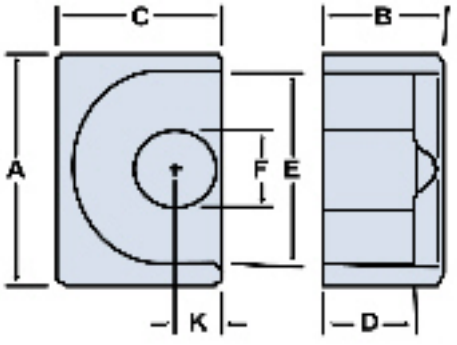
Fair-Rite Products Corp.
Your Signal Solution®
Ferrite Components for the Electronics Industry
Fair-Rite Products Corp. PO Box J,One Commercial Row, Wallkill, NY 12589-0288
Phone: (888) 324-7748 www.fair-rite.com

Fair-Rite Product's Catalog
Part Data Sheet, 6578170121
Printed: 2013-07-03




| | |
|---|---|
| Part Number: | 6578170121 |
| Frequency Range: | Dimensions |
| Description: | 78 EP CORE |
| Application: | Inductive Components |
| Where Used: | Closed Magnetic Circuit |
| Part Type: | EP Cores |
| Generic Name: | EP17 |

## Mechanical Specifications

| | |
|---|---|
| Weight: | 6.000 (g) per Set |

## Part Type Information

EP7, EP10, EP13, EP17, EP20

EP designs reduce the effect of residual air gap upon the effective permeability of the core, hence they minimize coil volume for a given inductance.

-EP cores can be supplied with the center post 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.

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## Mechanical Specifications

| Dim | mm | mm tol | nominal inch | inch misc. |
|---|---|---|---|---|
| A | 18.10 | ± 0.4 | 0.713 | - |
| B | 8.40 | ± 0.4 | 0.331 | - |
| C | 11.00 | ± 0.3 | 0.433 | - |
| D | 5.70 | ± 0.2 | 0.224 | - |
| E | 12.00 | ± 0.4 | 0.472 | - |
| F | 5.70 | ± 0.2 | 0.224 | - |
| G | - | - | - | - |
| H | - | - | - | - |
| J | - | - | - | - |
| K | 3.45 | min | 0.136 | min |

## Electrical Specifications

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

| Electrical Properties | |
|---|---|
| $A_L$ (nH) | 2250 ±25% |
| Ae($cm^2$) | 0.33600 |
| Σl/A($cm^{-1}$) | 8.00 |
| $l_e$ (cm) | 2.68 |
| $V_e$ ($cm^3$) | 0.89900 |
| $A_{min}$ ($cm^2$) | .252 |

## 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.

Σl/A - Core Constant
$l_e$: Effective Path Length
$A_e$: Effective Cross-Sectional Area
$V_e$: Effective Core Volume
$A_L$ - Inductance Factor $\left(\frac{L}{N^2}\right)$
NI - Value of dc Ampere-turns
N/AWG - Number of Turns/Wire Size for Test Coil

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# 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/mm² |
| Compressive Strength | 42 kgf/mm² |
| Young's Modulus | $15x10^3$ kgf/mm² |
| Hardness (Knoop) | 650 |
| Specific Gravity | ≈ 4.7 g/cm³ |

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

See next page for further material specifications.

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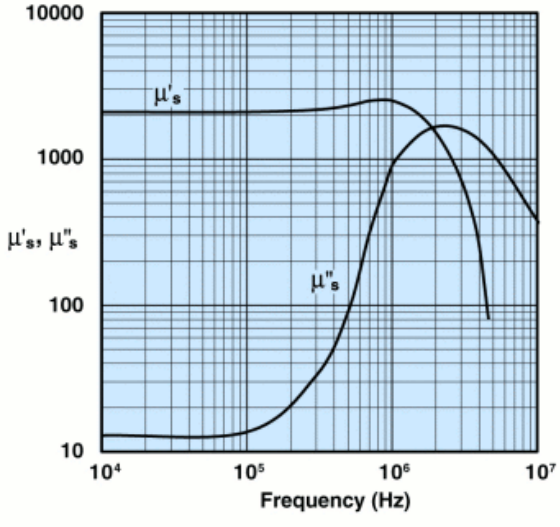
A MnZn ferrite specifically designed for power applications for frequencies up to 200 kHz.

RFID rods, toroids, U cores, and E&I cores are all available in 78 material.

## 78 Material Characteristics:

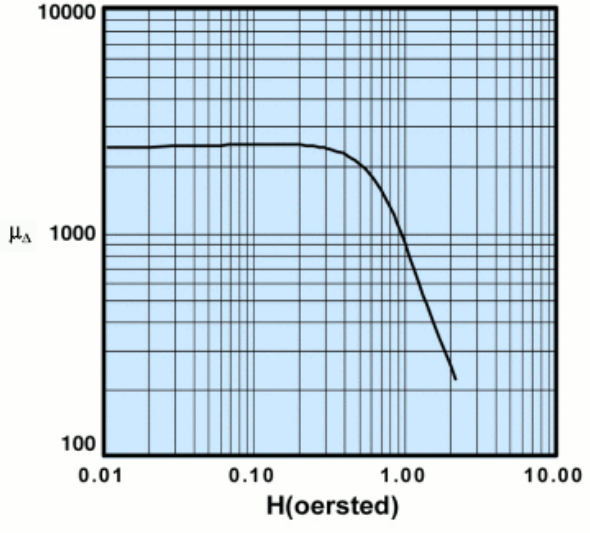
| Property | Unit | Symbol | Value |
|---|---|---|---|
| Initial Permeability @ B < 10 gauss | | $\mu_i$ | 2300 |
| Flux Density @ Field Strength | gauss oersted | B H | 4800 5 |
| Residual Flux Density | gauss | $B_r$ | 1500 |
| Coercive Force | oersted | $H_c$ | 0.20 |
| Loss Factor @ Frequency | $10^{-6}$ MHz | $\tan\delta/\mu_i$ | 4.5 0.1 |
| Temperature Coefficient of Initial Permeability (20 -70°C) | %/°C | | 1.0 |
| Curie Temperature | °C | $T_c$ | >200 |
| Resistivity | Ω cm | ρ | $2x10^2$ |

### Complex Permeability vs. Frequency

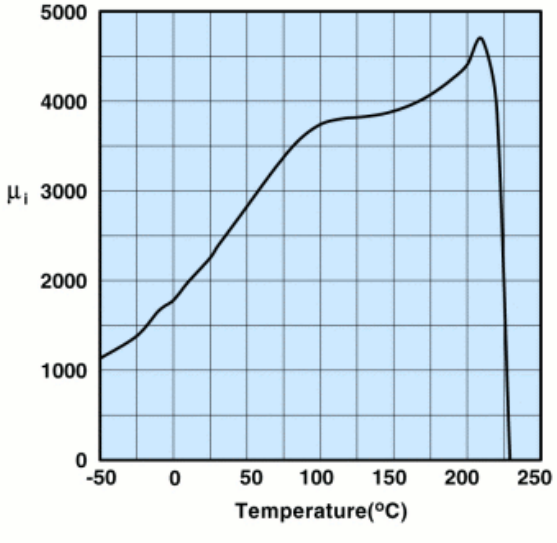



Measured on an 18/10/6mm toroid
using the HP 4284A and the HP 4291A.

### Incremental Permeability vs. H

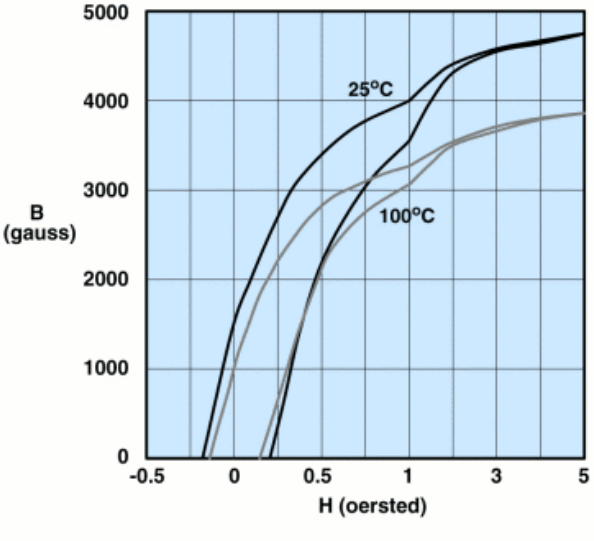



### Initial Permeability vs. Temperature




Measured on an 18/10/6mm toroid at 100kHz.

### Hysteresis Loop




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

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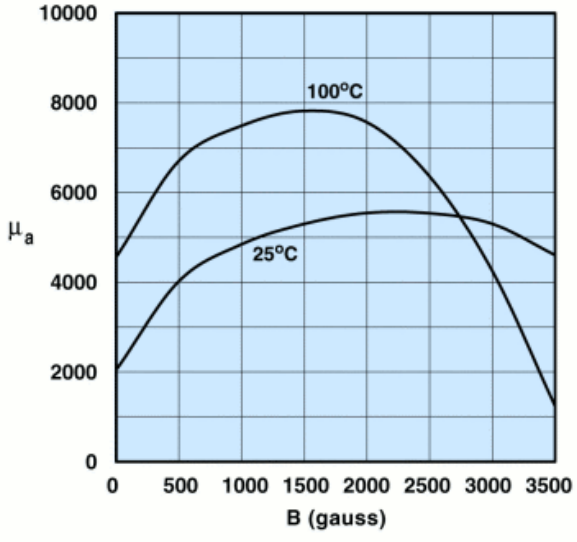
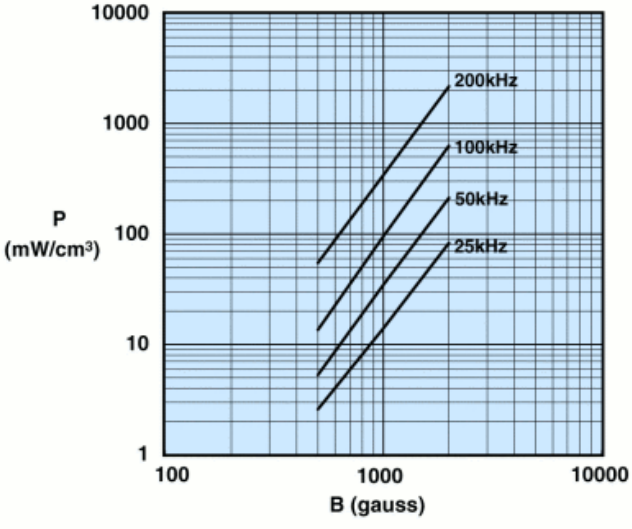
### Amplitude Permeability vs. Flux Density



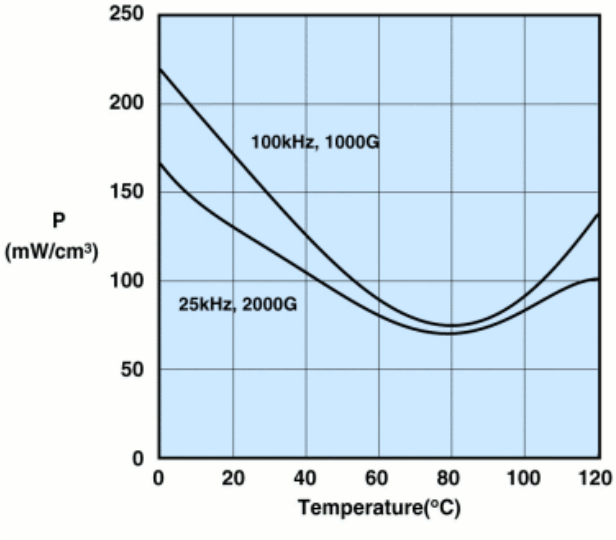

Measured on an 18/10/6mm toroid at 10kHz.

### Power Loss Density vs. Flux Density



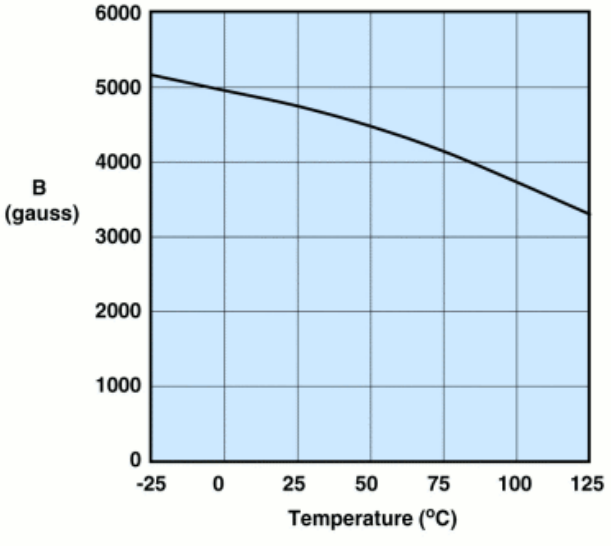

Measured on an 18/10/6mm toroid using the Clarke Hess 258 VAW at 100°C

### Power Loss Density vs. Temperature




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

### Flux Density vs. Temperature




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

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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http://moschip.ru/get-element

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В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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