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, 5677140821
Printed: 2011-05-05

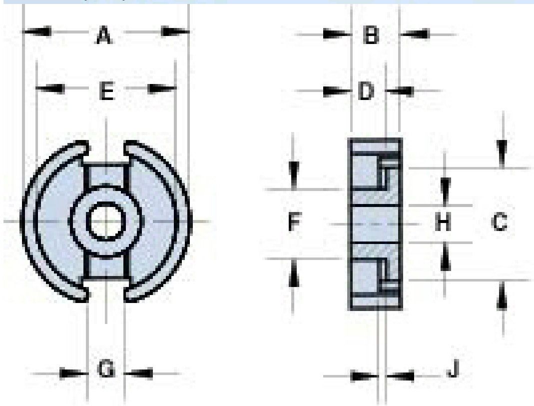

Figure 1

Part Number:	5677140821
Frequency Range:	MnZn 77 material
Description:	77 POT CORE
Application:	Inductive Components
Where Used:	Closed Magnetic Circuit
Part Type:	Pot Cores
Preferred Part:	✓

Mechanical Specifications

Weight: 1.900 (g)

Part Type Information

The pot core has found wide application in all types of inductive components. The core configuration provides a high degree of self-shielding. It also facilitates gapping to enhance its utility for a variety of magnetic designs.

-The part number is for a single core.

-Pot cores can be supplied with the center post gapped to a mechanical dimension.

-Pot cores can also be gapped to an Al value. These parts will be supplied as sets. Figure 1 pot core sets that have an airgap in one of the core halves will be marked with a white marking on the backwall. Pot core sets that are gapped symmetrically will not be marked.

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

-The pot cores shown in Figure 1 are in conformance with IEC 60133.

-For any pot core requirement not listed here or for gapped pot core designs feel free to contact our customer service.

-Explanation of Part Numbers: Digits 1&2 = product class, 3&4 = material grade, 5&6 = core OD in mm's, 7&8 = height of assembled cores in mm's, 9&10 = 21 for ungapped core halves.

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Mechanical Specifications

Dim	mm	mm tol	nominal inch	inch misc.
A	14.05	±0.25	0.553	-
B	4.25	-0.15	0.164	-
C	9.50	±0.25	0.374	-
D	2.90	±0.10	0.114	-
E	11.60	Min	0.457	Min
F	5.90	±0.10	0.232	-
G	3.30	±0.40	0.130	-
H	3.10	±0.10	0.122	-
J	0.20	Min	0.008	Min
K	-	-	-	-

Electrical Specifications

Typical Impedance (Ω)	

Electrical Properties	
A_L (nH)	1450 Min
Ae(cm^2)	0.25000
Σl/A(cm^{-1})	8.00
l_e (cm)	2.00
V_e (cm^3)	0.50000
A_{min}(cm^2)	.197

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
A_e: Effective Cross-Sectional Area
A_L - Inductance Factor $\left(\frac{L}{N^2}\right)$
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

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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.

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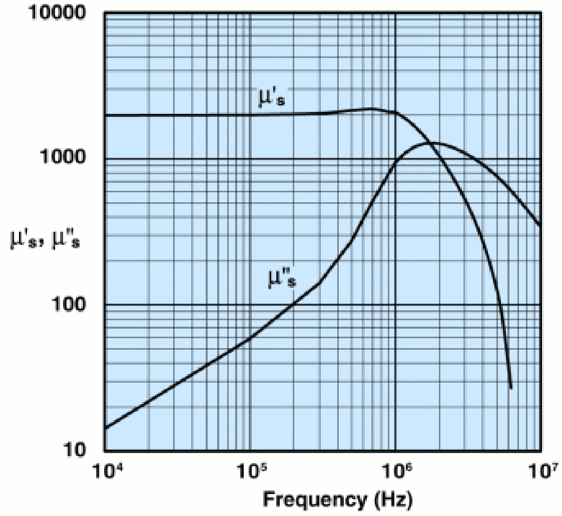
A MnZn ferrite for use in a wide range of high and low flux density inductive designs for frequencies up to 100 kHz.

Pot cores, E&I cores, U cores, rods, toroids, and bobbins are all available in 77 material.

77 Material Characteristics:

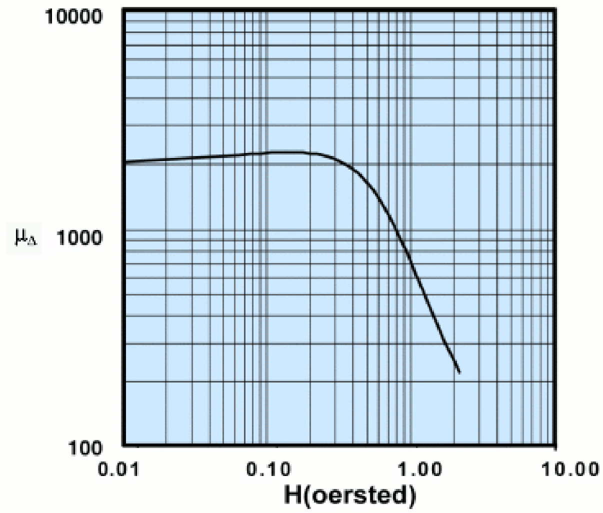
Property	Unit	Symbol	Value
Initial Permeability @ B < 10 gauss		μ_i	2000
Flux Density @ Field Strength	gauss oersted	B H	4900 5
Residual Flux Density	gauss	B_r	1800
Coercive Force	oersted	H_c	0.30
Loss Factor @ Frequency	10^{-6} MHz	$\tan\delta/\mu_i$	15 0.1
Temperature Coefficient of Initial Permeability (20 -70°C)	%/°C		0.7
Curie Temperature	°C	T_c	>200
Resistivity	Ω cm	ρ	$1x10^2$

Complex Permeability vs. Frequency

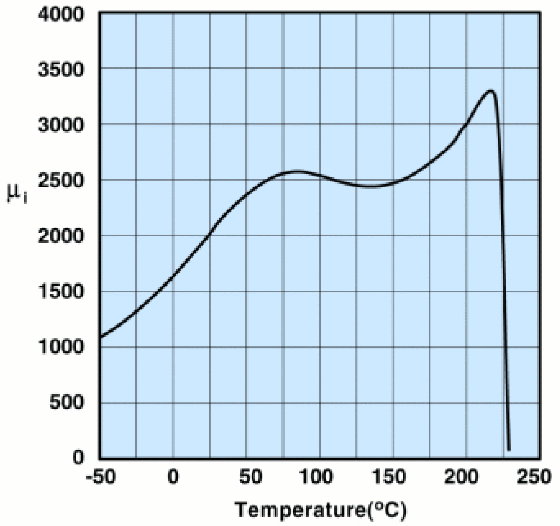


Measured on an 18/10/6mm toroid using the HP 4284A and the HP 4291A.

Incremental Permeability vs. H

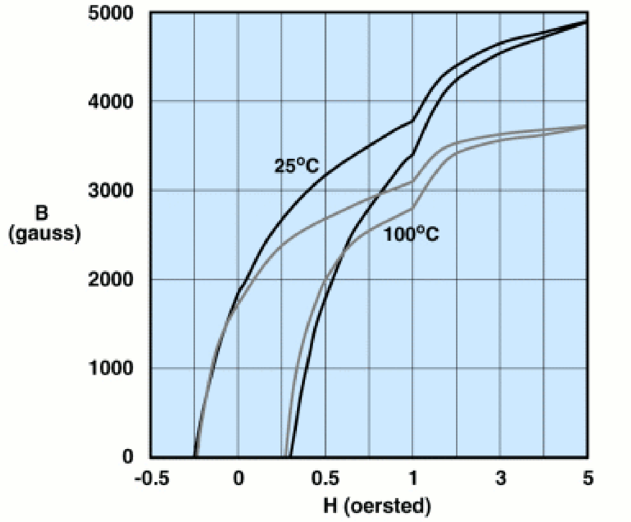


Initial Permeability vs. Temperature



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

Hysteresis Loop



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

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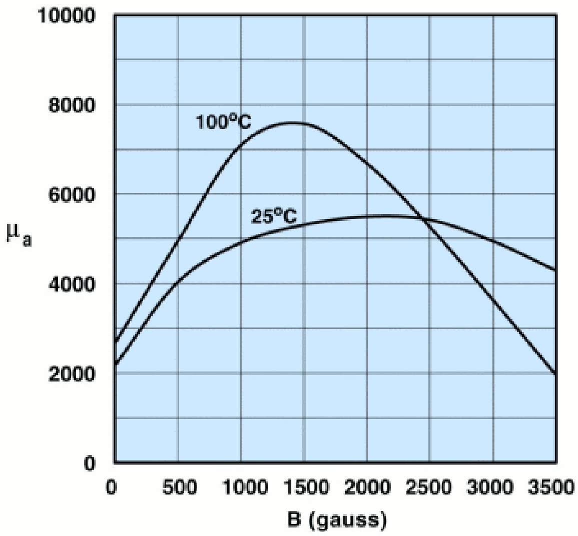
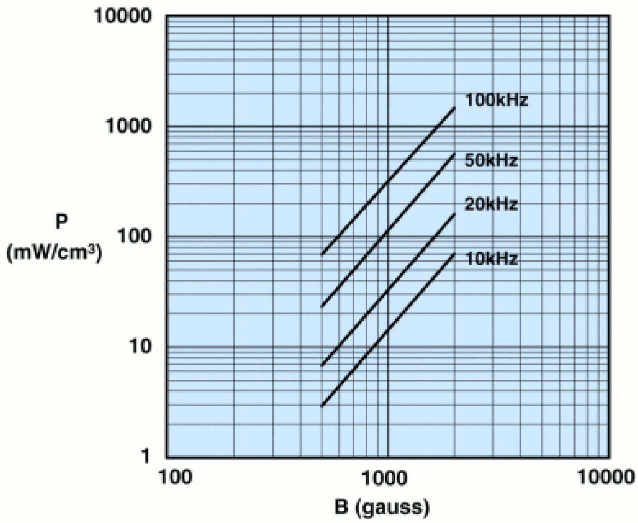
Amplitude Permeability vs. Flux Density



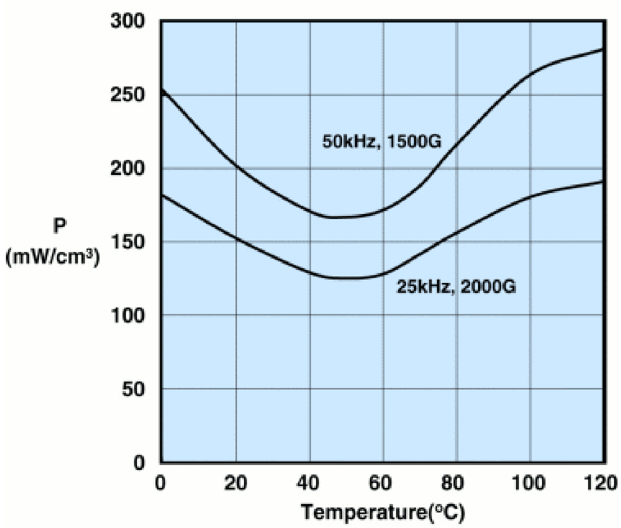
Measured on an 18/10/6mm toroid at 10kHz.

Power Loss Density vs. Flux Density



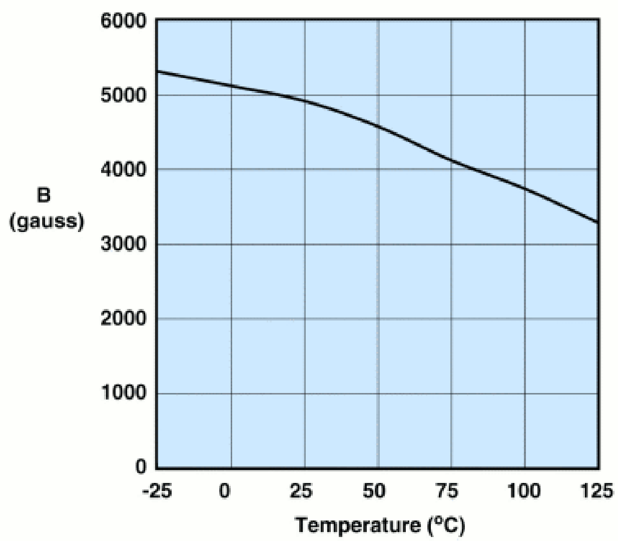
Measured on an 18/10/6mm toroid using the Clarke Hess 258 VAW at 100°C

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