

|                  |  |
|------------------|--|
| Part Number:     | 2744040447   |
| Frequency Range: | Broadband Frequencies 25-300 MHz (43 & 44 materials) |
| Description:     | 44 SM BEAD   |
| Application:     | Suppression Components                               |
| Where Used:      | Board Component                                      |
| Part Type:       | SM Beads (Differential-Mode)                         |
| Preferred Part:  | ✓  |

## Mechanical Specifications

Weight: .140 (g)

## Part Type Information

Surface mount beads are available from Fair-Rite in several materials and sizes. Their rugged construction lowers the dc resistance and increases current carrying capacity compared to plated beads.

-SM Beads on 12 mm tape width are supplied taped and reeled per EIA 481-1 and IEC 60286-3 standards. SM Beads on 16 and 24 mm tape widths are supplied taped and reeled per EIA 481-2 and IEC 60286-3 standards. Taped and reeled parts are supplied on a 13" reel.

-SM Beads can also be supplied not taped and reeled and then are bulk packed. This packing method will change the last digit of the part number to a '6'.

-The copper conductors have a lead-free tin coating.

-SM Beads meet the solderability specifications when tested in accordance with MIL-STD-202, method 208. After dipping the mounting site of the bead, the solder surface shall be at least 95% covered with a smooth solder coating. The edges of the copper strip are not specified as solderable surfaces.

-After preheating the beads to within 100 oC of the soldering temperature, the parts meet the resistance to soldering requirements of EIA-186-10E, temperature 260±5 oC and time 10±1 seconds.

-Suggested land patterns are in accordance with the latest revision of IPC-7351.

-SM Beads are controlled for impedance limits only. The impedances listed are typical values. Minimum impedance values are specified for the + marked frequencies. The minimum guaranteed impedance is the listed value less 20%. SM Beads in 73, 43 and 44 materials are measured for impedance on the 4193 Vector Impedance Analyzer. The 52 and 61 SM Beads are tested for impedance on the 4191A RF Impedance Analyzer.

-Recommended storage and operation temperature is -55°C to 125°C.

-The maximum practical current rating for these SM Beads is 5 amps.

-For any SM Bead requirement not listed, please contact our customer service group for availability and pricing.

-Our 'Surface Mount Bead Kit' is available for prototype evaluation.

-Explanation of Part Numbers: Digits 1&2 = product class, 3&4 = material grade, last digit 6 = bulk packed, 7 = taped and reeled.



## Mechanical Specifications

| Dim | mm   | mm<br>tol | nominal<br>inch | inch<br>misc. |
|-----|------|-----------|-----------------|---------------|
| A   | 1.95 | Max       | 0.076           | Max           |
| B   | 4.50 | ±0.20     | 0.177           | -             |
| C   | 6.40 | -0.60     | 0.240           | -             |
| D   | 1.40 | ±0.40     | 0.055           | -             |
| E   | 1.27 | ±0.05     | 0.050           | -             |
| F   | -    | -         | -               | -             |
| G   | -    | -         | -               | -             |
| H   | -    | -         | -               | -             |
| J   | -    | -         | -               | -             |
| K   | -    | -         | -               | -             |

## Electrical Specifications

| Typical Impedance ( $\Omega$ ) |    |
|--------------------------------|----|
| 10 MHz                         | 18 |
| 25 MHz+                        | 29 |
| 100 MHz+                       | 56 |
| 250 MHz                        | 60 |

| Electrical Properties |      |
|-----------------------|------|
| Max Rdc(m $\Omega$ )  | 1.60 |

## Land Patterns

| V              | W<br>ref       | X              | Y              | Z              |
|----------------|----------------|----------------|----------------|----------------|
| 1.800<br>0.071 | 4.800<br>0.189 | 0.800<br>0.032 | 3.000<br>0.118 | 1.270<br>0.050 |

## Winding Information

| Turns<br>Tested | Wire<br>Size | 1st Wire<br>Length | 2nd Wire<br>Length |
|-----------------|--------------|--------------------|--------------------|
| -               | -            | -                  | -                  |

## Reel Information

| Tape Width<br>mm | Pitch<br>mm | Parts 7 "<br>Reel | Parts 13 "<br>Reel | Parts 14 "<br>Reel |
|------------------|-------------|-------------------|--------------------|--------------------|
| 12               | 8           | -                 | 4000               | -                  |

## 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.

$\Sigma$ l/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 .....            | 10x10 <sup>-3</sup> cal/sec/cm/°C      |
| 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.



#### 44 Material Characteristics:

| Property   | Unit             | Symbol              | Value           |
|--|------------------|---------------------|-----------------|
| Initial Permeability @ B < 10 gauss                        |                  | $\mu_i$             | 500             |
| Flux Density @ Field Strength                              | gauss<br>oersted | B<br>H              | 3000<br>10      |
| Residual Flux Density                                      | gauss            | $B_r$               | 1100            |
| Coercive Force   | oersted          | $H_c$               | 0.45            |
| Loss Factor @ Frequency                                    | $10^{-6}$<br>MHz | $\tan \delta \mu_i$ | 125<br>1.0      |
| Temperature Coefficient of Initial Permeability (20 -70°C) | %/°C             |                     | 0.75            |
| Curie Temperature  | °C               | $T_c$               | >160            |
| Resistivity  | $\Omega$ cm      | $\rho$              | $1 \times 10^9$ |

A NiZn ferrite developed to combine a high suppression performance, from 30 MHz to 500 MHz, with a very high dc resistivity.

SM beads, PC beads, wound beads, round cable snap-its, and connector EMI suppression plates are all available in 44 material.

#### Complex Permeability vs. Frequency



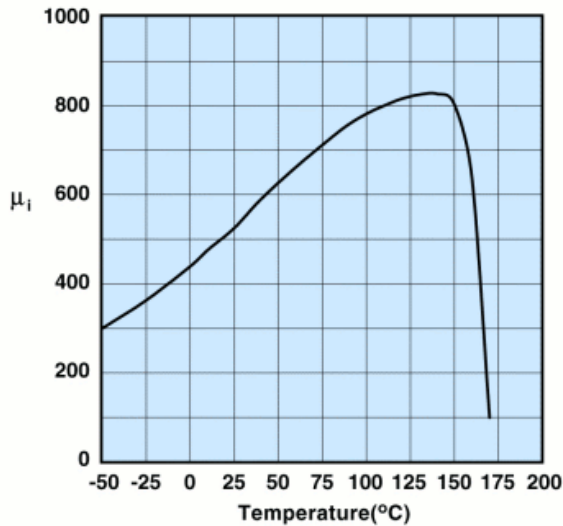
Measured on a 17/10/6mm toroid using the HP 4284A and the HP 4291A.

#### Percent of Original Impedance vs. Temperature



Measured on a 2644000301 using the HP4291A.

#### Initial Permeability vs. Temperature



Measured on a 17/10/6mm toroid at 100kHz.

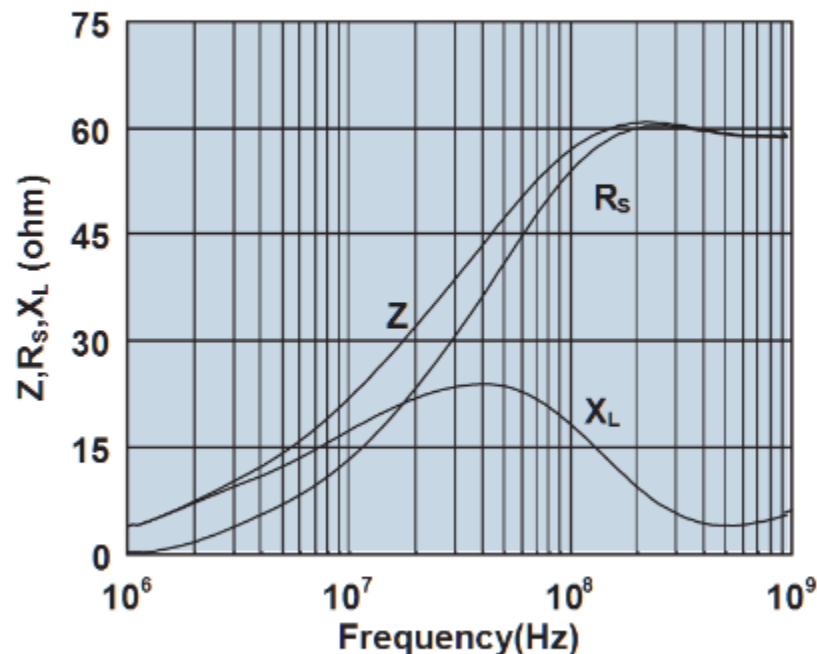
#### Hysteresis Loop



Measured on a 17/10/6mm toroid at 10kHz.

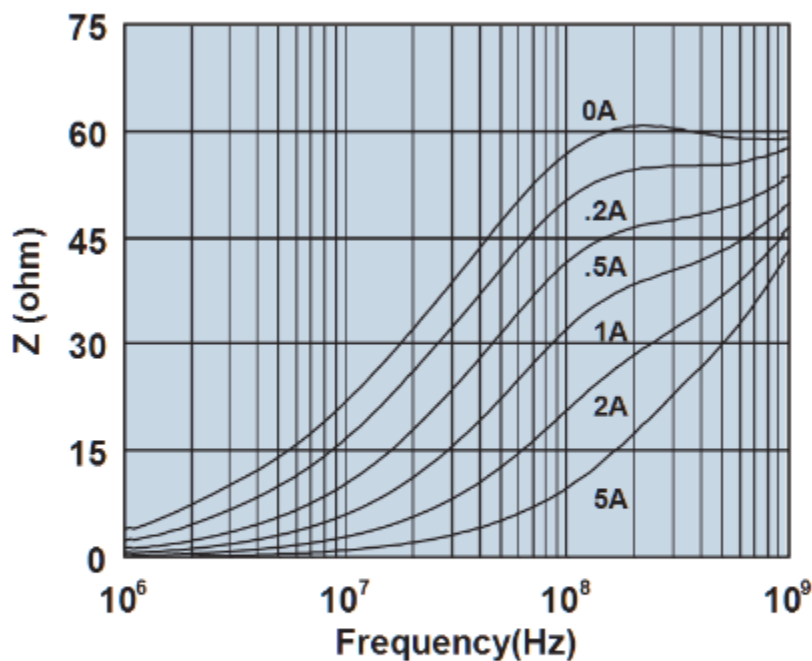


### 2744040447



Impedance, reactance, and resistance vs. frequency.

### 2744040447



Impedance vs. frequency with dc bias.



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

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- 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.);

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- 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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