

Part Number: 2504021217Y0  
 Frequency Range: Low Current  
 Description: MULTI-LAYER CHIP BEAD  
 Application: Suppression Components  
 Where Used: Board Component  
 Part Type: Chip Beads

## Mechanical Specifications

Weight: .002 (g)

## Part Type Information

Fair-Rite offers a broad selection of cost effective multi-layer chip beads to suppress conducted EMI signals. Chip beads can be used in an array of devices such as cellular phones, computers, laptops, pagers, etc. The small package sizes accommodate automated placements and allow for a dense packaging of circuit boards. Chip beads are 100% tested for impedance and dc resistance. They are available in standard, high and GHz signal speeds. The multi-layer chip beads are organized by increasing package size and current carrying capacity.

-All multi-layer chip beads are supplied taped and reeled, if required bulk packed chip beads can be provided.

-The impedance values listed are typical values. The nominal impedance with a  $\pm 25\%$  tolerance is specified for the + marked 100 MHz. Chip beads are measured for impedance on the HP 4291A and fixture HP 16192A.

-Chip beads have plated contacts, 100% tin over a nickel undercoating. They can accommodate both reflow and wave soldering technologies.

-The suggested land patterns are in accordance to the latest revision of IPC-7351.

-Recommended storage and operating temperature range is  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ .

-Our 'Chip Bead Kit' (part number 0199000018) is available for prototype evaluation.



## Mechanical Specifications

Dim	mm	mm tol	nominal inch	inch misc.
A	0.50	±0.05	0.020	-
B	0.50	±0.05	0.020	-
C	1.00	±0.05	0.040	-
D	0.25	±0.15	0.010	-
E	-	-	-	-
F	-	-	-	-
G	-	-	-	-
H	-	-	-	-
J	-	-	-	-
K	-	-	-	-

## Electrical Specifications

Typical Impedance (Ω)	
50 MHz	88
100 MHz+	120 ±25%
500 MHz	170
1000 MHz+	-

Electrical Properties	
Signal Speed	Standard
Max DCR (Ω)	0.50
Max Current (mA)	200

## Land Patterns

V	W ref	X	Y	Z
0.400	1.300	0.700	0.900	-
0.016	0.051	0.028	0.035	-

## Winding Information

Turns	Wire	1st Wire	2nd Wire
Tested	Size	Length	Length
-	-	-	-

## Reel Information

Tape Width	Pitch	Parts 7 "	Parts 13 "	Parts 14 "
mm	mm	Reel	Reel	Reel
8	4	10000	-	-

## Package Size

Pkg Size
0402 (1005)

## 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<sub>e</sub> - Effective Cross-Sectional Area

A<sub>L</sub> - Inductance Factor ( $\frac{L}{N^2}$ )

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

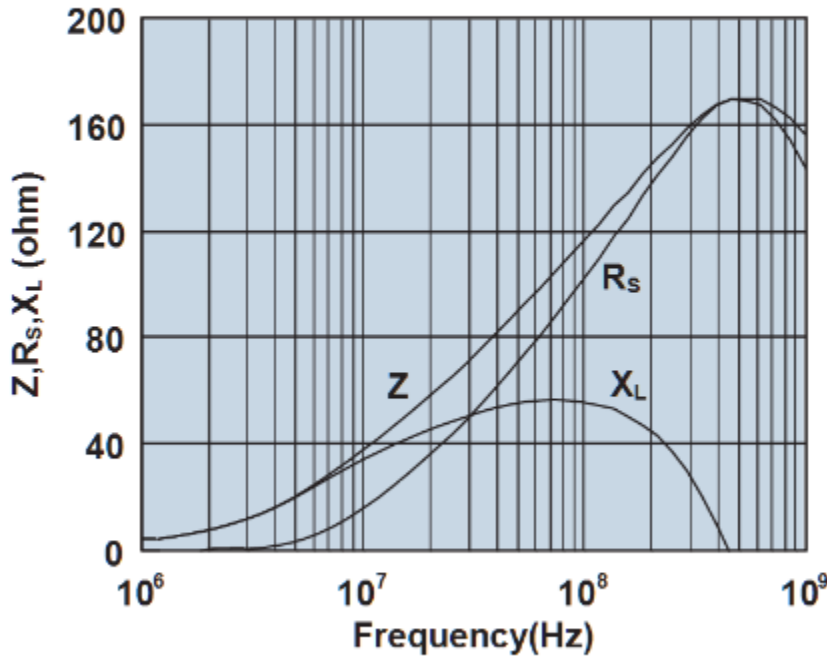
l<sub>e</sub> - Effective Path Length

V<sub>e</sub> - Effective Core Volume

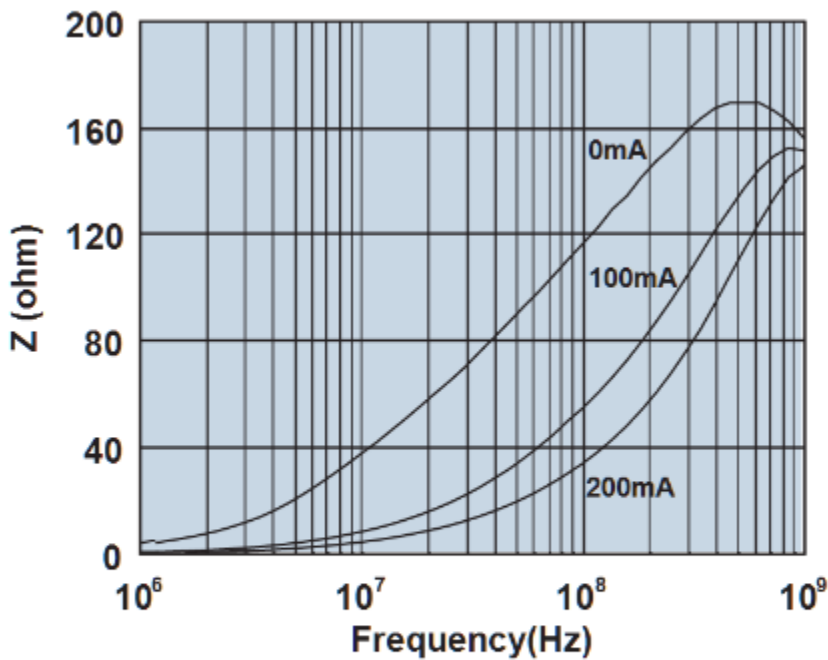
NI - Value of dc Ampere-turns



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Impedance, reactance, and resistance vs. frequency.



Impedance vs. frequency with dc bias.