

**Figure 1**

Part Number: 2643164051  
 Frequency Range: Broadband Frequencies 25-300 MHz (43 material)  
 Description: 43 SPLIT FLAT CABLE CORE  
 Application: Suppression Components  
 Where Used: Cable Component  
 Part Type: Flat Cable EMI Suppression Cores

## Mechanical Specifications

Weight: 60.000 (g)

## Part Type Information

Flat cable suppression core can accommodate multi-conductors flat cables, in widths from 12.7 mm (0.500") up to 77 mm (3.0"). These flat cable cores are available in two ferrite material grades to reduce conducted EMI from 1 MHz to hundreds of MHz.

-Flat cable suppression cores, split or single cores, are controlled for impedances only. Minimum impedance values are specified for the + marked frequencies. The minimum impedance is typically the listed impedance less 20%.

-Centered, single turn impedance tests for the 31 and 43 material are made on the 4193A Vector Impedance Analyzer. All tests are made with the shortest practical wire length.

-Assembly clips are available for most of the split flat cable cores. See section 'Flat Cable Core Assembly clips' in our catalog.

-Our 'Expanded Cable & Suppressor Kit' (part number 0199000005) contains a selection of these flat cable cores and clips.

-Flat Cable Cores are available in selected sizes in the 'Flex Circuit & Ribbon Cable Core Kit' (part number 0199000038).

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

## Mechanical Specifications

| Dim | mm    | mm<br>tol | nominal<br>inch | inch<br>misc. |
|-----|-------|-----------|-----------------|---------------|
| A   | 76.20 | ±1.50     | 3.000           | -             |
| B   | 65.30 | ±1.30     | 2.570           | -             |
| C   | 28.60 | ±0.80     | 1.125           | -             |
| D   | 6.35  | ±0.25     | 0.250           | -             |
| E   | 0.85  | ±0.20     | 0.033           | -             |
| F   | -     | -         | -               | -             |
| G   | -     | -         | -               | -             |
| H   | -     | -         | -               | -             |
| J   | -     | -         | -               | -             |
| K   | -     | -         | -               | -             |

## Electrical Specifications

| Typical Impedance ( $\Omega$ ) |     |
|--------------------------------|-----|
| 10 MHz                         | 48  |
| 25 MHz+                        | 100 |
| 100 MHz+                       | 290 |
| 250 MHz                        | 420 |

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

## Land Patterns

| V | W<br>ref | X | Y | Z |
|---|----------|---|---|---|
| - | -        | - | - | - |
| - | -        | - | - | - |

## Winding Information

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

## Reel Information

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

## Package Size

| Pkg Size |
|----------|
| -<br>(-) |

## 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.

$\Sigma L/A$  - 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 .....            | <b>3.5 - 4.5 mW/cm - °C</b>            |
| Coefficient of Linear Expansion ..... | 8 - 10x10 <sup>-6</sup> /°C            |
| Tensile Strength .....                | 4.9 kgf/mm <sup>2</sup>                |
| Compressive Strength .....            | 42 kgf/mm <sup>2</sup>                 |
| Young's Modulus .....                 | 15x10 <sup>3</sup> kgf/mm <sup>2</sup> |
| Hardness (Knoop) .....                | 650                                    |
| Specific Gravity .....                | ≈ 4.7 g/cm <sup>3</sup>                |

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

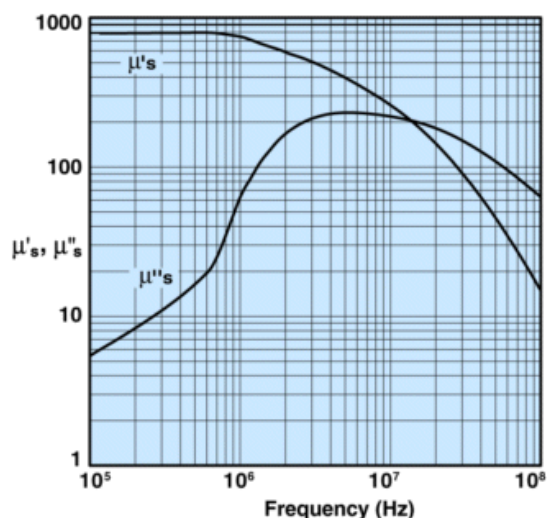
See next page for further material specifications.



### 43 Material Characteristics:

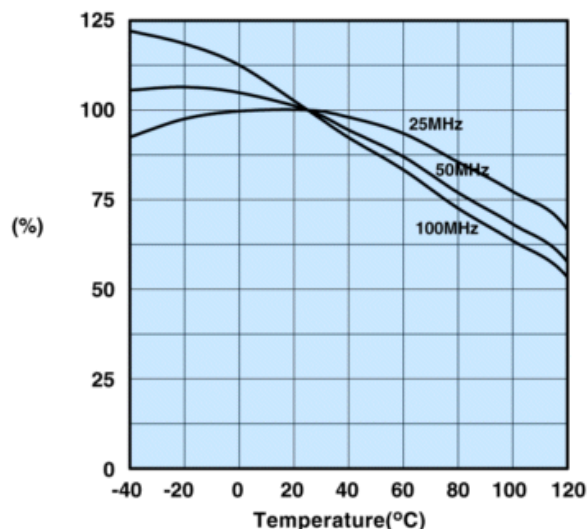
| Property                                                   | Unit             | Symbol                | Value           |
|------------------------------------------------------------|------------------|-----------------------|-----------------|
| Initial Permeability @ B < 10 gauss               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

### Complex Permeability vs. Frequency



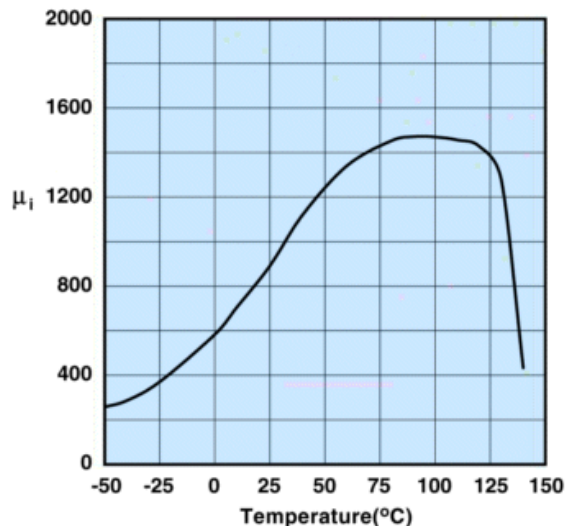
Measured on a 17/10/6mm toroid using the HP 4284A and the HP 4291A.

### Percent of Original Impedance vs. Temperature



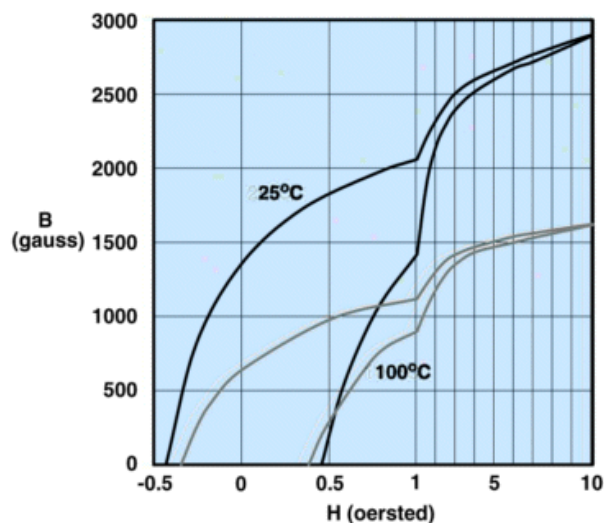
Measured on a 2643000301 using the HP4291A.

### 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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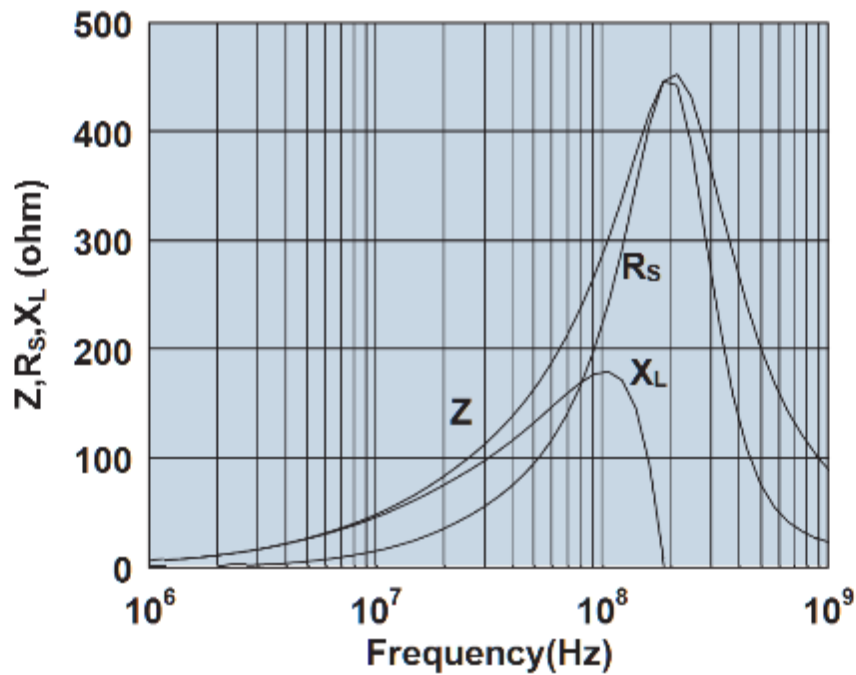
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**RoHS**  
Material  
Declaration

**2643164051**



Impedance, reactance, and resistance vs. frequency.