

Overview

The KEMET Noise Suppression Sheet FLEX SUPPRESSOR is effectively designed for high frequency noise that is generated from the electronic devices. The flexible sheet is a polymer base, blended with micron-sized magnetic powders dispersed throughout the material. These sheets are effective for electromagnetic wave and resonance suppression, and can be cut into a variety of shapes and sizes.

Applications

- Radiation noise suppression for electronic equipment, especially mobile phone, display, digital still camera, digital video camera, notebook PC and tablet, car infotainment
- Quasi-microwave range interference prevention inside and in-between electronics, desense in FM radio, digital TV, LTE, GPS, Wi-Fi, Bluetooth and optical transceiver
- Electro static discharge (ESD) countermeasure
- Enhanced wireless power transfer

Benefits

- Electromagnetic wave suppression – the electromagnetic wave enters through the sheet and is suppressed by losing its magnetic structure
- Resonance suppression – controls the high frequency current and suppresses unwanted electromagnetic resonance by creating impedance
- Wide range of frequencies available from MHz band to GHz band
- Thin, flexible material used in portable equipment
- Virtually no limitation to where it can be used
- Less time required for installation
- Easily cut into any shape
- RoHS compliant and halogen-free
- AEC-Q200 (FF1 and EFF4)
- Available in SHF band (EFS)

Sheet Type



Roll Type

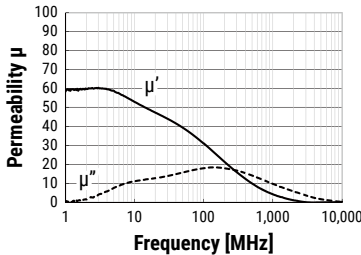
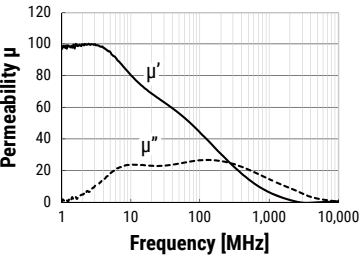
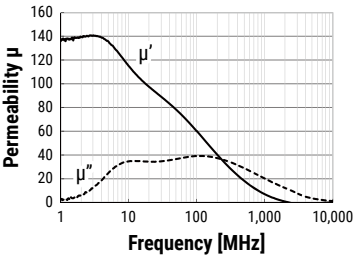
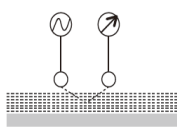
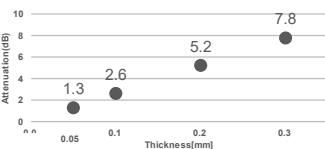
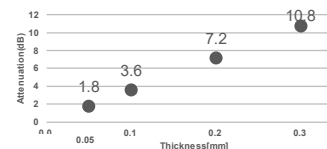
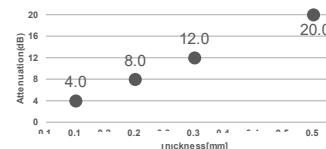


Part Number System

| EFF4 | (01)- | 240X240 | T0800 |
|--------|------------------|---------------------------------|--|
| Series | Thickness | Standard Dimensions | Adhesive Tape Thickness |
| EFA | | | |
| EFF* | (003) = 0.03 mm* | | |
| EFF4 | (005) = 0.05 mm | | |
| EFG* | (007) = 0.07 mm* | | |
| EFG2 | (01) = 0.1 mm | 80X80 = Sheet 80 mm x 80 mm | |
| EFG3 | (02) = 0.2 mm | 120X120 = Sheet 120 mm x 120 mm | |
| EFH* | (03) = 0.3 mm | 240X80 = Sheet 240 mm x 80 mm | |
| EFR* | (05) = 0.5 mm | 240X240 = Sheet 240 mm x 240 mm | |
| EFS | (10) = 1.0 mm | 240X10M = Roll 240 mm x 10 m | |
| EFW | (25) = 0.025 mm | 240X20M = Roll 240 mm x 20 m | |
| EFX* | (50) = 0.05 mm | 240X30M = Roll 240 mm x 30 m | |
| EFX6 | (75) = 0.075 mm | 240X50M = Roll 240 mm x 50 m | |
| FF1 | (100) = 0.1 mm | | |
| FG1 | (200) = 0.2 mm | | |
| FS | (300) = 0.3 mm | | |
| FX5 | | | |
| | | | T0800 = 0.03 mm T1500 = 0.14 mm* T2200 = 0.05 mm* T2900 = 0.01 mm Blank = No adhesive tape |

* Not for new design.

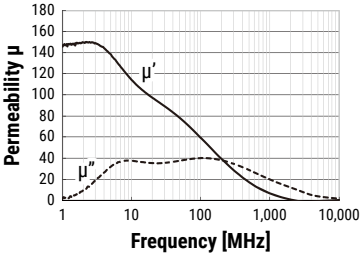
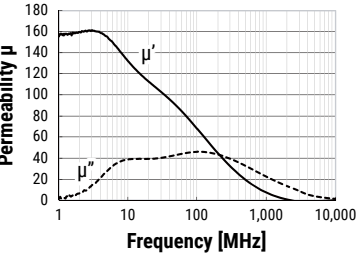
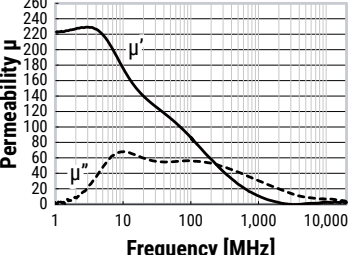
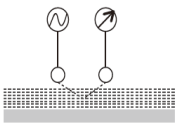
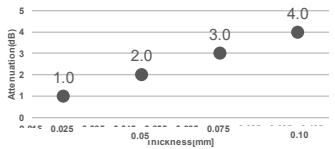
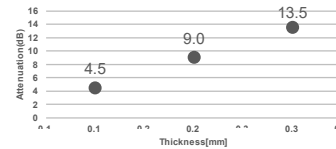
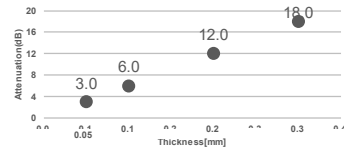
Specifications - UL94 V-0 Flame Retardant Type

| Features | | UL94 V-0 Flame Retardant Type | | |
|--|----------------|---|--|---|
| Series | | EFA | FF1 | EFF4 |
| Effective Frequency | | 1 MHz to 3 GHz | | |
| Operating Temperature (°C) | | -40 to +105 | -40 to +125 | |
| Thickness (mm) | | 0.05/0.1/0.2/0.3 | 0.05/0.1/0.2/0.3 | 0.1/0.2/0.3/0.5 |
| Standard Dimensions (mm) | | 240 X 240 (Roll on request) | 240 X 240 (Roll on request) | 240 X 240 |
| Permeability (μ) | | 60 typical, at 3 MHz | 100 typical, at 3 MHz | 140 typical, at 3 MHz |
| | |  |  |  |
| Decoupling Characteristics | | at 700 MHz | at 700 MHz | at 700 MHz |
|  FLEX SUPPRESSOR [®] Metal | |  |  |  |
| | | | | |
| Specific Gravity ¹ | | 3.1 typical | 3.1 typical | 3.7 typical |
| Surface Resistivity (Ω/sq.) | | 1.0 X 10 ⁶ typical | | |
| Approved Standard | | UL94 V-0 UL File No. E176124 | | |
| Environment | RoHS | Compliant | | |
| | Halogen | Free | | |
| | PVC | Free | | |
| | Lead | Free | | |
| | Red Phosphorus | Free | - | |
| Reflow Temperature (°C) | | Up to 260°C, special double-sided adhesive tape required, available upon request. | | |

¹ Value in 23°C atmosphere.

Above specifications are for the FLEX SUPPRESSOR only (adhesives, etc., not included.)

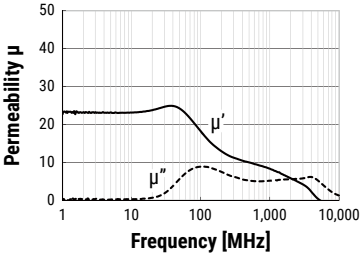
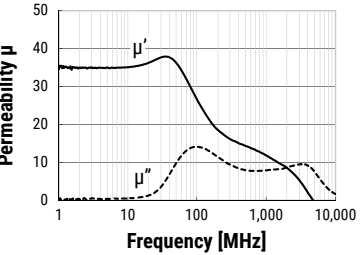
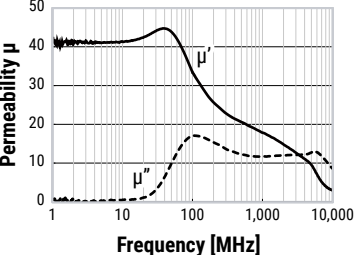
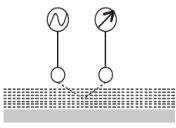
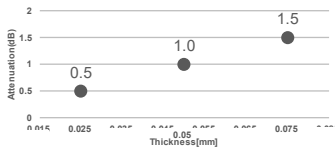
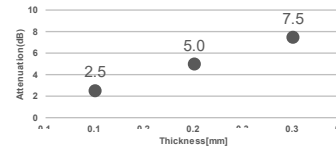
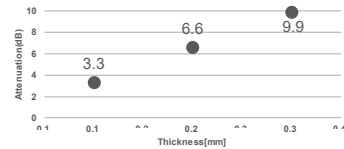
Specifications - High Permeability Type

| Features | | High Permeability Type | | |
|---|----------------|---|--|---|
| Series | | FX5 | EFX6 | EFW |
| Effective Frequency | | 1 MHz to 3 GHz | | |
| Operating Temperature (°C) | | -40 to +105 | | |
| Thickness (mm) | | 0.025/0.05/0.075/0.1 | 0.1/0.2/0.3 | 0.05/0.1/0.2/0.3 |
| Standard Dimensions (mm) | | 240 X 240 (Roll on request) | 240 X 240 | 240 X 240 |
| Permeability (μ) | | 150 typical, at 3 MHz | 160 typical, at 3 MHz | 230 typical, at 3 MHz |
| | |  |  |  |
| Decoupling Characteristics | | at 700 MHz | at 700 MHz | at 700 MHz |
|  | |  |  |  |
| | | | | |
| Specific Gravity ¹ | | 3.3 typical | 3.8 typical | 4.0 typical |
| Surface Resistivity (Ω /sq.) | | 1.0 X 10 ⁶ typical | | |
| Approved Standard | | UL94 HB UL File No. E176124 | | |
| Environment | RoHS | Compliant | | |
| | Halogen | Free | | |
| | PVC | Free | | |
| | Lead | Free | | |
| | Red Phosphorus | Free | | |
| Reflow Temperature (°C) | | Up to 260°C, special double-sided adhesive tape required, available upon request. | | |

¹ Value in 23°C atmosphere.

Above specifications are for the FLEX SUPPRESSOR only (adhesives, etc., not included.)

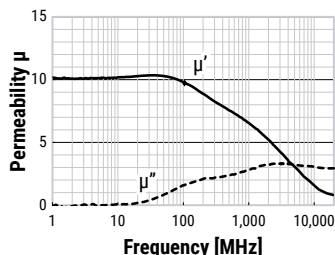
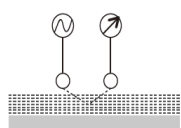
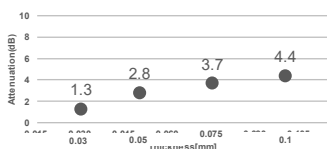
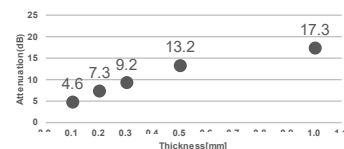
Specifications - GHz Band High Performance Type

| Features | | GHz Band High Performance Type | | |
|---|----------------|---|--|---|
| Series | | FG1 | EFG2 | EFG3 |
| Effective Frequency | | 1 GHz to 10 GHz | | |
| Operating Temperature (°C) | | -40 to +105 | | |
| Thickness (mm) | | 0.025/0.05/0.075 | 0.1/0.2/0.3 | 0.1/0.2/0.3 |
| Standard Dimensions (mm) | | 240 X 240 (Roll on request) | 240 X 240 | 240 X 240 |
| Permeability (μ) | | 25 typical, at 3 MHz | 35 typical, at 3 MHz | 42 typical, at 3 MHz |
| | |  |  |  |
| Decoupling Characteristics | | at 2.4 GHz | at 2.4 GHz | at 2.4 GHz |
|  | |  |  |  |
| | | | | |
| Specific Gravity ¹ | | 3.1 typical | 3.9 typical | 4.1 typical |
| Surface Resistivity (Ω /sq.) | | 1.0 X 10 ⁶ typical | | |
| Approved Standard | | UL94 HB UL File No. E176124 | | |
| Environment | RoHS | Compliant | | |
| | Halogen | Free | | |
| | PVC | Free | | |
| | Lead | Free | | |
| | Red Phosphorus | Free | | |
| Reflow Temperature (°C) | | Up to 260°C, special double-sided adhesive tape required, available upon request. | | |

¹ Value in 23°C atmosphere.

Above specifications are for the FLEX SUPPRESSOR only (adhesives, etc., not included.)

Specifications - Super High Frequency Type

| Features | | Super High Frequency Type | |
|---|----------------|---|--|
| Series | | FS | EFS |
| Effective Frequency | | 3 GHz to 40 GHz | |
| Operating Temperature (°C) | | -40 to +105 | |
| Thickness (mm) | | 0.03/0.05/0.075/0.1 | 0.1/0.2/0.3/0.5/1.0 |
| Standard Dimensions (mm) | | 240 X 240 (Roll on request) | 240 X 240 |
| Permeability at 3 MHz | | 10 typical, at 10 MHz | |
| | |  | |
| Decoupling Characteristics | | at 10 GHz | |
|  | |  |  |
| Specific Gravity ¹ | | 4.5 typical | |
| Surface Resistivity (Ω/sq.) | | 1.0 X 10 ⁸ typical | |
| Approved Standard | | UL94 V-0 UL File No. E176124 | |
| Environment | RoHS | Compliant | |
| | Halogen | Free | |
| | PVC | Free | |
| | Lead | Free | |
| | Red Phosphorus | Free | |
| Reflow Temperature (°C) | | Up to 260°C, special double-sided adhesive tape required, available upon request. | |

¹ Value in 23°C atmosphere.

Above specifications are for the FLEX SUPPRESSOR only (adhesives, etc., not included.)

Specifications - Not for New Design

| Features | | Standard Specifications | High Magnetic Permeability Type | Extra High Magnetic Permeability Type | High Frequency | High Temperature Reflow |
|--|----------------|---|--|--|---|---------------------------------|
| Series | | EFR | EFX | EFF | EFG | EFH |
| Effective Frequency | | Up to 10 GHz | | | | |
| Operating Temperature (°C) | | -40 to +105 | | | | |
| Thickness (mm) | | 0.05/0.1/0.2/0.3/0.5/1.0 | 0.05/0.1/0.2/0.3/0.5 | 0.07/0.1/0.2/0.3 | 0.05/0.1/0.2/0.3 | 0.05/0.1 |
| Standard Dimensions (mm) | | 240 x 240 | | | | |
| Specific Gravity ¹ | | 2.8 typical | 3.2 typical | 3.6 typical | 3.0 typical | 3.1 typical |
| Tensile Strength (Mpa) | | 3.6 minimum | 6.8 minimum | 6.9 minimum | 3.5 minimum | 6.8 minimum |
| Surface Resistivity (Ω/sq.) | | 1.0 x 10 ⁷ typical | 1.0 x 10 ⁶ typical | 1.0 x 10 ⁶ typical | 1.0 x 10 ⁶ typical | 1.0 x 10 ⁷ typical |
| Thermal Conductivity (W/m K) | | 0.22 | 0.22 | 0.4 | 0.22 | 1.3 |
| Approved Standard | | UL 94 V-0 | UL 94 HB | UL 94 V-0 | UL 94 V-1 | UL 94 V-0 |
| | | UL File No. E176124 | | | | |
| Environment | RoHS | Compliant | | | | |
| | Halogen | Free | | | | |
| | PVC | Free | | | | |
| | Lead | Free | | | | |
| | Red Phosphorus | – | Free | – | – | Free |
| Relative Magnetic Permeability (at 3MHz) | | 60 typical | 100 typical | 130 typical | 20 typical | 60 typical |
| Remarks | | 60 μ high permeability, various thickness flame retardant (UL 94 V-0 certified) | 100 μ high permeability, various thickness | Industry's highest magnetic permeability of 130 μ with halogen free composition. Flame retardant (UL 94 V-0 certified) | Excellent suppression of high frequency noise in Wi-Fi and higher bandwidths. | Can be mounted before reflowing |

¹ Value in 23°C atmosphere.

Above specifications are for the FLEX SUPPRESSOR only (adhesives, etc., not included.)

Table 1A – Ratings & Part Number Reference

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|-----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|----------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| EFA(005)-120X120T0800 | EFA | 0.05 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 2.83 |
| EFA(005)-240X10M | EFA | 0.05 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 403.00 |
| EFA(005)-240X10MT0800 | EFA | 0.05 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 498.96 |
| EFA(005)-240X240T0800 | EFA | 0.05 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 9.81 |
| EFA(005)-240X50M | EFA | 0.05 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 1,860.00 |
| EFA(005)-240X50MT0800 | EFA | 0.05 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 2,042.40 |
| EFA(005)-240X80T0800 | EFA | 0.05 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 3.77 |
| EFA(005)-80X80T0800 | EFA | 0.05 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 1.26 |
| EFA(01)-120X120T0800 | EFA | 0.1 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 5.05 |
| EFA(01)-240X10M | EFA | 0.1 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 806.40 |
| EFA(01)-240X10MT0800 | EFA | 0.1 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 902.16 |
| EFA(01)-240X240T0800 | EFA | 0.1 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 18.74 |
| EFA(01)-240X50M | EFA | 0.1 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 3,720.00 |
| EFA(01)-240X50MT0800 | EFA | 0.1 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 3,902.40 |
| EFA(01)-240X80T0800 | EFA | 0.1 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 6.73 |
| EFA(01)-80X80T0800 | EFA | 0.1 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 2.24 |
| EFA(02)-120X120T0800 | EFA | 0.2 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 9.53 |
| EFA(02)-240X10M | EFA | 0.2 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 1,612.80 |
| EFA(02)-240X10MT0800 | EFA | 0.2 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 1,708.56 |
| EFA(02)-240X240 | EFA | 0.2 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 35.72 |
| EFA(02)-240X240T0800 | EFA | 0.2 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 36.59 |
| EFA(02)-240X30M | EFA | 0.2 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 4,464.00 |
| EFA(02)-240X30MT0800 | EFA | 0.2 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 4,573.44 |
| EFA(02)-240X80T0800 | EFA | 0.2 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 12.70 |
| EFA(02)-80X80T0800 | EFA | 0.2 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 4.23 |
| EFA(03)-120X120T0800 | EFA | 0.3 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 13.98 |
| EFA(03)-240X10M | EFA | 0.3 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 2,419.20 |
| EFA(03)-240X10MT0800 | EFA | 0.3 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 2,514.96 |
| EFA(03)-240X20M | EFA | 0.3 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 4,464.00 |
| EFA(03)-240X20MT0800 | EFA | 0.3 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 4,536.96 |
| EFA(03)-240X240 | EFA | 0.3 | -- | 60 | 3.1 | 1.0 X 10 ⁶ | 53.57 |
| EFA(03)-240X240T0800 | EFA | 0.3 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 54.45 |
| EFA(03)-240X80T0800 | EFA | 0.3 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 18.63 |
| EFA(03)-80X80T0800 | EFA | 0.3 | 0.03 | 60 | 3.1 | 1.0 X 10 ⁶ | 6.21 |
| EFF4(01)-120X120T0800 | EFF4 | 0.1 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 5.92 |
| EFF4(01)-240X240T0800 | EFF4 | 0.1 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 23.66 |
| EFF4(01)-240X80T0800 | EFF4 | 0.1 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 7.89 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

Table 1A – Ratings & Part Number Reference cont.

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|-----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|--------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| EFF4(01)-80X80T0800 | EFF4 | 0.1 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 2.63 |
| EFF4(02)-120X120T0800 | EFF4 | 0.2 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 11.24 |
| EFF4(02)-240X240 | EFF4 | 0.2 | -- | 140 | 3.7 | 1.0 X 10 ⁶ | 42.63 |
| EFF4(02)-240X240T0800 | EFF4 | 0.2 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 44.97 |
| EFF4(02)-240X80T0800 | EFF4 | 0.2 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 14.99 |
| EFF4(02)-80X80T0800 | EFF4 | 0.2 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 5.00 |
| EFF4(03)-120X120T0800 | EFF4 | 0.3 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 16.57 |
| EFF4(03)-240X240 | EFF4 | 0.3 | -- | 140 | 3.7 | 1.0 X 10 ⁶ | 63.94 |
| EFF4(03)-240X240T0800 | EFF4 | 0.3 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 66.28 |
| EFF4(03)-240X80T0800 | EFF4 | 0.3 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 22.09 |
| EFF4(03)-80X80T0800 | EFF4 | 0.3 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 7.36 |
| EFF4(05)-120X120T0800 | EFF4 | 0.5 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 27.23 |
| EFF4(05)-240X240 | EFF4 | 0.5 | -- | 140 | 3.7 | 1.0 X 10 ⁶ | 106.56 |
| EFF4(05)-240X240T0800 | EFF4 | 0.5 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 108.90 |
| EFF4(05)-240X80T0800 | EFF4 | 0.5 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 36.30 |
| EFF4(05)-80X80T0800 | EFF4 | 0.5 | 0.03 | 140 | 3.7 | 1.0 X 10 ⁶ | 12.10 |
| EFG2(01)-120X120T0800 | EFG2 | 0.1 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 5.82 |
| EFG2(01)-240X240T0800 | EFG2 | 0.1 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 23.27 |
| EFG2(01)-240X80T0800 | EFG2 | 0.1 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 7.76 |
| EFG2(01)-80X80T0800 | EFG2 | 0.1 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 2.59 |
| EFG2(02)-120X120T0800 | EFG2 | 0.2 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 11.44 |
| EFG2(02)-240X240 | EFG2 | 0.2 | -- | 35 | 3.9 | 1.0 X 10 ⁶ | 44.93 |
| EFG2(02)-240X240T0800 | EFG2 | 0.2 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 45.74 |
| EFG2(02)-240X80T0800 | EFG2 | 0.2 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 15.25 |
| EFG2(02)-80X80T0800 | EFG2 | 0.2 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 5.08 |
| EFG2(03)-120X120T0800 | EFG2 | 0.3 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 17.05 |
| EFG2(03)-240X240 | EFG2 | 0.3 | -- | 35 | 3.9 | 1.0 X 10 ⁶ | 67.40 |
| EFG2(03)-240X240T0800 | EFG2 | 0.3 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 68.20 |
| EFG2(03)-240X80T0800 | EFG2 | 0.3 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 22.73 |
| EFG2(03)-80X80T0800 | EFG2 | 0.3 | 0.03 | 35 | 3.9 | 1.0 X 10 ⁶ | 7.58 |
| EFG3(01)-120X120T0800 | EFG3 | 0.1 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 7.89 |
| EFG3(01)-240X240T0800 | EFG3 | 0.1 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 31.57 |
| EFG3(01)-240X80T0800 | EFG3 | 0.1 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 10.52 |
| EFG3(01)-80X80T0800 | EFG3 | 0.1 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 3.51 |
| EFG3(02)-120X120T0800 | EFG3 | 0.2 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 13.65 |
| EFG3(02)-240X240 | EFG3 | 0.2 | -- | 42 | 4.1 | 1.0 X 10 ⁶ | 46.08 |
| EFG3(02)-240X240T0800 | EFG3 | 0.2 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 54.61 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

Table 1A – Ratings & Part Number Reference cont.

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|-----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|--------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| EFG3(02)-240X80T0800 | EFG3 | 0.2 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 18.20 |
| EFG3(02)-80X80T0800 | EFG3 | 0.2 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 6.07 |
| EFG3(03)-120X120T0800 | EFG3 | 0.3 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 19.41 |
| EFG3(03)-240X240 | EFG3 | 0.3 | -- | 42 | 4.1 | 1.0 X 10 ⁶ | 69.12 |
| EFG3(03)-240X240T0800 | EFG3 | 0.3 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 77.65 |
| EFG3(03)-240X80T0800 | EFG3 | 0.3 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 25.88 |
| EFG3(03)-80X80T0800 | EFG3 | 0.3 | 0.03 | 42 | 4.1 | 1.0 X 10 ⁶ | 8.63 |
| EFS(01)-120X120T0800 | EFS | 0.1 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 8.50 |
| EFS(01)-240X240T0800 | EFS | 0.1 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 34.00 |
| EFS(01)-240X80T0800 | EFS | 0.1 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 11.30 |
| EFS(01)-80X80T0800 | EFS | 0.1 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 3.80 |
| EFS(02)-120X120T0800 | EFS | 0.2 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 14.80 |
| EFS(02)-240X240 | EFS | 0.2 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 50.10 |
| EFS(02)-240X240T0800 | EFS | 0.2 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 59.10 |
| EFS(02)-240X80T0800 | EFS | 0.2 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 19.70 |
| EFS(02)-80X80T0800 | EFS | 0.2 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 6.60 |
| EFS(03)-120X120T0800 | EFS | 0.3 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 21.00 |
| EFS(03)-240X240 | EFS | 0.3 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 75.10 |
| EFS(03)-240X240T0800 | EFS | 0.3 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 84.10 |
| EFS(03)-240X80T0800 | EFS | 0.3 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 28.00 |
| EFS(03)-80X80T0800 | EFS | 0.3 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 9.30 |
| EFS(05)-120X120T0800 | EFS | 0.5 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 33.50 |
| EFS(05)-240X240 | EFS | 0.5 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 125.10 |
| EFS(05)-240X240T0800 | EFS | 0.5 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 134.20 |
| EFS(05)-240X80T0800 | EFS | 0.5 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 44.70 |
| EFS(05)-80X80T0800 | EFS | 0.5 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 14.90 |
| EFS(10)-120X120T0800 | EFS | 1.0 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 64.80 |
| EFS(10)-240X240 | EFS | 1.0 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 250.30 |
| EFS(10)-240X240T0800 | EFS | 1.0 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 259.30 |
| EFS(10)-240X80T0800 | EFS | 1.0 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 86.40 |
| EFS(10)-80X80T0800 | EFS | 1.0 | 0.03 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 28.80 |
| EFW(005)-120X120T0800 | EFW | 0.05 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 4.87 |
| EFW(005)-240X240T0800 | EFW | 0.05 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 19.47 |
| EFW(005)-240X80T0800 | EFW | 0.05 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 6.49 |
| EFW(005)-80X80T0800 | EFW | 0.05 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 2.16 |
| EFW(01)-120X120T0800 | EFW | 0.1 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 7.60 |
| EFW(01)-240X240T0800 | EFW | 0.1 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 30.42 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

Table 1A – Ratings & Part Number Reference cont.

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|-----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|----------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| EFW(01)-240X80T0800 | EFW | 0.1 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 10.14 |
| EFW(01)-80X80T0800 | EFW | 0.1 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 3.38 |
| EFW(02)-120X120T0800 | EFW | 0.2 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 13.08 |
| EFW(02)-240X240 | EFW | 0.2 | -- | 230 | 4.0 | 1.0 X 10 ⁶ | 43.78 |
| EFW(02)-240X240T0800 | EFW | 0.2 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 52.31 |
| EFW(02)-240X80T0800 | EFW | 0.2 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 17.44 |
| EFW(02)-80X80T0800 | EFW | 0.2 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 5.81 |
| EFW(03)-120X120T0800 | EFW | 0.3 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 18.55 |
| EFW(03)-240X240 | EFW | 0.3 | -- | 230 | 4.0 | 1.0 X 10 ⁶ | 65.66 |
| EFW(03)-240X240T0800 | EFW | 0.3 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 74.19 |
| EFW(03)-240X80T0800 | EFW | 0.3 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 24.73 |
| EFW(03)-80X80T0800 | EFW | 0.3 | 0.03 | 230 | 4.0 | 1.0 X 10 ⁶ | 8.24 |
| EFX6(01)-120X120T0800 | EFX6 | 0.1 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 5.69 |
| EFX6(01)-240X240T0800 | EFX6 | 0.1 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 22.77 |
| EFX6(01)-240X80T0800 | EFX6 | 0.1 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 7.59 |
| EFX6(01)-80X80T0800 | EFX6 | 0.1 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 2.53 |
| EFX6(02)-120X120T0800 | EFX6 | 0.2 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 11.17 |
| EFX6(02)-240X240 | EFX6 | 0.2 | -- | 160 | 3.8 | 1.0 X 10 ⁶ | 43.78 |
| EFX6(02)-240X240T0800 | EFX6 | 0.2 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 44.66 |
| EFX6(02)-240X80T0800 | EFX6 | 0.2 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 14.89 |
| EFX6(02)-80X80T0800 | EFX6 | 0.2 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 4.96 |
| EFX6(03)-120X120T0800 | EFX6 | 0.3 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 16.64 |
| EFX6(03)-240X240 | EFX6 | 0.3 | -- | 160 | 3.8 | 1.0 X 10 ⁶ | 65.67 |
| EFX6(03)-240X240T0800 | EFX6 | 0.3 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 66.54 |
| EFX6(03)-240X80T0800 | EFX6 | 0.3 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 22.18 |
| EFX6(03)-80X80T0800 | EFX6 | 0.3 | 0.03 | 160 | 3.8 | 1.0 X 10 ⁶ | 7.39 |
| FF1(100)-120X120T0800 | FF1 | 0.1 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 4.69 |
| FF1(100)-240X10M | FF1 | 0.1 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 781.20 |
| FF1(100)-240X10MT0800 | FF1 | 0.1 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 876.96 |
| FF1(100)-240X240T0800 | FF1 | 0.1 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 18.74 |
| FF1(100)-240X50M | FF1 | 0.1 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 3,720.00 |
| FF1(100)-240X50MT0800 | FF1 | 0.1 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 3,902.40 |
| FF1(100)-240X80T0800 | FF1 | 0.1 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 6.25 |
| FF1(100)-80X80T0800 | FF1 | 0.1 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 2.08 |
| FF1(200)-120X120T0800 | FF1 | 0.2 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 9.15 |
| FF1(200)-240X10M | FF1 | 0.2 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 1,562.40 |
| FF1(200)-240X10MT0800 | FF1 | 0.2 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 1,658.16 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

Table 1A – Ratings & Part Number Reference cont.

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|-----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|----------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| FF1(200)-240X240 | FF1 | 0.2 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 35.72 |
| FF1(200)-240X240T0800 | FF1 | 0.2 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 36.59 |
| FF1(200)-240X30M | FF1 | 0.2 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 4,464.00 |
| FF1(200)-240X30MT0800 | FF1 | 0.2 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 4,573.44 |
| FF1(200)-240X80T0800 | FF1 | 0.2 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 12.20 |
| FF1(200)-80X80T0800 | FF1 | 0.2 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 4.07 |
| FF1(300)-120X120T0800 | FF1 | 0.3 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 13.61 |
| FF1(300)-240X10M | FF1 | 0.3 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 2,343.60 |
| FF1(300)-240X10MT0800 | FF1 | 0.3 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 2,439.36 |
| FF1(300)-240X20M | FF1 | 0.3 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 4,464.00 |
| FF1(300)-240X20MT0800 | FF1 | 0.3 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 4,536.96 |
| FF1(300)-240X240 | FF1 | 0.3 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 53.57 |
| FF1(300)-240X240T0800 | FF1 | 0.3 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 54.45 |
| FF1(300)-240X80T0800 | FF1 | 0.3 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 18.15 |
| FF1(300)-80X80T0800 | FF1 | 0.3 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 6.05 |
| FF1(50)-120X120T0800 | FF1 | 0.05 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 2.45 |
| FF1(50)-240X10M | FF1 | 0.05 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 390.60 |
| FF1(50)-240X10MT0800 | FF1 | 0.05 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 486.36 |
| FF1(50)-240X240T0800 | FF1 | 0.05 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 9.81 |
| FF1(50)-240X50M | FF1 | 0.05 | -- | 100 | 3.1 | 1.0 X 10 ⁶ | 1,860.00 |
| FF1(50)-240X50MT0800 | FF1 | 0.05 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 2,042.40 |
| FF1(50)-240X80T0800 | FF1 | 0.05 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 3.27 |
| FF1(50)-80X80T0800 | FF1 | 0.05 | 0.03 | 100 | 3.1 | 1.0 X 10 ⁶ | 1.09 |
| FG1(25)-120X120T2900 | FG1 | 0.025 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 2.67 |
| FG1(25)-240X10M | FG1 | 0.025 | -- | 25 | 3.1 | 1.0 X 10 ⁶ | 195.30 |
| FG1(25)-240X10MT2900 | FG1 | 0.025 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 268.38 |
| FG1(25)-240X240T2900 | FG1 | 0.025 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 10.69 |
| FG1(25)-240X50M | FG1 | 0.025 | -- | 25 | 3.1 | 1.0 X 10 ⁶ | 930.00 |
| FG1(25)-240X50MT2900 | FG1 | 0.025 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 2,225.40 |
| FG1(25)-240X80T2900 | FG1 | 0.025 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 3.56 |
| FG1(25)-80X80T2900 | FG1 | 0.025 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 1.19 |
| FG1(50)-120X120T2900 | FG1 | 0.05 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 3.79 |
| FG1(50)-240X10M | FG1 | 0.05 | -- | 25 | 3.1 | 1.0 X 10 ⁶ | 390.60 |
| FG1(50)-240X10MT2900 | FG1 | 0.05 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 463.68 |
| FG1(50)-240X240T2900 | FG1 | 0.05 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 15.15 |
| FG1(50)-240X50M | FG1 | 0.05 | -- | 25 | 3.1 | 1.0 X 10 ⁶ | 1,860.00 |
| FG1(50)-240X50MT2900 | FG1 | 0.05 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 3,155.40 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

Table 1A – Ratings & Part Number Reference cont.

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|----------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| FG1(50)-240X80T2900 | FG1 | 0.05 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 5.05 |
| FG1(50)-80X80T2900 | FG1 | 0.05 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 1.68 |
| FG1(75)-120X120T2900 | FG1 | 0.075 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 4.90 |
| FG1(75)-240X10M | FG1 | 0.075 | -- | 25 | 3.1 | 1.0 X 10 ⁶ | 585.90 |
| FG1(75)-240X10MT2900 | FG1 | 0.075 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 658.98 |
| FG1(75)-240X240T2900 | FG1 | 0.075 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 19.61 |
| FG1(75)-240X50M | FG1 | 0.075 | -- | 25 | 3.1 | 1.0 X 10 ⁶ | 2,790.00 |
| FG1(75)-240X50MT2900 | FG1 | 0.075 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 4,085.40 |
| FG1(75)-240X80T2900 | FG1 | 0.075 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 6.54 |
| FG1(75)-80X80T2900 | FG1 | 0.075 | 0.01 | 25 | 3.1 | 1.0 X 10 ⁶ | 2.18 |
| FS(100)-120X120T2900 | FS | 0.1 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 8.12 |
| FS(100)-240X10M | FS | 0.1 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 1,195.20 |
| FS(100)-240X10MT2900 | FS | 0.1 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 1,353.84 |
| FS(100)-240X240T2900 | FS | 0.1 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 32.49 |
| FS(100)-240X50M | FS | 0.1 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 5,976.00 |
| FS(100)-240X50MT2900 | FS | 0.1 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 6,769.20 |
| FS(100)-240X80T2900 | FS | 0.1 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 10.83 |
| FS(100)-80X80T2900 | FS | 0.1 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 3.61 |
| FS(30)-120X120T2900 | FS | 0.03 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 3.79 |
| FS(30)-240X10M | FS | 0.03 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 472.80 |
| FS(30)-240X10MT2900 | FS | 0.03 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 631.44 |
| FS(30)-240X240T2900 | FS | 0.03 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 15.15 |
| FS(30)-240X50M | FS | 0.03 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 2,364.00 |
| FS(30)-240X50MT2900 | FS | 0.03 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 3,157.20 |
| FS(30)-240X80T2900 | FS | 0.03 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 5.05 |
| FS(30)-80X80T2900 | FS | 0.03 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 1.68 |
| FS(50)-120X120T2900 | FS | 0.05 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 5.03 |
| FS(50)-240X10M | FS | 0.05 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 679.20 |
| FS(50)-240X10MT2900 | FS | 0.05 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 837.84 |
| FS(50)-240X240T2900 | FS | 0.05 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 20.11 |
| FS(50)-240X50M | FS | 0.05 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 3,396.00 |
| FS(50)-240X50MT2900 | FS | 0.05 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 4,189.20 |
| FS(50)-240X80T2900 | FS | 0.05 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 6.70 |
| FS(50)-80X80T2900 | FS | 0.05 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 2.23 |
| FS(75)-120X120T2900 | FS | 0.075 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 6.58 |
| FS(75)-240X10M | FS | 0.075 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 937.20 |
| FS(75)-240X10MT2900 | FS | 0.075 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 1,095.84 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

Table 1A – Ratings & Part Number Reference cont.

| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |
|-----------------------|--------|-----------|----------------|-----------------------|------------------|-----------------------|----------|
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| FS(75)-240X240T2900 | FS | 0.075 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 26.30 |
| FS(75)-240X50M | FS | 0.075 | -- | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 4,686.00 |
| FS(75)-240X50MT2900 | FS | 0.075 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 5,479.20 |
| FS(75)-240X80T2900 | FS | 0.075 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 8.77 |
| FS(75)-80X80T2900 | FS | 0.075 | 0.01 | 10 ¹ | 4.5 | 1.0 X 10 ⁸ | 2.92 |
| FX5(100)-120X120T2900 | FX5 | 0.1 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 6.32 |
| FX5(100)-240X10M | FX5 | 0.1 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 831.60 |
| FX5(100)-240X10MT2900 | FX5 | 0.1 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 904.68 |
| FX5(100)-240X240T2900 | FX5 | 0.1 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 25.26 |
| FX5(100)-240X50M | FX5 | 0.1 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 3,960.00 |
| FX5(100)-240X50MT2900 | FX5 | 0.1 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 5,255.40 |
| FX5(100)-240X80T2900 | FX5 | 0.1 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 8.42 |
| FX5(100)-80X80T2900 | FX5 | 0.1 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 2.81 |
| FX5(25)-120X120T2900 | FX5 | 0.025 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 2.74 |
| FX5(25)-240X10M | FX5 | 0.025 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 207.90 |
| FX5(25)-240X10MT2900 | FX5 | 0.025 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 280.98 |
| FX5(25)-240X240T2900 | FX5 | 0.025 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 10.97 |
| FX5(25)-240X50M | FX5 | 0.025 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 990.00 |
| FX5(25)-240X50MT2900 | FX5 | 0.025 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 2,285.40 |
| FX5(25)-240X80T2900 | FX5 | 0.025 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 3.66 |
| FX5(25)-80X80T2900 | FX5 | 0.025 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 1.22 |
| FX5(50)-120X120T2900 | FX5 | 0.05 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 3.93 |
| FX5(50)-240X10M | FX5 | 0.05 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 415.80 |
| FX5(50)-240X10MT2900 | FX5 | 0.05 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 488.88 |
| FX5(50)-240X240T2900 | FX5 | 0.05 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 15.73 |
| FX5(50)-240X50M | FX5 | 0.05 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 1,980.00 |
| FX5(50)-240X50MT2900 | FX5 | 0.05 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 3,275.40 |
| FX5(50)-240X80T2900 | FX5 | 0.05 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 5.24 |
| FX5(50)-80X80T2900 | FX5 | 0.05 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 1.75 |
| FX5(75)-120X120T2900 | FX5 | 0.075 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 5.12 |
| FX5(75)-240X10M | FX5 | 0.075 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 623.70 |
| FX5(75)-240X10MT2900 | FX5 | 0.075 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 696.78 |
| FX5(75)-240X240T2900 | FX5 | 0.075 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 20.48 |
| FX5(75)-240X50M | FX5 | 0.075 | -- | 150 | 3.3 | 1.0 X 10 ⁶ | 2,970.00 |
| FX5(75)-240X50MT2900 | FX5 | 0.075 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 4,265.40 |
| FX5(75)-240X80T2900 | FX5 | 0.075 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 6.83 |
| FX5(75)-80X80T2900 | FX5 | 0.075 | 0.01 | 150 | 3.3 | 1.0 X 10 ⁶ | 2.28 |
| | | mm | mm | μ | Typical | Ω/sq. typical | g |
| Part Number | Series | Thickness | Tape Thickness | Permeability at 3 MHz | Specific Gravity | Surface Resistivity | Weight |

¹ Permeability at 10 MHz.

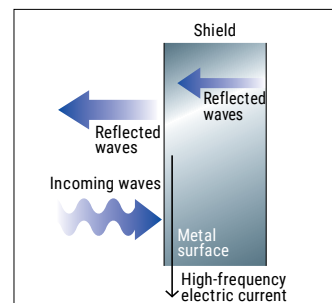
Table 1B – Not for New Design Ratings & Part Number Reference

| Part Number | Series | Thickness | Tape Thickness | Permeability | Specific Gravity | Tensile Strength | Surface Resistivity | Thermal Conductivity |
|-----------------------|--------|-----------|----------------|--------------|------------------|------------------|-----------------------|----------------------|
| | | mm | mm | at 3 MHz | Typical | Mpa Minimum | Ω/sq. typical | W/mK |
| EFR(005)-240x240T0800 | EFR | 0.05 | 0.03 | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(01)-240x240T0800 | EFR | 0.1 | 0.03 | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(02)-240x240 | EFR | 0.2 | -- | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(02)-240x240T0800 | EFR | 0.2 | 0.03 | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(03)-240x240 | EFR | 0.3 | -- | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(03)-240x240T0800 | EFR | 0.3 | 0.03 | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(05)-240x240 | EFR | 0.5 | -- | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(05)-240x240T1500 | EFR | 0.5 | 0.14 | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(10)-240x240 | EFR | 1 | -- | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFR(10)-240x240T1500 | EFR | 1 | 0.14 | 60 | 2.8 | 3.6 | 1.0 X 10 ⁷ | 0.22 |
| EFX(005)-240x240T0800 | EFX | 0.05 | 0.03 | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(01)-240x240T0800 | EFX | 0.1 | 0.03 | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(02)-240x240 | EFX | 0.2 | -- | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(02)-240x240T0800 | EFX | 0.2 | 0.03 | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(03)-240x240 | EFX | 0.3 | -- | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(03)-240x240T0800 | EFX | 0.3 | 0.03 | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(05)-240x240 | EFX | 0.5 | -- | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFX(05)-240x240T1500 | EFX | 0.5 | 0.14 | 100 | 3.2 | 6.8 | 1.0 X 10 ⁶ | 0.22 |
| EFF(007)-240x240T0800 | EFF | 0.07 | 0.03 | 130 | 3.6 | 6.9 | 1.0 X 10 ⁶ | 0.4 |
| EFF(01)-240x240T0800 | EFF | 0.1 | 0.03 | 130 | 3.6 | 6.9 | 1.0 X 10 ⁶ | 0.4 |
| EFF(02)-240x240 | EFF | 0.2 | -- | 130 | 3.6 | 6.9 | 1.0 X 10 ⁶ | 0.4 |
| EFF(02)-240x240T0800 | EFF | 0.2 | 0.03 | 130 | 3.6 | 6.9 | 1.0 X 10 ⁶ | 0.4 |
| EFF(03)-240x240 | EFF | 0.3 | -- | 130 | 3.6 | 6.9 | 1.0 X 10 ⁶ | 0.4 |
| EFF(03)-240x240T0800 | EFF | 0.3 | 0.03 | 130 | 3.6 | 6.9 | 1.0 X 10 ⁶ | 0.4 |
| EFA(003)-240x240T0800 | EFA | 0.03 | 0.03 | 60 | 3.1 | 6.8 | 1.0 X 10 ⁷ | 1.3 |
| EFG(005)-240x240T0800 | EFG | 0.05 | 0.03 | 20 | 3 | 3.5 | 1.0 X 10 ⁶ | 0.22 |
| EFG(01)-240x240T0800 | EFG | 0.1 | 0.03 | 20 | 3 | 3.5 | 1.0 X 10 ⁶ | 0.22 |
| EFG(02)-240x240 | EFG | 0.2 | -- | 20 | 3 | 3.5 | 1.0 X 10 ⁶ | 0.22 |
| EFG(02)-240x240T0800 | EFG | 0.2 | 0.03 | 20 | 3 | 3.5 | 1.0 X 10 ⁶ | 0.22 |
| EFG(03)-240x240 | EFG | 0.3 | -- | 20 | 3 | 3.5 | 1.0 X 10 ⁶ | 0.22 |
| EFG(03)-240x240T0800 | EFG | 0.3 | 0.03 | 20 | 3 | 3.5 | 1.0 X 10 ⁶ | 0.22 |
| EFH(005)-240x240T2200 | EFH | 0.05 | 0.05 | 60 | 3.1 | 6.8 | 1.0 X 10 ⁷ | 1.3 |
| EFH(01)-240x240T2200 | EFH | 0.1 | 0.05 | 60 | 3.1 | 6.8 | 1.0 X 10 ⁷ | 1.3 |
| | | mm | mm | at 3 MHz | Typical | Mpa Minimum | Ω/sq. typical | W/mK |
| Part Number | Series | Thickness | Tape Thickness | Permeability | Specific Gravity | Tensile Strength | Surface Resistivity | Thermal Conductivity |

Shielding

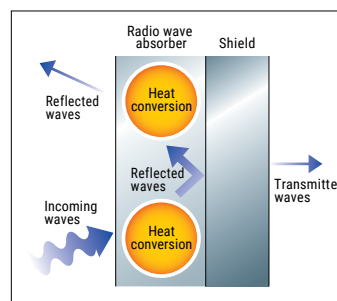
Shielding materials (metal, electrically conductive material)

While transmitted waves can be minimized, most of the incoming waves are reflected, causing internal interference. High frequency electric current occurs on the metal surfaces and the reflected noise occurs at the shielding joints, metal openings, and other parts when the grounding is poor.



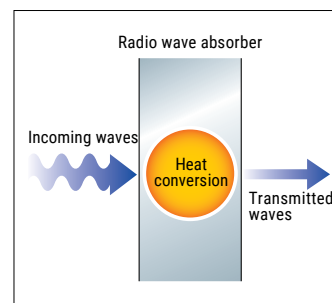
Shielding material with radio wave absorber

Shielding material with radio wave absorber, transmitted waves and reflected waves can be minimized by mounting metal plates on the back of the radio wave absorbers.



Radio wave absorbers

To prevent reflection, the electromagnetic energy is absorbed and converted into heat.



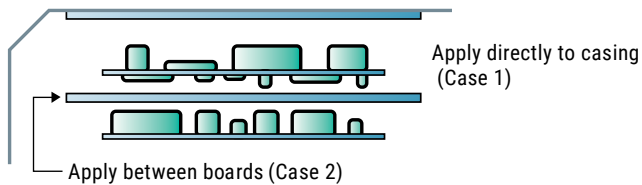
Reference: other absorbing and reflecting examples

| | Absorbing | Reflecting |
|-------------|-----------------------|-------------------------------|
| Radio Waves | Radio waves absorbers | Metals |
| Light | Black objects | White objects, mirrors |
| Sound | Absorbers, felt | Solid bodies (concrete, etc.) |

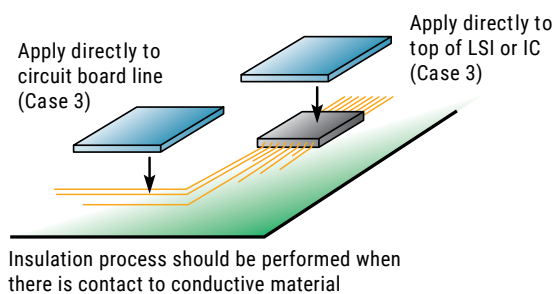
Applications

Case 1 – Suppressing noise reflected by casing

Case 2 – Suppressing crosstalk between substrates

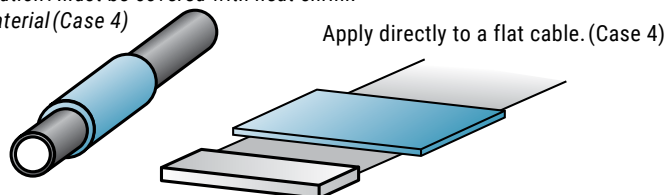


Case 3 – Suppressing radiation noise from LSI and IC

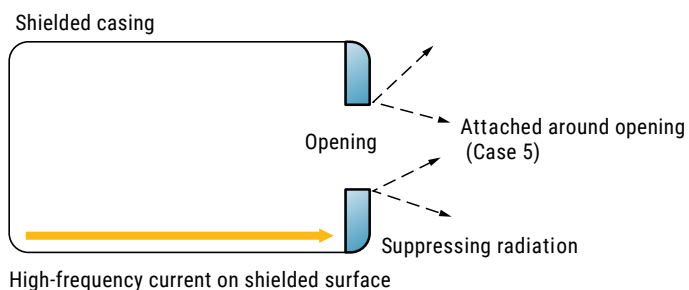


Case 4 – Suppressing noise from cables

Wrap FLEX SUPPRESSOR around the cable.
Caution: Must be covered with heat-shrink material (Case 4)

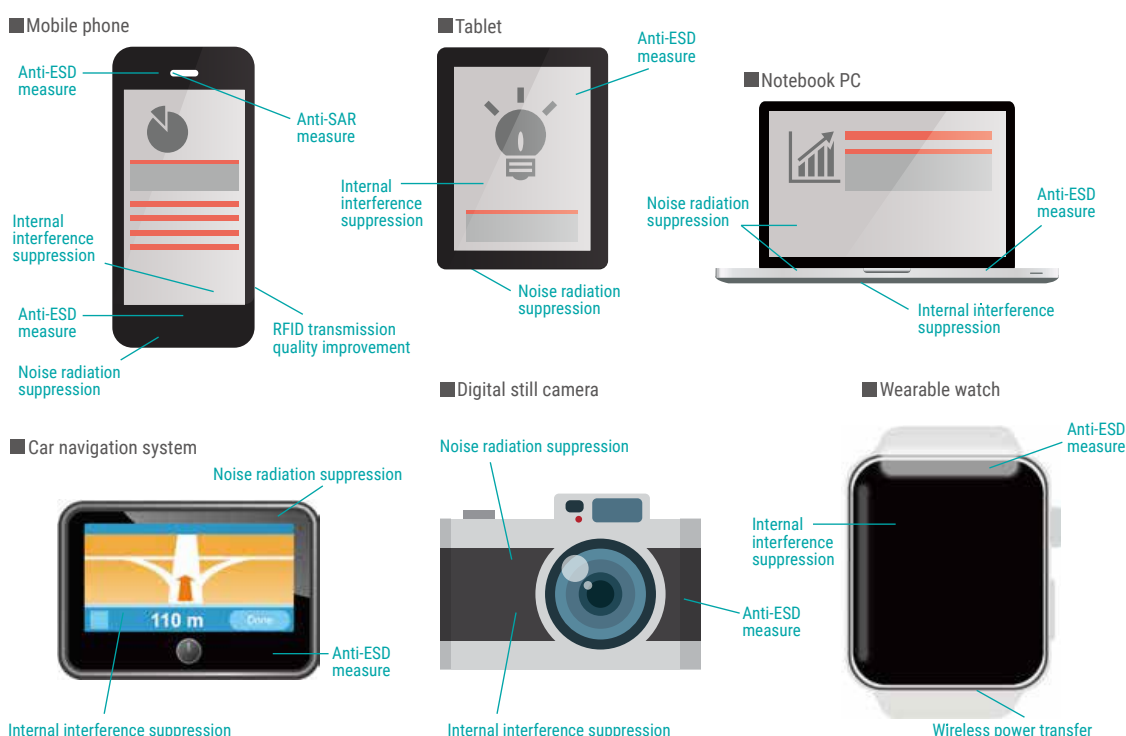


Case 5 – Suppressing noise radiation (reflected noise) from the opening of the shield, the casing, etc.




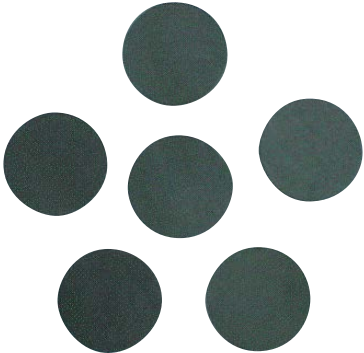




Applications cont.

| Devices | Noise Radiation Suppression | Internal Interference Suppression | RFID Transmission Quality Improvement | Anti-ESD Measure | Anti-SAR Measure |
|---|--|--|---|---|-----------------------------|
| Mobile phone | On main CPU | On FPC and LSI for LCD module and camera module On main CPU for reception improvement | On loop antenna for distance communication improvement | On FPC and LSI for LCD module and camera module On metal parts such as chassis | Near antenna and on chassis |
| Digital still camera and digital video camera | On CCD module FPD On image processing LSI On a memory slot | On the board | On loop antenna for distance communication improvement | On the board and FPC On metal parts such as chassis | — |
| Notebook PC and tablet | On CPU and GPU On cables inside LCD panel | On memory and SSD On wireless LAN and LTE module | On loop antenna and metal parts near antenna for distance communication improvement | On CPU and GPU On metal parts such as chassis | Near antenna and on chassis |
| Car infotainment | On LCD and FPC On control box | On GPS receiver and TV tuner On LSI for LCD for radio reception improvement | — | On metal parts such as chassis | — |
| Near field communication tag (NFC tag) | — | — | On loop antenna and metal parts near antenna for distance communication improvement | — | — |
| Base station, optical transceiver module | — | On the interior of the chassis and on LSI for error rate improvement | — | — | — |
| Wireless LAN and Wi-Fi. | — | On cable and co-axial cable for reception improvement | — | — | — |



Examples of Shapes

KEMET FLEX SUPPRESSOR sheets can be cut into a variety of shapes and sizes:

| With holes, cut-out shapes, and circular shapes | | Precut |
|---|--|---|
|  |  |  |
| Reel | Roll | With Aluminum or PET sheet |
|  |  |  |

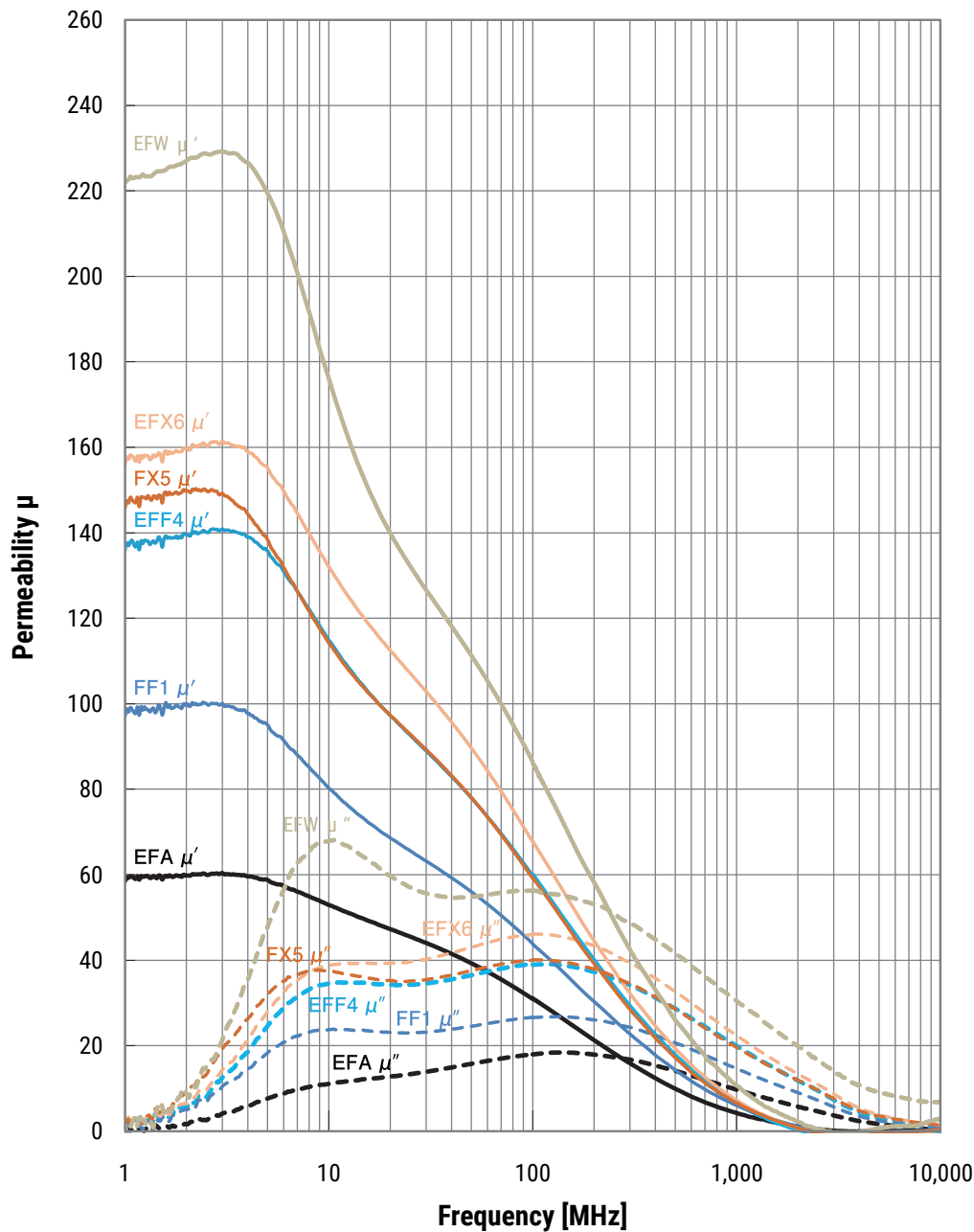
Some examples of customization, available upon request:

- The use of PET film in the front, for insulation or mechanical support
- The use of aluminum sheet in the front, for shielding effect
- The use of different adhesive tapes on the back - stronger, thinner, thicker, etc.

| Customization Examples | Where | Function |
|-------------------------|-------|--|
| PET Film | Front | Insulation or mechanical support |
| Aluminum sheet | Front | Shielding effect |
| Different adhesive tape | Back | Stronger adhesive tape Thinner or thicker tape Reflow capable, double-sided tape |

Permeable Characteristics

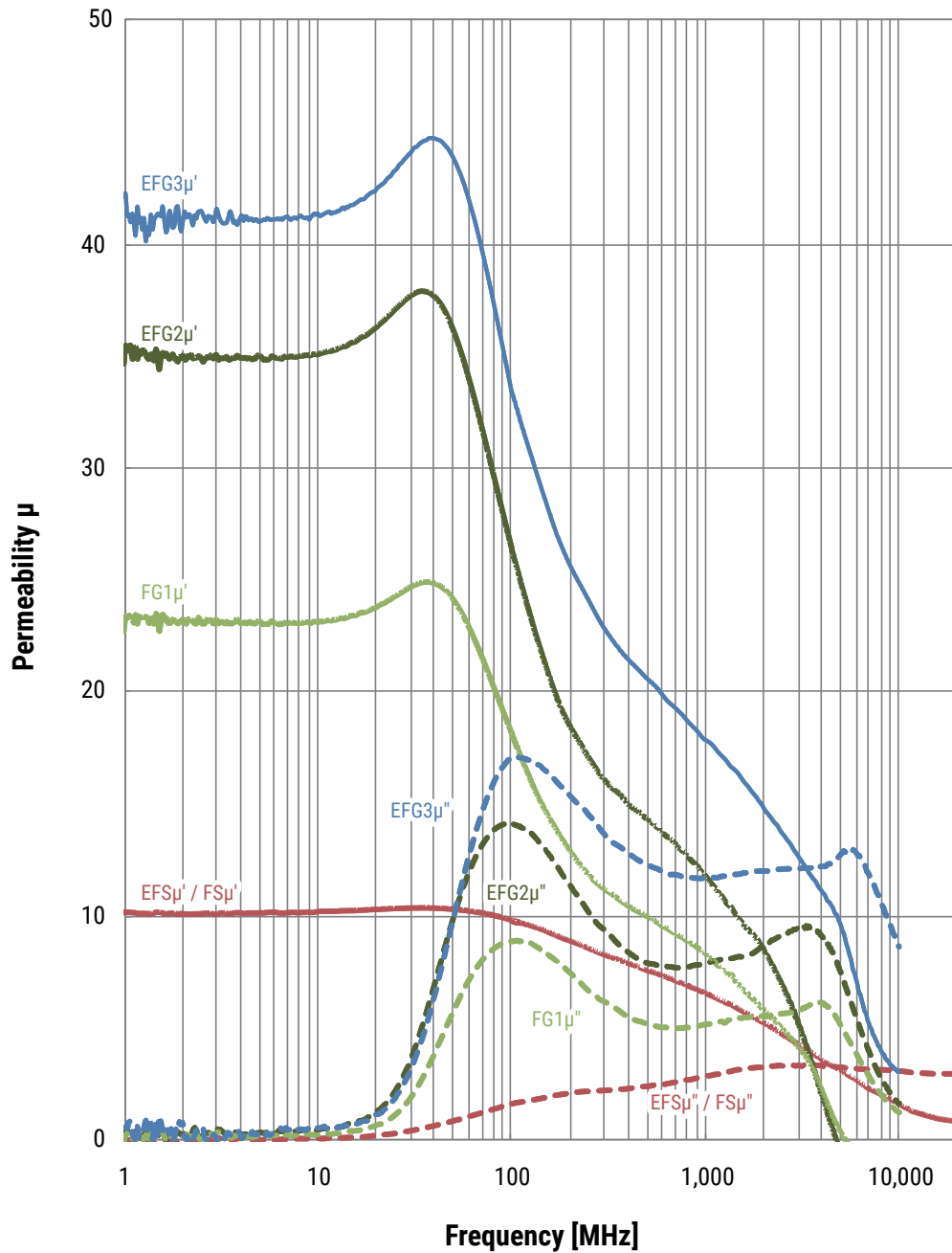
EFA, FF1, EFF4, FX5, EFX6 & EFW



Above data are not guaranteed values.

Permeable Characteristics cont.

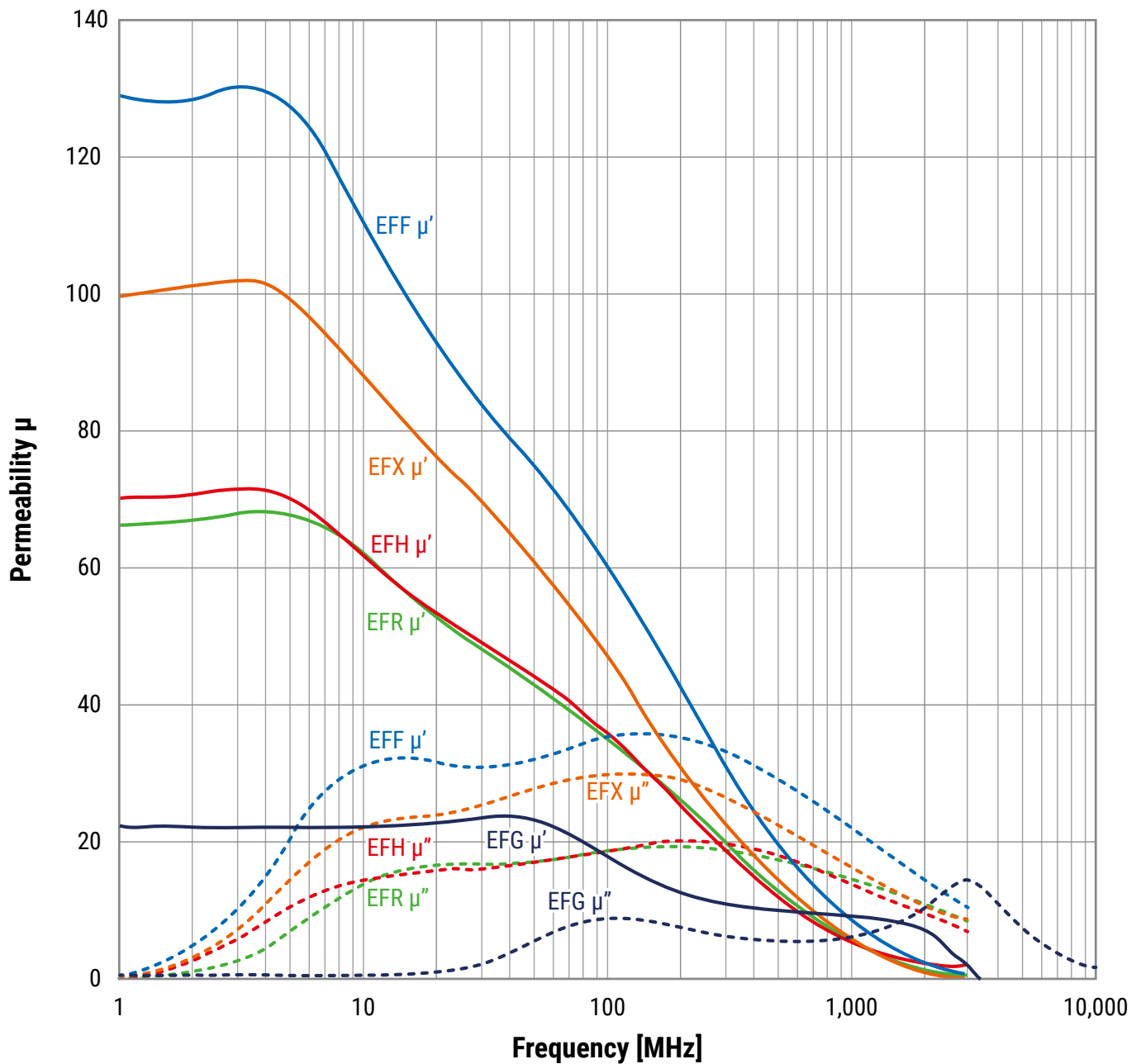
FG1, EFG2, EFG3, FS & EFS



Above data are not guaranteed values.

Permeable Characteristics - Not for New Design

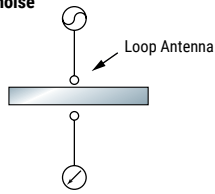
EFF, EFG, EFH, EFR & EFX



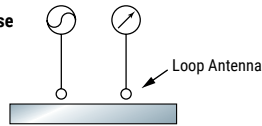
Above data are not guaranteed values.

Measuring Method of Electrical Characteristics

● Attenuation of transmission noise

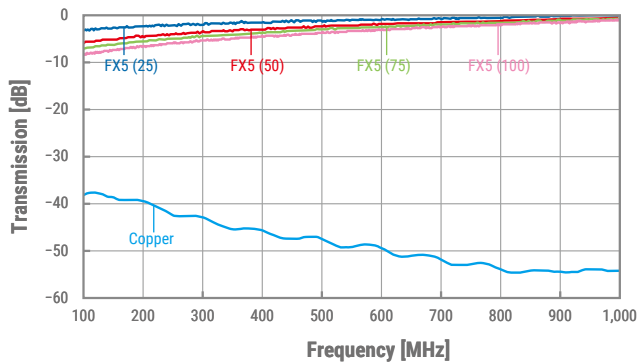


● Attenuation of coupling noise

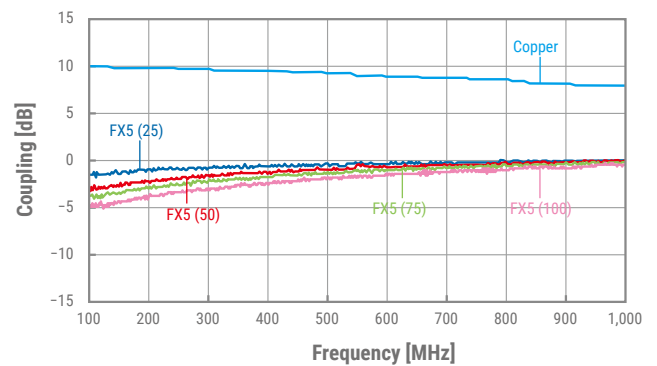


Electrical Characteristics

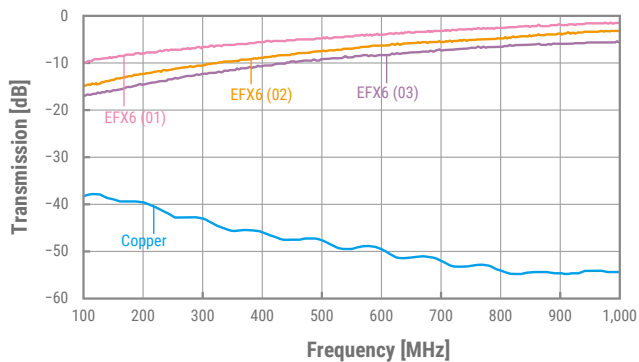
FX5 – Attenuation of Transmission Noise



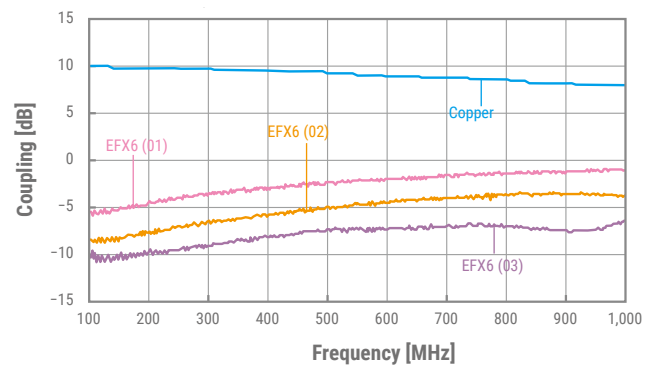
FX5 – Attenuation of Coupling Noise



EFX6 – Attenuation of Transmission Noise



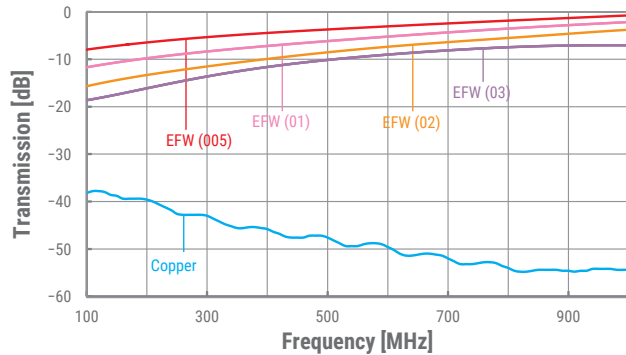
EFX6 – Attenuation of Coupling Noise



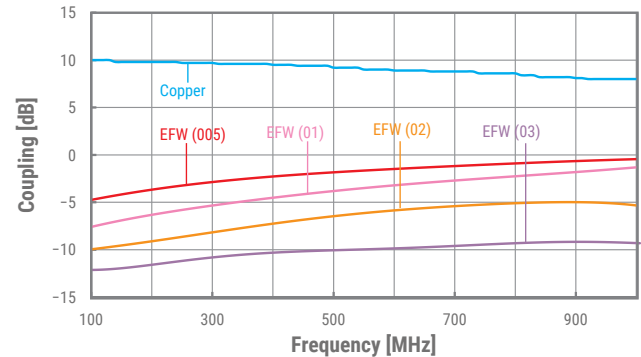
Above data are not guaranteed values.

Electrical Characteristics cont.

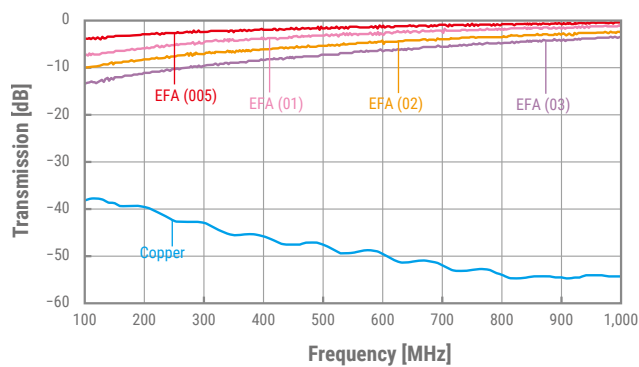
EFW – Attenuation of Transmission Noise



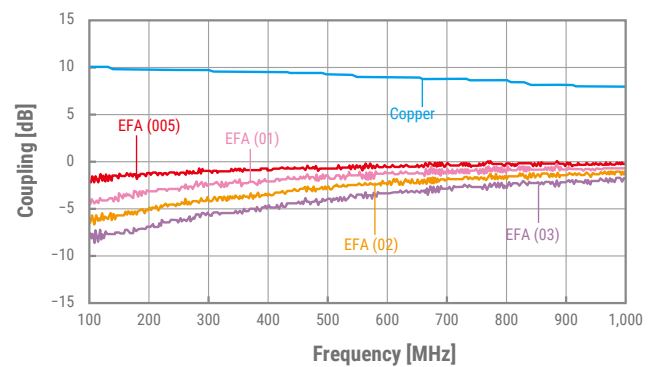
EFW – Attenuation of Coupling Noise



EFA – Attenuation of Transmission Noise



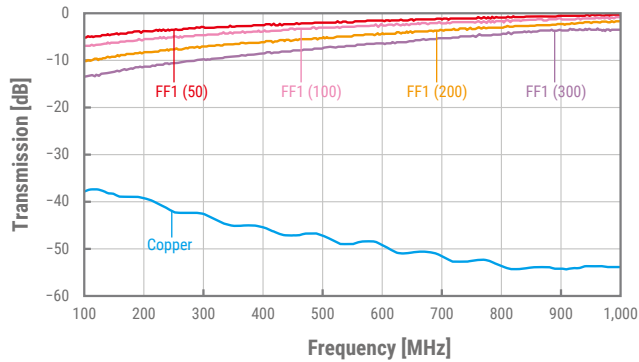
EFA – Attenuation of Coupling Noise



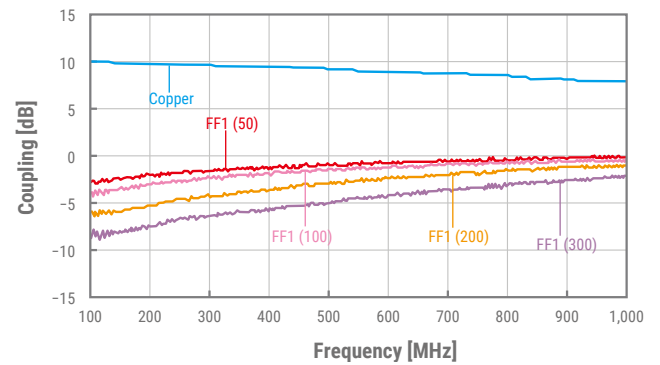
Above data are not guaranteed values.

Electrical Characteristics cont.

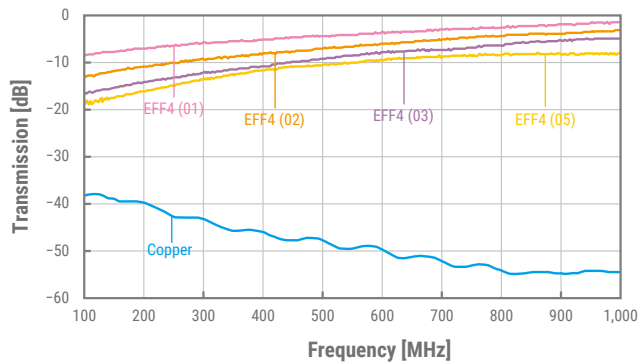
FF1 – Attenuation of Transmission Noise



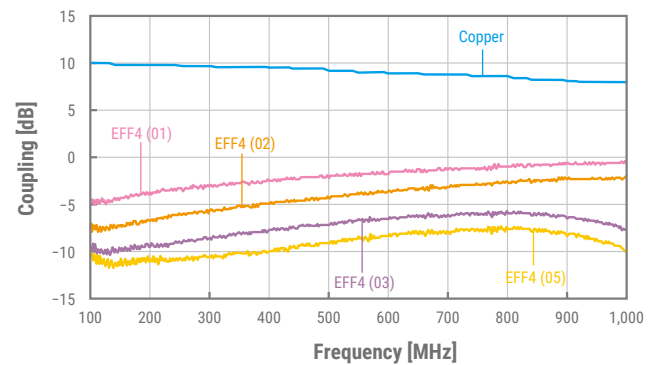
FF1 – Attenuation of Coupling Noise



EFF4 – Attenuation of Transmission Noise



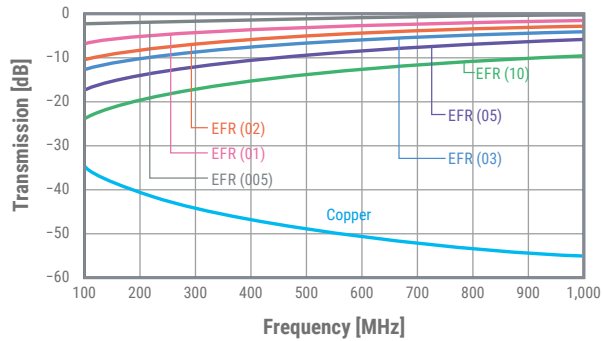
EFF4 – Attenuation of Coupling Noise



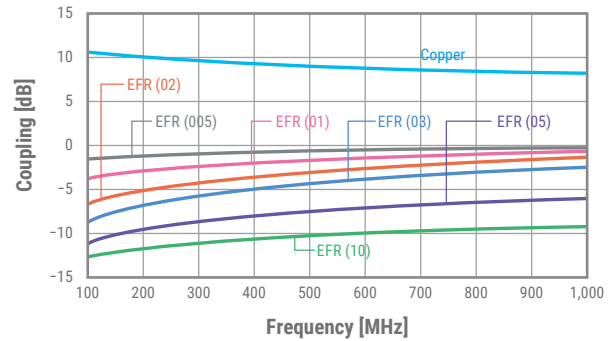
Above data are not guaranteed values.

Electrical Characteristics - Not for New Design

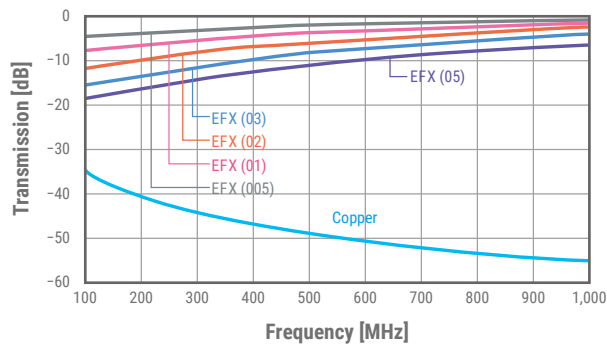
EFR – Attenuation of Transmission Noise



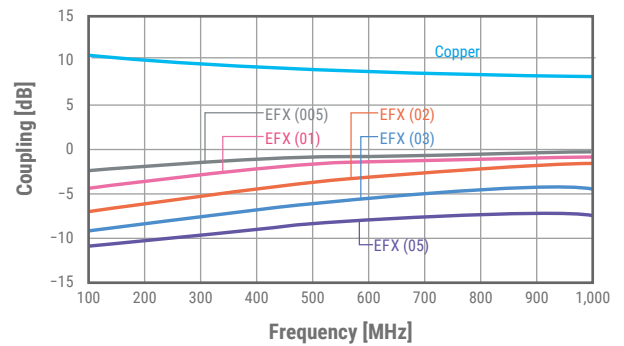
EFR – Attenuation of Coupling Noise



EFX – Attenuation of Transmission Noise



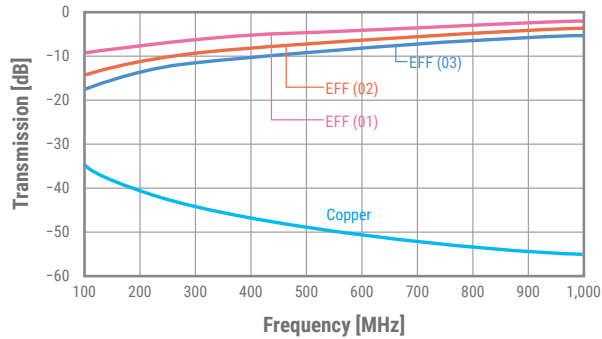
EFX – Attenuation of Coupling Noise



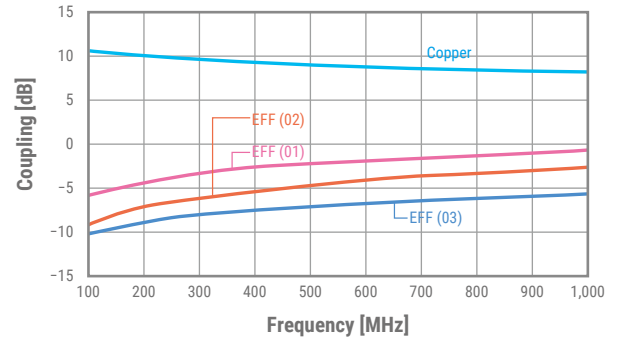
Above data are not guaranteed values.

Electrical Characteristics - Not for New Design cont.

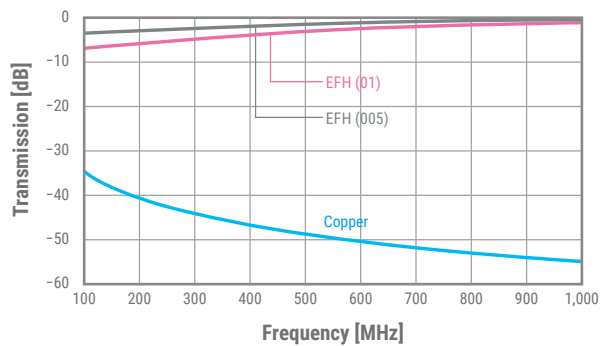
EFF – Attenuation of Transmission Noise



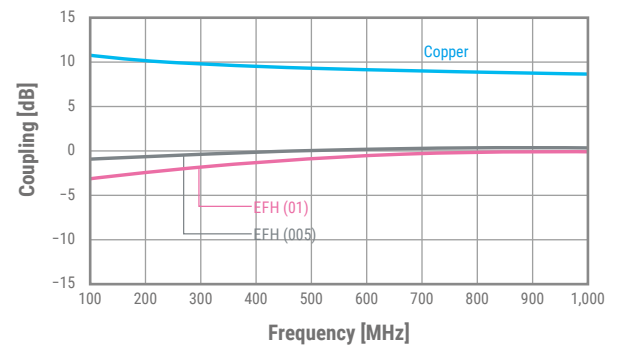
EFF – Attenuation of Coupling Noise



EFH – Attenuation of Transmission Noise

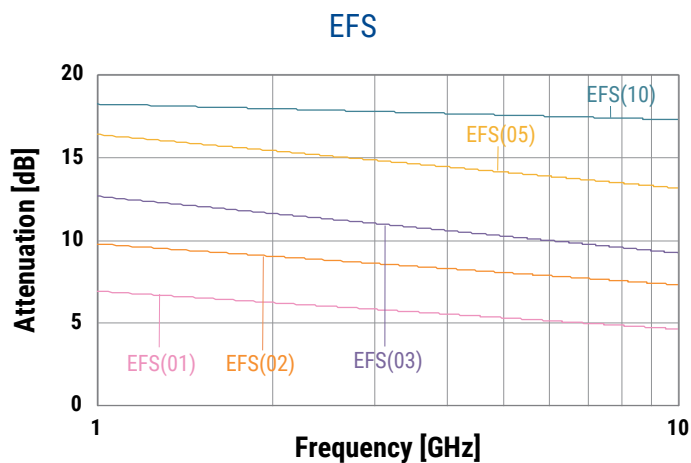
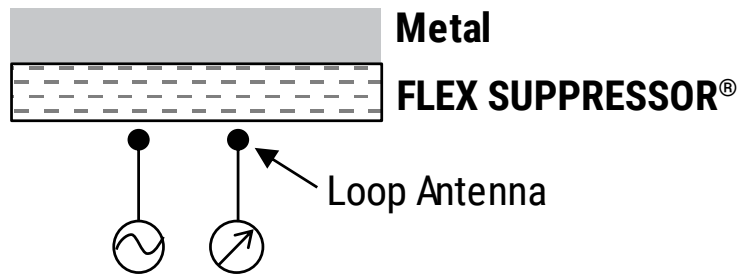


EFH – Attenuation of Coupling Noise

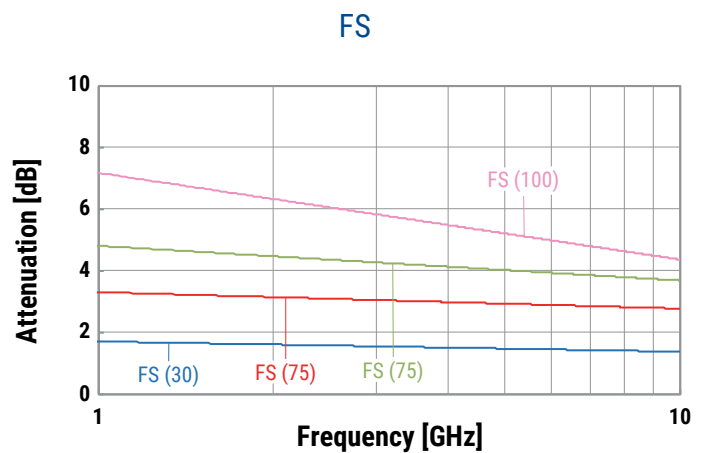


Above data are not guaranteed values.

Attenuation of Decoupling Noise with Metal

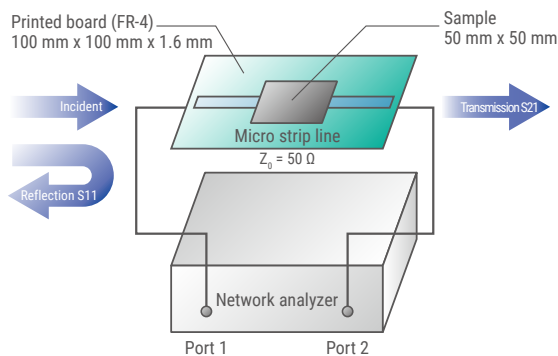


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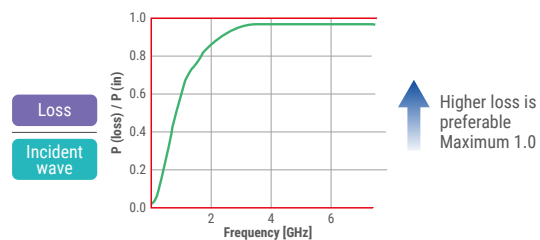


Above data are not guaranteed values.

Measuring Method of Transmission Noise Attenuation Characteristics

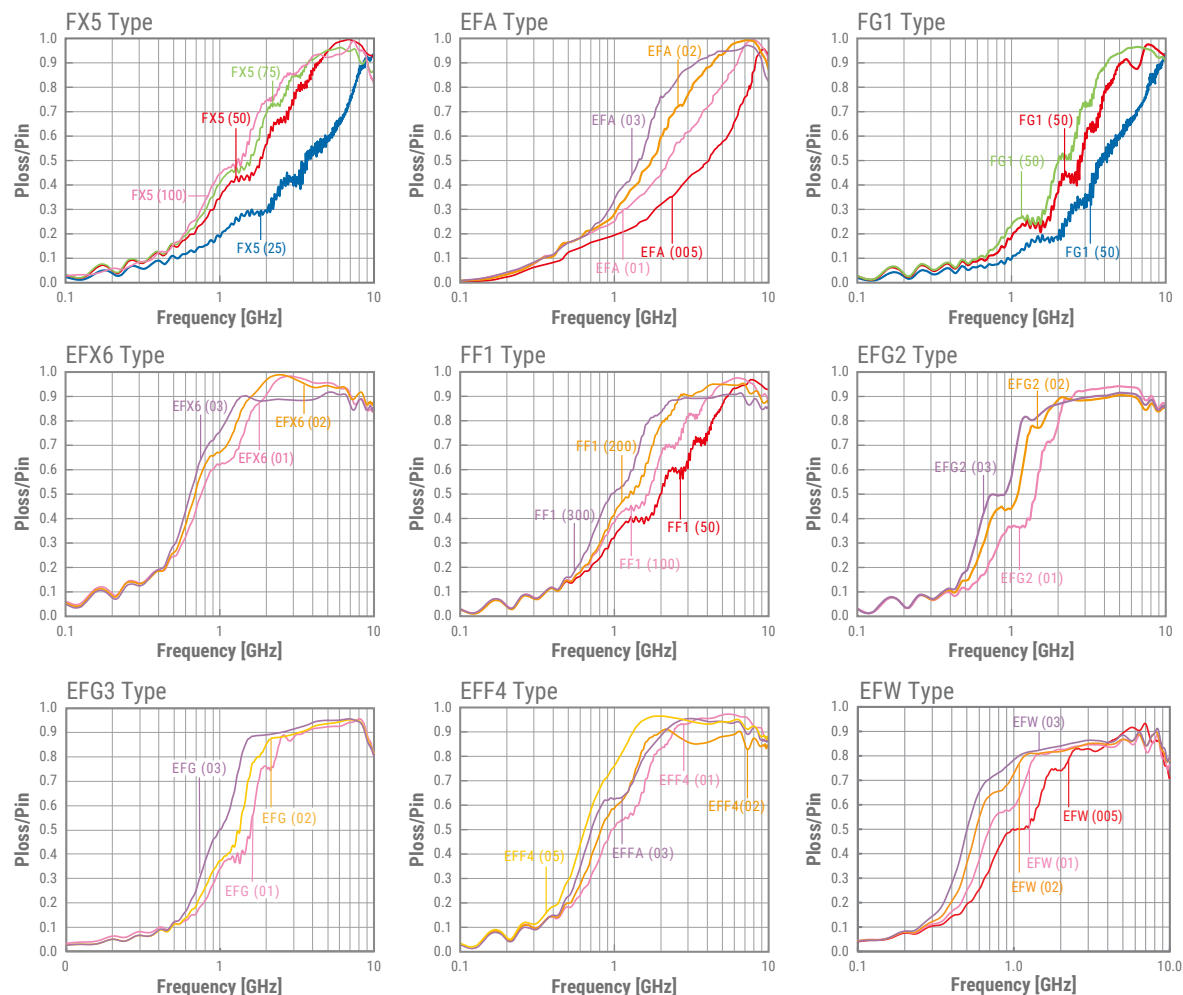


$$\text{Incident wave} = \text{Reflection S11} + \text{Loss} + \text{Transmission S21}$$



Transmission Noise Attenuation Characteristics

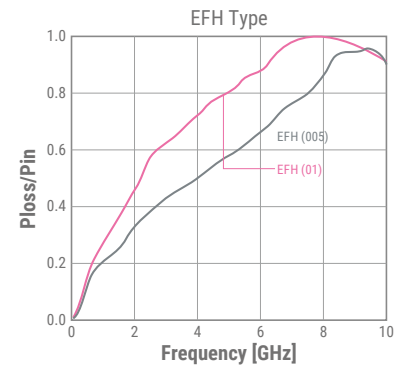
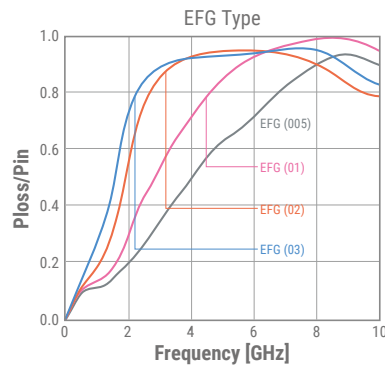
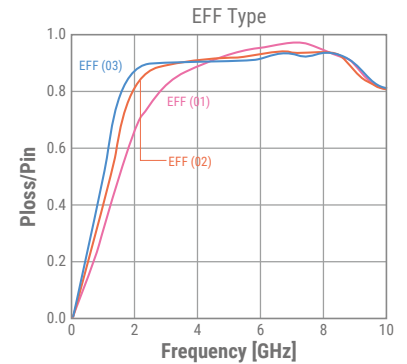
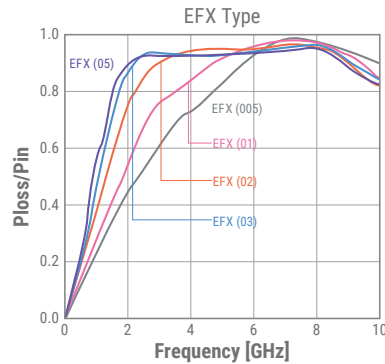
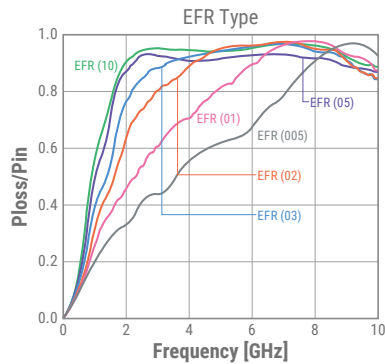
Shown in the graphs below are values of transmission loss calculated from the transmission characteristics S11 and S21, measured on $Z_0 = 50 \Omega$ type micro strip line (MSL) with a Flex Suppressor® attached.



Above data are not guaranteed values.

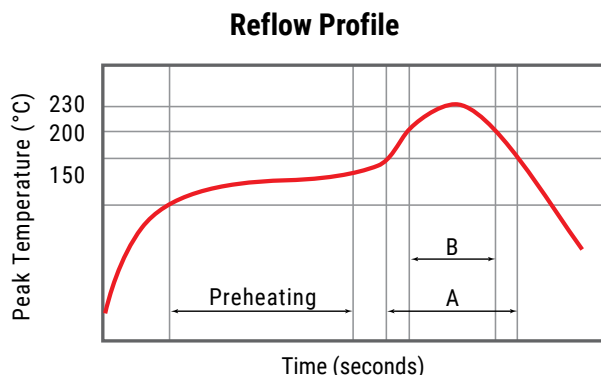
Transmission Noise Attenuation Characteristics - Not for New Design

Shown in the graphs below are values of transmission loss calculated from the transmission characteristics S11 and S21 measured on $Z_0 = 50 \Omega$ type MSL (micro strip line) with a Flex Suppressor® attached.



Above data are not guaranteed values.

Soldering Process



| | |
|------------------|-----------------------------------|
| Peak Temperature | +260°C |
| Preheating | 150 – 180°C 90 seconds maximum |
| A | 200°C or more, 60 seconds maximum |
| B | 230°C or more, 40 seconds maximum |
| Number of Times | 2 times maximum |

All noise suppression sheets are reflow capable, if used with special double-sided adhesive tape. Available upon request. Please contact KEMET representative for more details.

Handling Precautions

Avoid high temperature, humidity and direct sunlight. Storage environment should be below 40°C and below 70% relative humidity.

The surface resistance value listed in this catalog is a reference value of the circuit parameter to indicate noise suppression. The value does not represent the product's insulation characteristics. The value may become lower if an excess pressure is applied to the product.

The products in this datasheet are not insulators, they need to be handled as conductors. Care must be taken when in use, so that conductive material does not contact the surface or the edge of the FLEX SUPPRESSOR sheet. Insulation process should be performed when contact to conductive material is probable.

Depending on the processing procedure, powdery substance may drop out from sheet surface or the edge, if the cutting of the sheet is performed. Depending on the location, care must be taken, as this powder may effect the component's performance.

Any dust, oil or moisture must be cleaned from the surface of the installation area when using an adhesive tape to attach the sheet.

The adhesive tape may begin to lose some of its adhesiveness after being in storage for six months. This has no impact on the EMI filtering effectiveness.

Information on environmentally influential substances

The FLEX SUPPRESSOR does not contain any of the substances listed below:

(1) Ozone depleting substance

- CFC (chlorofluorocarbon)
- Halon
- Carbon tetrachloride
- 1,1,1-Trichloroethane
- HCFC (hydrochlorofluorocarbon)
- HBFC (hydrobromfluorocarbon)
- Methyl bromide

(2) Substances regulated by EU RoHS Directive 2011/65/EU and EU Directive 2015/863

- Lead and lead compound
- Mercury and mercury compound
- Cadmium and cadmium compound (content of plastics that are below 5 ppm)
- Hexavalent chromium and hexavalent chromium compound
- PBB (polybrominated biphenyl) and its kind
- PBDE (polybrominated diphenylether)
- DEHP (bis-(2-ethylhexy) phthalate)
- BBP (benzylbuty phthalate)
- DBP (dibutyl phthalate)
- DIBP (diisobuty phthalate)

(3) Other environmentally influential substances (examples)

- PCB (polychlorinated biphenyl)
- Polychlorinated naphthalene
- Hexachlorobenzene
- Organotin compounds (tributyl tin, triphenyl tin)
- Asbestos
- Azo compound
- Chlorinated paraffin and its kind (paraffin chloride, chlorinated paraffin and chloroparaffin)
- Radioactive substance
- PVC

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Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

When providing KEMET products and technologies contained herein to other countries, the customer must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the International Traffic in Arms Regulations (ITAR), the US Export Administration Regulations (EAR) and the Japan Foreign Exchange and Foreign Trade Act.

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