

Part Number: 8995101021
 Frequency Range: Dimensions
 Description: 98 EFD CORE
 Application: Inductive Components
 Where Used: Closed Magnetic Circuit
 Part Type: EFD Cores
 Generic Name: EFD10

Mechanical Specifications

Weight: .900 (g) per Set

Part Type Information

EFD10, EFD12, EFD15, EFD20, EFD25, EFD30

EFD (Economical Flat Design) cores have been designed to maximize volume in a low profile geometry. EFD cores allow maximum throughput power density with reasonably low mass for board level installation.

-EFD cores can be supplied with the centerpost gapped to a mechanical dimension or an AL value.

-AL value is measured at 1 kHz, $B < 10$ gauss.

-Weight indicated is per pair or set.

Mechanical Specifications

| Dim | mm | mm tol | nominal inch | inch misc. |
|-----|-------|-----------|-----------------|---------------|
| A | 10.50 | ± 0.3 | 0.413 | - |
| B | 5.20 | ± 0.15 | 0.205 | - |
| C | 2.70 | ± 0.2 | 0.106 | - |
| D | 3.75 | ± 0.15 | 0.148 | - |
| E | 7.65 | ± 0.3 | 0.301 | - |
| F | 4.55 | ± 0.2 | 0.179 | - |
| G | - | - | - | - |
| H | - | - | - | - |
| J | - | - | - | - |
| K | 1.45 | ± 0.1 | 0.057 | - |

Electrical Specifications

| Typical Impedance (Ω) | |
|--------------------------------|--|
| | |

| Electrical Properties | |
|----------------------------------|----------|
| A_L (nH) | 610 ±25% |
| A_e (cm ²) | 0.07200 |
| $\Sigma I/A$ (cm ⁻¹) | 32.70 |
| I_e (cm) | 2.36 |
| V_e (cm ³) | 0.17100 |
| A_{min} (cm ²) | .066 |

Land Patterns

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

Winding Information

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

$\Sigma I/A$ - 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

I_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 | 3.5 - 4.5 mW/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.



Fair-Rite Products Corp. Your Signal Solution®

Ferrite Components for the Electronics Industry

Fair-Rite Products Corp. PO Box J, One Commercial Row, Wallkill, NY 12589-0288
Phone: (888) 324-7748 www.fair-rite.com

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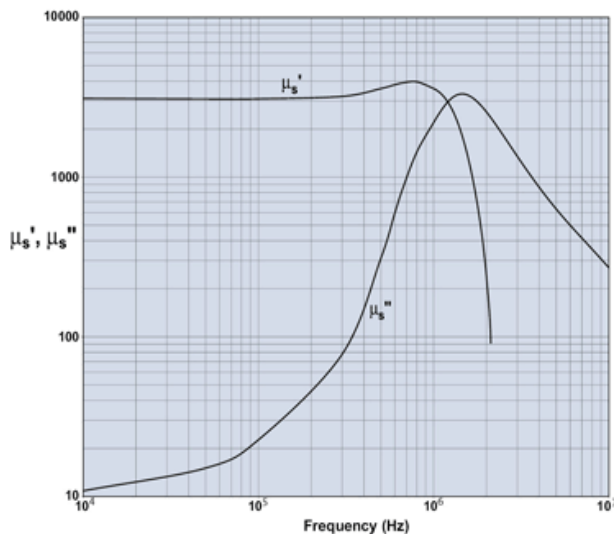
A low loss MnZn ferrite material for power applications up to 200 kHz with low temperature variation. New type 95 Material is a low loss power material, which features less power loss variation over temperature (25-120°C) at moderate flux densities for operation below 200 kHz.

Shapes available in 95 material are Toroids, U cores, Pot Cores, RM, PQ, EFD, EP.

95 Material Characteristics

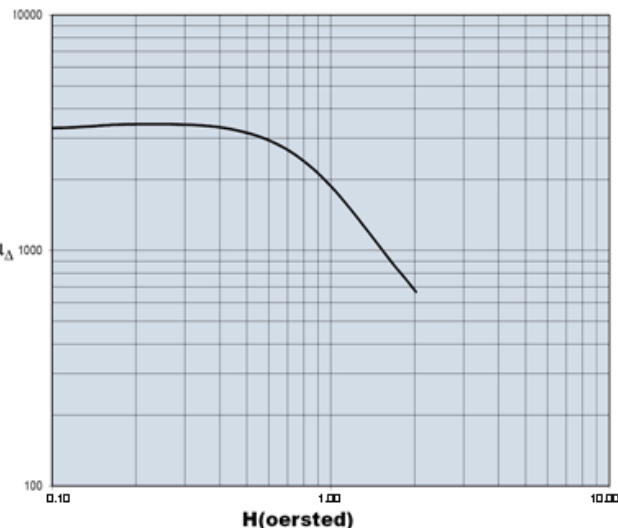
| Property | Unit | Symbol | Value |
|---|------------------|-----------------------|------------|
| Initial Permeability @ B < 10 gauss | | μ_i | 3000 |
| Flux Density @ Field Strength | gauss oersted | B H | 5000 5 |
| Residual Flux Density | gauss | B_r | 800 |
| Coercive Force | oersted | H_c | 0.13 |
| Loss Factor @ Frequency | 10^{-6} MHz | $\tan \delta / \mu_i$ | 3.0 0.1 |
| Temperature Coefficient of Initial Permeability (20 - 70°C) | % / °C | | 0.4 |
| Curie Temperature | °C | T_c | > 220 |
| Resistivity | ohm-cm | ρ | 200 |

Complex Permeability vs. Frequency

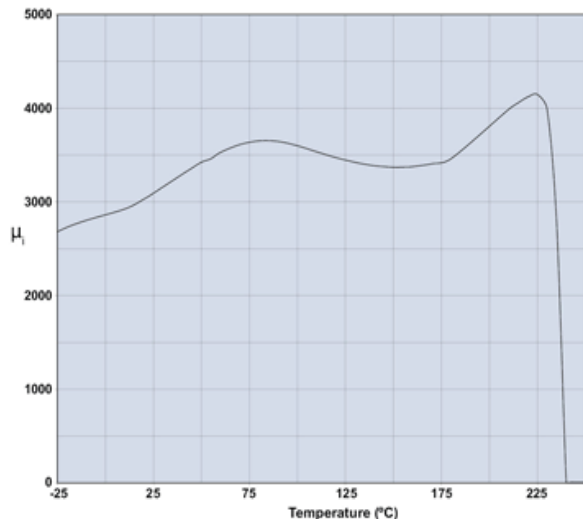


Measured on an 18/10/6mm toroid using HP 4284A and HP4291A.

Incremental Permeability vs. H

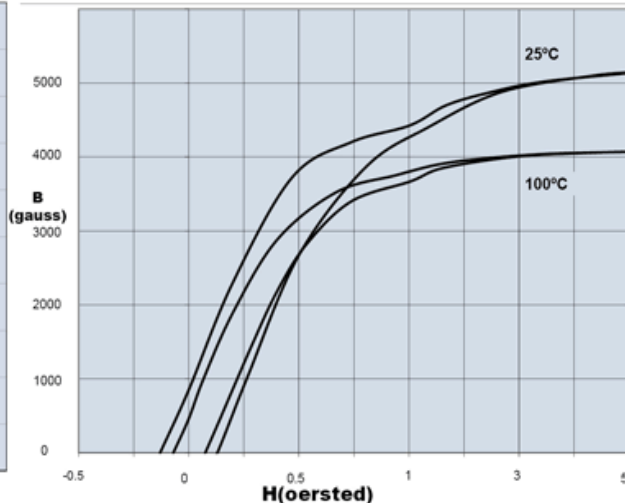


Initial Permeability vs. Temperature



Measured on an 18/10/6mm toroid at 10kHz.

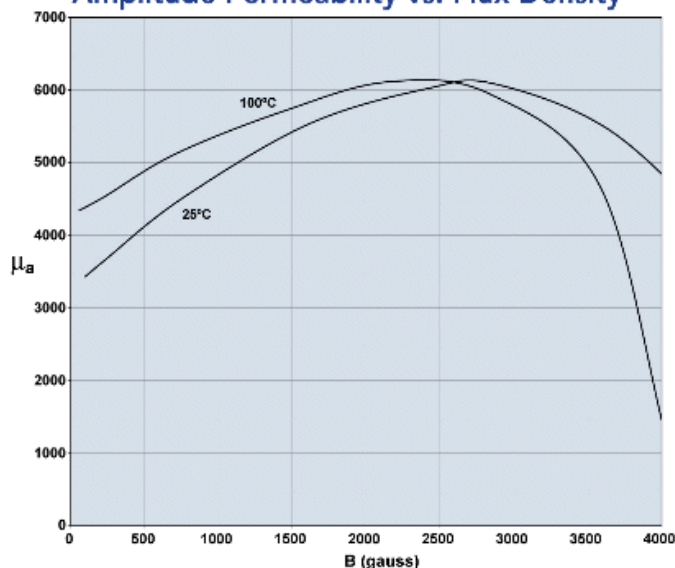
Hysteresis Loop



Measured on an 18/10/6mm toroid at 10kHz.

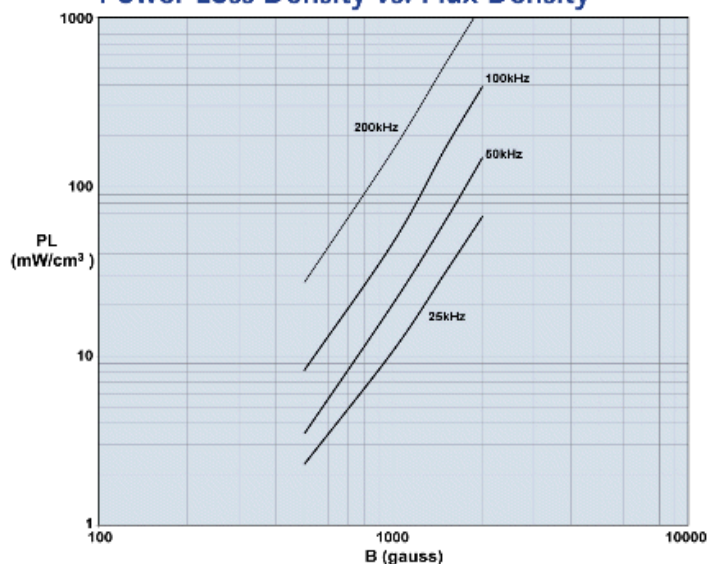
A low loss MnZn ferrite material for power applications up to 200kHz with low temperature variation.

Amplitude Permeability vs. Flux Density



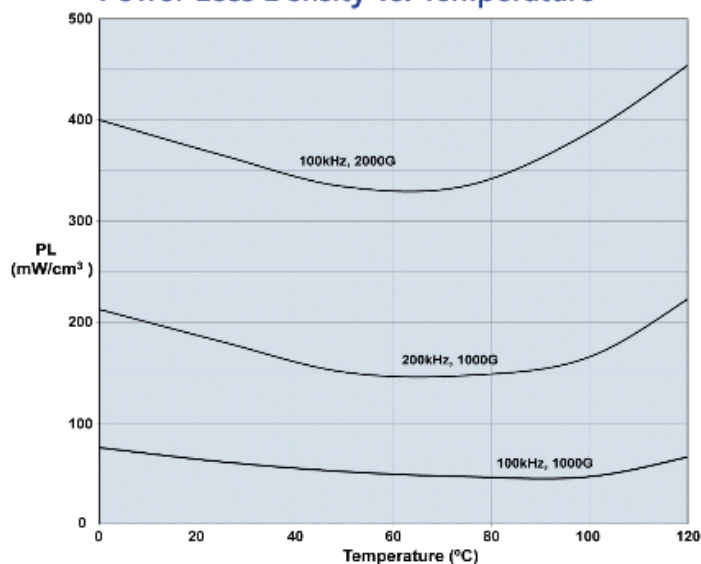
Measured on an 18/10/6mm toroid at 10kHz.

Power Loss Density vs. Flux Density



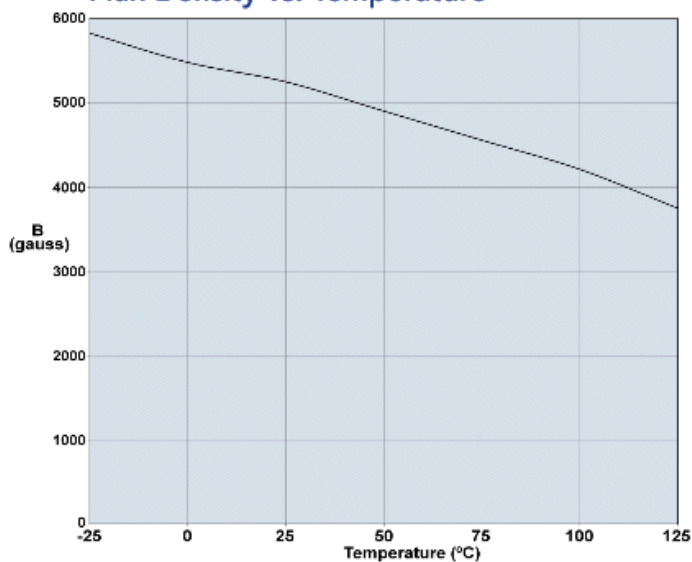
Measured on an 18/10/6mm toroid using the Clarke Hess 258 VAW at 100°C.

Power Loss Density vs. Temperature



Measured on an 18/10/6mm toroid using the Clarke Hess 258 VAW at 100°C.

Flux Density vs. Temperature



Measured on an 18/10/6mm toroid at 10kHz and H=5 oersted.