

DATA SHEET

Microwave Magnetic and Dielectric Materials for Circulators & Isolators

Features

- Broad $4\pi M_s$ range
- Metallized ground (optional)
- Precision machining
- Variety of ΔH , ΔH_k , B_r , H_c , μ

Benefits

- Performance tailored for frequency
- Reduced insertion loss
- Close tolerances for precision packaging
- Trade-offs to optimize performance

Introduction

With almost 50 years of experience Trans-Tech continues to be the supplier of choice of major OEM's for microwave magnetic and dielectric materials for circulators and isolators.

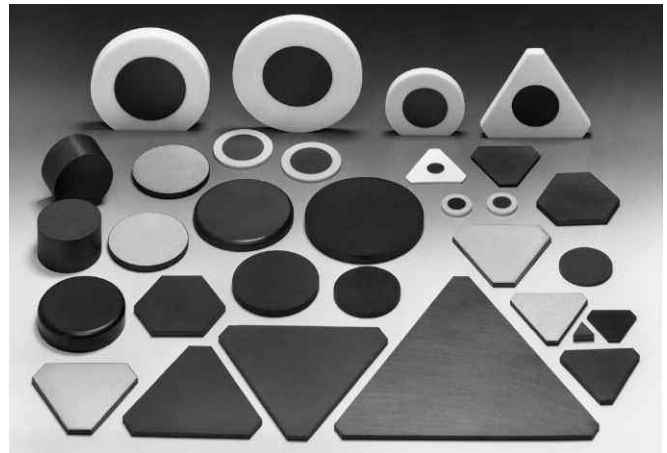
Trans-Tech offers a wide variety of materials, shapes and sizes that can be machined to customer specifications or supplied as an as-fired part.

Intended Applications

Materials are designed to meet the demands of circulator and isolator designs in the 200 MHz to 100 GHz frequency range, to optimize bandwidth, VSWR, insertion loss isolation, temperature and size.

Metallization

Disks and triangles are available with thick film metallization for ground planes. Dielectrics for composites, see section 1, pages 1-30 and 1-31.



General Characteristics

- Wide selection of $4\pi M_s$ values
- Low loss
- Low and high power material
- Temperature stability

Availability

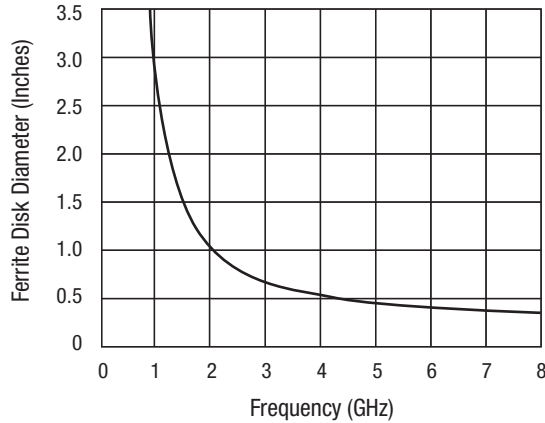
The selection of microwave magnetic material is a challenging technical problem, and involves trade-off of one or more performance parameters. High power handling may be obtained at the expense of low-power insertion loss; loss may be improved if temperature performance is not critical. Frequency of operation may force a compromise. Trans-Tech offers a broad range of materials for the designer to choose from. We control the entire process from powder blending to final machining, and can manufacture simple yet precise geometries such as disks or triangles for commercial circulators and isolators.

Guidelines for Below-Resonance Circulator Design

The Lowest Frequency of Operation is Dependent on $4\pi M_s$

$$\begin{aligned} &\text{With } F_0 \text{ in MHz} \\ &4\pi M_s \times y < F_0 \text{ in MHz} \\ &y = 2.8 \text{ MHz} \setminus Oe \end{aligned}$$

Estimated Size of Ferrite Disk



Suggested Ferrite Disk Diameters for Below Resonance Circulators from Simon

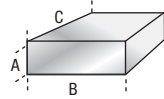
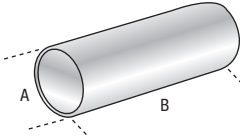
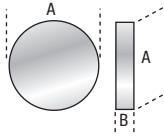
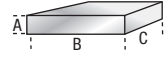
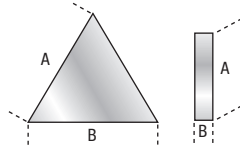
In above resonance applications, choice of $4\pi M_s$ and size is dependent on Gias conditions; therefore, no general approximation is appropriate

Standard Shapes and Sizes

As Fired Parts

A wide variety of shapes can be produced. The table below shows the shapes and dimensions available as a fired part.

Shapes & Dimensions Available

		Minimum Size	Maximum Size
Bars		A 0.250" B 1" 6"	A 1.00" B 2" C 6"
Rods		A 0.250" B 6"	A 1" B 6"
Disks		A 0.500" B 0.050"	A 4" B .150"
Substrates		A 0.065" B 1" C 1"	A .065" B 2" C 2"
Triangles		A 0.050" B 0.500"	A .150" B 4"

Machined Parts

Please contact or send specifications to Trans-Tech or your local sales representative.

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