

Figure 2

Part Number: 0443164251
 Frequency Range: Broadband Frequencies 25-300 MHz (43 & 44 materials)
 Description: 43 ROUND CABLE CORE ASSEMBLY
 Application: Suppression Components
 Where Used: Cable Component
 Part Type: Round Cable Snap-Its
 Preferred Part: ✓

Mechanical Specifications

Weight: 31.000 (g)

Part Type Information

Round cable snap-its can easily accommodate round cables or bundled wires with diameters from 2.5 mm (.100") to 25.4 mm (1.000"). These assemblies are available in four ferrite material classes to suppress differential or common-mode conducted EMI from 1 MHz into the GHz region. The polypropylene cases are meeting the RoHS restrictions of hazardous substances and have a flammability rating of UL94 V-0.

-Round cable snap-it assemblies are controlled for impedances only. The impedances listed are typical values. Minimum impedance values are specified for the + marked frequencies. The minimum guaranteed impedance is the listed impedance less 20%.

-Single turn impedance tests for the 31, 43 and 44 material are performed on the 4193A Vector Impedance Analyzer. The 61 material parts are tested on the 4191A RF Impedance Analyzer. Cores are tested with the shortest practical wire length.

-Many of the snap-it parts have round core equivalents. See Round Cable EMI Suppression Cores section of our catalog.

-'B' Dimension is the core Dimension.

-Round Cable Snap-it Kits are available for each of the four suppression materials. 31 Snap-It Kit (0199000030), 43 Snap-It Kit (0199000031), 46 Core and Snap-It Kit (0199000032) and 61 Snap-It Kit (0199000033).

-Explanation of Part Numbers: Digits 1 & 2 = product class and 3 & 4 = material grade.



Fair-Rite Products Corp.

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Ferrite Components for the Electronics Industry

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Fair-Rite Product's Catalog
Part Data Sheet, 0443164251
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Mechanical Specifications

| Dim | mm | mm tol | nominal inch | inch misc. |
|-----|-------|-----------|-----------------|---------------|
| A | 17.90 | - | 0.705 | - |
| B | 6.60 | - | 0.260 | - |
| C | 32.20 | - | 1.270 | - |
| D | 9.20 | - | 0.362 | - |
| E | - | - | - | - |
| F | - | - | - | - |
| G | - | - | - | - |
| H | - | - | - | - |
| J | - | - | - | - |
| K | - | - | - | - |

Electrical Specifications

| Typical Impedance (Ω) | |
|--------------------------------|-----|
| 10 MHz | 100 |
| 25 MHz+ | 163 |
| 100 MHz+ | 275 |
| 250 MHz | 275 |

| Electrical Properties | |
|-----------------------|--|
| | |

Land Patterns

| V | W ref | X | Y | Z |
|---|----------|---|---|---|
| - | - | - | - | - |
| - | - | - | - | - |

Winding Information

| Turns Tested | Wire Size | 1st Wire Length | 2nd Wire Length |
|-----------------|--------------|--------------------|--------------------|
| - | - | - | - |

Reel Information

| Tape Width mm | Pitch mm | Parts 7 " Reel | Parts 13 " Reel | Parts 14 " Reel |
|------------------|-------------|-------------------|--------------------|--------------------|
| - | - | - | - | - |

Package Size

| Pkg Size |
|----------|
| - (-) |

Connector Plate

| # Holes | # Rows |
|---------|--------|
| - | - |

Legend

+ Test frequency

Preferred parts, the suggested choice for new designs, have shorter lead times and are more readily available.

The column H(Oe) gives for each bead the calculated dc bias field in oersted for 1 turn and 1 ampere direct current. The actual dc H field in the application is this value of H times the actual NI (ampere-turn) product. For the effect of the dc bias on the impedance of the bead material, see figures 18-23 in the application note How to choose Ferrite Components for EMI Suppression.

A ½ turn is defined as a single pass through a hole.

Σ l/A - Core Constant

A_e - Effective Cross-Sectional Area

A_L - Inductance Factor ($\frac{L}{N^2}$)

N/AWG - Number of Turns/Wire Size for Test Coil

l_e - Effective Path Length

V_e - Effective Core Volume

NI - Value of dc Ampere-turns



Ferrite Material Constants

| | |
|---------------------------------------|--|
| Specific Heat | 0.25 cal/g/°C |
| Thermal Conductivity | 10x10 ⁻³ cal/sec/cm/°C |
| Coefficient of Linear Expansion | 8 - 10x10 ⁻⁶ /°C |
| Tensile Strength | 4.9 kgf/mm ² |
| Compressive Strength | 42 kgf/mm ² |
| Young's Modulus | 15x10 ³ kgf/mm ² |
| Hardness (Knoop) | 650 |
| Specific Gravity | ≈ 4.7 g/cm ³ |

The above quoted properties are typical for Fair-Rite MnZn and NiZn ferrites.

See next page for further material specifications.



43 Material Characteristics:

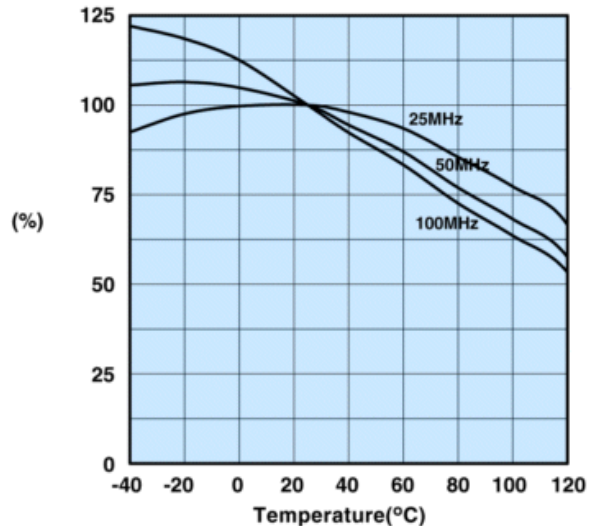
| Property | Unit | Symbol | Value |
|--|------------------|-----------------------|-----------------|
| Initial Permeability @ B < 10 gauss | | μ_i | 800 |
| Flux Density @ Field Strength | gauss oersted | B H | 2900 10 |
| Residual Flux Density | gauss | B_r | 1300 |
| Coercive Force | oersted | H_c | 0.45 |
| Loss Factor @ Frequency | 10^{-6} MHz | $\tan \delta / \mu_i$ | 250 1.0 |
| Temperature Coefficient of Initial Permeability (20 -70°C) | %/°C | | 1.25 |
| Curie Temperature | °C | T_c | >130 |
| Resistivity | Ω cm | ρ | 1×10^5 |

Complex Permeability vs. Frequency



Measured on a 17/10/6mm toroid using the HP 4284A and the HP 4291A.

Percent of Original Impedance vs. Temperature



Measured on a 2643000301 using the HP4291A.

Initial Permeability vs. Temperature



Measured on a 17/10/6mm toroid at 100kHz.

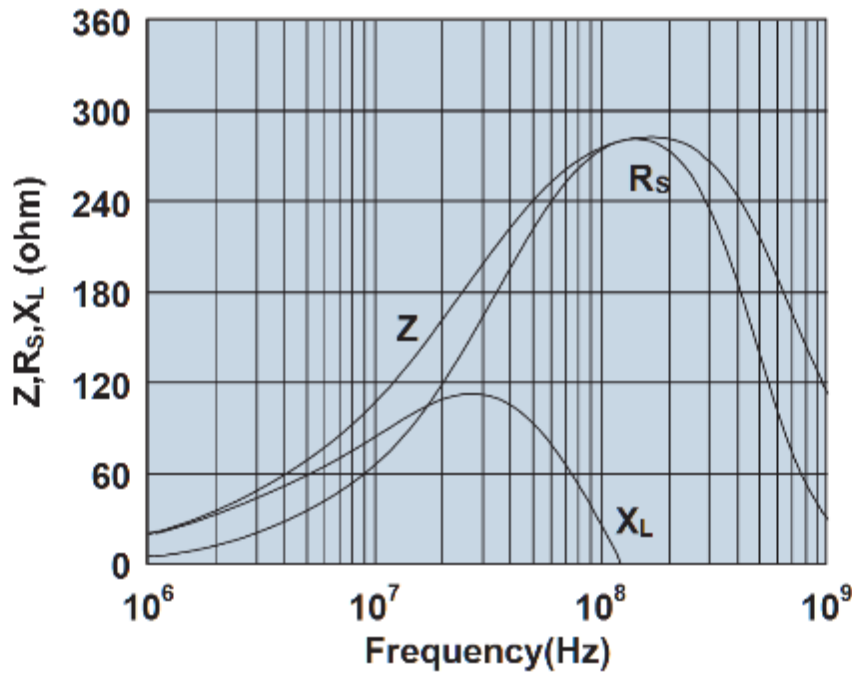
Hysteresis Loop



Measured on a 17/10/6mm toroid at 10kHz.



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Impedance, reactance, and resistance vs. frequency.