



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, 2961666661
Printed: 2013-07-03

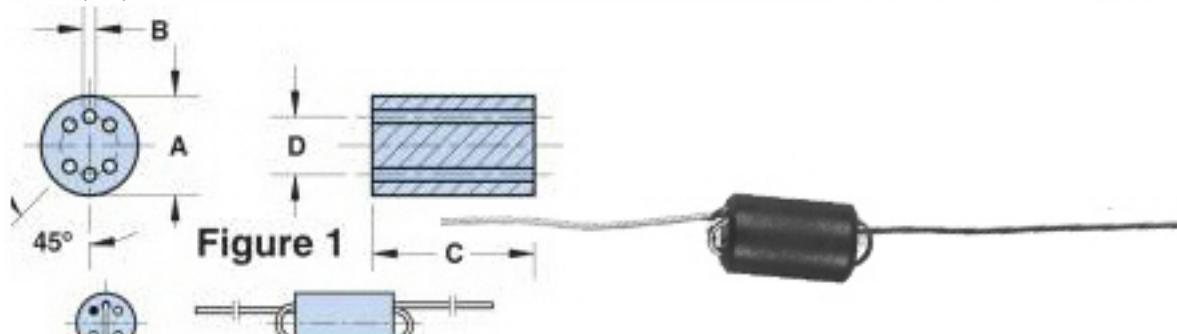


Figure 1-1

Part Number: 2961666661

Frequency Range: Higher Frequencies 50-500 MHz (61 material)

Description: 61 WOUND BEAD

Application: Suppression Components

Where Used: Board Component

Part Type: Wound Beads

Mechanical Specifications

Weight: 1.300 (g)

Part Type Information

Six and eleven hole beads, in two NiZn materials, are available both as beads (product class 26) and wound with tinned copper wire in several winding configurations (product class 29).

-Parts with a '1' as the last digit of the part number are supplied bulk packed. Wound beads with part numbers 29--666631 and 29-666651 can be supplied radially taped and reeled per IEC 60286-1 and EIA 468-B standards. For these taped and reeled wound beads the last digit of the part number is a '4'. Taped and reeled wound beads are supplied 500 pieces on a 13" reel.

-Wire used for winding is oxygen free high conductivity copper with 100% matte tin plating over a nickel undercoating.

-Beads are controlled for impedance limits only. Minimum impedance values are specified for the + marked frequencies. The minimum impedance is typically the listed impedance less 20%. The 44 material beads and wound beads are tested on the 4193A Vector Impedance Meter. The 61 material parts on the 4291A RF Impedance Analyzer.

-Recommended storage temperature and operating temperature is -55°C to 125°C

-For any wound bead requirement not listed in here, please contact our customer service group for availability and pricing.

-Explanation of Part Numbers: Digits 1&2 = product class, 3&4 = material grade and last digit 1 = bulk packed, 4 = taped and reeled.



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RoHS
Material Declaration

Mechanical Specifications

Dim	mm	mm tol	nominal inch	inch misc.
A	6.00	± 0.25	0.236	-
B	0.75	$+0.15$	0.032	-
C	10.00	± 0.25	0.394	-
D	3.50	Ref	0.138	Ref
E	-	-	-	-
F	-	-	-	-
G	-	-	-	-
H	-	-	-	-
J	-	-	-	-
K	-	-	-	-

Electrical Specifications

Typical Impedance (Ω)	
10 MHz	75
50 MHz+	280
100 MHz+	380
200 MHz+	510
400 MHz	600

Electrical Properties	

Land Patterns

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

Winding Information

Turns Tested	Wire Size	1st Wire Length	2nd Wire Length
1½	0.53 24 AWG	38.0 ± 3.0	1.500

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.

$\sum I/A$ - 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



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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/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 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.

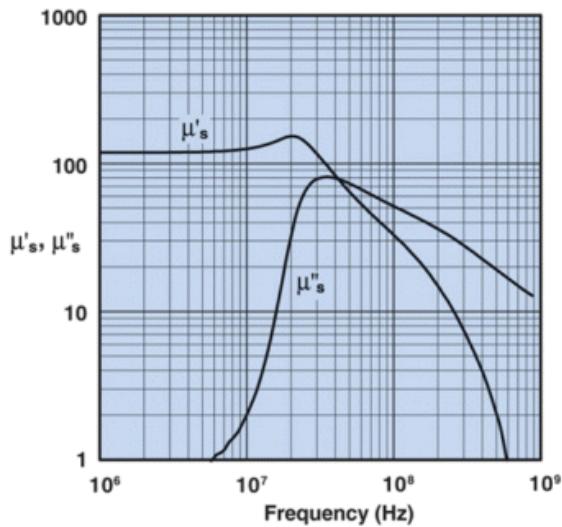
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61 Material Characteristics:

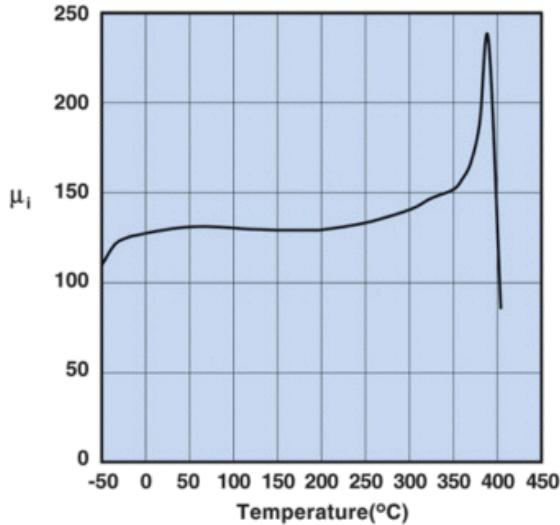
Property	Unit	Symbol	Value
Initial Permeability @ B < 10 gauss		μ_i	125
Flux Density @ Field Strength	gauss oersted	B H	2350 15
Residual Flux Density	gauss	B_r	1200
Coercive Force	oersted	H_c	1.8
Loss Factor @ Frequency	10^{-6} MHz	$\tan \delta / \mu_i$	30 1.0
Temperature Coefficient of Initial Permeability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

Complex Permeability vs. Frequency



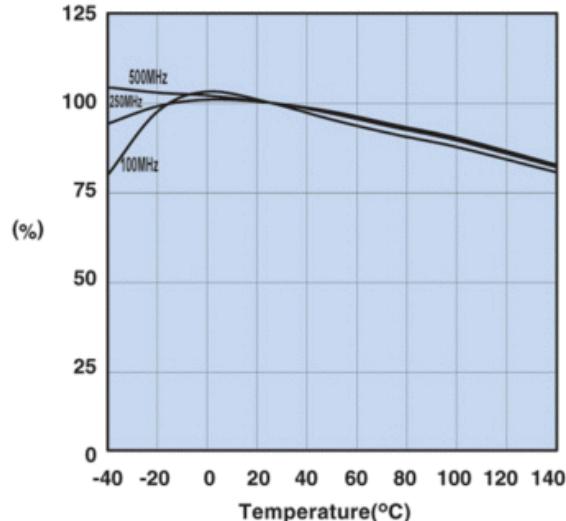
Measured on a 19/10/6mm toroid using the HP 4284A and the HP 4291A.

Initial Permeability vs. Temperature



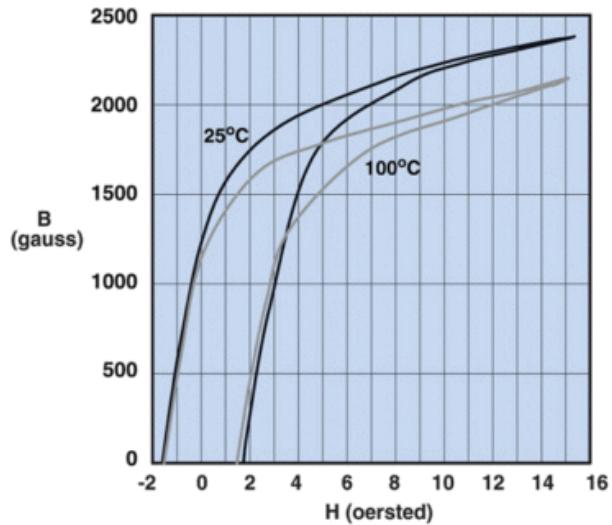
Measured on a 19/10/6mm toroid at 100kHz.

Percent of Original Impedance vs. Temperature



Measured on a 2661000301 using the HP4291A.

Hysteresis Loop



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



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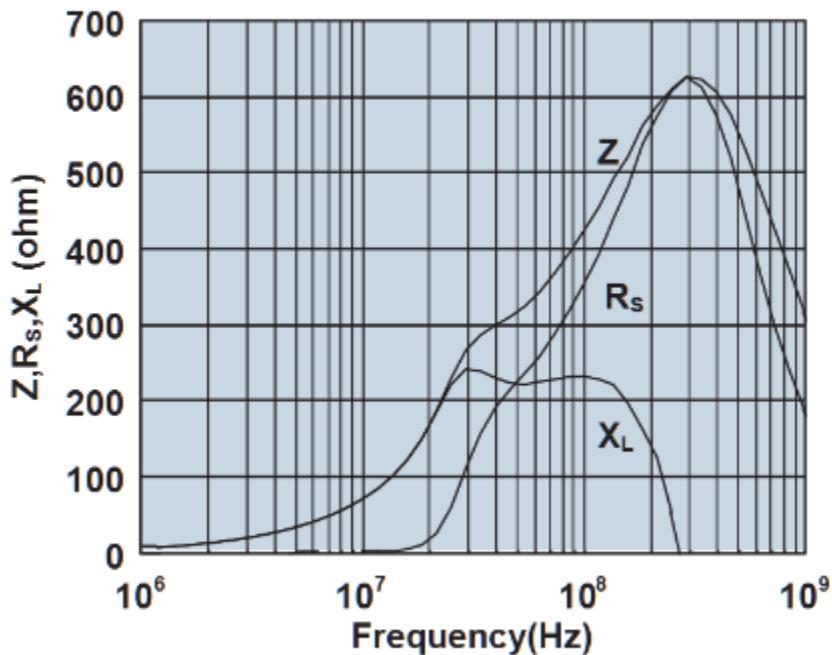
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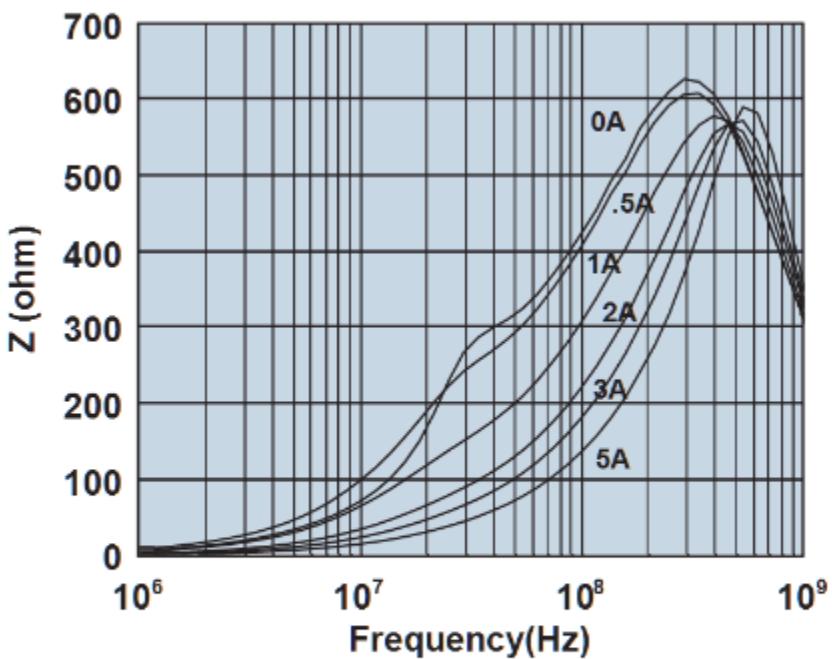


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Impedance, reactance, and resistance vs. frequency.



Impedance vs. frequency with dc bias.

Mouser Electronics

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