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, 5961001001
Printed: 2013-07-03

Part Number:	5961001001
Frequency Range:	Low Permeability, 61 (ui=125) material
Description:	61 TOROID
Application:	Inductive Components
Where Used:	Closed Magnetic Circuit
Part Type:	Toroids

Mechanical Specifications

Weight:	13.000 (g)

Part Type Information

A ring configuration provides the ultimate utilization of the intrinsic ferrite material properties. Toroidal cores are used in a wide variety of applications such as power input filters, ground-fault interrupters, common-mode filters and in pulse and broadband transformers.

-Toroids are listed by initial permeability classes and increasing dimension of the inside diameter.

-All toroidal cores are supplied burnished to break sharp edges.

-Toroids are tested for AL values at 10 kHz.

-Toroids with an outside diameter of 9.5mm (.375'') or smaller can be supplied Parylene C coated. The Parylene coating will increase the 'A' and 'C' dimensions and decrease the 'B' dimension a maximum of 0.038mm (.0015''). The ninth digit of a Parylene coated toroid part number is a '1'. See the material characteristics of Parylene C in our online catalog.

-Toroids with an outside diameter of 9.5mm (.375'') or larger can be supplied with a uniform coating of thermo-set plastic coating. This coating will increase the 'A' and 'C' dimensions and decrease the 'B' dimension a maximum of 0.5mm (.020''). The 9th digit of the thermo-set plastic coated toroid part number is a '2'. Thermo-set plastic coating is RoHS compliant.

-Thermo-set plastic coated parts can withstand a minimum breakdown voltage of 1000 Vrms, uniformly applied across the 'C' dimension of the toroid.

-The "C" dimension may be modified to suit specific applications.

-For any toroidal core requirement not listed in the catalog, please contact our customer service department for availability and pricing.

-Explaination of Part Numbers: Digits 1&2 = product class, 3&4 = material grade, 9th digit 1 = Parylene coating, 2 = thermo-set plastic coating.

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, 5961001001
Printed: 2013-07-03

Mechanical Specifications

Dim	mm	mm tol	nominal inch	inch misc.
A	29.00	±0.65	1.142	-
B	19.00	±0.50	0.748	-
C	7.50	±0.25	0.295	-
D	-	-	-	-
E	-	-	-	-
F	-	-	-	-
G	-	-	-	-
H	-	-	-	-
J	-	-	-	-
K	-	-	-	-

Electrical Specifications

Typical Impedance (Ω)

Electrical Properties

A_L (nH)	80 ±25%
Ae(cm^2)	0.37000
Σl/A(cm^{-1})	19.80
l_e (cm)	7.30
V_e (cm^3)	2.70000

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 $\left(\frac{L}{N2}\right)$

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

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, 5961001001
Printed: 2013-07-03

Ferrite Material Constants

Specific Heat	0.25 cal/g/°C
Thermal Conductivity	**3.5 - 4.5 mW/cm - °C**
Coefficient of Linear Expansion	$8 - 10 \times 10^{-6}$/°C
Tensile Strength	4.9 kgf/mm^2
Compressive Strength	42 kgf/mm^2
Young's Modulus	15×10^3 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.

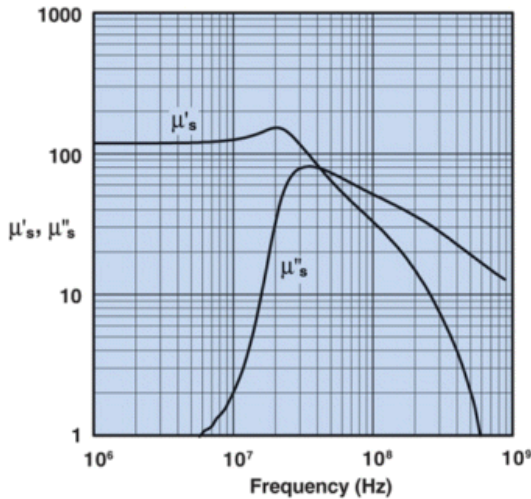A high frequency NiZn ferrite developed for a range of inductive applications up to 25 MHz. This material is also used in EMI applications for suppression of noise frequencies above 200 MHz.

EMI suppression beads, beads on leads, SM beads, wound beads, multi-aperture cores, round cable snap-its, rods, antenna/RFID rods, and toroids are all available in 61 material.

Strong magnetic fields or excessive mechanical stresses may result in irreversible changes in permeability and losses.

61 Material Characteristics:

Property	Unit	Symbol	Value
Initial Permeability @ B < 10 gauss		μ_i	125
Flux Density	gauss	B	2350
@ Field Strength	oersted	H	15
Residual Flux Density	gauss	B_r	1200
Coercive Force	oersted	H_c	1.8
Loss Factor	10^{-6}	$\tan\delta/\mu_i$	30
@ Frequency	MHz		1.0
Temperature Coefficient of Initial Permeability (20 -70°C)	%/°C		0.10
Curie Temperature	°C	T_c	>300
Resistivity	Ω cm	ρ	1×10^8

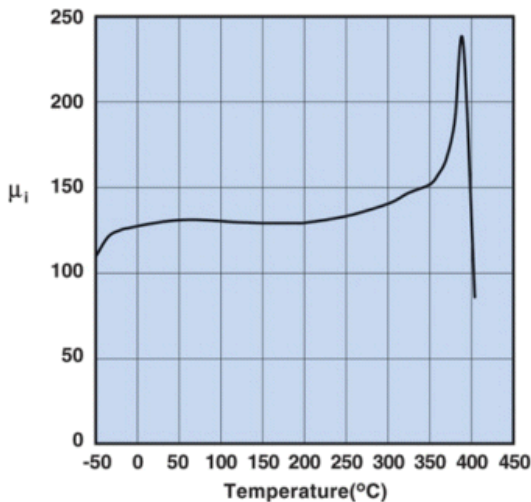### Complex Permeability vs. Frequency

Measured on a 19/10/6mm toroid using the HP 4284A and the HP 4291A.

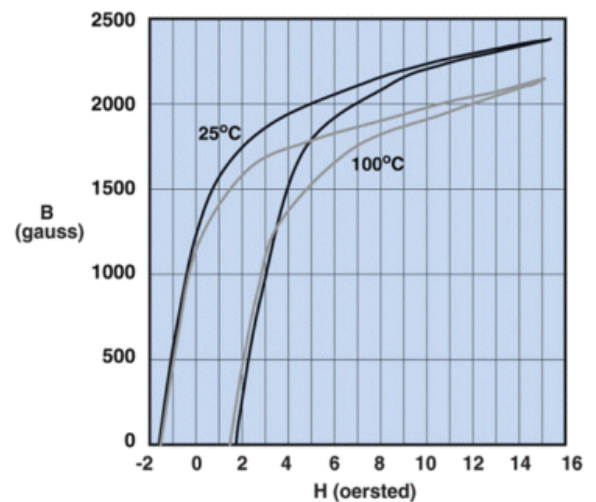### Percent of Original Impedance vs. Temperature
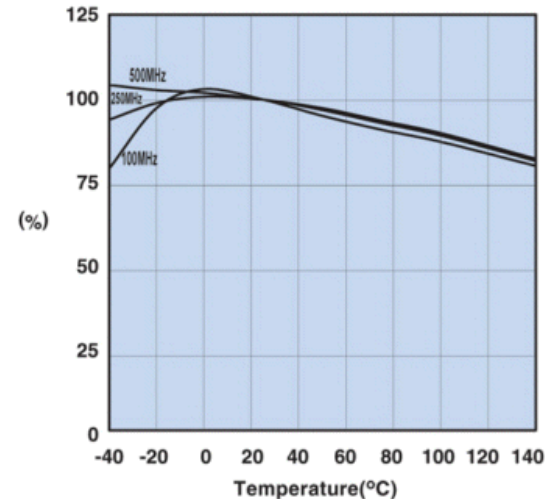
Measured on a 2661000301 using the HP4291A.

Initial Permeability vs. Temperature

Measured on a 19/10/6mm toroid at 100kHz.

Hysteresis Loop

Measured on a 19/10/6mm toroid at 10kHz.