-R-38D |
| ESD-R-47B | 51.5 | 25.5 | 17.5 | 34.0 | White | ESD-R-47S |

* Flame resistant grade of the case : UL94 V-2

◎Toroidal cores with high heat resistance and cable holding mechanism

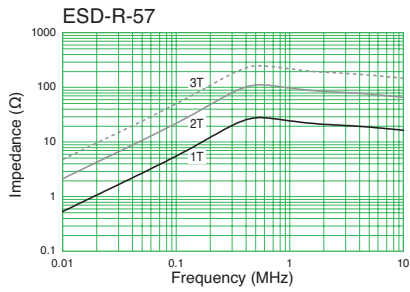
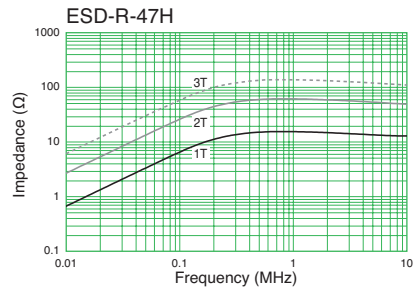
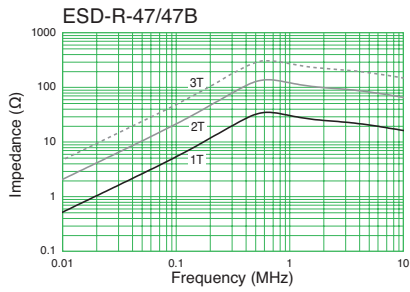
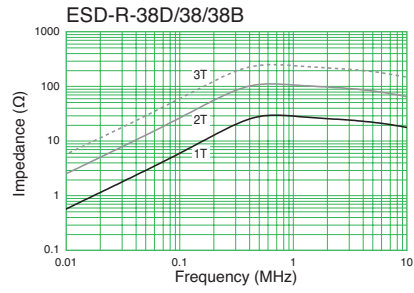
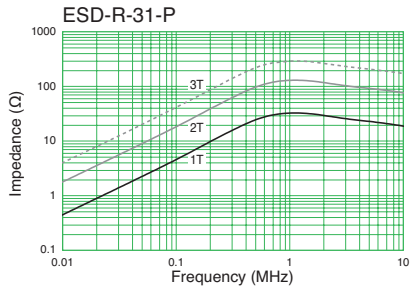
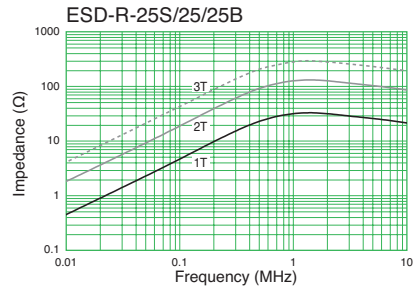
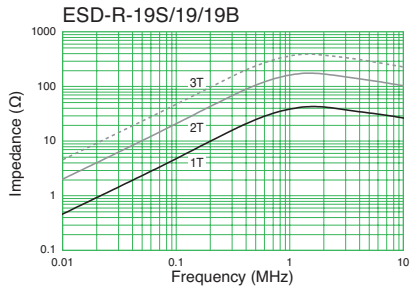
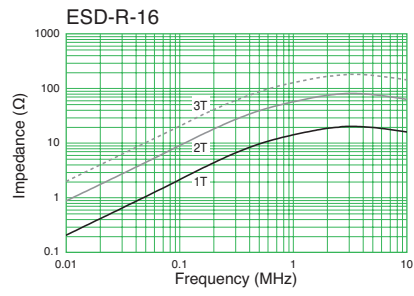
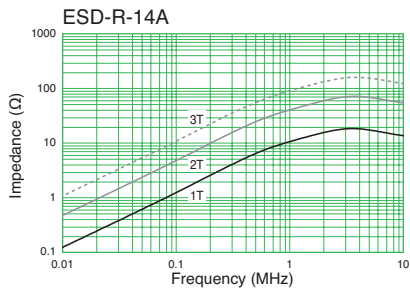
| Model | Dimensions(mm) | Color of case | Compatible toroidal core (bare type) |
|------------------|----------------|---------------|--------------------------------------|
| ESD-R-47H | See below | White | — |

* Flame resistant grade of the case : UL94 V-0



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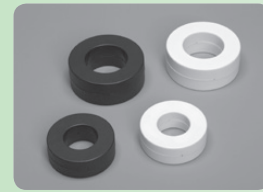
Impedance vs. Frequency



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Toroidal Cores with High Heat Resistance ESD-R-H Series

[RoHS Compliant]



Features

- ① Wider operational temperature range. (-40°C to +120°C)
- ② Advanced characteristics achieved by using optimal core materials for target frequency range.
Low frequency range (ESD-R-M-H series)
High frequency range (ESD-R-N-H series)
- ③ Flame retardancy: UL94 V-0

Applications

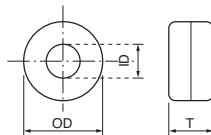
- Automotive (EPS, etc.)
- Information and communication devices, audio-visual equipment, consumer electronics

| Model | Dimensions(mm) | | | Frequency range | | Color of case | Compatible toroidal core (bare type) |
|-------------|----------------|------|------|------------------------------------|-------------------------------------|---------------|--------------------------------------|
| | OD | ID | T | up to 10MHz (mainly AM band range) | up to 300MHz (mainly FM band range) | | |
| ESD-R-12M-H | 15.0 | 5.0 | 9.0 | ● | | White | — |
| ESD-R-12N-H | 15.0 | 5.0 | 9.0 | | ● | Black | ESD-R-12S |
| ESD-R-19M-H | 22.0 | 7.7 | 14.0 | ● | | White | ESD-R-19S |
| ESD-R-19N-H | 22.0 | 7.7 | 14.0 | | ● | Black | ESD-R-19SD |
| ESD-R-25M-H | 29.0 | 12.7 | 16.0 | ● | | White | ESD-R-25S |
| ESD-R-25N-H | 29.0 | 12.7 | 16.0 | | ● | Black | ESD-R-25SD |
| ESD-R-38M-H | 42.0 | 16.7 | 17.0 | ● | | White | ESD-R-38D |
| ESD-R-38N-H | 42.0 | 16.7 | 17.0 | | ● | Black | — |
| ESD-R-47M-H | 51.0 | 24.4 | 19.0 | ● | | White | ESD-R-47S |
| ESD-R-47N-H | 51.0 | 24.4 | 19.0 | | ● | Black | — |
| ESD-R-57M-H | 61.0 | 33.2 | 25.0 | ● | | White | ESD-R-57S |
| ESD-R-57N-H | 61.0 | 33.2 | 25.0 | | ● | Black | — |

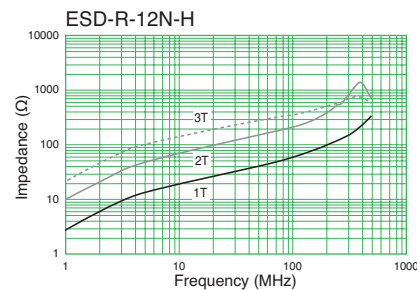
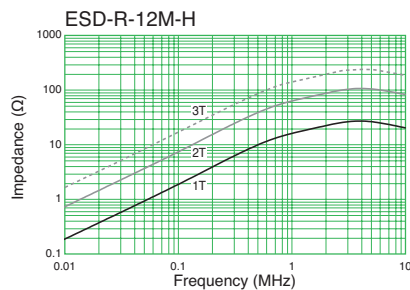
* Above frequency range is a reference only. Please test with actual device before use.

Shape and Dimensions

● ESD-R-H Series

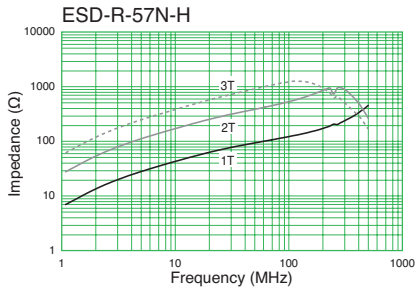
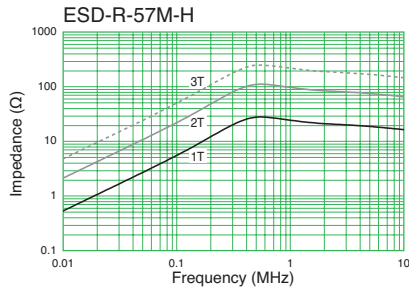
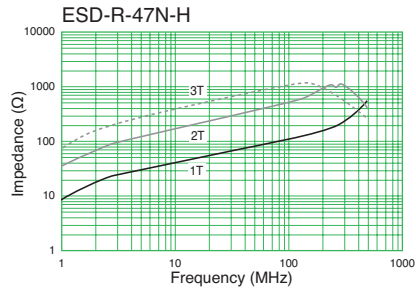
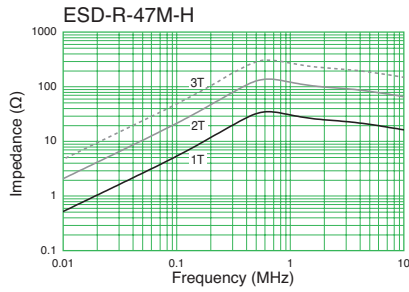
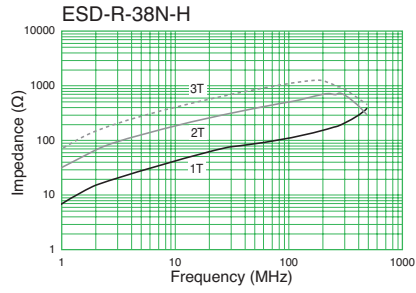
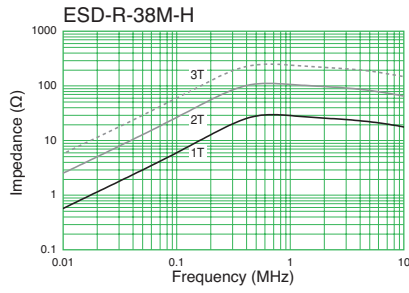
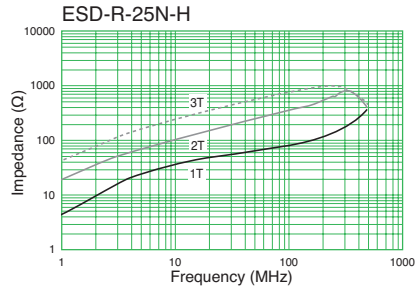
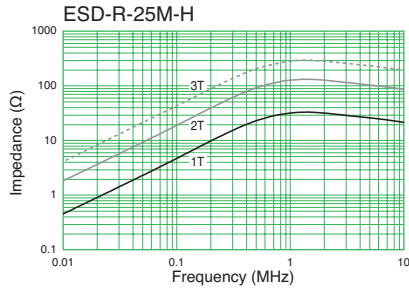
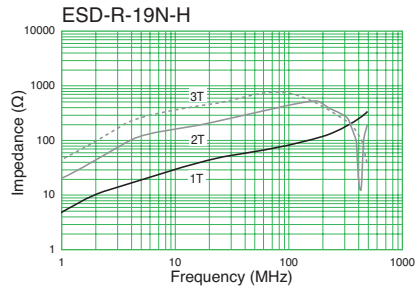
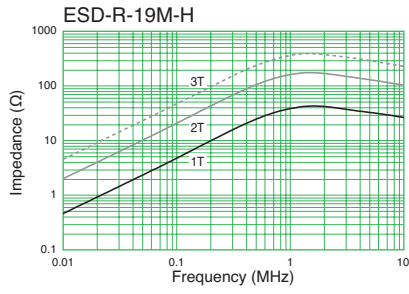


Impedance vs. Frequency



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Impedance vs. Frequency

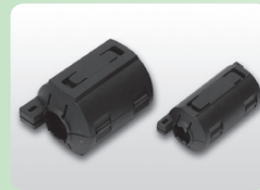


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Snap-on Cores for Round Cables with High Heat Resistance and Cable Holding Mechanism

ESD-SR-H/HL Series

[RoHS Compliant]



Features

- ① Wider operational temperature range.
 ESD-SR-160H/250H: -40°C to +100°C
 ESD-SR-160HL/250HL: -40°C to +125°C
- ② Holding mechanisms provided
 (Fixing of cables / enclosures with fixing bands possible)
- ③ Split design allows easy post-fitting.

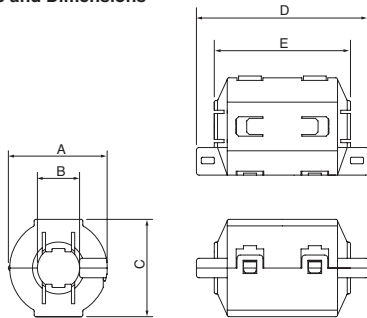
Applications

- Automotive (EPS, etc.)
- Information and communication devices, audio-visual equipment, consumer electronics

| Model | Dimensions(mm) | | | | | Weight(g) | Color of case |
|-----------------------|----------------|----------|------|------|------|-----------|---------------|
| | A | φB | C | D | E | | |
| ESD-SR-160H/HL | 19.5 | Up to 9 | 19.5 | 46.5 | 38.5 | 23 | black |
| ESD-SR-250H/HL | 30.0 | Up to 13 | 30.0 | 53.0 | 42.0 | 63 | black |

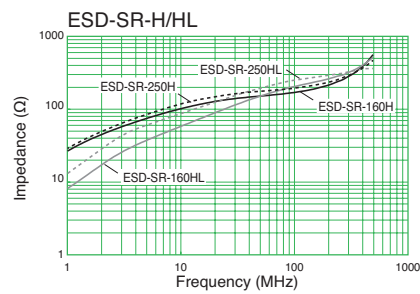
* Flame resistant grade of the case : UL94 V-0

Shape and Dimensions



* HL series are indicated by dot printing (white dot) on the case. [mm]

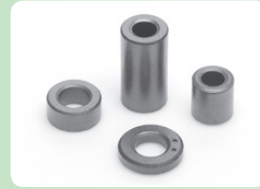
Impedance vs. Frequency



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Toroidal Cores (Bare Type)

[RoHS Compliant]

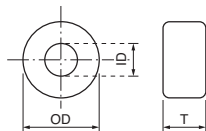


| Model | Dimensions(mm) | | | Frequency range | |
|-------------|----------------|------|------|---------------------------------------|--|
| | OD | ID | T | up to 10MHz (mainly AM band range) | up to 300MHz (mainly FM band range) |
| ESD-R-10D | 9.5 | 5.0 | 10.0 | | ● |
| ESD-R-10E | 10.0 | 5.0 | 5.0 | | ● |
| ESD-R-10S | 10.5 | 5.5 | 20.0 | | ● |
| ESD-R-12C | 11.8 | 7.3 | 15.0 | | ● |
| ESD-R-12E | 11.8 | 7.3 | 8.0 | | ● |
| ESD-R-12F | 12.0 | 8.5 | 15.0 | | ● |
| ESD-R-12S | 12.0 | 7.0 | 5.5 | | ● |
| ESD-R-14C | 14.0 | 7.0 | 3.0 | | ● |
| ESD-R-14E | 14.0 | 10.0 | 8.0 | | ● |
| ESD-R-14S | 14.3 | 6.3 | 28.5 | | ● |
| ESD-R-15C-1 | 15.0 | 10.5 | 12.0 | | ● |
| ESD-R-16 | 15.8 | 11.6 | 8.4 | ● | |
| ESD-R-16C | 16.0 | 9.0 | 17.0 | | ● |
| ESD-R-17S | 17.5 | 9.5 | 28.5 | | ● |
| ESD-R-18SD | 18.0 | 10.0 | 6.0 | | ● |
| ESD-R-19S | 18.5 | 10.0 | 10.0 | ● | |
| ESD-R-19SD | 18.5 | 10.0 | 10.0 | | ● |
| ESD-R-22SD | 22.5 | 13.8 | 6.4 | | ● |
| ESD-R-25SD | 25.0 | 15.0 | 12.0 | | ● |
| ESD-R-25S | 25.0 | 15.0 | 12.0 | ● | |
| ESD-R-26S | 26.0 | 13.0 | 28.5 | | ● |
| ESD-R-28C | 28.0 | 16.0 | 13.0 | | ● |
| ESD-R-31C | 31.0 | 19.0 | 8.0 | | ● |
| ESD-R-38D | 38.1 | 19.0 | 12.7 | ● | |

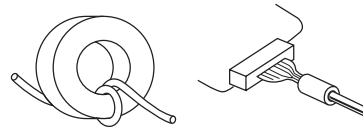
* Other sizes available. Please contact TOKIN.
* Above frequency range is a reference only. Please test with actual device before use.

Shape and Dimensions

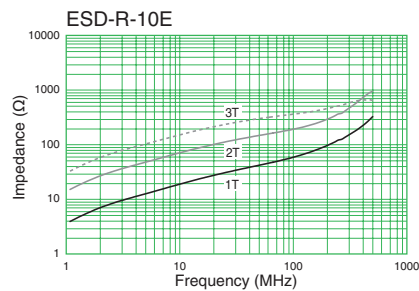
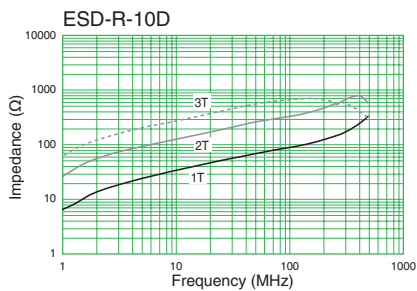
● ESD-R Series



Installation Example

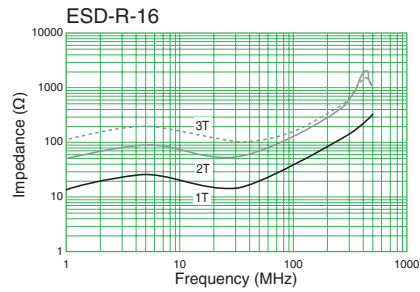
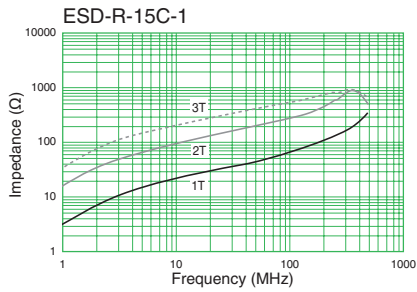
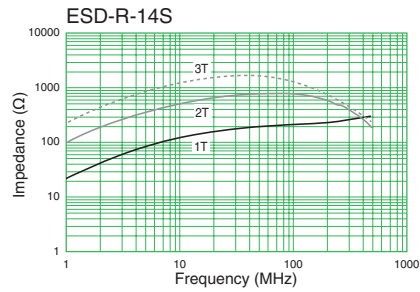
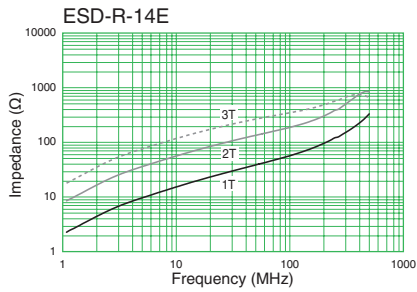
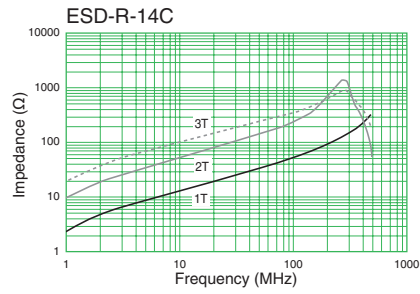
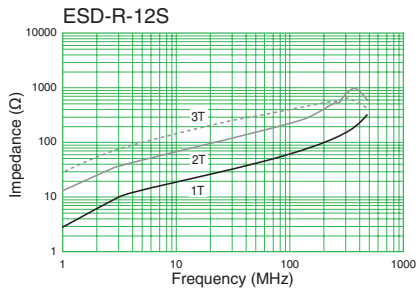
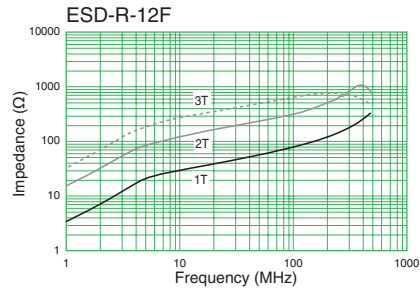
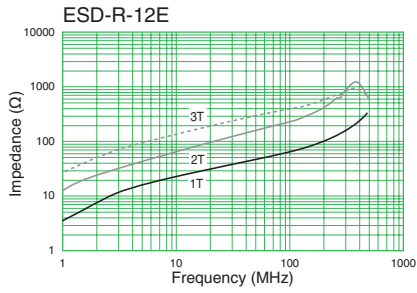
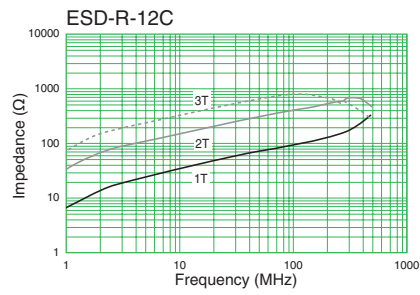
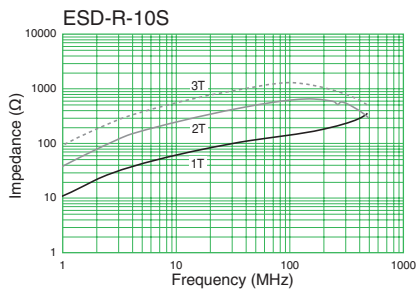


Impedance vs. Frequency



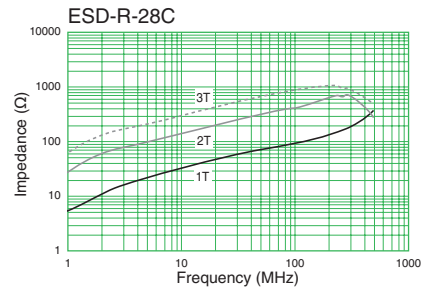
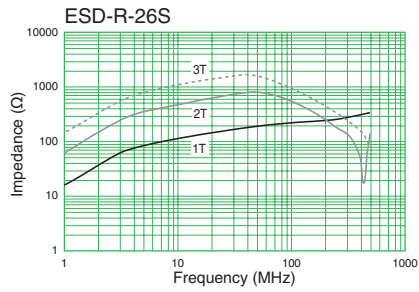
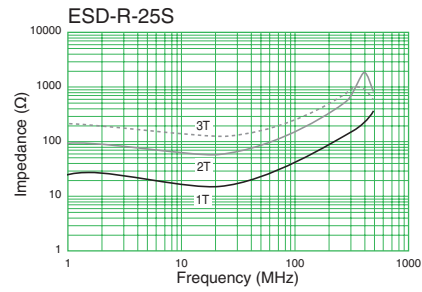
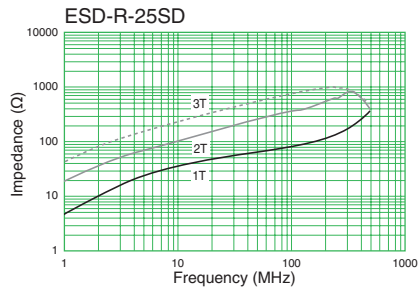
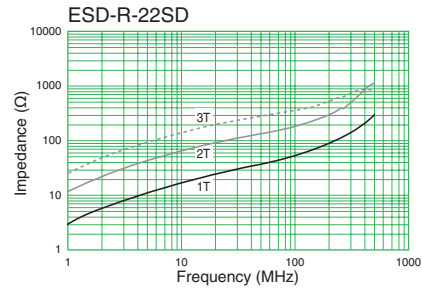
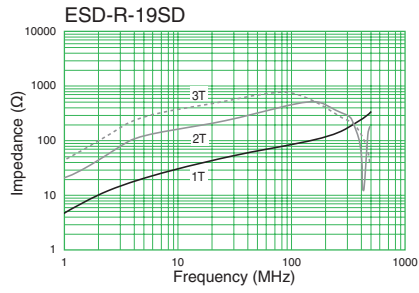
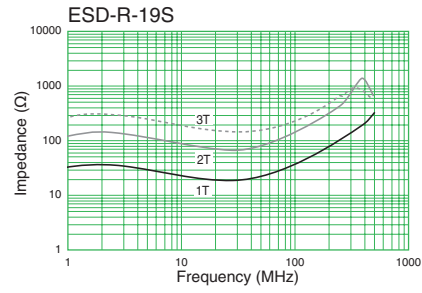
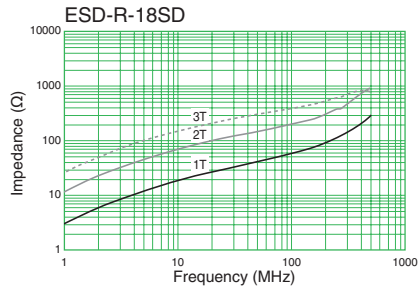
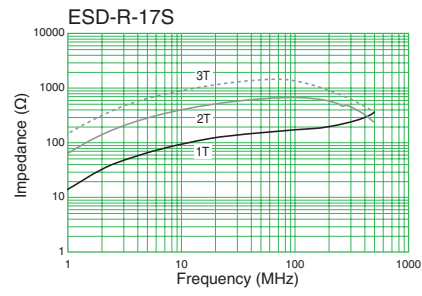
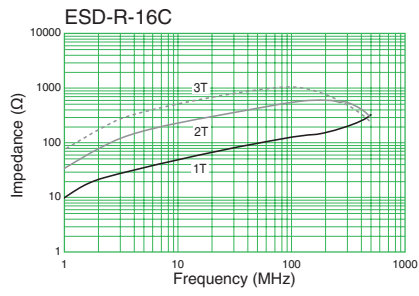
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- Before using the product in this catalog, please read "Precautions" and other safety precautions listed in the printed version catalog.

Impedance vs. Frequency



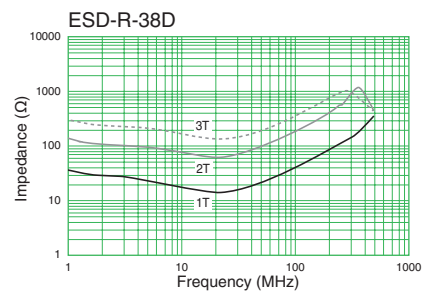
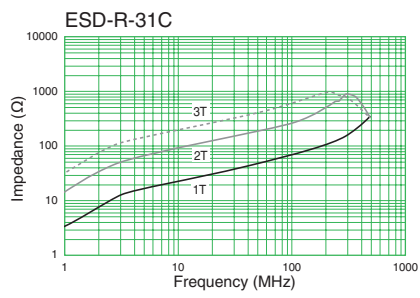
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Impedance vs. Frequency



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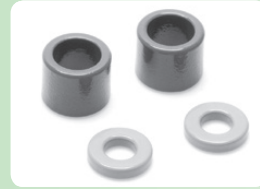
Impedance vs. Frequency



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Toroidal Cores (Coated Type)

[RoHS Compliant]

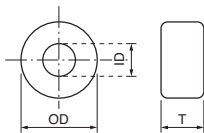


| Model | Dimensions(mm) | | | Frequency range | | Color of coating | Compatible toroidal core (bare type) |
|-------------|----------------|------|------|---------------------------------------|--|------------------|--------------------------------------|
| | OD | ID | T | up to 10MHz (mainly AM band range) | up to 300MHz (mainly FM band range) | | |
| ESD-R-12C-2 | 12.0 | 7.3 | 15.3 | | ● | Blue | |
| ESD-R-14A | 15.0 | 6.2 | 3.5 | ● | | Green | — |
| ESD-R-14C-2 | 14.0 | 7.0 | 3.0 | | ● | Blue | ESD-R-14C |
| ESD-R-15C | 15.2 | 10.5 | 12.5 | | ● | Blue | ESD-R-15C-1 |
| ESD-R-17S-1 | 17.7 | 9.4 | 28.8 | | ● | Blue | ESD-R-17S |
| ESD-R-19E-1 | 19.0 | 10.7 | 5.3 | | ● | Blue | — |
| ESD-R-25D-8 | 25.0 | 15.0 | 8.0 | | ● | Blue | — |
| ESD-R-25L-A | 25.3 | 15.1 | 12.1 | | ● | Blue | ESD-R-25SD |
| ESD-R-28C-1 | 28.2 | 15.8 | 13.2 | | ● | Blue | — |
| ESD-R-31C-1 | 32.0 | 19.5 | 9.0 | | ● | Green | ESD-R-31C |
| ESD-R-31-P | 32.0 | 19.0 | 15.8 | ● | | Green | |

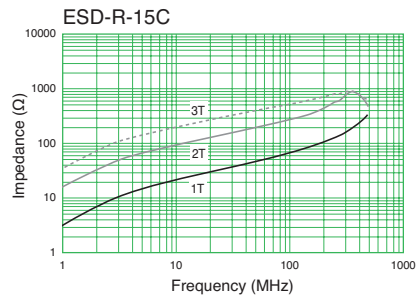
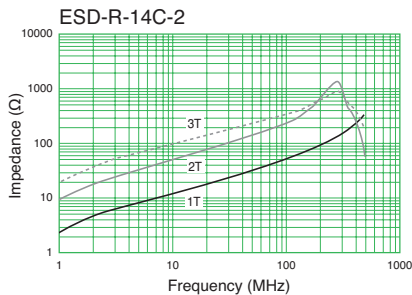
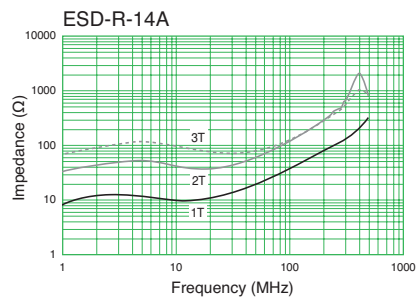
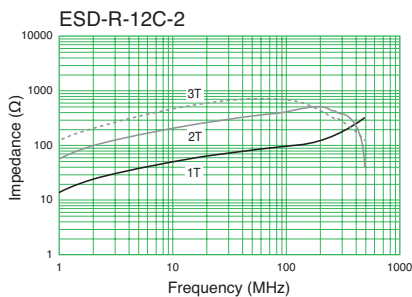
* Above frequency range is a reference only. Please test with actual device before use.

Shape and Dimensions

● ESD-R Series

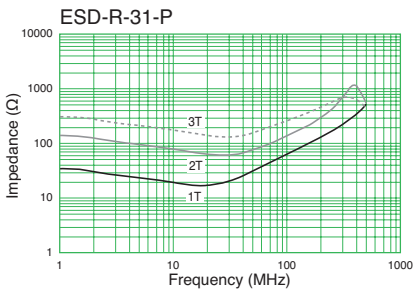
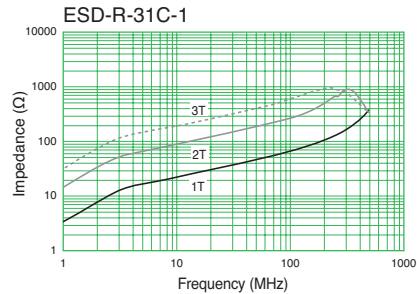
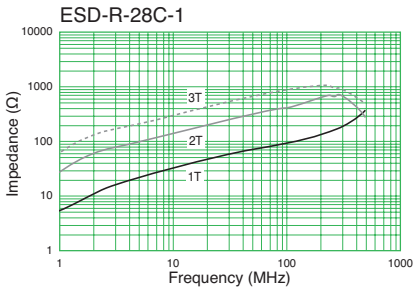
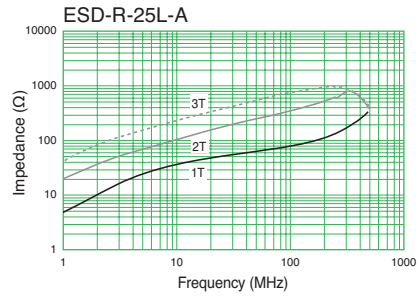
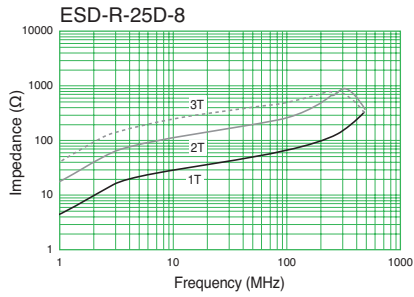
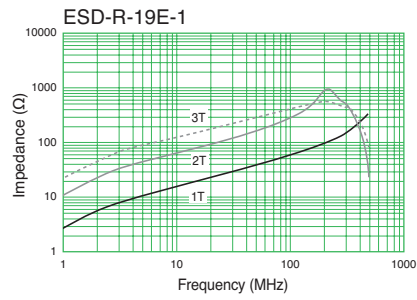
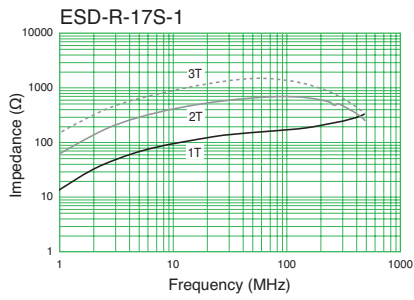


Impedance vs. Frequency



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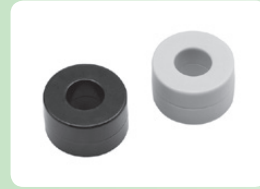
Impedance vs. Frequency



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Toroidal Cores with Case

[RoHS Compliant]



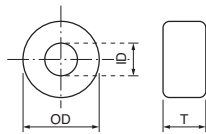
| Model | Dimensions(mm) | | | Frequency range | | Remarks | Color of case | Compatible toroidal core (bare type) |
|-------------|----------------|------|------|------------------------------------|-------------------------------------|------------------|---------------|--------------------------------------|
| | OD | ID | T | up to 10MHz (mainly AM band range) | up to 300MHz (mainly FM band range) | | | |
| ESD-R-12D | 12.9 | 6.0 | 6.4 | | ● | | black | ESD-R-12S |
| ESD-R-19 | 19.0 | 9.0 | 11.0 | ● | | | white | ESD-R-19S |
| ESD-R-19D | 19.0 | 9.0 | 11.0 | | ● | | black | ESD-R-19SD |
| ESD-R-25 | 26.0 | 14.0 | 15.0 | ● | | | white | ESD-R-25S |
| ESD-R-25D | 26.0 | 14.0 | 15.0 | | ● | | black | ESD-R-25SD |
| ESD-R-38 | 39.0 | 17.5 | 14.0 | ● | | | white | ESD-R-38D |
| ESD-R-38C-1 | 39.0 | 17.5 | 14.0 | | ● | with tape(black) | white | — |
| ESD-R-47 | 48.0 | 25.5 | 16.0 | ● | | | white | ESD-R-47S |
| ESD-R-47D-1 | 48.0 | 25.5 | 16.0 | | ● | with tape(black) | white | — |
| ESD-R-57 | 61.0 | 32.4 | 24.0 | ● | | | white | ESD-R-57S |
| ESD-R-57D-1 | 61.0 | 32.4 | 24.0 | | ● | with tape(black) | white | — |

* Above frequency range is a reference only. Please test with actual device before use.

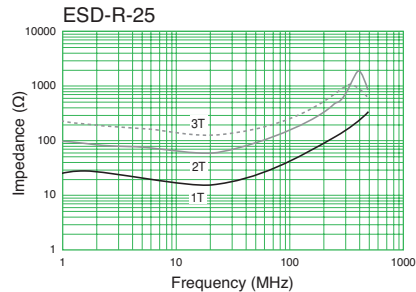
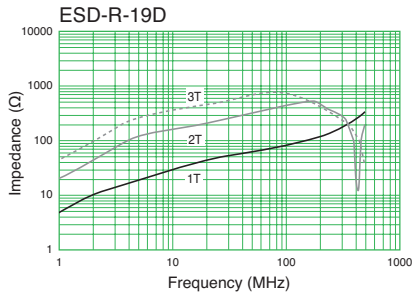
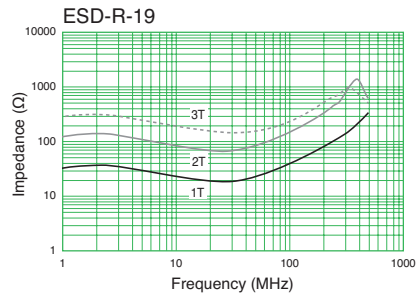
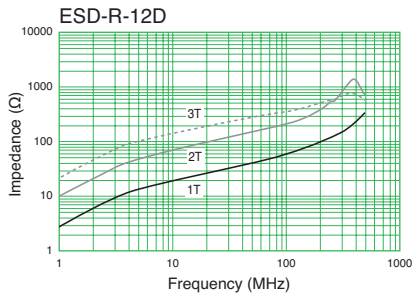
* Flame resistant grade of the case : UL94 V-2

Shape and Dimensions

● ESD-R Series

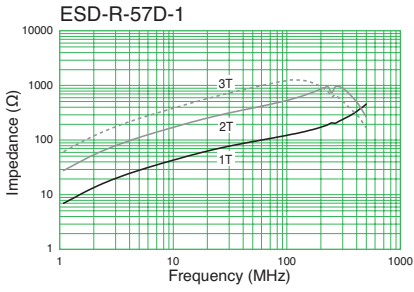
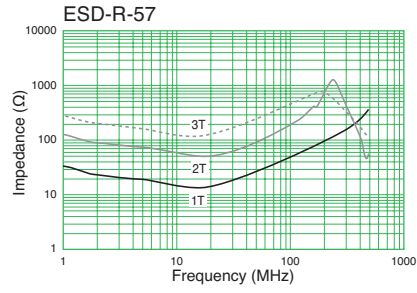
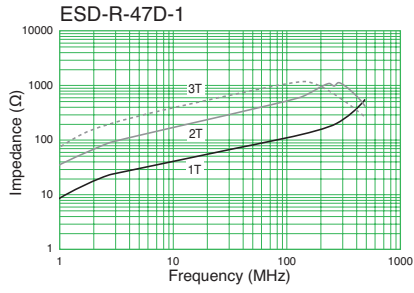
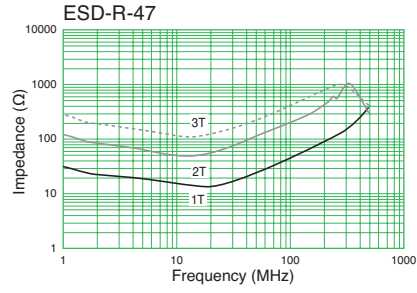
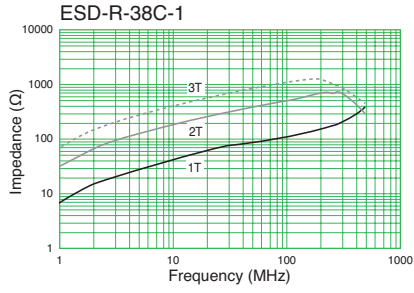
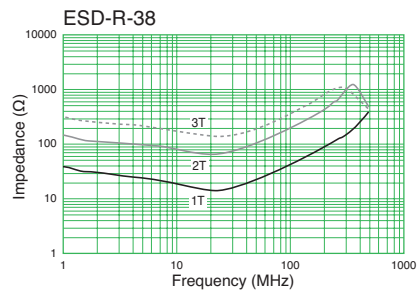
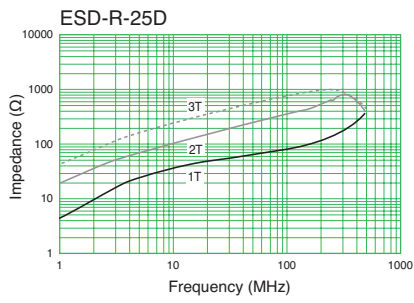


Impedance vs. Frequency



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Toroidal Cores with Snail-shaped Case

[RoHS Compliant]



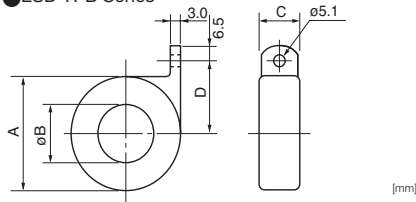
| Model | Dimensions(mm) | | | | Frequency range | | Color of case | Compatible toroidal core (bare type) |
|-------------|----------------|------|------|------|------------------------------------|-------------------------------------|---------------|--------------------------------------|
| | A | B | C | D | up to 10MHz (mainly AM band range) | up to 300MHz (mainly FM band range) | | |
| ESD-R-19B | 21.5 | 8.8 | 13.0 | 18.5 | ● | | white | ESD-R-19S |
| ESD-R-19D-B | 21.5 | 8.8 | 13.0 | 18.5 | | ● | black | ESD-R-19SD |
| ESD-R-25B | 29.3 | 13.9 | 15.0 | 23.0 | ● | | white | ESD-R-25S |
| ESD-R-25D-B | 29.3 | 13.9 | 15.0 | 23.0 | | ● | black | ESD-R-25SD |
| ESD-R-38B | 42.4 | 17.9 | 16.0 | 28.0 | ● | | white | ESD-R-38D |
| ESD-R-38D-B | 42.4 | 17.9 | 16.0 | 28.0 | | ● | black | — |
| ESD-R-47B | 51.5 | 25.5 | 17.5 | 34.0 | ● | | white | ESD-R-47S |
| ESD-R-47D-B | 51.5 | 25.5 | 17.5 | 34.0 | | ● | black | — |

* Above frequency range is a reference only. Please test with actual device before use.

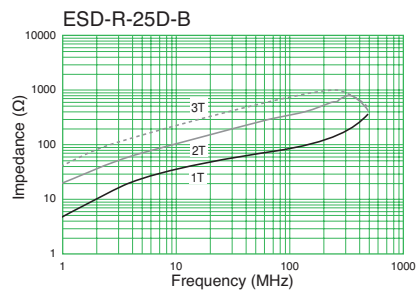
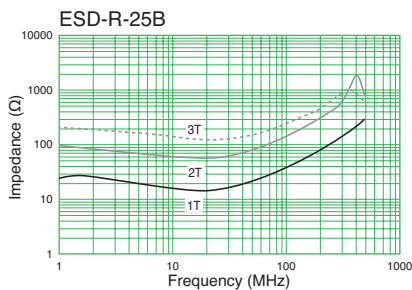
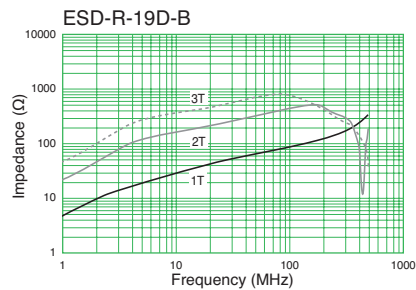
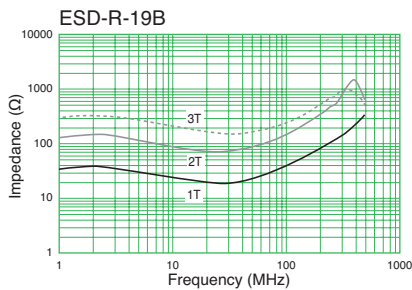
* Flame resistant grade of the case : UL94 V-2

Shape and Dimensions

● ESD-R-B Series

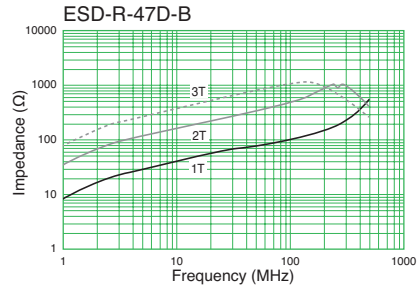
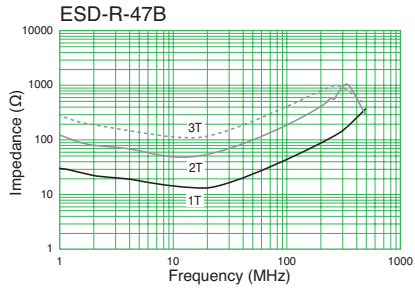
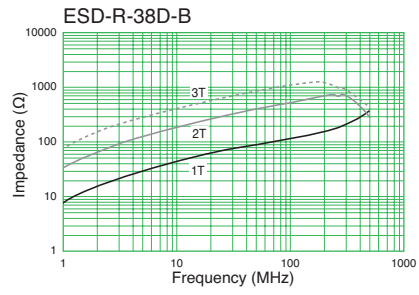
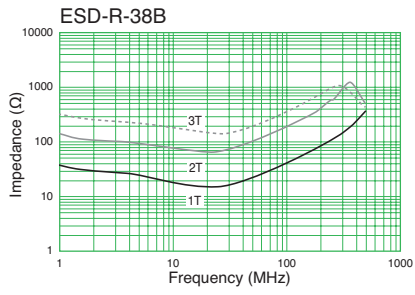


Impedance vs. Frequency



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Snap-on Cores for Round Cables

[RoHS Compliant]



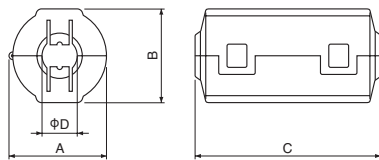
● ESD-SR Series

| Model | Dimensions(mm) | | | φD | Weight (g) | Color of case |
|------------|----------------|--------|--------|------------|------------|---------------------|
| | A max. | B max. | C max. | | | |
| ESD-SR-100 | 16.5 | 16.5 | 21.0 | Up to 6.0 | 7.2 | Black, Gray, Violet |
| ESD-SR-110 | 14.4 | 14.2 | 28.0 | Up to 5.0 | 6.9 | Black, Gray, Violet |
| ESD-SR-S10 | 15.5 | 14.0 | 18.5 | Up to 6.0 | 4.1 | Black |
| ESD-SR-120 | 16.0 | 16.4 | 33.0 | Up to 6.0 | 13.3 | Black, Gray, Violet |
| ESD-SR-150 | 19.6 | 20.3 | 37.4 | Up to 7.0 | 23.4 | Black, Gray, Violet |
| ESD-SR-160 | 20.2 | 20.0 | 39.0 | Up to 9.0 | 22.7 | Black, Gray, Violet |
| ESD-SR-250 | 31.5 | 31.6 | 38.0 | Up to 13.0 | 59.5 | Black, Gray, Violet |
| ESD-SR-S16 | 23.0 | 20.0 | 20.5 | Up to 8.0 | 12.9 | Black |
| ESD-SR-S25 | 33.0 | 29.0 | 15.5 | Up to 14.5 | 21.3 | Black |

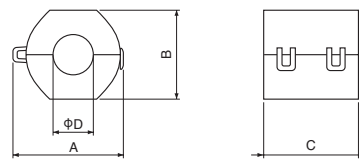
* The Violet case is built-to-order item.
 * Flame resistant grade of the case : UL94 V-0

Shape and Dimensions

● ESD-SR-□□□



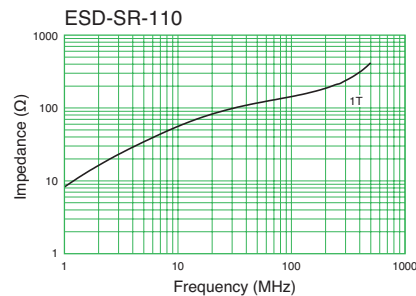
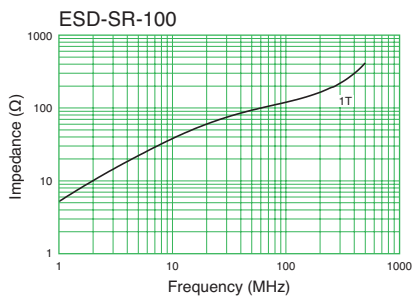
● ESD-SR-S□□



Case Color

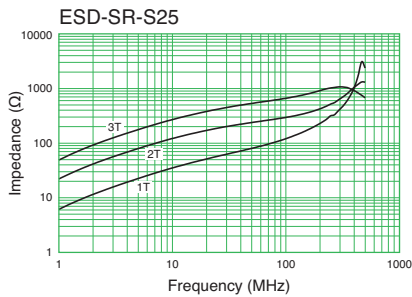
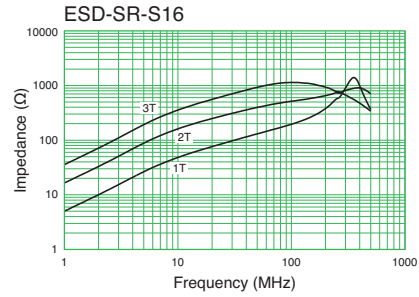
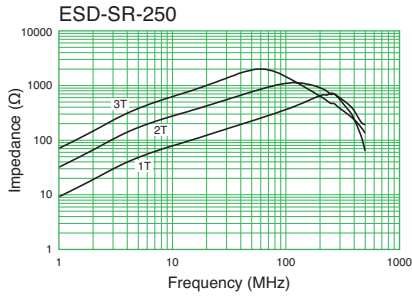
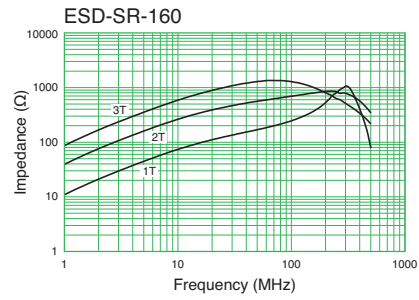
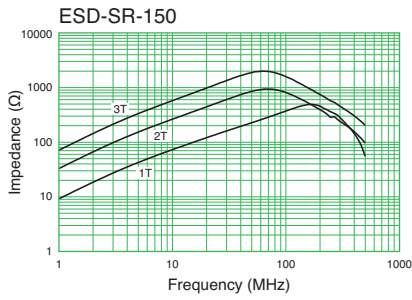
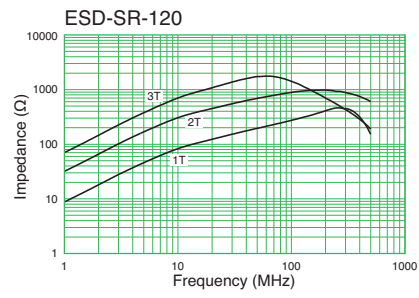
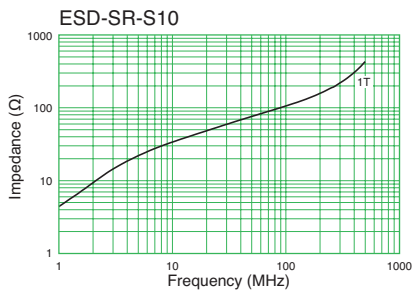
ESD-SR-□□□□ (blank) Black
 ESD-SR-□□□□G Gray
 ESD-SR-□□□□V Violet
 * Black only for ESD-SR-S□□

Impedance vs. Frequency



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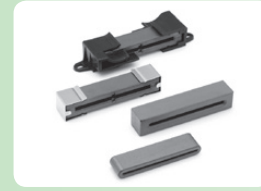
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Solid / Split Cores for Flat Cables

[RoHS Compliant]



● **ESD-FPL Series**

| Model | Dimensions(mm) | | | | | Applicable cable | shape | Remarks |
|-----------------|----------------|------|-------|------|------|------------------|-------|------------------|
| | a | b | c | d | e | | | |
| ESD-FPL-14.5-3 | 14.5 | 11.0 | 2.75 | 3.0 | 0.80 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-14.5-5 | 14.5 | 11.0 | 2.75 | 5.0 | 0.80 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-14.5-8 | 14.5 | 11.0 | 2.75 | 8.0 | 0.80 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-14.5-10 | 14.5 | 11.0 | 2.75 | 10.0 | 0.80 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-16-12 | 16.0 | 11.5 | 4.50 | 12.0 | 0.85 | 8 core | Fig.3 | |
| ESD-FPL-18-6 | 18.0 | 14.0 | 5.00 | 6.0 | 1.00 | FPC-FFC | Fig.3 | |
| ESD-FPL-18-8 | 18.0 | 14.0 | 5.00 | 8.0 | 1.00 | 10 core | Fig.3 | |
| ESD-FPL-18-12 | 18.0 | 14.0 | 5.00 | 12.0 | 1.00 | FPC-FFC | Fig.3 | |
| ESD-FPL-18.7-3 | 18.7 | 15.0 | 2.75 | 3.0 | 0.70 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-18.7-7 | 18.7 | 15.0 | 2.75 | 7.0 | 0.70 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-18.7-10 | 18.7 | 15.0 | 2.75 | 10.0 | 0.70 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-18.7-12 | 18.7 | 15.0 | 2.75 | 12.0 | 0.70 | FPC-FFC | Fig.3 | Thin type |
| ESD-FPL-21-8 | 21.0 | 17.0 | 5.00 | 8.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-21.5-8 | 21.5 | 16.5 | 6.50 | 8.0 | 1.30 | 12 core | Fig.3 | |
| ESD-FPL-23.8-7 | 23.8 | 18.8 | 6.30 | 7.0 | 1.10 | 12 core | Fig.3 | |
| ESD-FPL-13 | 23.8 | 18.8 | 6.30 | 15.0 | 1.10 | 13 core | Fig.3 | |
| ESD-FPL-24-8 | 24.0 | 19.0 | 6.50 | 8.0 | 1.30 | 14 core | Fig.3 | |
| ESD-FPL-24.5-6 | 24.5 | 20.0 | 4.50 | 6.0 | 0.90 | FPC-FFC | Fig.3 | |
| ESD-FPL-24.5-8 | 24.5 | 20.0 | 4.50 | 8.0 | 0.90 | FPC-FFC | Fig.3 | |
| ESD-FPL-25-12 | 25.0 | 21.0 | 5.00 | 12.0 | 0.85 | 16 core | Fig.3 | |
| ESD-FPL-27-8 | 27.0 | 22.0 | 6.50 | 8.0 | 1.30 | 16 core | Fig.3 | |
| ESD-FPL-7 | 28.0 | 23.5 | 7.70 | 7.0 | 1.50 | 16 core | Fig.2 | |
| ESD-FPL-15 | 28.0 | 23.5 | 7.70 | 14.6 | 1.50 | 16 core | Fig.2 | |
| ESD-FPL-28-10 | 28.0 | 24.0 | 5.00 | 10.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-31-9 | 31.0 | 27.0 | 5.00 | 9.0 | 0.55 | FPC | Fig.3 | Minimal gap type |
| ESD-FPL-31-12 | 31.0 | 27.0 | 5.00 | 12.0 | 0.55 | FPC | Fig.3 | Minimal gap type |
| ESD-FPL-32-8 | 32.0 | 28.0 | 5.00 | 8.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-32-12 | 32.0 | 28.0 | 5.00 | 12.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-20-12 | 33.2 | 27.0 | 8.00 | 12.0 | 1.50 | 20 core | Fig.3 | |
| ESD-FPL-20-15 | 33.2 | 27.0 | 8.00 | 15.0 | 1.50 | 20 core | Fig.3 | |
| ESD-FPL-33.5-8 | 33.5 | 27.5 | 6.50 | 8.0 | 1.30 | 20 core | Fig.3 | |
| ESD-FPL-33.5-10 | 33.5 | 27.5 | 6.50 | 10.0 | 1.30 | 20 core | Fig.3 | |
| ESD-FPL-33.5-12 | 33.5 | 27.5 | 6.50 | 12.0 | 1.30 | 20 core | Fig.3 | |
| ESD-FPL-34-15 | 34.0 | 30.0 | 6.00 | 15.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-35-5 | 35.0 | 30.0 | 8.00 | 5.0 | 1.30 | 22 core | Fig.3 | |
| ESD-FPL-35-8 | 35.0 | 30.0 | 8.00 | 8.0 | 1.30 | 22 core | Fig.3 | |
| ESD-FPL-16 | 37.0 | 25.4 | 12.00 | 12.7 | 1.90 | 16 core | Fig.1 | |
| ESD-FPL-38-12 | 38.0 | 34.0 | 5.00 | 12.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-38.5-8 | 38.5 | 35.0 | 4.00 | 8.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-38.5-12 | 38.5 | 35.0 | 4.00 | 12.0 | 0.80 | FPC-FFC | Fig.3 | |
| ESD-FPL-40-10 | 40.0 | 34.8 | 6.50 | 10.0 | 1.30 | 26 core | Fig.3 | |
| ESD-FPL-40-12 | 40.0 | 34.8 | 6.50 | 12.0 | 1.30 | 26 core | Fig.3 | |
| ESD-FPL-40-15 | 40.0 | 34.8 | 6.50 | 15.0 | 1.30 | 26 core | Fig.3 | |
| ESD-FPL-26 | 41.2 | 35.0 | 7.70 | 15.0 | 1.50 | 26 core | Fig.3 | |
| ESD-FPL-45.2-8 | 45.2 | 40.0 | 6.50 | 8.0 | 1.30 | 30 core | Fig.3 | |
| ESD-FPL-45-12 | 45.2 | 40.0 | 6.50 | 12.0 | 1.50 | 30 core | Fig.3 | |
| ESD-FPL-49.6-12 | 49.6 | 44.5 | 6.50 | 12.0 | 1.30 | 32 core | Fig.3 | |
| ESD-FPL-57.6-12 | 57.6 | 52.0 | 6.50 | 12.0 | 1.30 | 40 core | Fig.3 | |
| ESD-FPL-34 | 60.0 | 48.5 | 12.00 | 12.7 | 2.20 | 34 core | Fig.1 | |
| ESD-FPL-50 | 80.0 | 68.6 | 12.00 | 12.7 | 1.90 | 50 core | Fig.1 | |

* Other sizes available. Please contact TOKIN.



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●ESD-FPD Series

| Model | Dimensions(mm) | | | | | Applicable cable | Remarks |
|--------------|----------------|------|------|------|-----|------------------|-----------------------|
| | a | b | c | d | e | | |
| ESD-FPD-16 | 37.0 | 25.4 | 10.0 | 12.7 | 2.6 | 16 core | Stainless steel clamp |
| ESD-FPD-16-1 | 37.0 | 25.4 | 10.0 | 12.7 | 2.6 | 16 core | Nylon clamp |
| ESD-FPD-34 | 60.0 | 48.3 | 10.0 | 12.7 | 2.0 | 34 core | Stainless steel clamp |
| ESD-FPD-34-1 | 60.0 | 48.3 | 10.0 | 12.7 | 2.0 | 34 core | Nylon clamp |
| ESD-FPD-40 | 68.0 | 56.0 | 10.0 | 12.7 | 2.0 | 40 core | Stainless steel clamp |
| ESD-FPD-40-1 | 68.0 | 56.0 | 10.0 | 12.7 | 2.0 | 40 core | Nylon clamp |
| ESD-FPD-50 | 80.0 | 68.6 | 10.0 | 12.7 | 2.0 | 50 core | Stainless steel clamp |
| ESD-FPD-50-1 | 80.0 | 68.6 | 10.0 | 12.7 | 2.0 | 50 core | Nylon clamp |

Shape and Dimensions

●ESD-FPD Series (Core)

●ESD-FPD Series Clamp (Stainless steel)

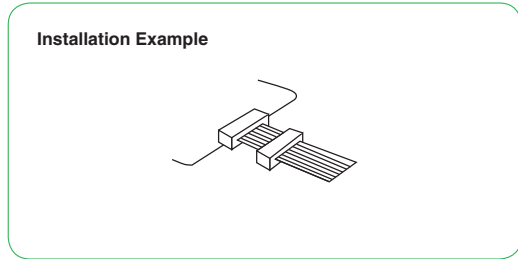
●ESD-FPD-1 Series Clamp FPD-CL-1 (Black nylon with cable stopper)

●Fig.1

●Fig.2

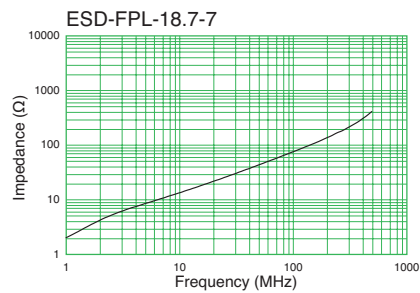
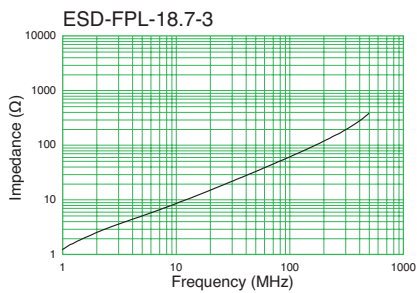
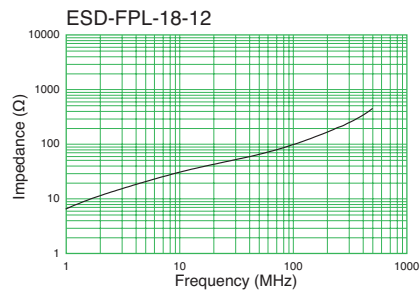
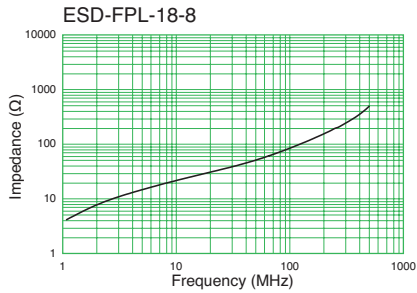
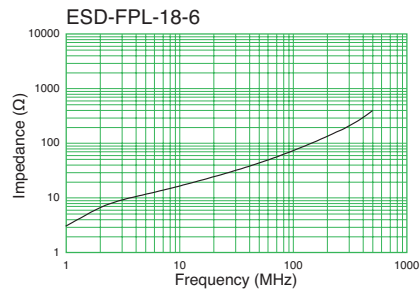
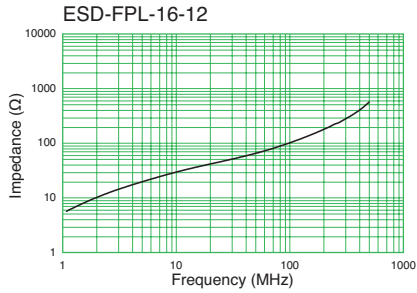
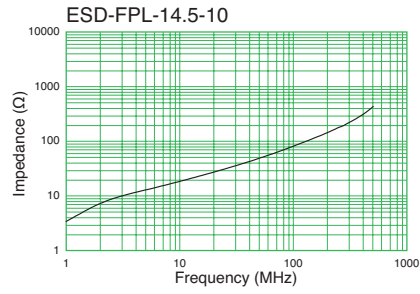
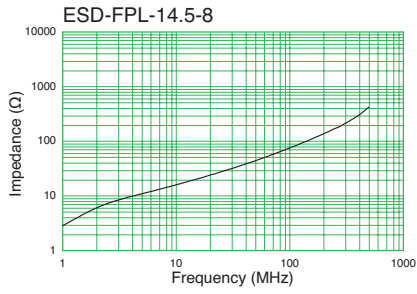
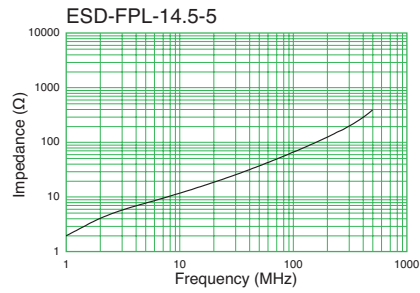
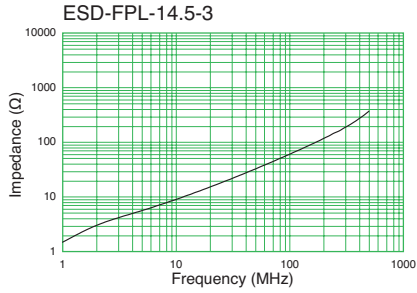
●Fig.3

[mm]



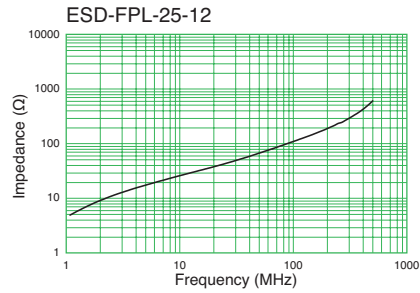
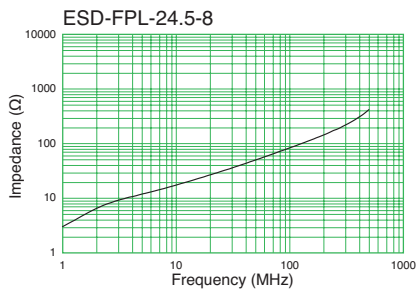
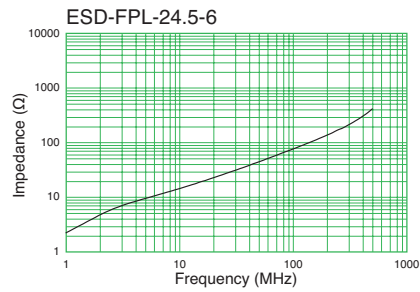
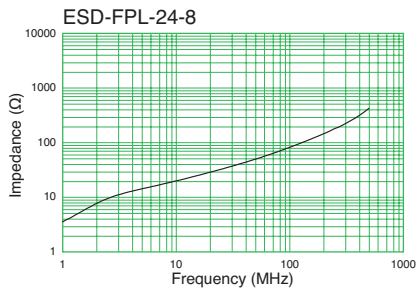
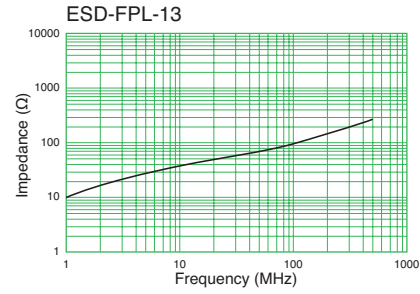
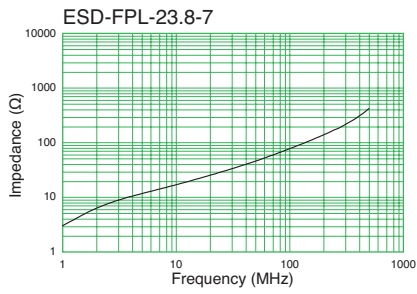
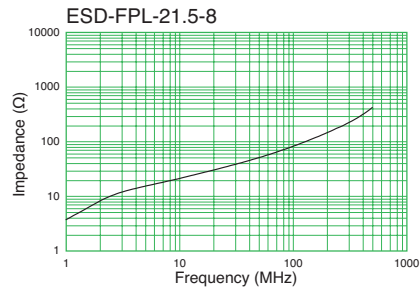
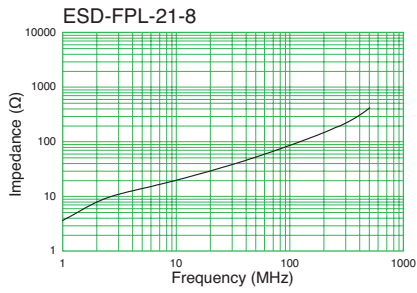
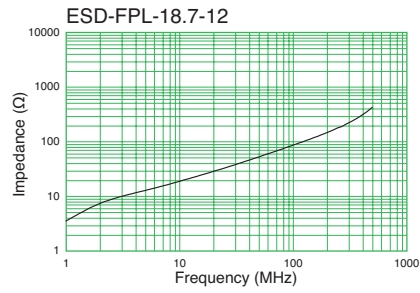
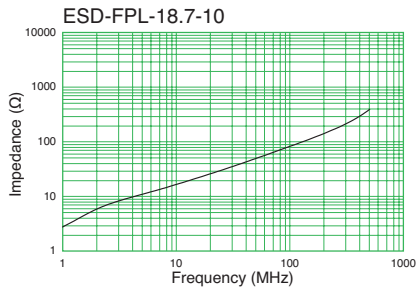
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Impedance vs. Frequency



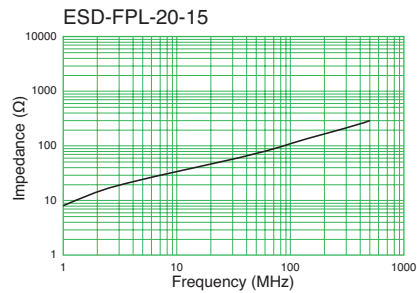
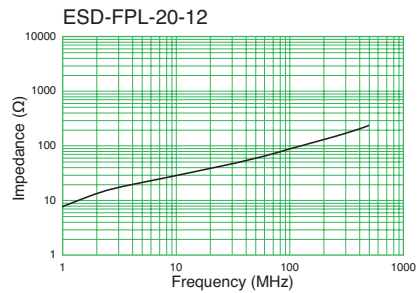
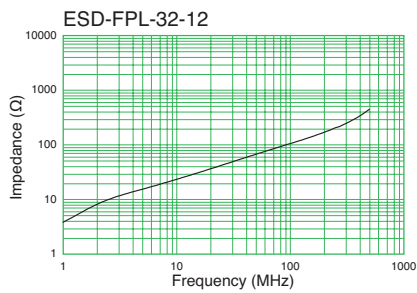
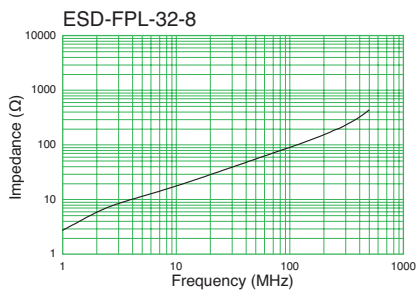
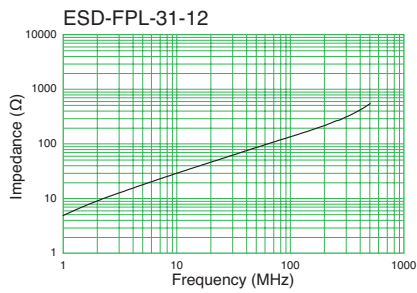
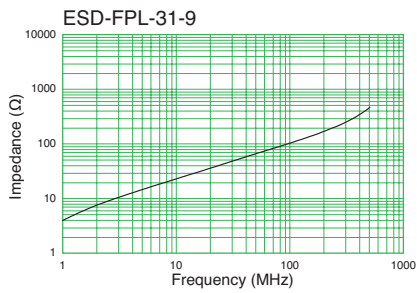
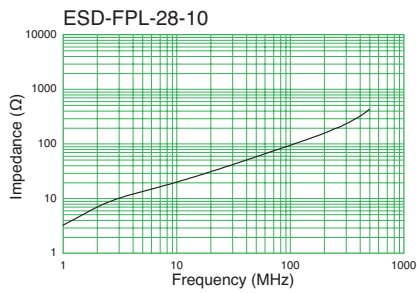
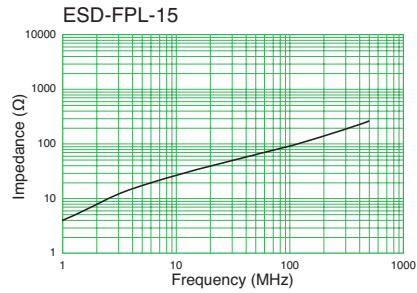
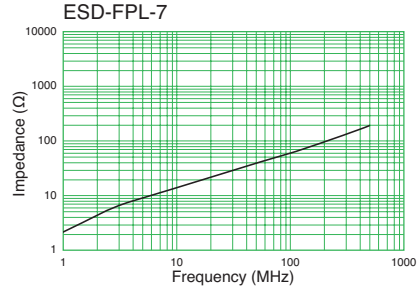
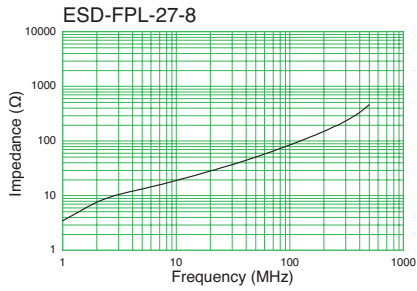
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Impedance vs. Frequency



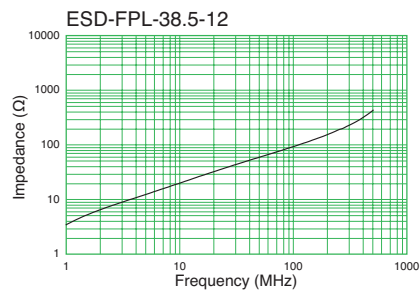
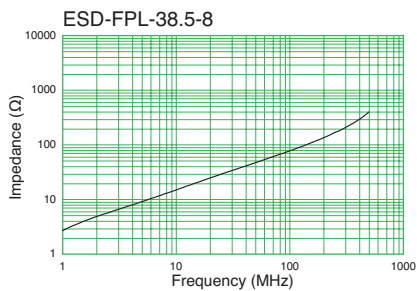
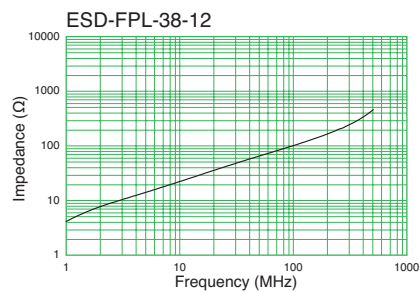
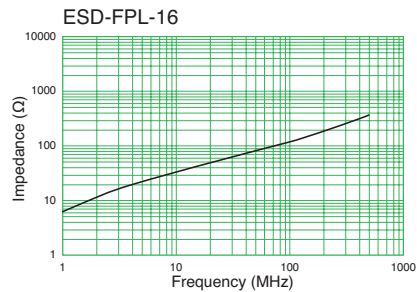
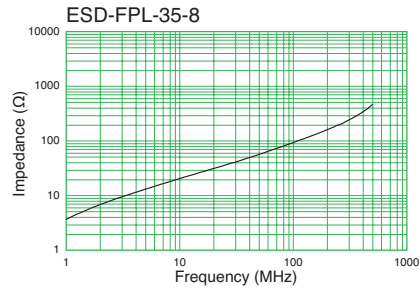
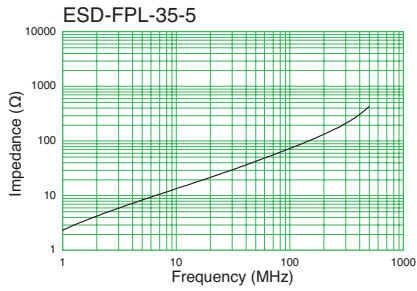
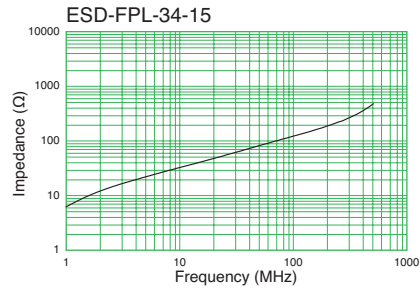
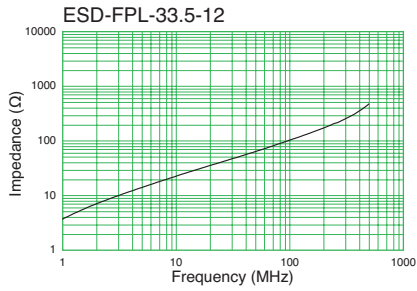
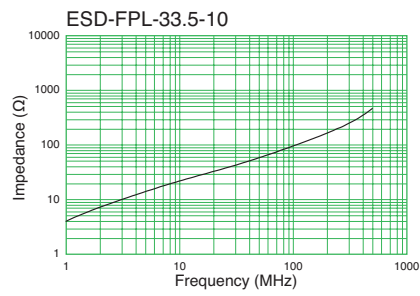
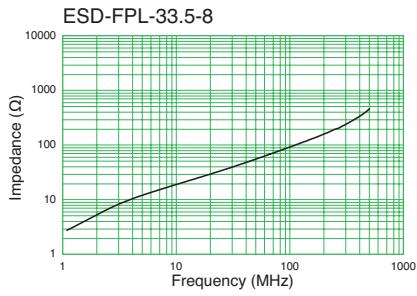
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Impedance vs. Frequency



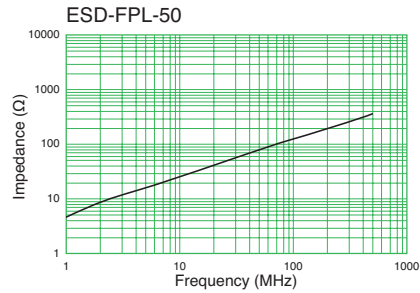
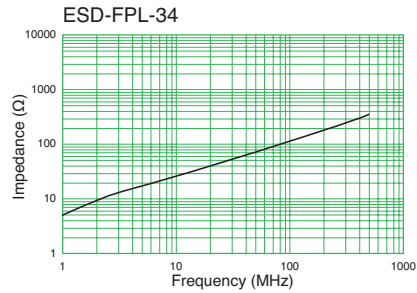
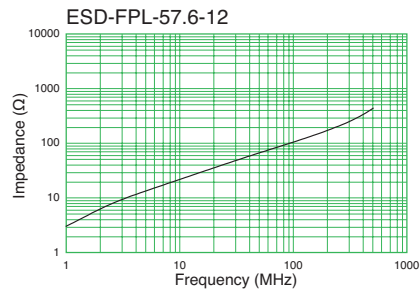
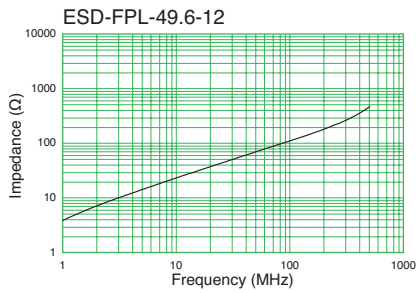
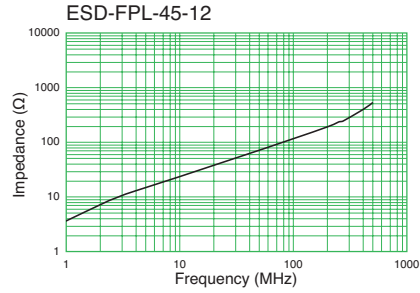
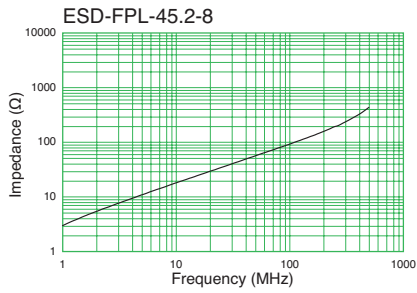
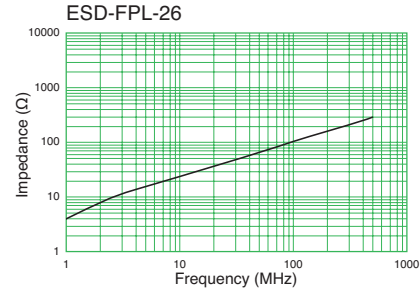
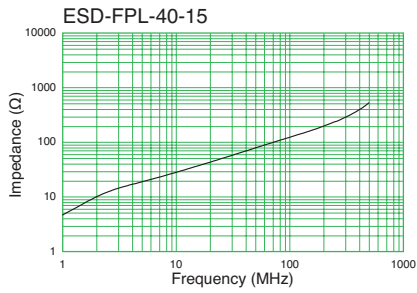
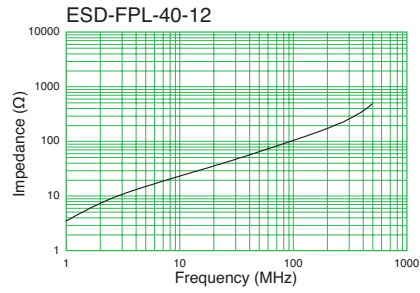
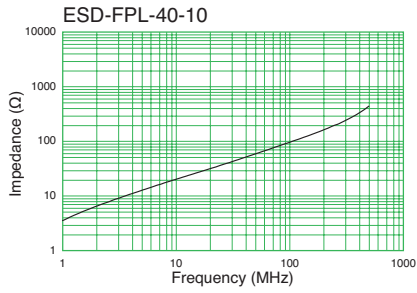
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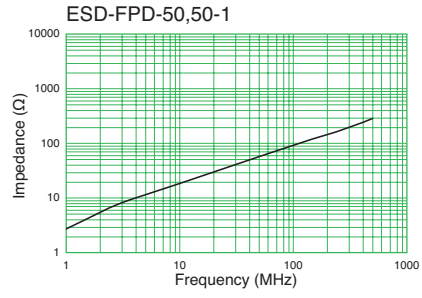
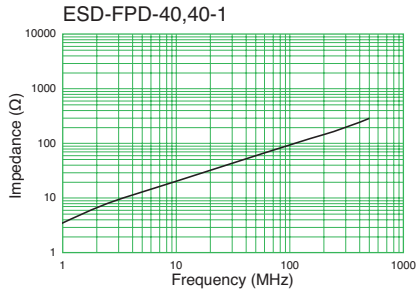
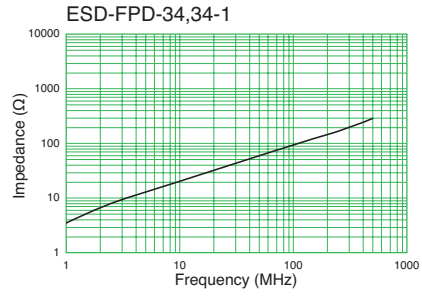
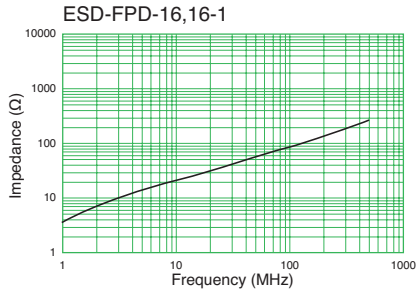
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Bead Cores

[RoHS Compliant]

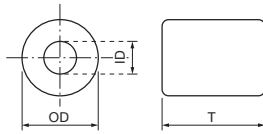


| Model | Dimensions(mm) | | | Frequency range | | Remarks |
|-----------|----------------|-----|-----|---------------------------------------|--|----------|
| | OD | ID | T | up to 10MHz (mainly AM band range) | up to 300MHz (mainly FM band range) | |
| B-20F-28 | 2.8 | 1.3 | 3.0 | ● | | |
| B-20F-38 | 3.8 | 1.5 | 4.3 | ● | | |
| B-20F-46 | 4.6 | 1.5 | 4.3 | ● | | |
| B-20F-57 | 5.7 | 1.5 | 8.0 | ● | | |
| B-20L-25 | 2.5 | 1.0 | 1.2 | | ● | |
| B-20L-34 | 3.4 | 0.8 | 4.4 | | ● | |
| B-20L-44 | 4.4 | 1.6 | 7.0 | | ● | |
| B-20L-48B | 4.8 | 2.4 | 4.8 | | ● | |
| B-20L-95B | 9.7 | 4.8 | 4.2 | | ● | (coated) |

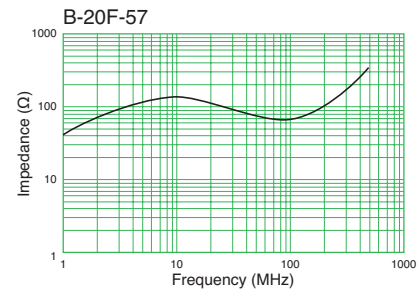
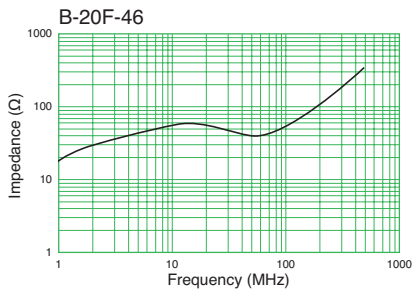
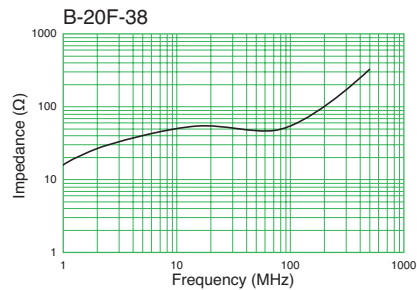
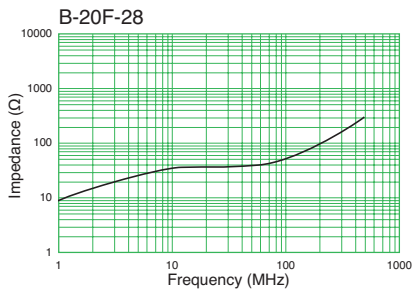
* Above frequency range is a reference only. Please test with actual device before use.

Shape and Dimensions

● Beads Cores

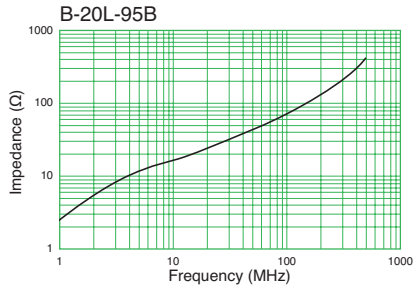
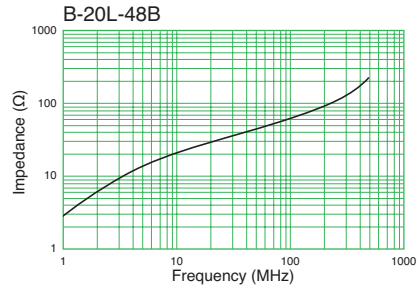
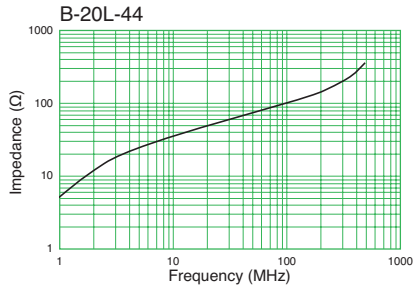
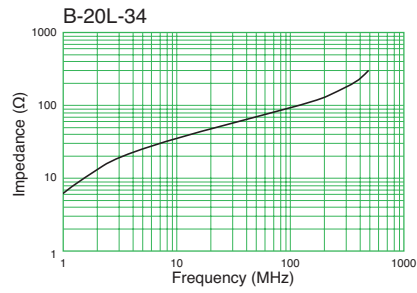
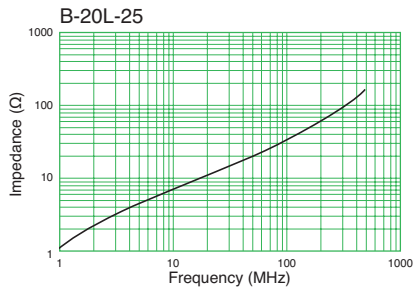


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Precautions



- The names of the products and the specifications in this catalog are subject to change without notice for the sake of improvement. The manufacturer also reserves the right to discontinue any of these products. At the time of delivery, please ask for specifications sheets to check the contents in order to use the products properly and safely.
- Descriptions in this catalog regarding product characteristics and quality are based solely on discrete components. When using these components, be sure to check the specifications with the component in question mounted on the products.
- The manufacturer's warranty will not cover any disadvantage or damage caused by improper use of the products that deviates from the characteristics, specifications, or conditions for use described in this catalog.
- The products in this catalog are intended for use in ordinary electronic products. If any of these products are to be used in special applications requiring extremely high reliability, such as in aviation equipment and nuclear power controllers where product defects might pose a safety risk, please consult your TOKIN sales representatives.
- Though the manufacturer has taken all possible precautions to ensure the quality and reliability of its products, improper use of products may result in bodily injury, fire, or similar accident. If you have any questions regarding the use of the products in question, please consult your TOKIN sales representatives.
- Please be advised that the manufacturer accepts no responsibility for any infraction by users of the manufacturer's products on third party patents or industrial copyrights. The manufacturer is responsible only when such infractions are attributable to the structural design of the product and its manufacturing process.
- Export Control
For customers outside Japan
TOKIN products should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destructive weapons(nuclear weapons, chemical or biological weapons, or missiles), or any other weapons.
For customers in Japan
For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.
- This catalog is current as of April 2017.



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