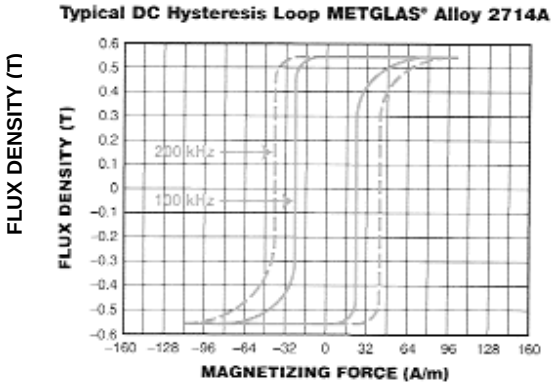
Square Loop Cores manufactured with cobalt-based METGLAS® amorphous alloy 2714A allow the design of mag amps that can operate at higher frequencies than previously possible. Their combination of magnetic properties enable magnetic amplifiers to provide unparalleled precision and efficiency in output regulation.

Mag amps are particularly well suited for outputs with currents of 1 amp to several tens of amps, although they are also used at lower currents where tight regulation and efficiency are extremely important.

Conventional regulated outputs are limited at higher frequencies and output currents. Linear regulators cannot handle output currents that exceed one or two amperes efficiently, and thus require heat sinking
schemes, which increase the size of the power supply. Independent switched-mode sub-regulators avoid this inefficiency, but usually require circuitry which is more complex, expensive and less reliable than a mag amp.

Standard sizes are available from 9.6 mm to 34.1 mm OD and the possibility of manufacturing custom sizes also exists. Core coatings meeting UL94V-0 and temperature class F are available upon request.

Typical DC Hysteresis Loop METGLAS Alloy 2714A



METGLAS® Square Loop magnetic cores are specifically designed to exhibit an extremely square dc Hysteresis loop and high BSAT resulting in the following important benefits:

- Low saturated permeability
- Low coercive field – *indicating a small reset current*
- Low profile – *enabling weight and volume reduction of up to 50%*
- Low loss – *resulting from micro-thin METGLAS® ribbon (18µm)*

Physical Properties METGLAS® Alloy 2714A

Ribbon Thickness (µm)	18
Density (g/cm^3)	7.59
Thermal Expansion (ppm/°C)	12.7
Crystallization Temperature (°C)	560
Curie Temperature (°C)	225
Continuous Service Temperature (°C)	<120
Tensile Strength (MN/m^2)	1k-1.7k
Elastic Modulus (GN/m^2)	100-110
Vicker's Hardness (50g load)	960

Magnetic Properties METGLAS® Square Loop Cores

Saturation Flux Density (Tesla)	0.57
Saturation Magnetostriction (ppm)	<<1
Electrical Resistivity (µ-Ω-cm)	142
Squareness Ratio (%)	>95

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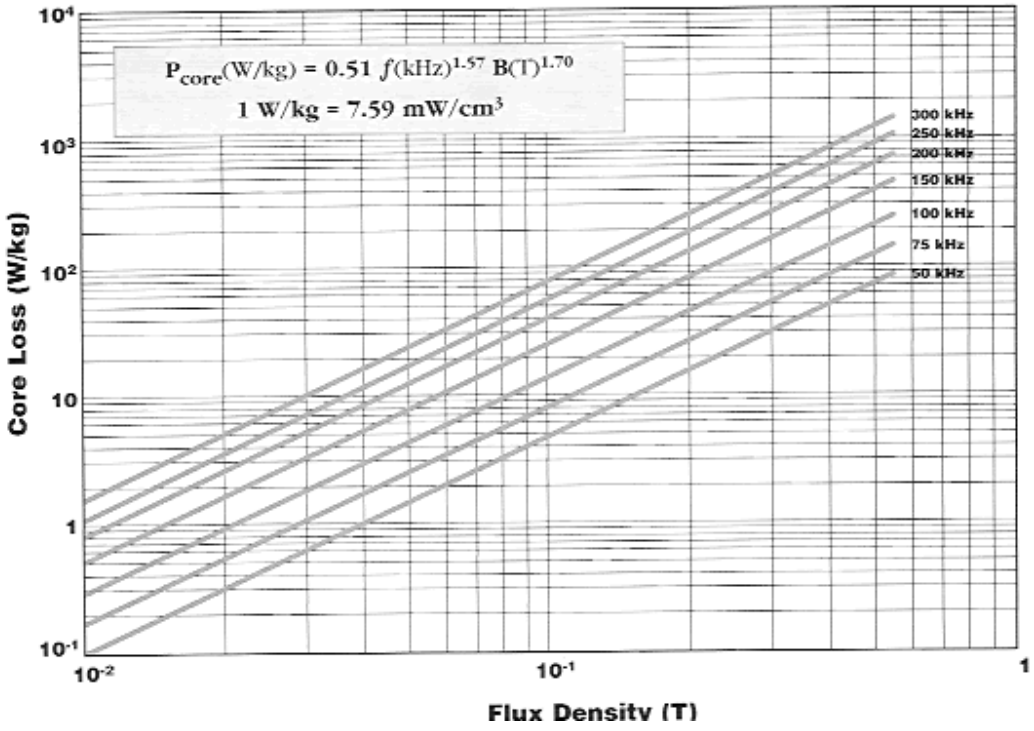
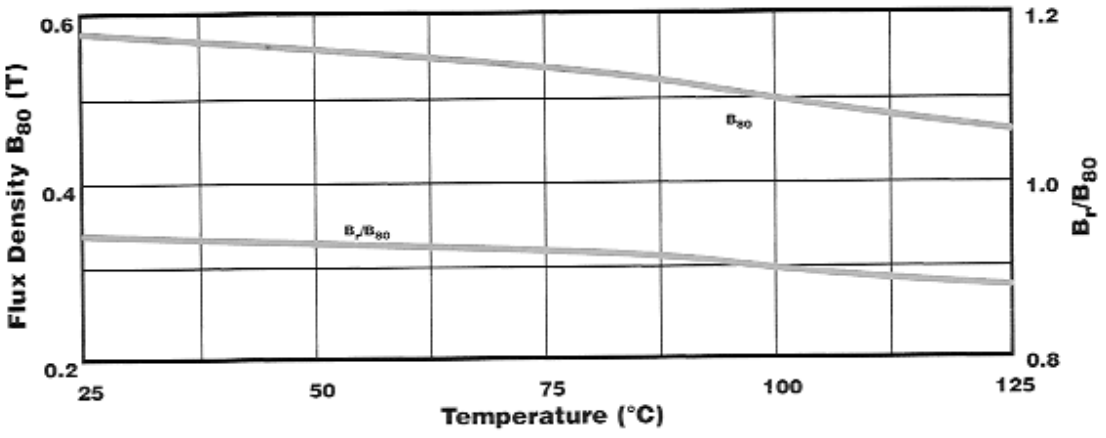
Core Loss vs. Flux Density† @ 25°C



B_{80}, B_r/B_{80} vs. Temperature§



† B_{80} = Flux Density @ 80 A/m

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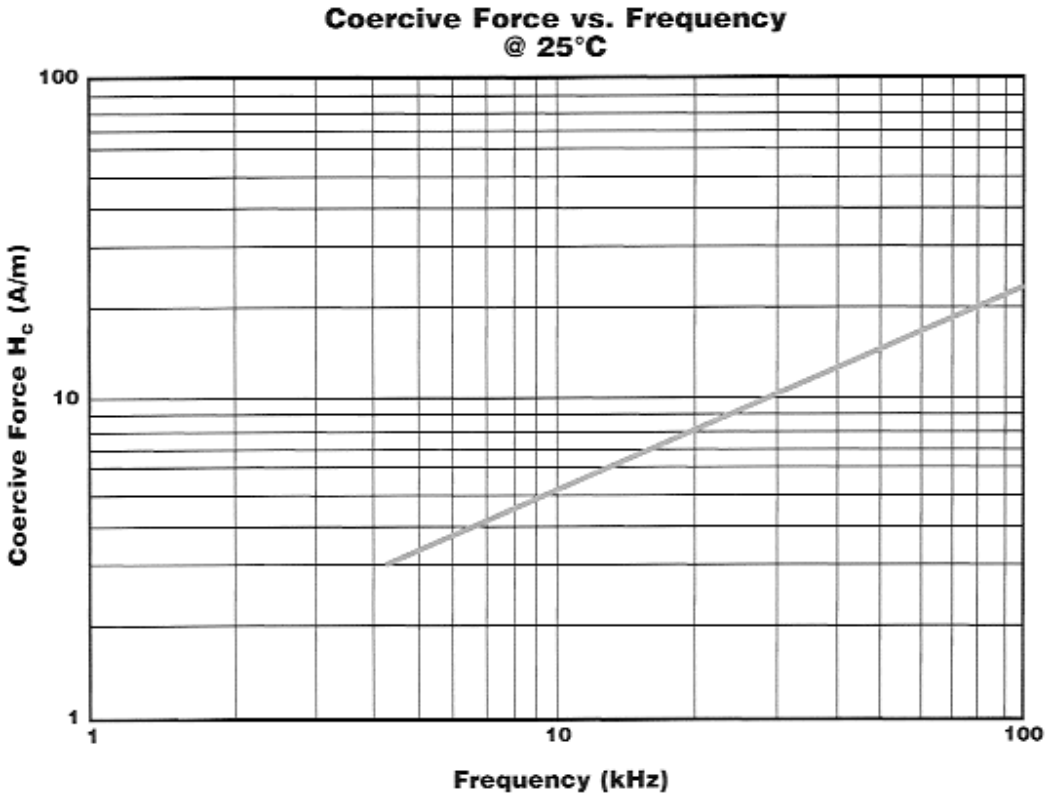

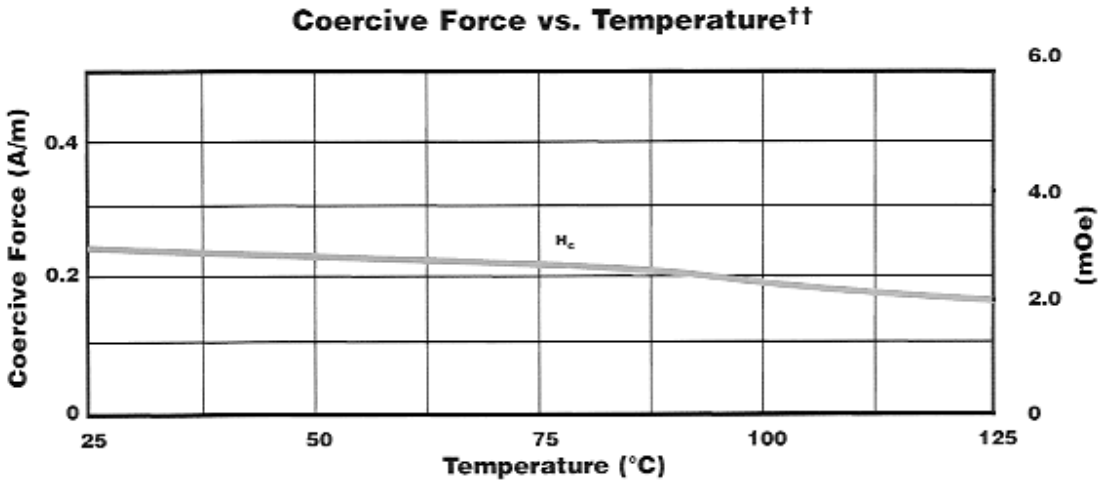

†† 1 Oe = 79.6 A/m

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MAGAMP Square Loop Cores														
	CORE DIMENSION			Performance Parameters										
Core No.	O.D.Max (mm)	I.D.Min (mm)	Ht. Max (mm)	lm (cm)	A_c (cm^2)	Vol (cm^3)	W_a (cm^2)	W_aA_c (cm^4)	Cal Mass	Sq Ratio	Bsat	Br	Total Flux	Core Loss
MP0703M4AS	8.139	4.466	4.699	1.88	0.025	0.047	0.157	0.004	0.36	0.84	0.57	0.45	2.87	84.52
MP0705M4AS	8.141	4.466	6.287	1.88	0.038	0.071	0.157	0.006	0.54	0.84	0.57	0.45	4.30	126.77
MP0803M4AS	9.437	4.466	4.699	2.08	0.041	0.085	0.157	0.006	0.65	0.84	0.57	0.45	4.67	151.89
MP0805M4AS	9.710	4.466	6.287	2.12	0.066	0.140	0.157	0.010	1.07	0.84	0.57	0.45	7.56	250.50
MP1005M4AS	11.090	6.066	6.121	2.59	0.060	0.155	0.289	0.017	1.17	0.84	0.57	0.45	6.82	275.71
MP1105M4AS	12.190	8.987	6.287	3.24	0.030	0.099	0.634	0.019	0.75	0.84	0.57	0.45	3.48	176.37
MP1205M4AS	12.977	7.971	6.287	3.14	0.057	0.180	0.499	0.028	1.36	0.84	0.57	0.45	6.51	320.18
MP1303M4AS	13.968	8.987	4.699	3.50	0.041	0.145	0.634	0.026	1.10	0.84	0.57	0.45	4.71	257.99
MP1305M4AS	13.724	8.987	6.287	3.46	0.057	0.198	0.634	0.036	1.50	0.84	0.57	0.45	6.51	352.69
MP1405M4AS	15.159	8.987	6.287	3.67	0.083	0.304	0.634	0.052	2.31	0.84	0.57	0.45	9.43	542.31
MP1505M4AS	16.459	8.987	6.287	3.87	0.106	0.410	0.634	0.067	3.11	0.84	0.57	0.45	12.08	730.73
MP1506M4AS	16.384	8.987	7.874	3.86	0.140	0.540	0.634	0.089	4.10	0.84	0.57	0.45	15.96	963.42
MP1603M4AS	17.145	12.162	4.699	4.50	0.041	0.184	1.162	0.048	1.40	0.84	0.57	0.45	4.67	328.57
MP1705M4AS	18.285	12.162	6.287	4.66	0.082	0.381	1.162	0.095	2.89	0.84	0.57	0.45	9.32	680.29
MP1706M4AS	18.268	12.162	7.874	4.68	0.112	0.526	1.162	0.130	3.99	0.84	0.57	0.45	12.80	937.88
MP1805M4AS	19.748	12.162	6.287	4.88	0.108	0.529	1.162	0.126	4.02	0.84	0.57	0.45	12.36	944.11
MP1903M4AS	20.715	12.162	4.699	5.00	0.082	0.410	1.162	0.095	3.11	0.84	0.57	0.45	9.34	731.19
MP1905M4AS	19.992	12.162	6.287	4.92	0.113	0.555	1.162	0.131	4.21	0.84	0.57	0.45	12.85	989.26
MP1906M4AS	20.459	12.162	7.874	4.99	0.161	0.804	1.162	0.187	6.11	0.84	0.57	0.45	18.39	1,434.76
MP2006M4AS	21.275	14.702	7.874	5.54	0.121	0.672	1.698	0.206	5.10	0.84	0.57	0.45	13.83	1,198.06
MP2008M4AS	21.321	12.162	9.906	5.15	0.248	1.276	1.162	0.288	9.69	0.84	0.57	0.45	28.25	2,276.79
MP2208M4AS	23.105	15.972	9.906	6.01	0.175	1.054	2.004	0.351	8.00	0.84	0.57	0.45	20.00	1,880.17
MP2303M4AS	24.294	15.972	4.699	6.19	0.081	0.501	2.004	0.162	3.80	0.84	0.57	0.45	9.23	893.69
MP2306M4AS	24.512	15.972	7.874	6.23	0.169	1.053	2.004	0.339	8.00	0.84	0.57	0.45	19.27	1,878.94
MP2410M4AS	25.658	18.512	11.049	6.83	0.206	1.409	2.692	0.555	10.69	0.84	0.57	0.45	23.50	2,512.81
MP2505M4AS	26.756	18.512	6.287	7.01	0.124	0.872	2.692	0.335	6.62	0.84	0.57	0.45	14.18	1,554.88
MP2510M4AS	26.797	18.512	11.049	7.01	0.249	1.743	2.692	0.669	13.23	0.84	0.57	0.45	28.35	3,109.76
MP2705M4AS	28.382	15.972	6.287	6.89	0.207	1.424	2.004	0.414	10.81	0.84	0.57	0.45	23.56	2,540.52
MP3005M4AS	31.226	18.512	6.287	7.69	0.207	1.589	2.692	0.556	12.06	0.84	0.57	0.45	23.55	2,833.36
MP3210M4AS	33.865	21.687	11.049	8.58	0.388	3.330	3.694	1.433	25.28	0.84	0.57	0.45	44.24	5,940.28
MP3506M4AS	36.509	24.862	7.874	9.52	0.249	2.371	4.855	1.209	17.99	0.84	0.57	0.45	28.39	4,228.52

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