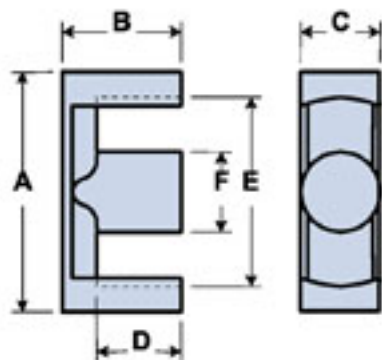
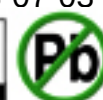




Part Number: 9578545402  
 Frequency Range: Dimensions  
 Description: 78 ETD CORE  
 Application: Inductive Components  
 Where Used: Closed Magnetic Circuit  
 Part Type: ETD Cores  
 Generic Name: ETD54

## Mechanical Specifications

Weight: 180.000(g) per Set

## Part Type Information

ETD29, ETD34, ETD39, ETD44, ETD49, ETD54, ETD59

ETD cores have been designed to make optimum use of a given volume of ferrite material for maximum throughput power, specifically for forward converter transformers. The structure, which includes a round center post, approaches a nearly uniform cross-sectional area throughout the core and provides a winding area that minimizes winding losses. ETD cores are used mainly in switched-mode power supplies and permit off-line designs where IEC and VDE isolation requirements must be met.

-ETD 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<br>tol | nominal<br>inch | inch<br>misc. |
|-----|-------|-----------|-----------------|---------------|
| A   | 54.20 | ± 1       | 2.134           | -             |
| B   | 27.10 | ± 0.3     | 1.067           | -             |
| C   | 18.90 | ± 0.4     | 0.744           | -             |
| D   | 19.50 | ± 0.3     | 0.768           | -             |
| E   | 40.50 | min       | 1.594           | min           |
| F   | 18.90 | ± 0.3     | 0.744           | -             |
| G   | -     | -         | -               | -             |
| H   | -     | -         | -               | -             |
| J   | -     | -         | -               | -             |
| K   | -     | -         | -               | -             |

## Electrical Specifications

| Typical Impedance ( $\Omega$ ) |  |
|--------------------------------|--|
|                                |  |

| Electrical Properties            |           |
|----------------------------------|-----------|
| $A_L$ (nH)                       | 5300 ±25% |
| $A_e$ (cm <sup>2</sup> )         | 2.65000   |
| $\Sigma I/A$ (cm <sup>-1</sup> ) | 4.70      |
| $l_e$ (cm)                       | 12.56     |
| $V_e$ (cm <sup>3</sup> )         | 33.30000  |
| $A_{min}$ (cm <sup>2</sup> )     | 2.400     |

## 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.

$\Sigma I/A$  - Core Constant

$A_e$  - Effective Cross-Sectional Area

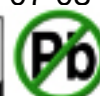
$A_L$  - Inductance Factor ( $\frac{L}{N^2}$ )

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

$l_e$  - 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.



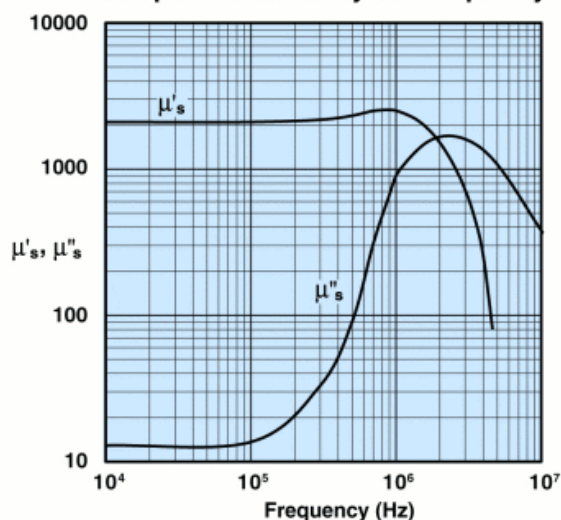
A MnZn ferrite specifically designed for power applications for frequencies up to 200 kHz.

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

## 78 Material Characteristics:

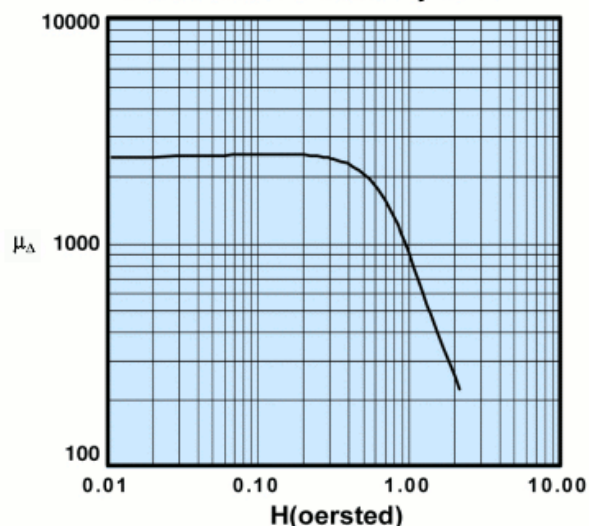
| Property                                                   | Unit             | Symbol              | Value           |
|------------------------------------------------------------|------------------|---------------------|-----------------|
| Initial Permeability @ B < 10 gauss                   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

**Complex Permeability vs. Frequency**

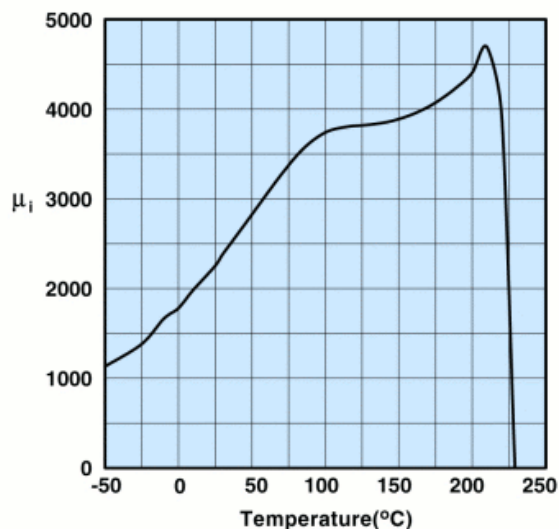


Measured on an 18/10/6mm toroid using the HP 4284A and the HP 4291A.

**Incremental Permeability vs. H**

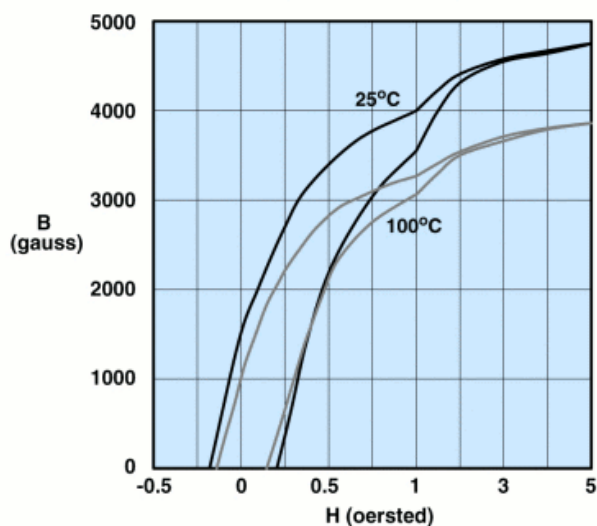


**Initial Permeability vs. Temperature**



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

**Hysteresis Loop**



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



# Fair-Rite Products Corp. Your Signal Solution®

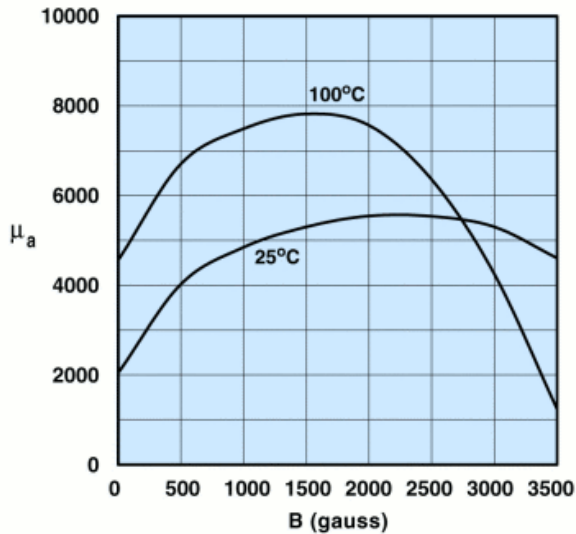
Ferrite Components for the Electronics Industry

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, 9578545402  
Printed: 2013-07-03

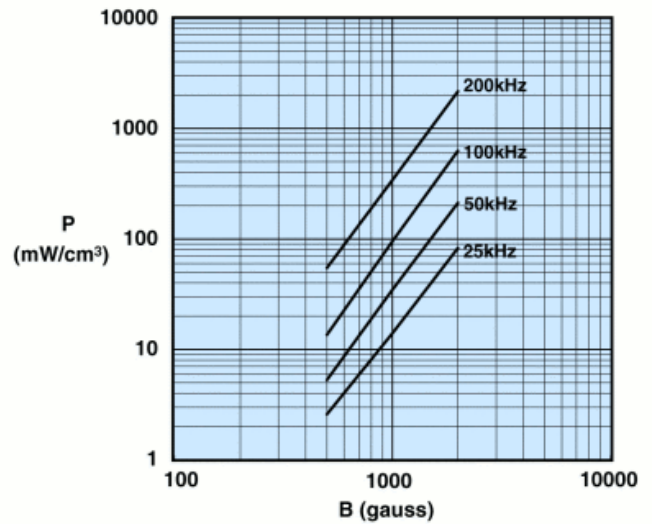


## Amplitude Permeability vs. Flux Density



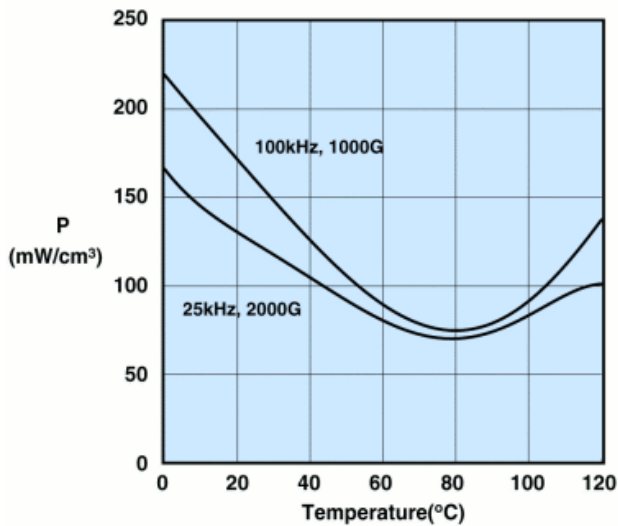
Measured on an 18/10/6mm toroid at 10kHz.

## Power Loss Density vs. Flux Density



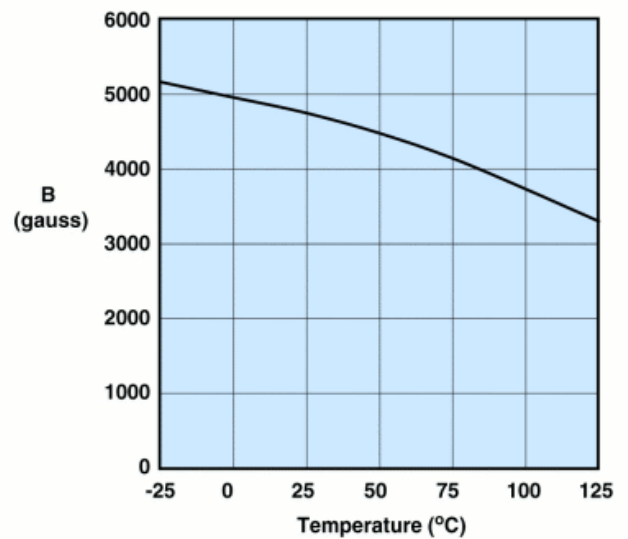
Measured on an 18/10/6mm toroid using the Clarke Hess 258 VAW at 100°C

## 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.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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