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Fair-Rite Products Corp.

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Introduction

History

The history of magnetism began with the discovery of the properties of a mineral called magnetite (Fe_3O_4). The most plentiful deposits were found in the district of Magnesia in Asia Minor (hence the mineral's name) where it was observed, centuries before the birth of Christ, that these naturally occurring stones would attract iron. Later on it found application in the lodestone of early navigators. In 1600 William Gilbert published *De Magnete*, the first scientific study on magnetism. In 1819 Hans Christian Oersted observed that an electric current in a wire affected a magnetic compass needle, thus with later contributions by Faraday, Maxwell, Hertz and others, the new science of electromagnetism came into being.

Even though the existence of naturally occurring magnetite, a weak type of hard ferrite, had been known since antiquity, producing an analogous soft magnetic material in the laboratory proved elusive. Research on magnetic oxides was going on concurrently during the 1930's, primarily in Japan and the Netherlands. However, it was not until 1945 that J. L. Snoek of the Philips' Research Laboratories in the Netherlands succeeded in producing a soft ferrite* material for commercial applications.

Fair-Rite Products Corp. was not far behind in the manufacture and sale of soft ferrites for use in the electronics industry. It was formed in 1952 and officially started operations in 1953. The ensuing years have seen a rather crude product, which was available in only a few shapes and materials, develop into a major line of ferrite components for inductive devices, produced in many core configurations with a wide selection of materials. The application of ferrites in EMI suppression as shield beads and broadband chokes, where an effective resistive impedance is produced at high frequencies, has grown so fast in the last decade, that their use as EMI suppressors is limited only by the imagination of the end user.

Soft Ferrites

The single most important characteristic of soft ferrites, as compared to other magnetic materials, is the high volume resistivity exhibited in the monolithic form. Since eddy current losses are inversely proportional to resistivity and these losses increase with the square of the frequency, high resistivity becomes an essential factor in magnetic materials intended for high frequency operation. The magnetic properties of ferrite components are isotropic, and by employing various pressing, extruding, and/or grinding techniques, a wide range of complex shapes can be formed. There is no other class of magnetic material that can match soft ferrites in performance, cost and volumetric efficiency, over the range from audio frequencies to above 200 MHz.

During the last 25 years the basic constituents of ferrites have changed little, but purity of raw materials and process control have improved dramatically. Ferrites are ceramic materials with the general chemical formula $MO.Fe_2O_3$, where MO is a divalent metal oxide blended with 48 to 60 mole percent of iron oxide. Fair-Rite manufactures three broad groups of soft ferrite materials:

Manganese zinc (Fair-Rite 33, 73, 75, 76, 77 and 78 material)
Nickel zinc (Fair-Rite 42, 43, 44, 61, 65, 67 and 68 material)
Manganese (Fair-Rite 85 material)

Manganese zinc ferrites are completely vitrified and have very low porosity. They have the highest permeabilities and exhibit volume resistivities ranging from one hundred to several thousand ohm-centimeter. Manganese zinc ferrite components are used in tuned circuits and magnetic power designs from the low kilohertz range into the broadcast spectrum. These ferrites have a linear expansion coefficient of approximately 10 ppm/°C.

The nickel zinc ferrites vary in porosity, and frequently contain oxides of other metals, such as those of magnesium, manganese, copper or cobalt. Volume resistivities range from several kilohm-centimeter to tens of megohm-centimeter. In general, they are used at higher frequencies (above 1 MHz), and are suitable for low flux density applications. Nickel zinc ferrites have a linear expansion coefficient of approximately 8 ppm/°C.

The manganese ferrite is a dense, temperature stable material displaying a high degree of squareness in its hysteresis loop. This makes this material uniquely suited for such applications as multiple output control in switched-mode power supplies and high frequency magnetic amplifiers.

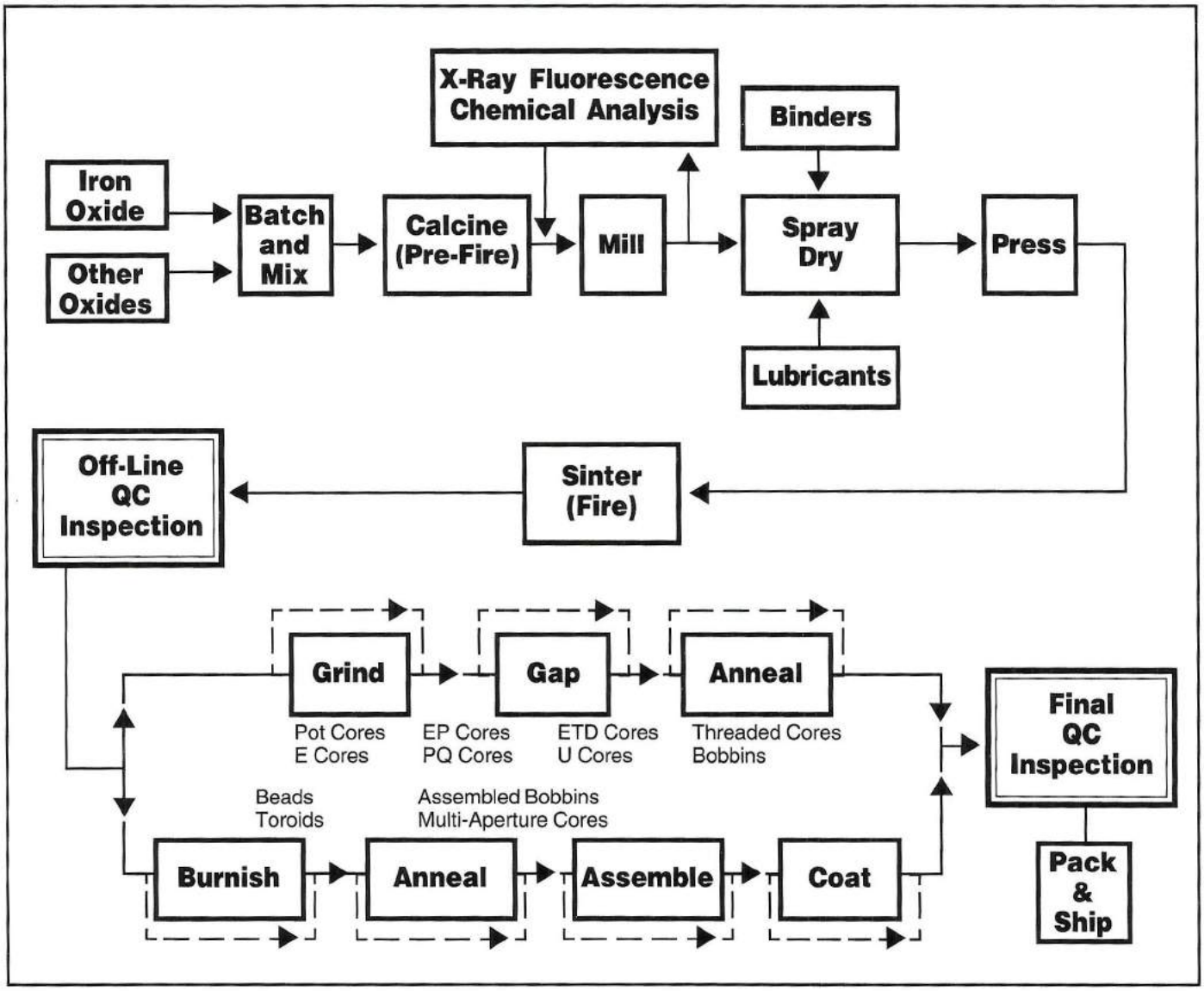
As is evident from the flow diagram on page 3, there is considerable processing involved, and the manufacturing cycle will take a minimum of two weeks. The parts listed in the catalog represent a broad cross section of the wide variety of cores produced by Fair-Rite Products. Large OEM quantitites are manufactured by Fair-Rite to order. Most of the more commonly used parts are stocked by our distributors, offering prompt deliveries. For a complete listing of our distributors see the back cover of the catalog.

Many of the parts produced by Fair-Rite are made to customer specifications, and we welcome inquiries involving application-specific designs. We have the capability to design tooling rapidly, and have it fabricated either by our own tool shop or by outside vendors.

***Footnote:** *The difference between hard and soft ferrite is not tactile, but rather a magnetic characteristic. Soft ferrite does not retain significant magnetization, whereas hard ferrite magnetization is considered permanent.*

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Simplified Process Flow Diagram



Fair-Rite Products Corp.
CAGE # 34899
Federal ID# 141389596

Ferrite Cores
Standard Industrial
Classification (SIC) 3264

Magnetic Properties of

Property	Unit	Symbol	68	67	65	61	44
Initial Permeability @ B <10 gauss		μ_i	20	40	100	125	500
Flux Density @ Field Strength	gauss mT oersted A/m	B H	2000 200 40 3200	3000 300 20 1600	2150 215 10 800	2350 235 10 800	3000 300 10 800
Residual Flux Density	gauss mT	B_r	1000 100	1000 100	1300 130	1200 120	1100 110
Coercive Force	oersted A/m	H_c	10 800	3.0 240	2.35 188	1.6 128	.35 28
Loss Factor @ Frequency	10^{-6} MHz	tan δ/μ_i	400 100	150 50	80 7.9	32 2.5	85 1.0
Temperature Coefficient of Initial Permeability (20-70 °C)	%/°C		.06	.13	.05	.15	–
Curie Temperature	°C	T_c	>500	>475	>400	>350	>160
Resistivity	Ω cm	ρ	10^7	10^7	10^7	10^8	10^9
Power Loss Density 25kHz - 2000 G - 100°C 100kHz - 1000 G - 100°C	mW/cm³	P	 – –	 – –	 – –	 – –	 – –
Recommended Frequency Range Application Areas L E P S	MHz		 <400 – – –	 <300 – – –	 <125 – – –	 <100 >200 – –	 – 30-250 – –
See this page for additional material data			7	8	9	10	12

Application Areas
- L Low flux density devices.
- E EMI suppression.
- P Power magnetics.
- S Special square loop ferrite.

Additional ferrite mechanical and thermal characteristics are tabulated on page 6.

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33	43	85*	77	78	73	75	76
800	850	900	2000	2300	2500	5000	10000
2500 250 10 800	2750 275 10 800	3900 390 10 800	4600 460 10 800	5000 500 37.5 3000	4000 400 10 800	3900 390 10 800	4000 400 2 160
1350 135	1200 120	3400 340	1150 115	1500 150	1000 100	1250 125	1250 125
.30 24	.30 24	.50 40	.22 17.5	.20 16	.18 14.5	.16 13	.10 8
35 .2	120 1.0	50 .1	4.5 .1	4.5 .1	7 .1	15 .1	15 .025
.1	1.0	–	.6	1.2	.8	.9	.9
>150	>130	>200	>200	>200	>160	>140	>120
10^2	10^5	$2\ 10^2$	10^2	$2\ 10^2$	10^2	$3\ 10^2$	50
– –	– –	– –	200 –	<115 <130	– –	140 –	– –
<3 – – –	<10 30-200 – –	– – – <.15	<3 <30 <.1 –	<2.5 – <.5 –	<2.5 <30 – –	<.75 <15 <.1 –	<.5 – – –
13	14	11	16 & 17	18 & 19	15	20	21

42 Material, specifically developed for absorber applications in Anechoic Chambers, is listed on page 89.

** New Fair-Rite material, added in this edition of the catalog.*

Material Characteristics

Ferrite Material Constants

Specific Heat	.25 cal/g/°C
Thermal Conductivity	$10x10^{-3}$ cal/sec/cm/°C
Coefficient of Linear Expansion	$8 - 10x10^{-6}$/°C
Tensile Strength	4.9 kgf/mm^2
Compressive Strength	42 kgf/mm^2
Young Modulus	1.3 kgf/mm^2
Hardness (Knoop)	650
Specific Gravity	$\approx$ 4.7 g/cm^3

The above quoted properties are typical for Fair-Rite MnZn and NiZn ferrites.

Properties of Parylene C* Coating Material

Dielectric Strength	.5600	V/mil
Volume Resistivity	$8.8\ 10^{16}$	ohm
Surface Resistivity	10^{14}	ohm
Dielectric Constant (1MHz)	2.95	
Dissipation Factor (1MHz)	.013	
Density	1.29	g/cm^3
Water Absorption (24 hrs)	<.1	%
Coefficient of Friction	.29	
Continuous Operating Temperature	<100	°C
Thermal Conductivity	$2.0\ 10^{-4}$	cal/sec/cm/°C

** Union Carbide Trademark*

Conversion Table

SI Units	CGS Units
1 T (tesla) = 1 Vs/m^2	= 10^4 gauss
1 mT	= 10 gauss
1 A/m = 10^{-2} A/cm	= .0125 oersted
.1 mT	= 1 gauss
80 A/m	= 1 oersted

Greek Alphabet

A,	α	Alpha	N,	ν	Nu
B,	β	Beta	Ξ,	ξ	Xi
Γ,	γ	Gamma	O,	o	Omicron
Δ,	δ	Delta	Π,	π	Pi
E,	ε	Epsilon	P,	ρ	Rho
Z,	ζ	Zeta	Σ,	σ	Sigma
H,	η	Eta	T,	τ	Tau
Θ,	θ	Theta	Y,	υ	Upsilon
I,	ι	Iota	Φ,	ϕ	Phi
K,	κ	Kappa	X,	χ	Chi
Λ,	λ	Lambda	Ψ,	ψ	Psi
M,	μ	Mu	Ω,	ω	Omega

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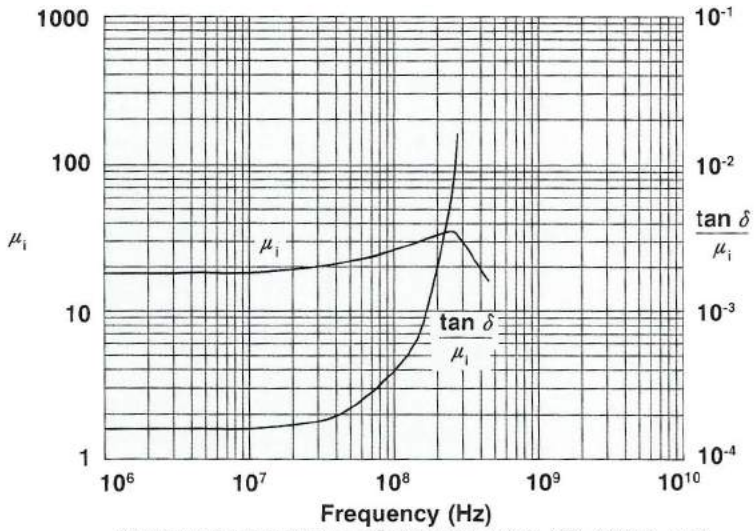
68 Material

Primary Characteristics
Frequency range up to 400 MHz
High Q
Excellent temperature stability from -50° to 300° C
High resistivity

Applications
HF coils and matching transformers
Antennas
Broadband transformers

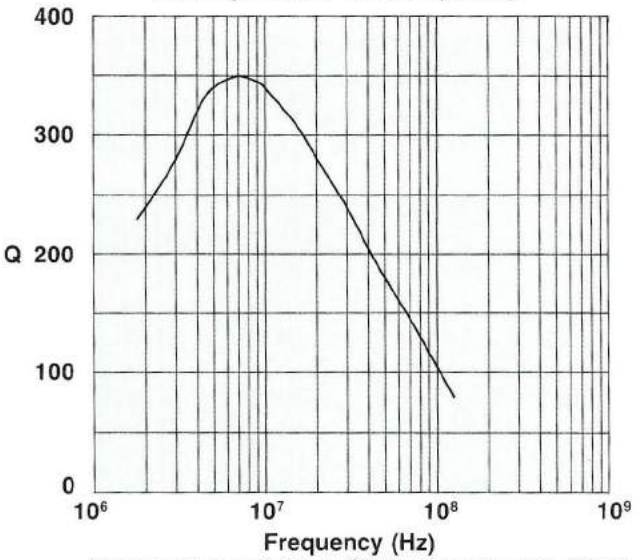
Available Core Shapes
Toroids, slugs, multi-aperture cores

Initial Permeability & Loss Factor vs. Frequency



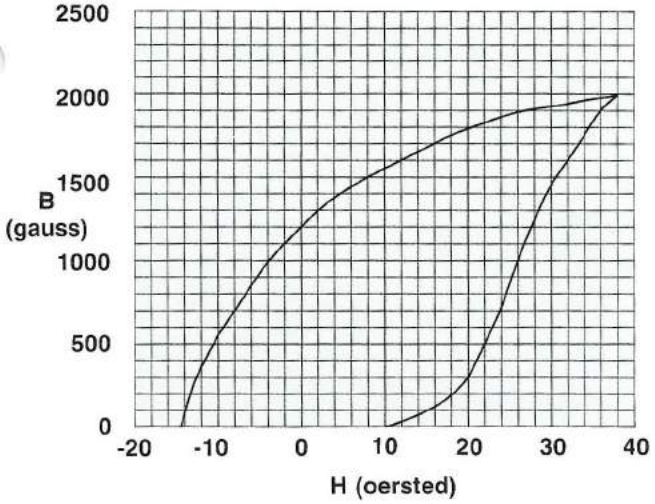
Measured on a **9.5mm** OD toroid using HP 4275A and HP 4191A.

Quality Factor vs. Frequency



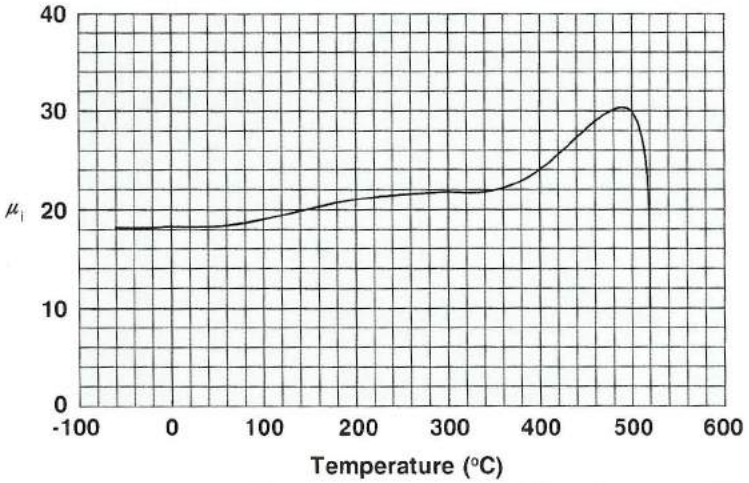
Measured on a **9.5mm** OD toroid using HP 4275A and HP 4191A.

Hysteresis Loop



Measured on a **25.4mm** OD toroid.
If material has been saturated it will exhibit a higher initial permeability, a lower Q and the hysteresis curve will assume a different shape.

Initial Permeability vs. Temperature



Measured on a **9.5mm** OD toroid at 100 KHz using a HP 4275A.

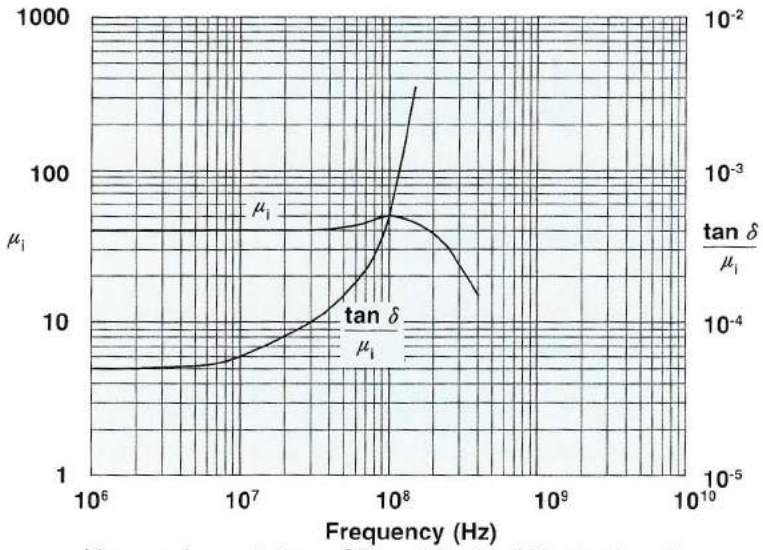
67 Material

Primary Characteristics
Frequency range up to 300 MHz
High Q
Excellent temperature stability from -50° to 300° C
High resistivity

Applications
Antennas and high frequency coils
Broadband and linear power transformers

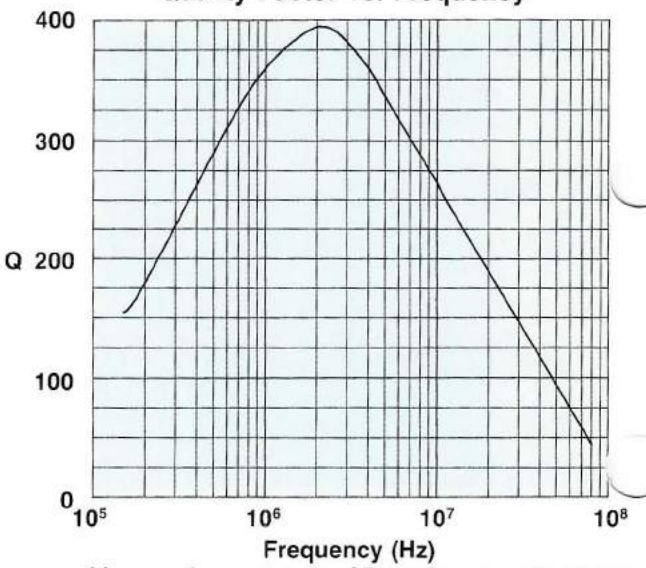
Available Core Shapes
Toroids, slugs, multi-aperture cores

Initial Permeability & Loss Factor vs. Frequency



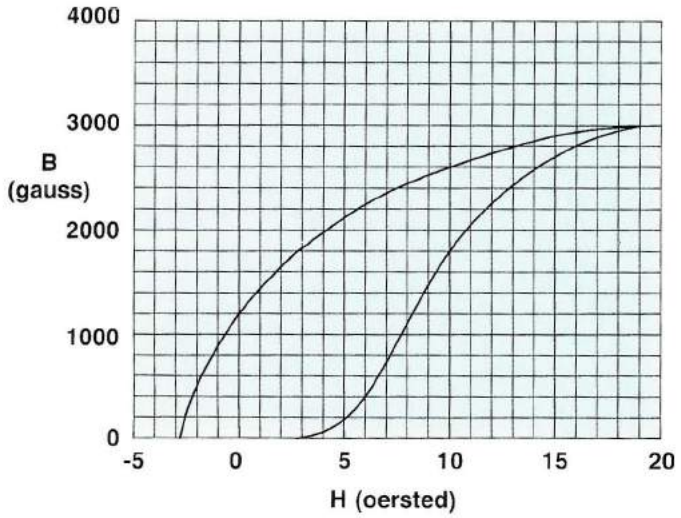
Measured on a **9.5mm** OD toroid using HP 4275A and HP 4191A.

Quality Factor vs. Frequency



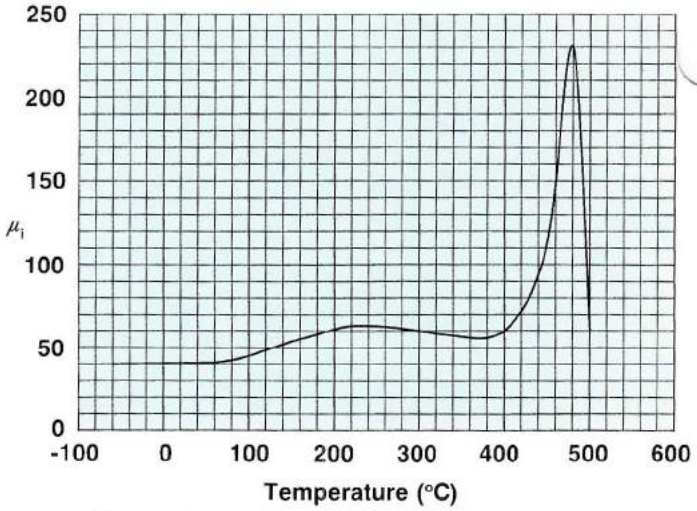
Measured on a **9.5mm** OD toroid using HP 4275A and HP 4191A.

Hysteresis Loop



Measured on a **25.4mm** OD toroid.
If material has been saturated it will exhibit a higher initial permeability, a lower Q and the hysteresis curve will assume a different shape.

Initial Permeability vs. Temperature



Measured on a **9.5mm** OD toroid at 100 kHz using a HP 4275A.

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65 Material

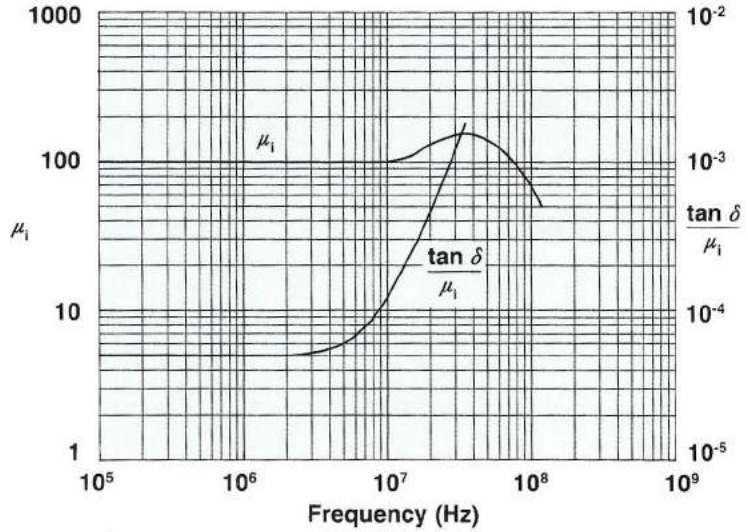
Primary Characteristics
Frequency range up to 125 MHz
High Q
Excellent temperature stability from room temperature to 125° C
High resistivity

Applications
HF broadband and coupling transformers
Balun transformer designs

Available Core Shapes
Multi-aperture cores

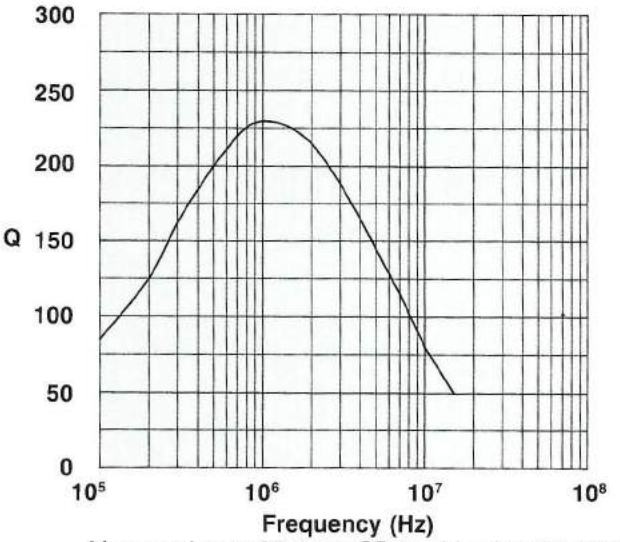
Note: This material is not recommended for new designs.

Initial Permeability & Loss Factor vs. Frequency



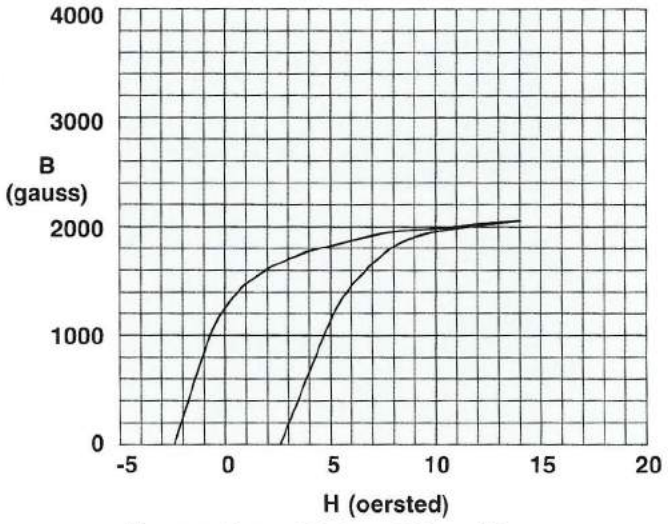
Measured on a **25.4mm** OD toroid using HP 4275A and HP 4191A.

Quality Factor vs. Frequency



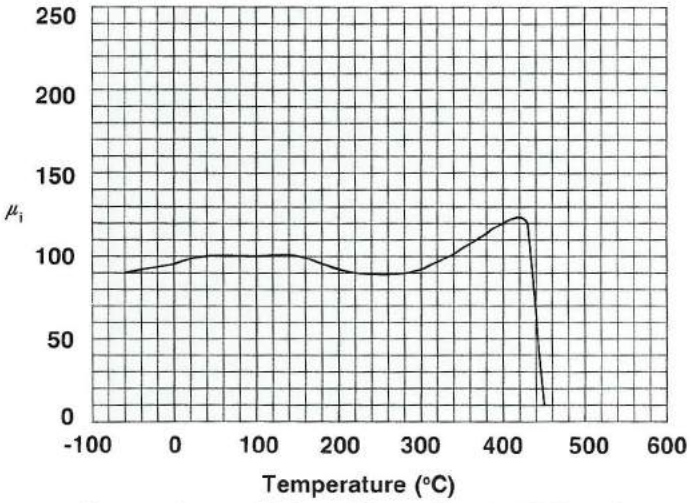
Measured on a **25.4mm** OD toroid using HP 4275A and HP 4191A.

Hysteresis Loop



Measured on a **25.4mm** OD toroid.

Initial Permeability vs. Temperature



Measured on a **25.4mm** OD toroid at 100 KHz using a HP 4275A.

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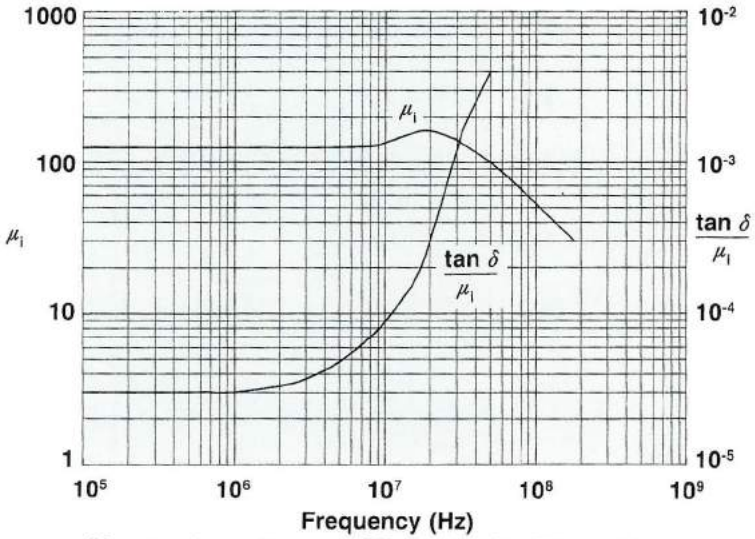
61 Material

Primary Characteristics
Frequency range up to 100 MHz
High Q
Tuned frequency applications up to 10 MHz
High resistivity

Applications
Antennas
Inductors, choke coils and broadband transformers
EMI suppression for frequencies > 200 MHz.

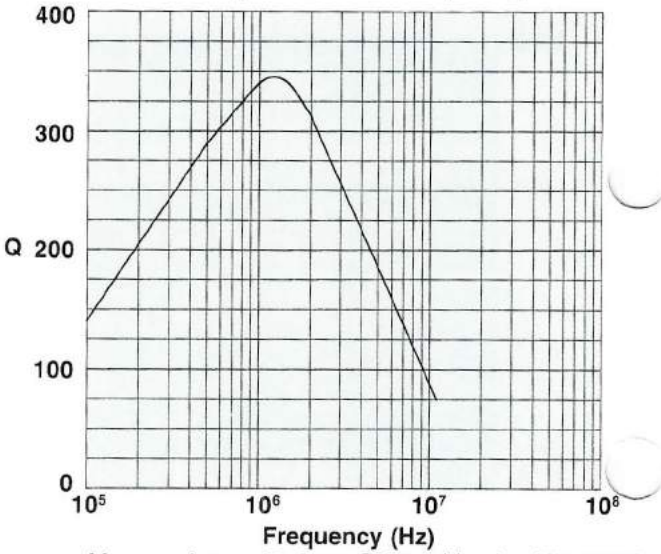
Available Core Shapes
Slugs, toroids, shield beads, wound beads, beads on leads, multi-aperture cores

Initial Permeability & Loss Factor vs. Frequency



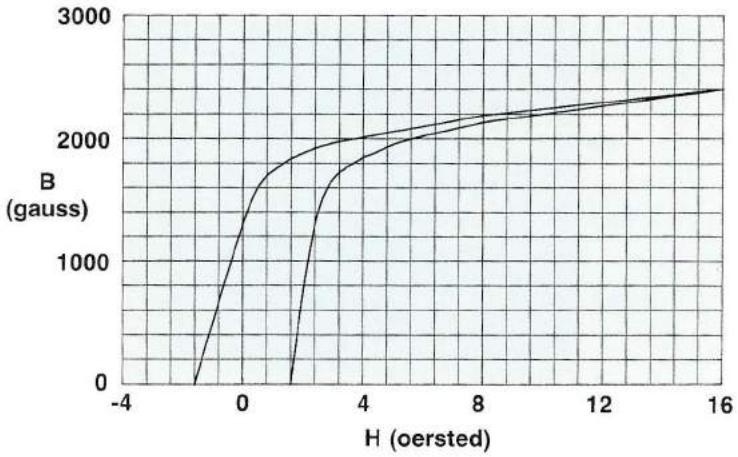
Measured on a **25.4mm** OD toroid using HP 4275A and HP 4191A.

Quality Factor vs. Frequency



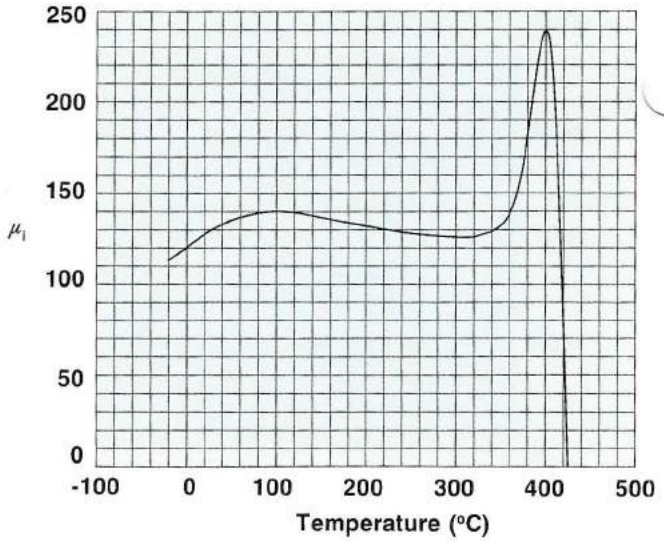
Measured on a **25.4mm** OD toroid using HP 4275A and HP 4191A.

Hysteresis Loop



Measured on a **25.4mm** OD toroid.

Initial Permeability vs. Temperature



Measured on a **25.4mm** OD toroid at 100 kHz using a HP 4275A.

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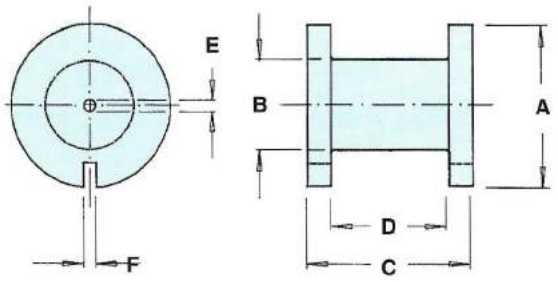


Figure 1

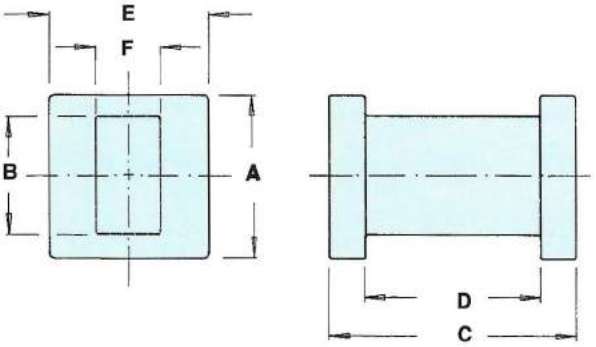


Figure 2

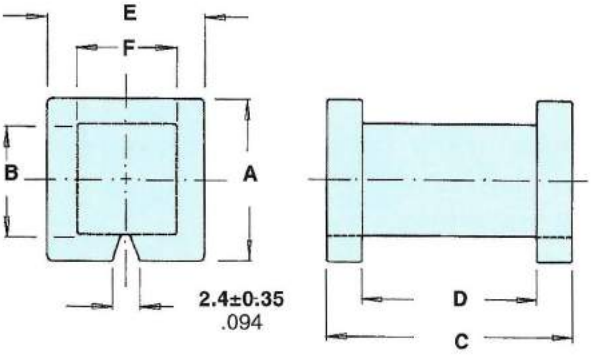


Figure 3

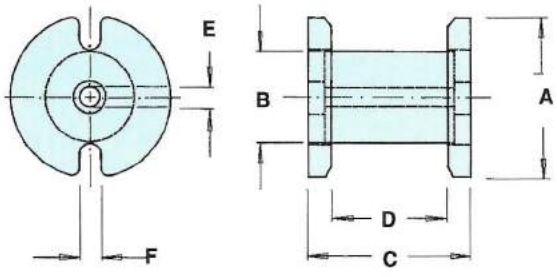


Figure 4

Symbols	Definitions
A_L	Inductance factor ($\frac{L}{N^2}$)
NI	Value of dc ampere-turns which reduces A_L value by a maximum of 5% at room temperature.
A_w	Winding area

Magnetic Parameters

Part Number	A_L(nH) ± 10%	*NI*(At)	A_w(cm²)
9643001165	16.5	–	.12
9677001165	17	90	.12
9643001015	38	–	.30
9677001015	39	125	.30
9843000104	38	–	.33
9877000104	39	125	.33
9877000204	45	360	.37
9677142009	52	325	.31
9677182009	66	400	.44
9677182209	65	410	.51
9677242009	88	430	.69
9677242409	84	450	.91
9677282009	100	470	.69
9677282509	95	520	.99
9677352509	124	580	1.27
9677353509	110	700	1.97
9677453509	142	750	2.34

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Soft Ferrite References

IEC Publications on Soft Ferrite Materials and Components

133	(1985)	Dimensions of pot-cores made of magnetic oxides and associated parts. (Third Edition).
205	(1966)	Calculation of the effective parameters of magnetic piece parts. Amendment No. 1 (1976). Amendment No. 2 (1981).
205A	(1968)	First supplement.
205B	(1974)	Second supplement.
220	(1966)	Dimensions of tubes, pins, and rods of ferromagnetic oxides.
221	(1966)	Dimensions of screw cores made of ferromagnetic oxides. Amendment No. 2 (1976).
221A	(1972)	First supplement.
223	(1966)	Dimensions of aerial rods and slabs of ferromagnetic oxides.
223A	(1972)	First supplement.
223B	(1977)	Second supplement.
226	(1967)	Dimensions of cross cores (X-cores) made of ferromagnetic oxides and associated parts. Amendment No. 1 (1982).
226A	(1970)	First supplement.
367:	–	Cores for inductors and transformers for telecommunications.
367-1	(1982)	Part 1: Measuring methods. (Second Edition). Amendment No. 1 (1984). Amendment No. 2 (1992).
367-2	(1974)	Part 2: Guides for the drafting of performance specifications. Amendment No. 1 (1983).
367-2A	(1976)	First supplement.
401	(1993)	Ferrite materials - Guide on the format of data appearing in manufacturers' catalogues of transformer and inductor cores. (Second Edition).
424	(1973)	Guide to the specification of limits for physical imperfections of parts made from magnetic oxides.
431	(1993)	Dimensions of square cores (RM cores) made of magnetic oxides and associated parts. (Second edition). Amendment No. 1 (1995).
492	(1974)	Measuring methods for aerial rods.
525	(1976)	Dimensions of toroids made of magnetic oxides or iron powder. Amendment No. 1 (1980).
647	(1979)	Dimensions for magnetic oxide cores intended for use in power supplies (EC cores).
701	(1981)	Axial lead cores made of magnetic oxides or iron powder.
723:	—	Inductor and transformer cores for telecommunications.
723-1	(1982)	Part 1: Generic specification.
723-2	(1983)	Part 2: Sectional specification: Magnetic oxide cores for inductor applications.
723-2-1	(1983)	Part 2: Blank detail specification: Magnetic oxide cores for inductor applications. Assessment level A.
723-3	(1985)	Part 3: Sectional specification: Magnetic oxide cores for broadband transformers.
723-3-1	(1985)	Part 3: Blank detail specification: Magnetic oxide cores for broadband transformers. Assessment levels A and B.
723-4	(1987)	Part 4: Sectional specification: Magnetic oxide cores for transformers and chokes for power applications.
723-4-1	(1987)	Part 4: Blank detail specification: Magnetic oxide cores for transformers and chokes for power applications - Assessment level A.
723-5	(1993)	Part 5: Sectional specification: Adjusters used with magnetic oxide cores for use in adjustable inductors and transformers.
723-5-1	(1993)	Part 5: Sectional specification: Adjusters used with magnetic oxide cores for use in adjustable inductors and transformers. Section 1: Blank detail specification - Assessment level A.
732	(1982)	Measuring methods for cylinder cores, tube cores and screw cores of magnetic oxides.
1007	(1994)	Transformers and inductors for use in electronic and telecommunication equipment -Measuring methods and test procedures. (Second Edition).
1185	(1992)	Magnetic oxide cores (ETD-cores) intended for use in power supply applications - Dimensions. Amendment No. 1 (1995).
1246	(1994)	Magnetic oxide cores (E-cores) of rectangular cross-section and associated parts - Dimensions.

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Soft Ferrite References

1247 (1995) PM-cores made of magnetic oxides and associated parts - Dimensions.

1332 (1995) Soft ferrite material classification.

50(221) (1990) Chapter 221: Magnetic materials and components.
Amendment No. 1 (1993).
International Electrotechnical Vocabulary.
(Each chapter of the vocabulary is issued as a separate booklet, each dealing with a specific field.)

The International Electrotechnical Commission (IEC) is the organization responsible for international standardization in the electrical and electronics fields. Founded in 1906, the IEC is presently composed of 51 National Committees collectively representing some 80% of the world's population that produces and consumes 95% of the electric energy.

The above publications have been issued by IEC Technical Committee No. 51: Magnetic Components and Ferrite Materials. Publications can be purchased from the American National Standards Institute, 11 West 42nd Street, New York, NY, 10036, (212) 642-4900.

MMPA Publications on Soft Ferrites

PC 110 Pot Core Standard

TC 200 Threaded Core Standard

UEI 310 U, E, and I Core Standard

SFG-92 Soft Ferrites, a User's Guide

The Soft Ferrite Division of the Magnetic Materials Producers Association was formed in 1973 for the purpose of enhancing communications between ferrite manufacturers and users, increasing the application knowledge of the users, establishing engineering standards, and providing a representative body for the industry.

Soft ferrite MMPA publications can be obtained from Fair-Rite Products Corp. or their representatives.

Reference Books for Soft Ferrite Applications

Ferrites for Inductors and Transformers, 1983
Snelling, E.C. and Giles, A.D. , John Wiley & Sons, New York, NY

Soft Ferrites, Properties and Applications, 2nd Edition, 1988
Snelling, E.C. , Butterworths, Stoneham, MA

Transformer and Inductor Design Handbook, 1988
McLyman, Wm. T., Marcel Dekker, New York, NY

Transmission Line Transformers, 1990
Sevick, J., American Radio Relay League, Newington, CT

Soft Magnetic Materials, 1979
Boll, R., John Wiley & Sons, New York, NY

Transformers for Electronic Circuits, 2nd Edition, 1990
Grossner, N., McGraw Hill, New York, NY

Modern Ferrite Technology, 1990
Goldman, A., Van Nostrand Reinhold, New York, NY

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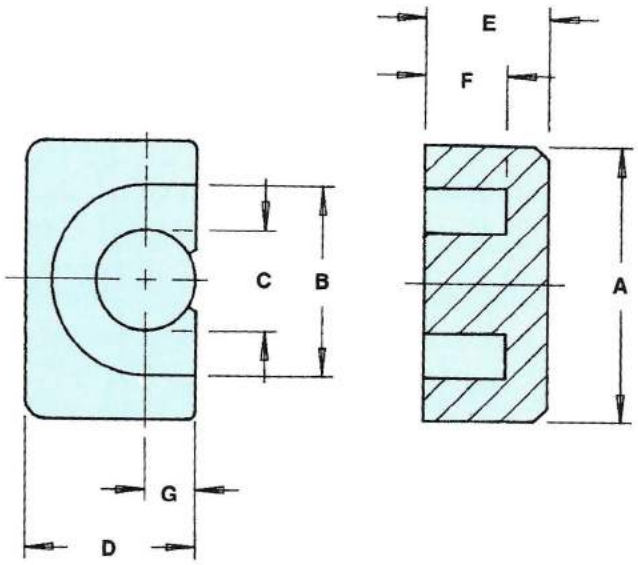
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EP Cores



Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number*	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_{min} (cm^2)	A_L (nH)		
						77	78	75
65 - - 070721	15.2	1.57	0.103	0.163	0.085	825 Min.	825 Min.	1900 Min.
65 - - 101021	17.0	1.93	0.113	0.217	0.085	790 Min.	790 Min.	1900 Min.
65 - - 131321	12.4	2.42	0.195	0.47	0.148	1200 Min.	1200 Min.	2800 Min.
65 - - 171721	8.4	2.85	0.339	0.97	0.252	1875 Min.	1875 Min.	4400 Min.
65 - - 202021	5.1	4.0	0.78	3.12	0.60	3150 Min.	3150 Min.	7200 Min.

** Insert desired material in 3rd & 4th digit positions.*

PQ Cores

The PQ core was developed for use in power applications. The large core surface area for the volume of the core aids in heat dissipation.

These cores are employed both in filter and transformer designs in switched-mode power supplies.

- *Available materials: 77 and 78.*
- *Part number is for a single core.*
- *PQ cores can be supplied with the center post gapped to a mechanical dimension.*
- *PQ cores can also be gapped to an A_L value. These cores will be supplied as sets.*
- *A_L value is measured at 1kHz, <10 gauss.*
- *See section "The Effect of Direct Current on the Inductance of a Ferrite Core" on page 29 for curves of A_L vs. gap length.*

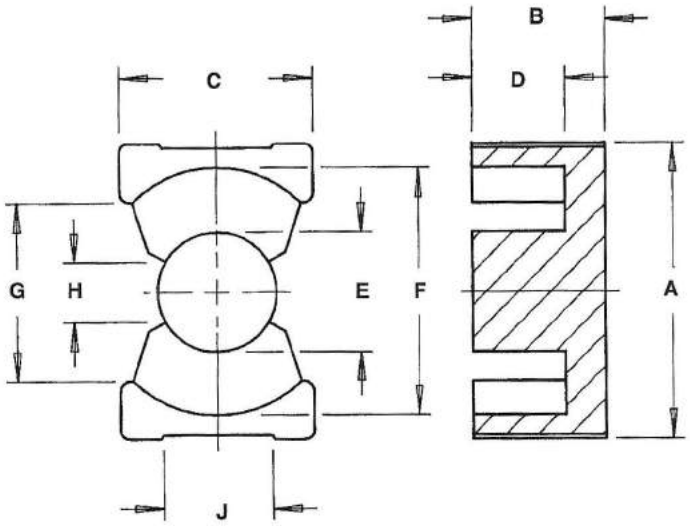
Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

Part Number*	A	B	C	D	E	F	G Min.	H Min.	J
66 - - 201621	**21.25±0.4** .837	**8.1±0.1** .319	**14.0±0.4** .551	**5.0+0.3** .203	**8.8±0.2** .346	**18.0±0.4** .709	**12.0** .472	**4.0** .158	**8.4-0.5** .321
66 - - 202021	**21.25±0.4** .837	**10.1±0.1** .398	**14.0±0.4** .551	**7.0+0.3** .281	**8.8±0.2** .346	**18.0±0.4** .709	**12.0** .472	**4.0** .158	**8.4-0.5** .321
66 - - 262021	**27.25±0.45** 1.073	**10.2-0.25** .397	**19.0±0.45** .748	**5.6+0.3** .226	**12.0±0.2** .472	**22.5±0.45** .886	**15.5** .610	**6.0** .236	**11.0-0.5** .423
66 - - 262521	**27.25±0.45** 1.073	**12.5-0.25** .487	**19.0±0.45** .748	**7.9+0.3** .317	**12.0±0.2** .472	**22.5±0.45** .886	**15.5** .610	**6.0** .236	**11.0-0.5** .423
6677322021	**33.0±0.5** 1.300	**10.4-0.25** .406	**22.0±0.5** .866	**5.6+0.3** .226	**13.45±0.25** .530	**27.5±0.5** 1.083	**19.0** .748	**5.5** .216	**12.8-0.5** .494
6677323021	**33.0±0.5** 1.300	**15.3-0.25** .597	**22.0±0.5** .866	**10.5+0.3** .419	**13.45±0.25** .530	**27.5±0.5** 1.083	**19.0** .748	**5.5** .216	**12.8-0.5** .494
6677353521	**36.1±0.6** 1.422	**17.5-0.25** .684	**26.0±0.5** 1.024	**12.35+0.3** .492	**14.35±0.25** .565	**32.0±0.5** 1.260	**23.5** .925	**5.95** .234	**13.1-0.5** .506
6677404021	**41.5±0.9** 1.633	**20.0-0.25** .782	**28.0±0.6** 1.102	**14.6+0.3** .581	**14.9±0.3** .587	**37.0±0.6** 1.457	**28.0** 1.102	**6.35** .250	**13.6±0.25** .535

** Insert desired material in 3rd & 4th digit positions.*

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PQ Cores



Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number*	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_{min} (cm^2)	Wt (g)	A_L (nH)	
							77	78
66 - - 201621	6.03	3.74	0.62	2.30	0.58	7.2	2550 Min.	2850 Min.
66 - - 202021	7.42	4.6	0.62	2.82	0.58	8.3	2175 Min.	2360 Min.
66 - - 262021	3.87	4.6	1.19	5.5	1.09	16	4050 Min.	4575 Min.
66 - - 262521	4.71	5.6	1.18	6.6	1.09	19	3450 Min.	3900 Min.
6677322021	3.29	5.6	1.70	9.5	1.37	22	5025 Min.	–
6677323021	4.66	7.5	1.61	12.7	1.37	30	3550 Min.	–
6677353521	4.49	8.8	1.96	17.2	1.56	37	3600 Min.	–
6677404021	5.07	10.2	2.01	20.5	1.67	50	3225 Min.	–

** Insert desired material in 3rd & 4th digit positions.*

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U Cores

The U core offers an economical core design with a nearly uniform cross-sectional area.

In a power ferrite material they are frequently used in output chokes, power input filters and transformers for switched-mode power supplies and HF fluorescent ballasts.

- *Available material: 77*
- *Part number is for a single core.*
- *These U cores have the same minimum cross-sectional area as the listed effective cross-sectional area.*
- *A_L value is measured at 1kHz, < 10 gauss.*

Dimensions ***(Bold numbers are in millimeters,*** *light numbers are nominal in inches.)*

Part Number	Fig.	A	B	C	D Min.	E Min.	F	Wt (g)
9077002002	1	**8.9 - 0.5** .340	**4.45+0.25** .180	**4.05±0.2** .160	**1.3** .051	**2.3** .090	–	.7
9077026002+	1	**25.4±0.75** 1.000	**12.6+0.25** .500	**6.6 - 0.5** .250	**6.2** .244	**12.45** .490	–	9.0
9077025002+	1	**25.4±0.75** 1.000	**15.75+0.25** .625	**6.6 - 0.5** .250	**9.4** .370	**12.45** .490	–	9.0
9077024002+	1	**25.4±0.75** 1.000	**18.9+0.25** .750	**6.6 - 0.5** .250	**12.55** .494	**12.45** .490	–	10
9277023002	2	**26.5±0.7** 1.045	**15.75+0.25** .625	**10.0 - 0.5** .385	**10.0** .394	**7.25** .285	–	14
9277002002	2	**26.5±0.7** 1.045	**20.2±0.15** .795	**10.0 - 0.5** .385	**14.35** .565	**7.25** .285	–	17
9277024002	3	**31.4±0.6** 1.237	**18.5±0.15** .729	**10.25 - 0.5** .394	**9.4** .370	**12.5** .492	**26.6±0.5** 1.047	18
9277008002	3	**41.15±0.75** 1.620	**17.45±0.15** .687	**11.7±0.25** .460	**7.8** .307	**18.65** .735	**35.3±0.6** 1.390	26
9277010002	3	**41.15±0.75** 1.620	**20.5+0.25** .812	**11.7±0.25** .460	**10.95** .431	**18.65** .735	**35.3±0.6** 1.390	29
9277012002	3	**41.15±0.75** 1.620	**25.4±0.15** 1.000	**11.7±0.25** .460	**15.75** .620	**18.65** .735	**35.3±0.6** 1.390	34
9077014002	1	**101.6±2.0** 4.000	**57.1±0.4** 2.250	**25.4±0.8** 1.000	**31.0** 1.220	**49.25** 1.940	–	550

+ *An I core, 9377024002, is available for these U cores, see page 106.*

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U Cores

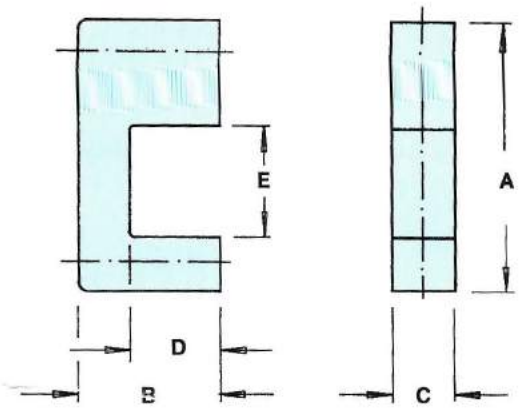


Figure 1

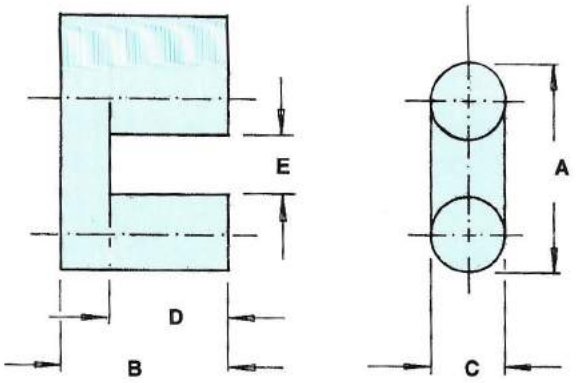


Figure 2

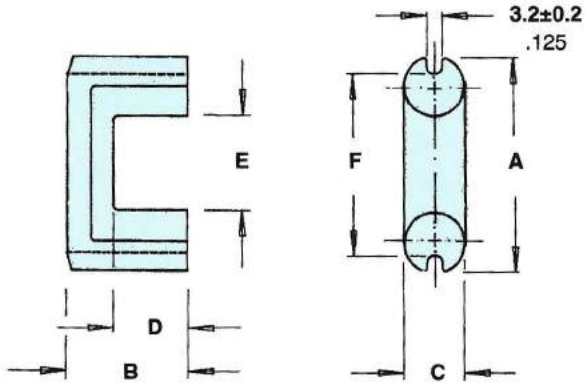


Figure 3

Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_L (nH)±25%
9077002002	16.8	2.08	.124	.257	925
9077026002	17.6	7.1	.40	2.85	1250
9077025002	20.7	8.4	.40	3.36	1050
9077024002	23.9	9.6	.40	3.88	925
9277023002	11.6	7.8	.67	5.2	1850
9277002002	13.9	9.5	.68	6.5	1575
9277024002	11.2	9.3	.83	7.7	1900
9277008002	10.5	10.3	.98	10.1	2100
9277010002	11.8	11.6	.98	11.3	1900
9277012002	13.8	13.5	.98	13.2	1675
9077014002	4.88	31.5	6.5	198	3930 Min.

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E & I Cores

The E core geometry offers an economical design approach for a wide range of applications.

In a power ferrite, E cores are used in a variety of power designs. In a high permeability material they are utilized for matching and broadband transformers.

- *Available materials: 77, 78, and 75.*
- *Part number is for a single core.*
- *E cores can be supplied with the center post gapped to a mechanical dimension.*
- *E cores can also be gapped to an A_L value. These cores will be supplied as sets.*
- *A_L value is measured at 1kHz, < 10 gauss.*
- *See section "The Effect of Direct Current on the Inductance of a Ferrite Core" on page 28 for curves of A_L vs. gap length.*
- *Equivalent Fair-Rite lamination sizes:*

E2829	*94 - - 019002*	*E375*	*9477375002*
E187	*94 - - 016002*	*E21*	*9477500002*
E2425	*94 - - 015002*	*E625*	*9477625002*

Dimensions ***(Bold numbers are in millimeters,*** *light numbers are nominal in inches.)*

Part Number*	Fig.	A	B	C	D	E	F Min.	Wt (g)
94 - - 019002	1	**12.7±0.25** .500	**5.8 - 0.25** .224	**3.45 - 0.5** .125	**4.1±0.15** .161	**3.3 - 0.25** .125	**9.3** .365	.8
94 - - 020002	1	**12.7±0.25** .500	**5.8 - 0.25** .224	**6.6 - 0.5** .250	**4.1±0.15** .161	**3.3 - 0.25** .125	**9.3** .365	1.5
94 - - 016002	1	**19.3±0.4** .760	**8.2 - 0.25** .318	**4.75±0.20** .187	**5.6+0.25** .225	**4.95 - 0.35** .187	**14.3** .562	2.4
94 - - 012002	1	**19.3±0.4** .760	**8.2 - 0.25** .318	**9.5±0.25** .375	**5.6+0.25** .225	**4.95 - 0.35** .187	**14.3** .562	4.8
94 - - 015002	1	**25.4±0.5** 1.000	**9.8 - 0.3** .380	**6.6 - 0.5** .250	**6.35+0.25** .255	**6.6 - 0.5** .250	**18.8** .740	5.4
94 - - 014002	1	**25.4±0.5** 1.000	**9.8 - 0.3** .380	**12.7±0.25** .500	**6.35+0.25** .255	**6.6 - 0.5** .250	**18.8** .740	11
9477034002	1	**25.4±0.5** 1.000	**16.0±0.25** .630	**6.6 - 0.5** .250	**12.7+0.35** .507	**6.6 - 0.5** .250	**18.8** .740	8.4
9477017002	1	**28.0±0.6** 1.102	**10.6 - 0.25** .413	**11.2±0.25** .440	**5.6+0.25** .225	**7.7±0.25** .303	**19.2** .756	13
9477375002	1	**34.55±0.7** 1.360	**14.5 - 0.25** .567	**9.25±0.25** .365	**9.5+0.25** .380	**9.4±0.15** .370	**24.8** .976	16
9477500002	1	**40.75±0.8** 1.604	**16.5±0.15** .650	**12.2±0.4** .480	**10.15+0.25** .405	**12.2±0.35** .480	**27.8** 1.095	30
9477036002	1	**42.85±0.75** 1.687	**21.15 - 0.25** .828	**15.85 - 0.75** .609	**14.95+0.25** .593	**11.9±0.25** .468	**30.4** 1.197	48
9477625002	1	**47.1±0.75** 1.855	**19.85 - 0.4** .773	**15.6±0.25** .615	**12.0+0.25** .477	**15.6±0.25** .615	**31.6** 1.245	57
93 - - 020002	2	**25.4±0.6** 1.000	**3.3 - 0.25** .125	**6.6 - 0.5** .250	–	–	–	2.7
9377024002	2	**25.4±0.6** 1.000	**6.5 - 0.25** .250	**6.6 - 0.5** .250	–	–	–	5.4
9377036002	2	**42.85±0.75** 1.687	**6.1 - 0.25** .235	**15.85 - 0.75** .609	–	–	–	21

** Insert desired material in 3rd & 4th digit positions.*

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E & I Cores

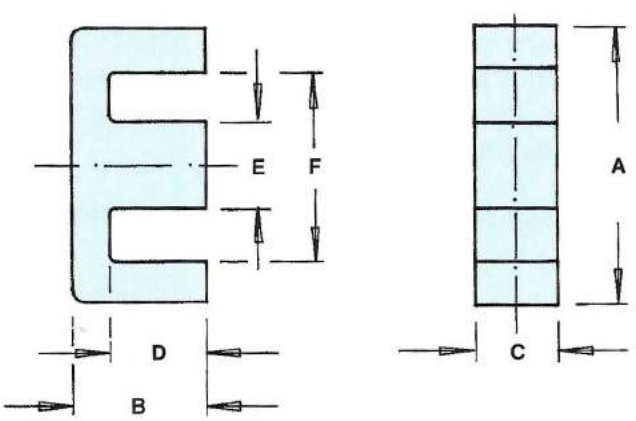


Figure 1

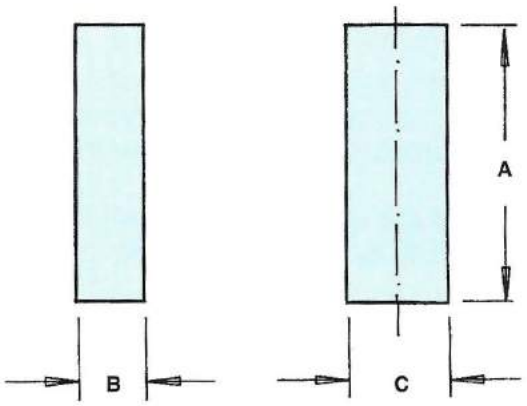


Figure 2

Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number*	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_L (nH)		
					77	78	75
94 - - 019002	27.6	2.77	.101	.279	475 Min.	525 Min.	1290±25%
94 - - 020002	13.8	2.77	.202	.56	1000 Min.	1075 Min.	2600±25%
94 - - 016002	17.9	4.0	.225	.90	825 Min.	925 Min.	2300±25%
94 - - 012002	8.92	4.0	.45	1.80	1700 Min.	1900 Min.	4600±25%
94 - - 015002	12.06	4.9	.40	1.95	1300 Min.	1450 Min.	3500±25%
94 - - 014002	6.03	4.9	.80	3.92	2625 Min.	2950 Min.	7000±25%
9477034002	18.0	7.3	.40	2.98	870 Min.	–	–
9477017002	5.0	4.8	.96	4.6	3000 Min.	–	–
9477375002	7.92	6.9	.86	6.0	2050 Min.	–	–
9477500002	5.12	7.6	1.50	11.5	3225 Min.	–	–
9477036002	5.34	9.8	1.84	18.1	3175 Min.	–	–
9477625002	3.74	8.9	2.37	21.1	4500 Min.	–	–
93 - - 020002 ①	8.82	3.56	.40	1.44	1575 Min.	1725 Min.	4200±25%
9377024002** ②	8.64	3.48	.40	1.41	1700 Min.	–	–
9377036002 ③	3.68	6.8	1.84	12.5	4275 Min.	–	–

** Insert desired material in 3rd & 4th digit positions.*

① ② ③ In combination with E Cores : ① 94 - - 016002, ② 9477015002, ③ 9477036002

*** May be used with U cores, see page 104.*

ETD Cores

ETD cores have been designed to make optimum use of a given volume of ferrite material for maximum throughput power, specifically for forward converter transformers. Their structure, which includes a round center post, approaches a nearly uniform cross-sectional area throughout the core and provides a winding area that minimizes winding losses.

ETD cores are used mainly in switched-mode power supplies and permit off-line designs where IEC and VDE isolation requirements must be met.

- *Available materials: 77 and 78.*
- *Part number is for a single core.*
- *ETD cores can be supplied with the center post gapped to a mechanical dimension.*
- *ETD cores can also be gapped to an A_L value. These cores will be supplied as sets.*
- *A_L value is measured at 1kHz, <10 gauss.*
- *See section "The Effect of Direct Current on the Inductance of a Ferrite Core" on page 29 for curves of A_L vs. gap length.*
- *The ETD cores are in conformance with IEC 1185.*

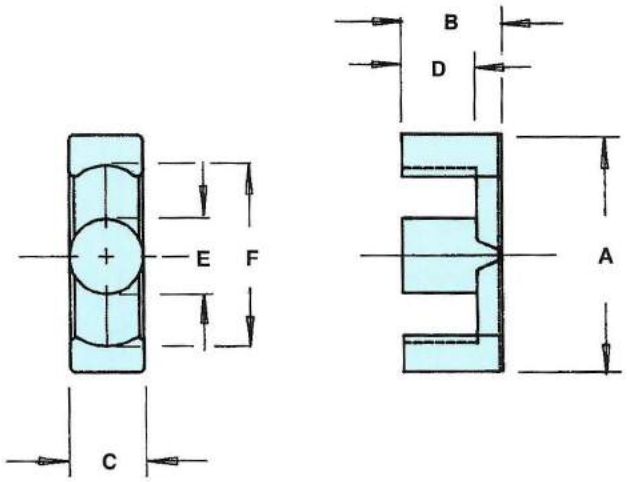
Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

Part Number*	A	B	C	D	E	F	Wt (g)
95 - - 340002	**34.2±0.8** 1.346	**17.3±0.2** .681	**10.8±0.3** .425	**12.1±0.3** .476	**10.8±0.3** .425	**26.3±0.7** 1.035	22
95 - - 390002	**39.1±0.9** 1.539	**19.8±0.2** .780	**12.5±0.3** .492	**14.6±0.4** .575	**12.5±0.3** .492	**30.1±0.8** 1.185	32
95 - - 440002	**44.0±1.0** 1.732	**22.3±0.2** .878	**14.8±0.4** .583	**16.5±0.4** .650	**14.8±0.4** .583	**33.3±0.8** 1.311	52
95 - - 490002	**48.7±1.1** 1.917	**24.7±0.2** .972	**16.3±0.4** .642	**18.1±0.4** .713	**16.3±0.4** .642	**37.0±0.9** 1.457	65

** Insert desired material in 3rd & 4th digit positions.*

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ETD Cores



Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number*	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_{min} (cm^2)	A_L (nH)	
						77	78
95 - - 340002	8.1	7.9	.97	7.6	.92	1875 Min.	2100 Min.
95 - - 390002	7.4	9.2	1.25	11.5	1.23	2100 Min.	2360 Min.
95 - - 440002	5.9	10.3	1.73	17.8	1.72	2625 Min.	2925 Min.
95 - - 490002	5.4	11.4	2.11	24.1	2.09	3000 Min.	3375 Min.

** Insert desired material in 3rd & 4th digit positions.*

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Bobbins

An economical and well-proven core design for many applications where relatively low but stable inductance values are required.

- *Available materials: 43 and 77.*
- *For higher frequency designs, use a small bobbin (figure 1) in 43 material.*
- *For power applications, bobbins in 77 material are specified for A_L and dc bias limits.*
- *Assembled bobbins, shown in figure 4, can be supplied with a uniform coating of white epoxy enamel which can withstand a minimum breakdown of 1000Vrms. The last digit of an epoxy coated bobbin is an "8". These bobbins can be supplied with notches at one end only. This changes the last digit of the part number to a "7". Bobbins of this type can also be provided epoxy coated. The last digit then becomes a "6".*
- *The listed dimensions are for assembled bobbins without epoxy coating.*
- *Bobbins are tested for A_L value at 1kHz, < 10 gauss.*
- *The bobbins of figure 4 can also be purchased as unassembled parts. (See pages 92 and 93).*

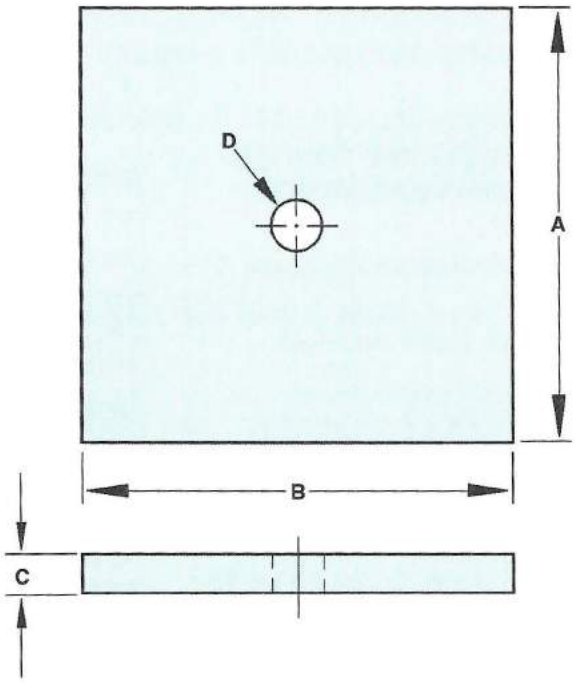
Dimensions ***(Bold numbers are in millimeters,*** *light numbers are nominal in inches.)*

Part Number	Fig.	A	B	C	D	E	F	Wt (g)
9643001165	1	**5.05 - 0.15** .196	**2.65+0.1** .107	**12.7±0.25** .500	**10.0+0.3** .400	**1.0+0.1** .042	**0.5±0.1** .020	1.3
9677001165	1	**5.05 - 0.15** .196	**2.65+0.1** .107	**12.7±0.25** .500	**10.0+0.3** .400	**1.0+0.1** .042	**0.5±0.1** .020	1.3
9643001015	1	**9.55 - 0.15** .373	**4.65+0.2** .187	**19.0±0.7** .750	**12.7±0.15** .500	**1.0+0.1** .042	**1.0+0.25** .045	6.7
9677001015	1	**9.55 - 0.15** .373	**4.65+0.2** .187	**19.0±0.7** .750	**12.7±0.15** .500	**1.0+0.1** .042	**1.0+0.25** .045	6.7
9843000104	2	**8.05±0.2** .317	**5.55+0.25** .225	**19.0±0.4** .750	**12.7±0.25** .500	**8.05±0.2** .317	**2.7+0.25** .111	3.0
9877000104	2	**8.05±0.2** .317	**5.55+0.25** .225	**19.0±0.4** .750	**12.7±0.25** .500	**8.05±0.2** .317	**2.7+0.25** .111	3.0
9877000204	3	**11.3±0.25** .445	**7.5±0.25** .295	**24.4±0.5** .960	**17.8+0.9** .718	**11.2±0.4** .440	**7.25±0.25** .285	8.4
9677142009	4	**14.0±0.35** .551	**9.0±0.3** .354	**20.0±0.7** .788	**12.5±0.3** .492	**3.2±0.1** .126	**2.0±0.3** .079	8.5
9677182009	4	**18.0±0.45** .709	**11.0±0.3** .433	**20.0±0.7** .788	**12.5±0.3** .492	**3.2±0.1** .126	**2.5±0.3** .098	13
9677182209	4	**18.0±0.45** .709	**11.0±0.3** .433	**22.0±0.7** .866	**14.5±0.35** .570	**3.2±0.1** .126	**2.5±0.3** .098	14
9677242009	4	**24.0±0.6** .945	**13.0±0.3** .512	**20.0±0.7** .788	**12.5±0.3** .492	**3.2±0.1** .126	**3.0±0.3** .118	22
9677242409	4	**24.0±0.6** .945	**13.0±0.3** .512	**24.0±0.7** .946	**16.5±0.4** .650	**3.2±0.1** .126	**3.0±0.3** .118	24
9677282009	4	**28.0±0.7** 1.102	**17.0±0.4** .670	**20.0±0.7** .788	**12.5±0.3** .492	**4.2±0.15** .165	**3.0±0.3** .118	33
9677282509	4	**28.0±0.7** 1.102	**17.0±0.4** .670	**25.0±0.7** .985	**18.0±0.45** .708	**4.2±0.15** .165	**3.0±0.3** .118	38
9677352509	4	**35.0±0.9** 1.381	**21.0±0.5** .825	**25.0±0.7** .985	**18.0±0.45** .708	**6.9±0.4** .272	**3.0±0.3** .118	56
9677353509	4	**35.0±0.9** 1.381	**21.0±0.5** .825	**35.0±0.75** 1.380	**28.0±0.6** 1.100	**6.9±0.4** .272	**3.0±0.3** .118	71
9677453509	4	**45.0±1.0** 1.771	**27.0±0.5** 1.063	**35.0±0.75** 1.380	**26.0±0.6** 1.024	**9.0±0.3** .354	**3.6±0.3** .142	127

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Tile Absorber

- *Tiles are surface ground on all sides to precise mechanical tolerances minimizing gaps between adjacent tiles to ensure maximum low-frequency performance.*
- *For additional technical information on absorber tile applications, see section "Ferrite Tile Absorber for EMC Test Chamber Applications" found on page 62.*
- *Panels and individual tiles may be mounted to walls with screws, epoxy or contact adhesive depending on conditions.*



Tiles

Dimensions ***(Bold numbers are in millimeters,*** *light numbers are nominal in inches.)*

Part Number	A	B	C*	D	Wt (g)
3642011601	**100 ±0.13** 3.937	**100 ±0.13** 3.937	**6.3 ±0.13** .248	**10 ±0.3** .394	324

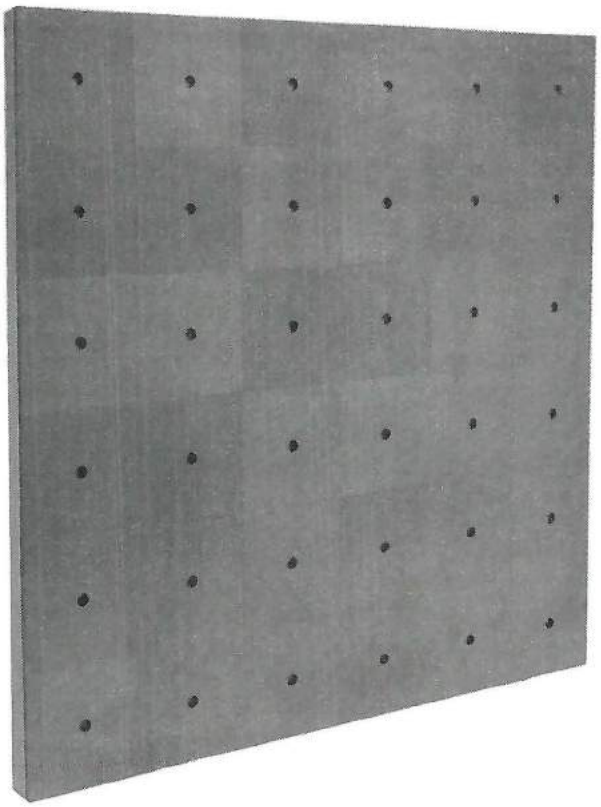
** Other custom thicknesses available from **5.0** to **6.7mm***

Panels

Dimensions ***(Bold numbers are in millimeters,*** *light numbers are in inches.)*

Part Number	A	B	C	Wt (kg)
3742011901	**600** 23.62	**600** 23.62	**16.8** .66	17.7

Each panel consists of:
36 Ferrite Tiles epoxy bonded to **9mm** (.35") particle board faced on both sides with 26 ga (**0.46mm**) zinc coated steel.



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Slugs

The simplest form of Fair-Rite pressed cores, used extensively for inductive devices when inductance tolerances of ±10% are permissible.

Applications include coils for differential input filters, chokes for SCR and triac circuits, inductors in audio cross-over networks and pulse transformers.

- *Available materials: 61, 33 and 77.*
- *The "A" dimension can be centerless ground to tighter tolerances.*
- *Slugs 4277142009 through 4277453509 are used in the assembled bobbins, listed on page 110, figure 4. These slugs have a* ***0.6mm*** *(.025") max. chamfer on the outside corners.*
- *For information on slug permeability vs. slug dimensions, see page 24.*

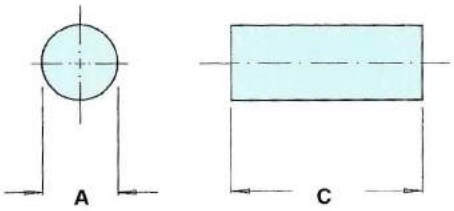


Figure 1

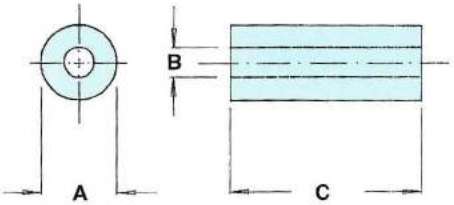


Figure 2

Dimensions ***(Bold numbers are in millimeters,*** *light numbers are nominal in inches.)*

Part Number**	Fig.	A	B	C*	Available Materials			Wt (g)
					61	33	77	
40 - - 032221	1	**.95±0.025** .037	–	**7.9±0.3** .312	–	✓	✓	.08
4033129021	1	**3.25 - 0.25** .125	–	**12.7±0.4** .500	–	✓	–	.5
4033128021	1	**3.25 - 0.25** .125	–	**19.05±0.76** .750	–	✓	–	.8
4033122011	1	**3.25 - 0.25** .125	–	**25.4±0.75** 1.000	–	✓	–	1.1
4077172011	1	**4.6 - 0.3** .175	–	**22.2±0.76** .875	–	–	✓	1.9
4077272011	1	**6.35±0.25** .250	–	**19.05±0.76** .750	–	–	✓	2.7
40 - - 287011	1	**6.35±0.25** .250	–	**22.1±0.7** .870	✓	✓	✓	3.5
40 - - 276011	1	**6.35±0.25** .250	–	**25.4±0.7** 1.000	✓	✓	✓	3.8
40 - - 292011	1	**6.35±0.25** .250	–	**28.6±0.7** 1.125	✓	✓	✓	4.4
40 - - 296011	1	**6.35±0.25** .250	–	**31.75±0.75** 1.250	✓	✓	✓	4.8
40 - - 266011	1	**6.35±0.25** .250	–	**38.1±0.75** 1.500	✓	✓	✓	5.9
4077312911	1	**8.0±0.35** .315	–	**38.1±0.75** 1.500	–	–	✓	9.1
4077374711	1	**9.45±0.2** .372	–	**31.75±0.75** 1.250	–	–	✓	11
4077375411	1	**9.45±0.2** .372	–	**41.3±0.8** 1.625	–	–	✓	14
4077375211	1	**9.45±0.2** .372	–	**50.8±1.0** 2.000	–	–	✓	18
4077485111	1	**12.3±0.4** .485	–	**31.75±0.75** 1.250	–	–	✓	19
4077484611	1	**12.3±0.4** .485	–	**41.3±0.8** 1.625	–	–	✓	24
4277142009	2	**9.0±0.3** .354	**3.2±0.1** .126	**13.5±0.3** .532	–	–	✓	3.7
4277182009	2	**11.0±0.3** .433	**3.2±0.1** .126	**13.5±0.3** .532	–	–	✓	5.7
4277182209	2	**11.0±0.3** .433	**3.2±0.1** .126	**15.5±0.35** .610	–	–	✓	6.6
4277242009	2	**13.0±0.3** .512	**3.2±0.1** .126	**13.5±0.3** .532	–	–	✓	8.3
4277242409	2	**13.0±0.3** .512	**3.2±0.1** .126	**17.5±0.4** .690	–	–	✓	11
4277282009	2	**17.0±0.4** .670	**4.2±0.15** .165	**13.5±0.3** .532	–	–	✓	14
4277282509	2	**17.0±0.4** .670	**4.2±0.15** .165	**18.95±0.45** .746	–	–	✓	19
4277352509	2	**21.0±0.5** .825	**6.9±0.4** .272	**18.95±0.45** .746	–	–	✓	28
4277353509	2	**21.0±0.5** .825	**6.9±0.4** .272	**29.0±0.6** 1.140	–	–	✓	43
4277453509	2	**27.0±0.5** 1.063	**9.0±0.3** .354	**27.0±0.6** 1.064	–	–	✓	66

* *This dimension may be modified to suit specific applications.*

** *Insert desired material in 3rd & 4th digit positions.*

✓ *Denotes available standard slugs.*

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Discs

Discs can be used with certain slugs to increase inductance and improve shielding.

- *Available in 77 material.*
- *These discs are used in the assembled bobbins, listed on page 110, figure 4.*
- *Discs are burnished to facilitate bobbin winding.*

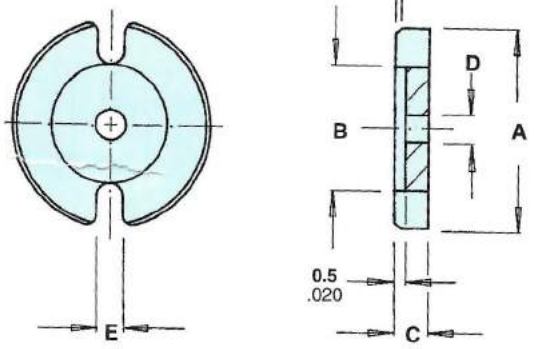


Figure 1

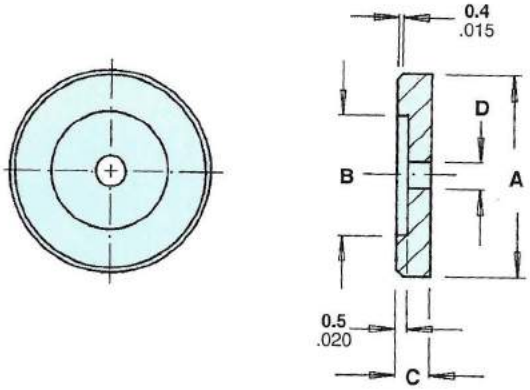


Figure 2

Dimensions ***(Bold numbers are in millimeters,*** *light numbers are nominal in inches.)*

Part Number	Fig.	A	B	C	D	E	Wt (g)
5477140009	1	**14.0±0.35** .551	**8.8+0.25** .352	**3.6+0.3** .148	**4.6+0.3** .187	**2.0±0.3** .079	2.4
5477140007	2	**14.0±0.35** .551	**8.8+0.25** .352	**3.6+0.3** .148	**4.6+0.3** .187	–	2.4
5477180009	1	**18.0±0.45** .709	**10.8+0.25** .430	**3.6+0.3** .148	**4.6+0.3** .187	**2.5±0.3** .098	3.8
5477180007	2	**18.0±0.45** .709	**10.8+0.25** .430	**3.6+0.3** .148	**4.6+0.3** .187	–	3.9
5477240009	1	**24.0±0.6** .945	**12.8+0.3** .510	**3.6+0.3** .148	**4.6+0.3** .187	**3.0±0.3** .118	6.9
5477240007	2	**24.0±0.6** .945	**12.8+0.3** .510	**3.6+0.3** .148	**4.6+0.3** .187	–	7.6
5477280009	1	**28.0±0.7** 1.102	**16.65+0.3** .661	**3.6+0.3** .148	**6.0±0.25** .236	**3.0±0.3** .118	9.7
5477280007	2	**28.0±0.7** 1.102	**16.65+0.3** .661	**3.6+0.3** .148	**6.0±0.25** .236	–	10
5477350009	1	**35.0±0.9** 1.381	**20.65+0.3** .819	**3.4+0.25** .138	**8.3±0.3** .327	**3.0±0.3** .118	14
5477350007	2	**35.0±0.9** 1.381	**20.65+0.3** .819	**3.4+0.25** .138	**8.3±0.3** .327	–	15
5477450009	1	**45.0±1.0** 1.771	**26.5+0.4** 1.052	**4.4+0.25** .177	**9.0±0.3** .354	**3.6±0.3** .142	31
5477450007	2	**45.0±1.0** 1.771	**26.5+0.4** 1.052	**4.4+0.25** .177	**9.0±0.3** .354	–	31

Pot Cores

The pot core has found wide application in all types of inductive devices. The core configuration provides a high degree of self-shielding. It also facilitates gapping to enhance its utility for a variety of magnetic designs.

- *Available materials: 77 and 78.*
- *Part number is for a single core.*
- *Pot cores in 78 material can be supplied with the center post gapped to a mechanical dimension.*
- *Pot cores in 78 material can also be gapped to an A_L value. These cores will be supplied as sets.*
- *A_L value is measured at 1kHz, <10 gauss.*
- *See section "The Effect of Direct Current on the Inductance of a Ferrite Core" on page 29 for curves of A_L vs. gap length.*
- *The pot cores shown in figure 1 are in conformance with IEC 133.*

Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

Part Number*	Fig.	A	B	C	D	E	F	G	H	J Min.
56 - - 140821	1	**14.05±0.25** .553	**11.8±0.2** .465	**5.9±0.1** .232	**3.1±0.1** .122	**4.25 - 0.15** .164	**2.9±0.1** .114	**2.9+0.4** .122	**9.5±0.25** .374	**0.2** .008
56 - - 181121	1	**18.0±0.4** .709	**15.15±0.25** .596	**7.45±0.15** .293	**3.1±0.1** .122	**5.35 - 0.15** .208	**3.7±0.1** .146	**3.85±0.6** .152	**12.3±0.3** .484	**0.3** .012
56 - - 221321	1	**21.6±0.4** .850	**18.2±0.3** .717	**9.25±0.15** .364	**4.55±0.15** .179	**6.7±0.1** .264	**4.7±0.1** .185	**3.1±0.6** .122	**14.9±0.35** .587	**0.4** .016
56 - - 261621	1	**25.5±0.5** 1.004	**21.6±0.4** .850	**11.3±0.2** .445	**5.55±0.15** .218	**8.05±0.1** .317	**5.6±0.1** .220	**3.6±0.6** .142	**18.15±0.4** .715	**0.5** .020
56 - - 301921	1	**30.0±0.5** 1.181	**25.4±0.4** 1.000	**13.3±0.2** .524	**5.55±0.15** .218	**9.4±0.1** .370	**6.6±0.1** .260	**4.2±0.6** .165	**21.5±0.5** .846	**0.6** .024
56 - - 362221	1	**35.6±0.6** 1.402	**30.4±0.5** 1.197	**15.9±0.3** .626	**5.55±0.15** .218	**10.85±0.15** .427	**7.45±0.15** .293	**5.1±0.5** .201	**26.0±0.5** 1.024	**0.6** .024
55 - - 000721	2	**22.85±0.45** .900	**18.3±0.35** .720	**9.7±0.2** .382	**5.1±0.15** .200	**9.2 - 0.35** .355	**7.25±0.2** .285	–	–	–
55 - - 000821	3	**22.85±0.45** .900	**18.3±0.35** .720	**9.7±0.2** .382	**5.1±0.15** .200	**9.2 - 0.35** .355	**7.25±0.2** .285	**13.0 Min** .511	**15.25±0.25** .600	–
55 - - 000921	2	**22.85±0.45** .900	**18.3±0.35** .720	**9.7±0.2** .382	**5.1±0.15** .200	**5.65 - 0.25** .218	**3.75±0.1** .148	–	–	–
55 - - 001021	3	**22.85±0.45** .900	**18.3±0.35** .720	**9.7±0.2** .382	**5.1±0.15** .200	**5.65 - 0.25** .218	**3.75±0.1** .148	**13.0 Min** .511	**15.25±0.25** .600	–

* *Insert desired material in 3rd & 4th digit positions.*

Pot Cores

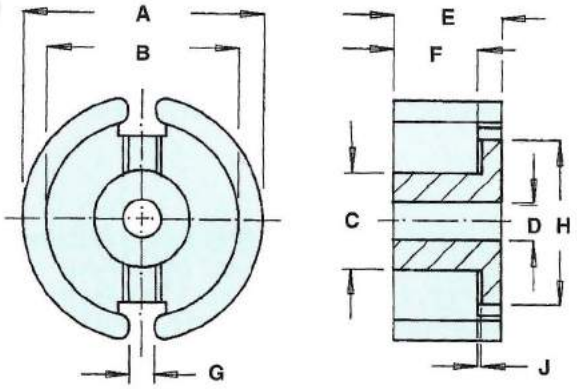


Figure 1

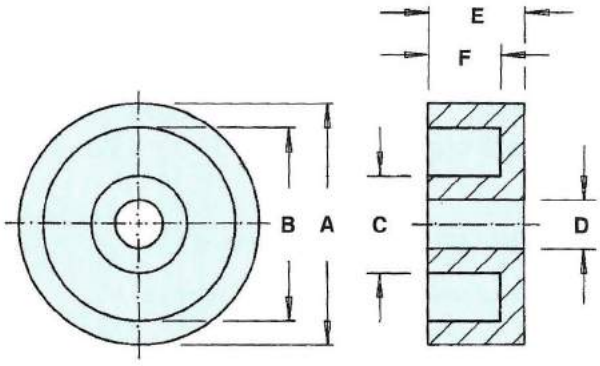


Figure 2

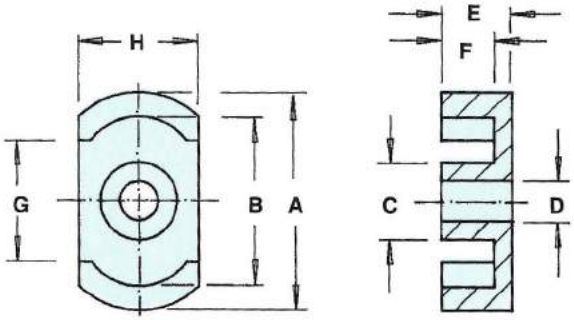


Figure 3

Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number*	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_{min} (cm^2)	Wt (g)	A_L (nH)	
							77	78
56 - - 140821	8.0	2.00	.250	.50	.197	1.9	1450 Min.	1575 Min.
56 - - 181121	6.0	2.59	.43	1.12	.360	4.7	2150 Min.	2350 Min.
56 - - 221321	5.0	3.16	.63	2.00	.51	7.2	2725 Min.	3000 Min.
56 - - 261621	4.0	3.76	.93	3.46	.76	12	3525 Min.	3900 Min.
56 - - 301921	3.30	4.5	1.36	6.1	1.14	19	4425 Min.	4900 Min.
56 - - 362221	2.58	5.2	2.02	10.6	1.74	34	5875 Min.	6550 Min.
55 - - 000721	6.75	4.3	.63	2.70	.53	11	2200 Min.	2475 Min.
55 - - 000821						7.6		
55 - - 000921	4.54	2.87	.63	1.80	.53	7.3	2925 Min.	5350 Min.
55 - - 001021						5.2		

** Insert desired material in 3rd & 4th digit positions.*

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Toroids

The ring configuration provides the ultimate in the utilization of the ferrite material properties. Power input filters, ground-fault interrupters and a variety of pulse and matching transformers are only a few of the applications for this core type.

- *Available materials: 61, 43, 77, 75, 76, and 85.*
- *All toroidal cores are supplied burnished to remove sharp edges.*
- *Additional toroidal cores in 43 material for EMI applications are listed in the shield bead section.*
- *Toroids in 85 material are specified to a squareness ratio and not specified to an A_L value.*
- *Toroids are tested for A_L values at <10 gauss at these frequencies:*

  43-75-77 material at 100 kHz,
  76 material 10 kHz,
  61 material 1 MHz.

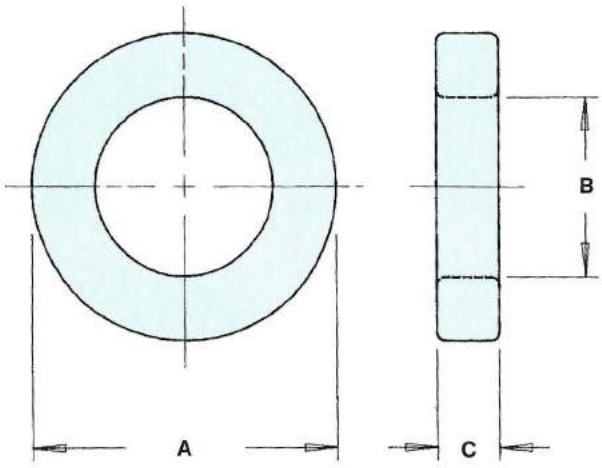
- *Toroids with an outside diameter of **9.5mm** (.375") or larger can be supplied with a uniform coating of a white epoxy enamel. This coating will increase "A" and "C" dimensions and decrease the "B" dimension a maximum of **.25mm** (.010"). The 9th digit of white epoxy enamel coated toroids is a "2".*
- *Epoxy coated toroidal cores can withstand a minimum breakdown voltage of 1000Vrms, uniformly applied across the "C" dimension of the core.*
- *Fair-Rite has the in-house capability to coat small ferrite parts with Parylene C. Toroids with a diameter of **9.5mm** (.375") or smaller can be supplied Parylene coated. The 9th digit of Parylene coated toroids is a "1". See page 6 for material characteristics of Parylene C.*

Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

Part Number**	A	B	C*	Wt (g)
59 - - 000801	**3.95±0.15** .155	**2.15+0.15** .088	**1.35 - 0.15** .050	.05
59 - - 002101	**4.95 - 0.25** .190	**2.2+0.15** .090	**1.35 - 0.15** .050	.09
59 - - 000101	**5.95 - 0.25** .230	**3.05±0.1** .120	**1.65 - 0.25** .060	.14
59 - - 000201	**9.5±0.2** .375	**4.75±0.15** .187	**3.3 - 0.25** .125	.83

** *Insert desired material in 3rd and 4th digit positions.*
* *This dimension may be modified to suit specific applications.*

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Symbols	Definitions
$\Sigma\ell/A$	Core constant
ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number**	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_L (nH) ± 20%					
					61	43	77	75	76§	85
59 - - 000801	87.6	0.92	0.011	0.0097	–	120	285	715	1430	–
59 - - 002101	69.2	1.04	0.015	0.0157	–	150	360	900	1800	–
59 - - 000101	63.8	1.30	0.020	0.027	25	165	390	975	1950	–
59 - - 000201	28.6	2.07	0.072	0.15	55	375	880	2200	4400	✓

** *Insert desired material in 3rd and 4th digit positions.*
§ *A_L tolerance ± 30%*
✓ *Denotes available standard toroids in 85 material.*

Toroids

Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

Part Number**	A	B	C*	Wt (g)
59 - - 000301	**12.7±0.25** .500	**7.15±0.2** .281	**4.9 - 0.25** .188	2.0
59 - - 001101	**12.7±0.25** .500	**7.9±0.2** .312	**6.35±0.25** .250	2.4
59 - - 001901	**12.7±0.25** .500	**7.9±0.2** .312	**12.7±0.35** .500	4.7
59 - - 005101	**16.0±0.4** .630	**9.6±0.3** .378	**4.75 - 0.25** .182	2.8
59 - - 004901	**16.0±0.4** .630	**9.6±0.3** .378	**6.35±0.25** .250	4.0
59 - - 000601	**21.0±0.35** .825	**13.2±0.3** .520	**6.35±0.25** .250	6.4
59 - - 000501	**21.0±0.35** .825	**13.2±0.3** .520	**11.9±0.4** .468	12
59 - - 001801	**22.1±0.4** .870	**13.7±0.3** .540	**6.35±0.25** .250	7.2
59 - - 007601	**22.1±0.4** .870	**13.7±0.3** .540	**12.7±0.45** .500	15
59 - - 001301	**25.4±0.6** 1.000	**15.5±0.5** .610	**6.35±0.25** .250	9.6
59 - - 001401	**25.4±0.6** 1.000	**15.5±0.5** .610	**8.15±0.3** .320	12
59 - - 006401	**25.4±0.6** 1.000	**15.5±0.5** .610	**12.7±0.5** .500	18
59 - - 001001	**29.0±0.65** 1.142	**19.0±0.5** .748	**7.5±0.25** .295	13
59 - - 001201	**29.0±0.65** 1.142	**19.0±0.5** .748	**13.85±0.3** .545	26
59 - - 001601	**31.1±0.75** 1.225	**19.05±0.5** .750	**7.9±0.3** .312	18
59 - - 001701	**31.75±0.75** 1.250	**19.05±0.5** .750	**9.5±0.3** .375	23
59 - - 002701	**36.0±1.2** 1.400	**23.0±0.55** .900	**12.7±0.5** .500	33
59 - - 003801	**61.0±1.3** 2.400	**35.55±0.85** 1.400	**12.7±0.5** .500	106
59 - - 011101	**73.65±1.5** 2.900	**38.85±0.75** 1.530	**12.7±0.4** .500	188

** *Insert desired material in 3rd and 4th digit positions.*
* *This dimension may be modified to suit specific applications.*

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Symbols	Definitions
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ℓ_e	Effective path length
A_e	Effective cross-sectional area
V_e	Effective core volume
A_L	Inductance factor ($\frac{L}{N^2}$)

Magnetic Parameters

Part Number**	$\Sigma\ell/A$ (cm^{-1})	ℓ_e (cm)	A_e (cm^2)	V_e (cm^3)	A_L (nH) ± 20%				
					61	43	77	75	85
59 - - 000301	22.9	2.95	0.129	0.38	65	470	1100	2725	✓
59 - - 001101	20.8	3.12	0.150	0.47	75	510	1200	3000	✓
59 - - 001901	10.4	3.12	0.299	0.93	150	1025	2400	6000	✓
59 - - 005101	26.6	3.85	0.145	0.56	–	400	940	2350	✓
59 - - 004901	19.4	3.85	0.199	0.77	80	550	1300	3225	✓
59 - - 000601	21.3	5.2	0.243	1.26	75	500	1175	2950	✓
59 - - 000501	11.4	5.2	0.46	2.36	135	940	2200	5500	✓
59 - - 001801	20.7	5.4	0.262	1.42	75	510	1200	3025	✓
59 - - 007601	10.3	5.4	0.52	2.83	–	1025	2425	6100	✓
59 - - 001301	20.0	6.2	0.308	1.90	–	530	1250	–	✓
59 - - 001401	15.1	6.2	0.41	2.52	–	700	1600	–	✓
59 - - 006401	10.0	6.2	0.62	3.80	–	1060	2500	–	✓
59 - - 001001	19.8	7.3	0.37	2.70	80	540	1275	–	–
59 - - 001201	10.7	7.3	0.68	5.0	145	1000	2350	–	–
59 - - 001601	16.2	7.6	0.47	3.53	–	660	1550	–	–
59 - - 001701	12.9	7.6	0.59	4.5	120	825	1950	–	–
59 - - 002701	11.2	8.9	0.79	7.0	140	950	2250	–	–
59 - - 003801	9.2	14.5	1.58	22.8	170	1160	2725	–	–
59 - - 011101	7.8	16.7	2.15	35.9	–	1375	3225	–	–

** *Insert desired material in 3rd and 4th digit positions.*
✓ *Denotes available standard toroids in 85 material.*

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EP Cores

The EP core design reduces the effect of residual air gap upon the effective permeability of the core, hence it minimizes coil volume for a given inductance.

Also, the core geometry provides a high degree of isolation from adjacent components. EP cores are advantageously used in low power devices, matching and broadband transformers.

- *Available materials: 77, 78, and 75.*
- *Part number is for a single core.*
- *EP cores can be supplied with the center post gapped to a mechanical dimension.*
- *EP cores can also be gapped to an A_L value. These cores will be supplied as sets.*
- *A_L value is measured at 1kHz, <10 gauss.*
- *See section "The Effect of Direct Current on the Inductance of a Ferrite Core" on page 29 for curves of A_L vs. gap length.*

Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

Part Number*	A	B	C	D	E	F	G Max.	Wt (g)
65 - - 070721	**9.2±0.2** .362	**7.4±0.2** .291	**3.3±0.1** .130	**6.35±0.15** .250	**3.7±0.05** .146	**2.6±0.1** .102	**1.8** .071	.8
65 - - 101021	**11.5±0.3** .453	**9.4±0.2** .370	**3.3±0.15** .130	**7.65±0.2** .301	**5.1±0.1** .201	**3.7±0.1** .146	**1.95** .077	1.5
65 - - 131321	**12.5±0.3** .492	**10.0±0.3** .394	**4.35±0.15** .171	**8.8±0.2** .346	**6.5 - 0.15** .253	**4.6±0.1** .181	**2.5** .098	2.5
65 - - 171721	**18.0±0.5** .709	**12.0±0.4** .472	**5.85 - 0.35** .223	**11.0±0.25** .433	**8.4±0.1** .331	**5.65±0.15** .222	**3.45** .136	6.4
65 - - 202021	**24.0±0.5** .945	**16.5±0.4** .650	**8.75±0.25** .344	**14.95±0.35** .589	**10.7±0.1** .421	**7.15±0.15** .281	**4.7** .185	15

** Insert desired material in 3rd & 4th digit positions.*

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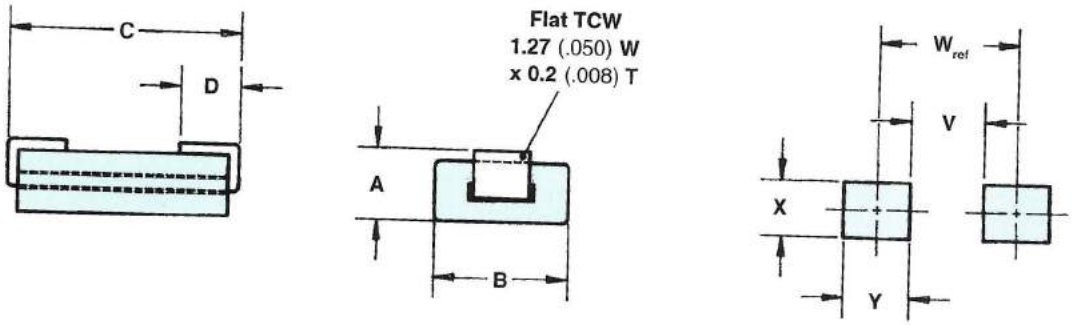


Figure 1

Land Pattern

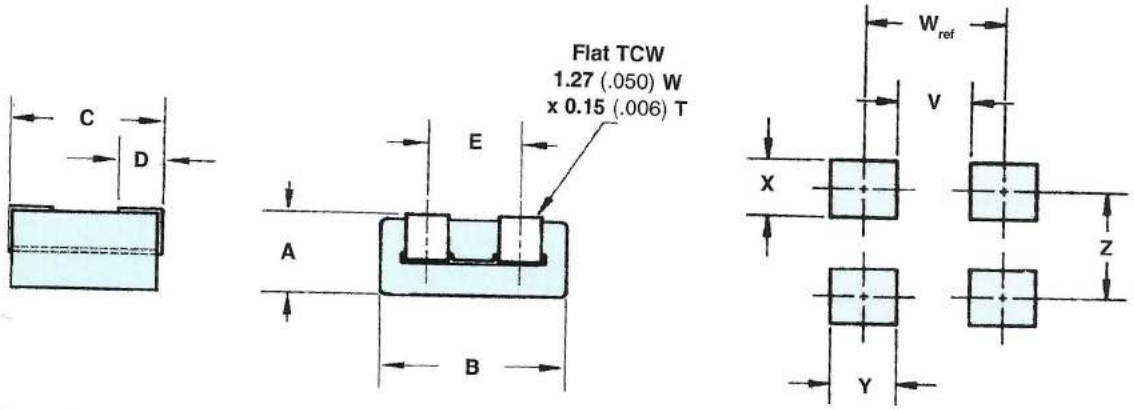


Figure 2

Land Pattern

Dimensions *(**Bold numbers are in millimeters,** light numbers are in inches.)*

Part Number*	Impedance (Ω) 73		43		44		Rdc(mΩ)	Land Pattern Dimensions V	W(ref.)	X	Y	Z
	10 MHz	25 MHz	25 MHz	100 MHz	25 MHz	100 MHz						
27- - 019447	25 Min.	40±20%	23 Min.	47±20%	–	–	0.6 Max.	**1.0** .040	**4.0** .157	**1.8** .071	**3.0** .118	–
27- - 021447	48 Min.	78±20%	45 Min.	95±20%	–	–	0.9 Max.	**4.5** .177	**7.5** .295	**1.8** .071	**3.0** .118	–
27- - 037447	48 Min.	78±20%	45 Min.	95±20%	–	–	0.7 Max.	**5.0** .197	**8.0** .315	**1.8** .071	**3.0** .118	–
27- - 044447	20 Min.	33±20%	–	–	17 Min.	36±20%	0.8 Max.	**1.5** .059	**4.5** .177	**1.8** .071	**3.0** .118	–
2744041447	–	–	–	–	16 Min.	33±20%	0.8 Max.	**1.0** .040	**4.0** .157	**1.8** .071	**3.0** .118	**2.54** .100
2744045447	–	–	–	–	30 Min.	60±20%	1.2 Max.	**4.5** .177	**7.5** .295	**1.8** .071	**3.0** .118	**2.54** .100

* *Insert desired material in 3rd & 4th digit positions.*

SM Beads

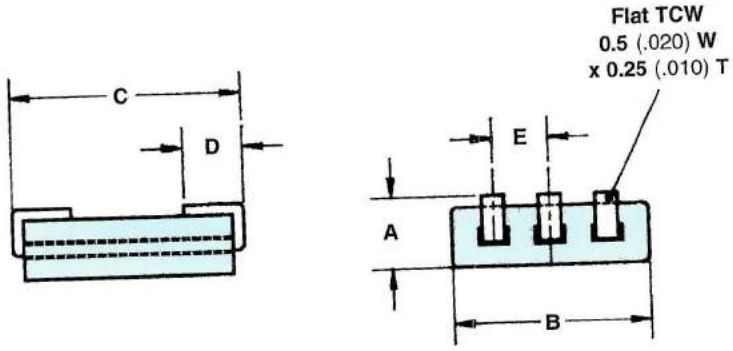


Figure 3

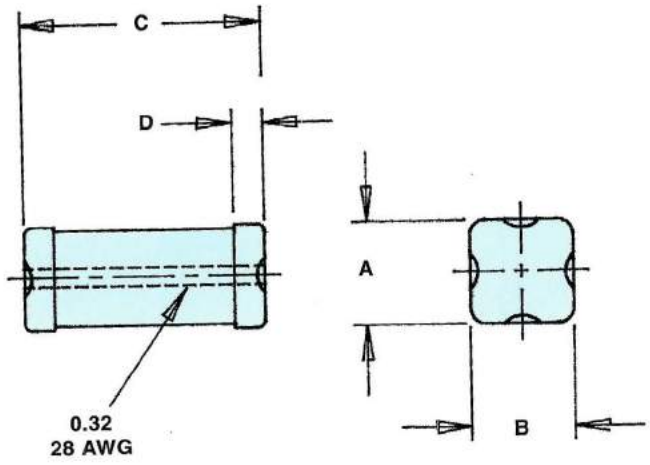


Figure 4

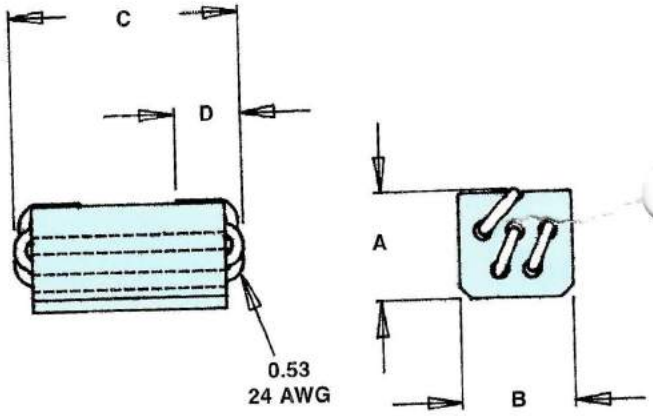


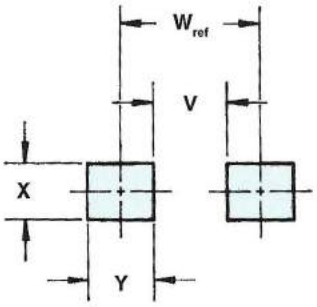
Figure 5

Dimensions *(**Bold numbers are in millimeters,** light numbers are nominal in inches.)*

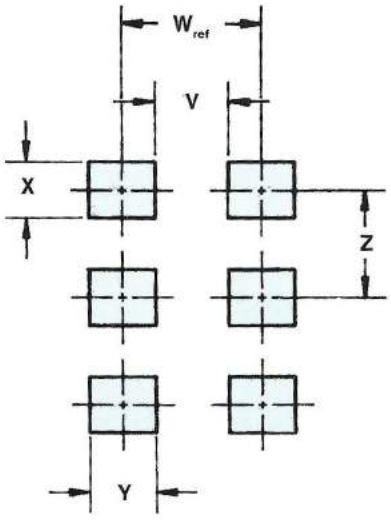
Part Number	Fig.	A	B	C	D	E	Wt (g)	Tape Width	Parts/Reel
2744040446**	3	**1.45±0.2** .057	**4.5±0.2** .177	**6.2 - 0.6** .232	**1.4±0.4** .055	**1.27±0.05** .050	.14	–	–
2744049447	4	**1.65 - 0.25** .060	**1.65 - 0.25** .060	**4.0±0.3** .157	**0.2 Min.** .008 Min.	–	.04	**12**	8000
2744050447	4	**1.65 - 0.25** .060	**1.65 - 0.25** .060	**4.7±0.3** .185	**0.2 Min.** .008 Min.	–	.05	**12**	8000
2744555577	5	**5.0 Max.** .197 Max.	**5.00±0.25** .197	**11.0 Max.** .433 Max.	**2.0 Min.** .079 Min.	–	.96	**24**	1500

** *Not supplied taped and reeled.*

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Land Pattern



Land Pattern

Dimensions *(**Bold numbers are in millimeters,** light numbers are in inches.)*

	Impedance (Ω)			Land Pattern Dimensions				
Part Number	**25 MHz**	**100 MHz**	**Rdc(mΩ)**	**V**	**W(ref.)**	**X**	**Y**	**Z**
2744040446	23 Min.	56±20%	1.4 Max.	**1.8** .071	**4.8** .189	**0.8** .032	**3.0** .118	**1.27** .050
2744049447	20 Min.	45±20%	1.2 Max.	**2.2** .087	**3.6** .142	**2.0** .079	**1.4** .055	–
2744050447	23 Min.	53±20%	1.5 Max.	**2.6** .102	**4.0** .157	**2.0** .079	**1.4** .055	–
2744555577	340 Min.	600±20%	7.5 Max.	**2.0** .079	**7.0** .295	**2.0** .079	**5.0** .197	–

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