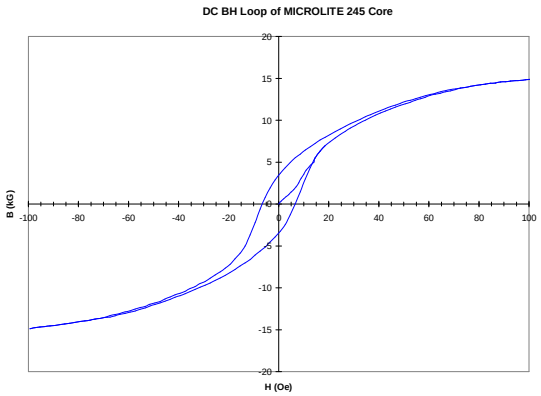
Metglas®

MICROLITE®
High Frequency Distributed Gap Inductor Cores

Materials Magic
Hitachi Metals

Technical Bulletin

MICROLITE® Toroidal Cores are manufactured with Metglas® amorphous alloy 2605SA1 ribbon. Their unique combination of high saturation flux density and low loss make them the first choice for all energy storage applications, enabling the designer to achieve both size and system cost reduction.



Applications

- SMPS output inductors
- Flyback transformers
- Differential input inductors
- PVC inductors
- VRM inductors

Benefits

- High saturated flux density
- Significant size reduction
- Low core loss
- Extended bias capability
- Fewer turns due to higher permeability

Physical Properties Metglas MICROLITE XP Cores

Ribbon Thickness (µm)	23
Density (g/cm³)	7.18
Thermal Expansion (ppm/°C)	7.6
Crystallization Temperature (°C)	508
Curie Temperature (°C)	399
Continuous Service Temperature (°C)	150

Magnetic Properties Metglas MICROLITE XP Cores

Saturation Flux Density (T)	1.56
Permeability (depending on core size)	245/270

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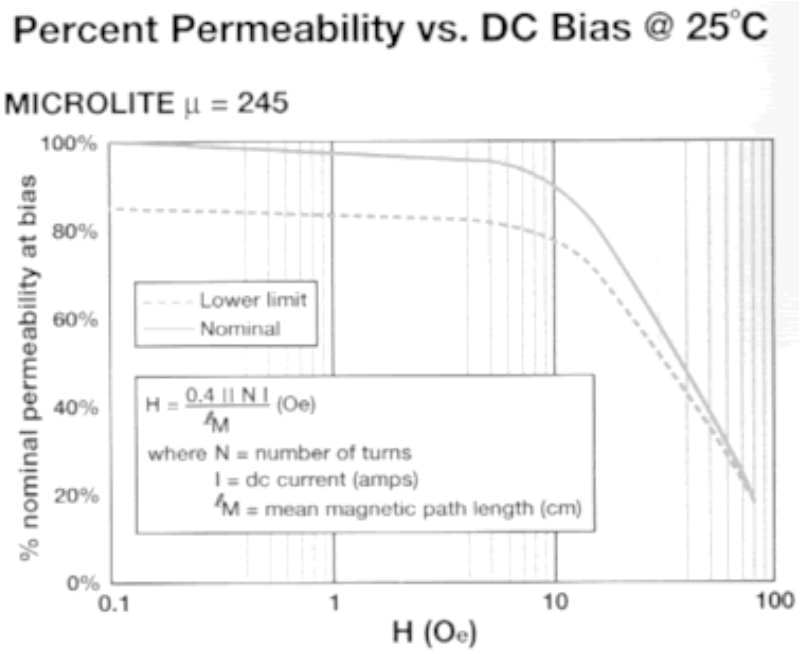

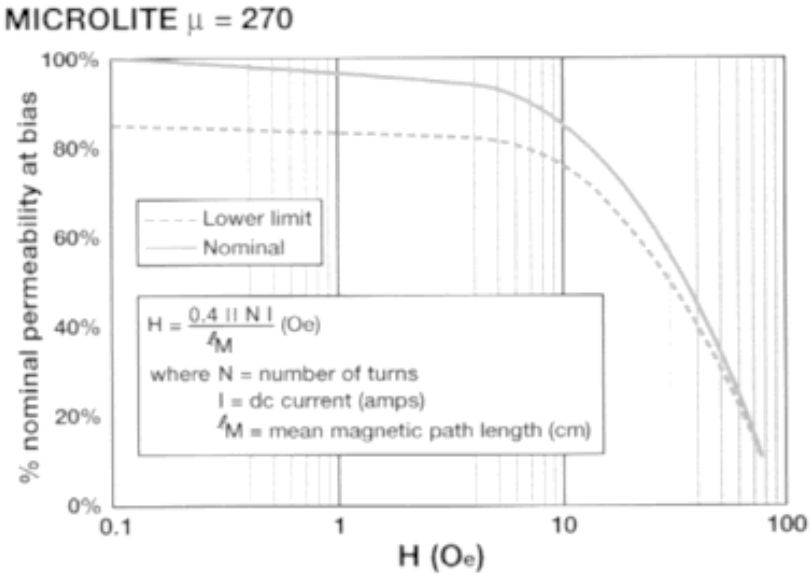

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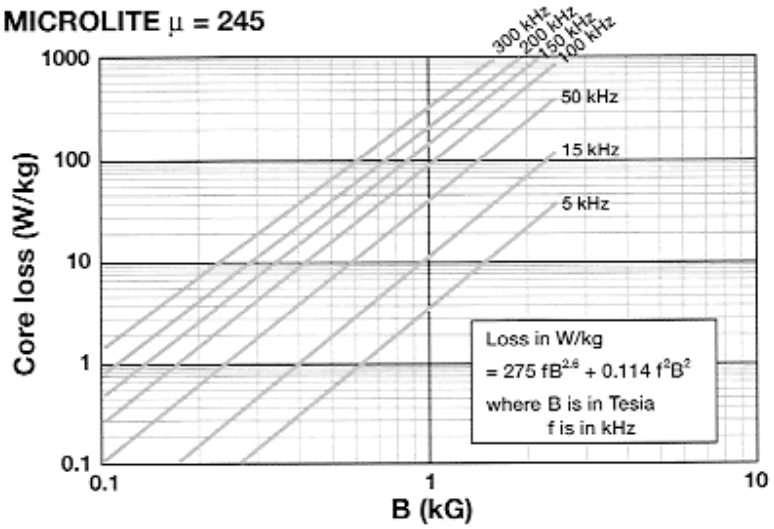
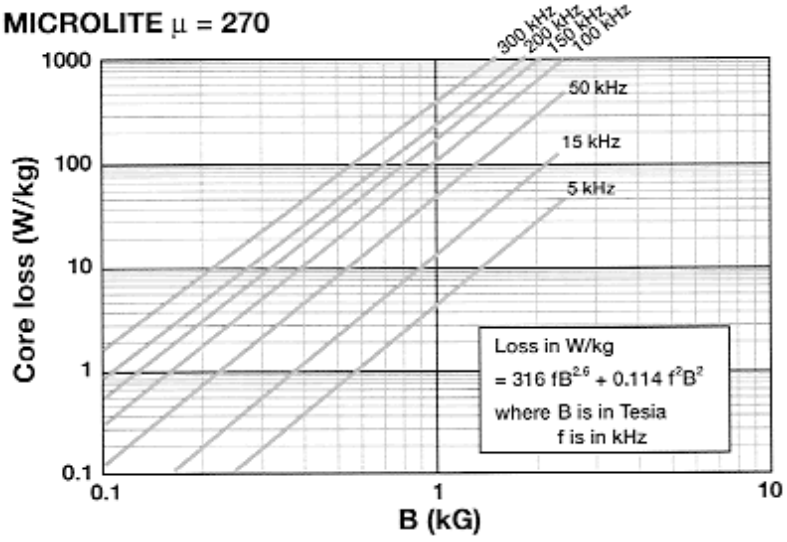
Core Loss vs. Flux Density @ 25°C





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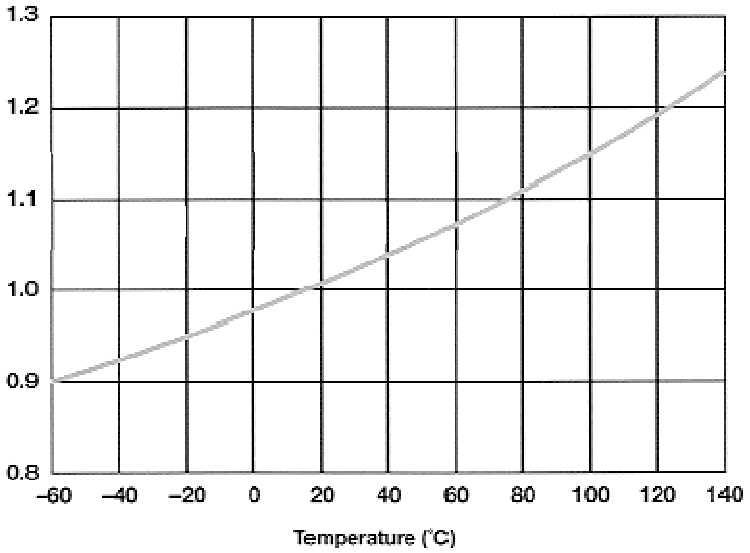
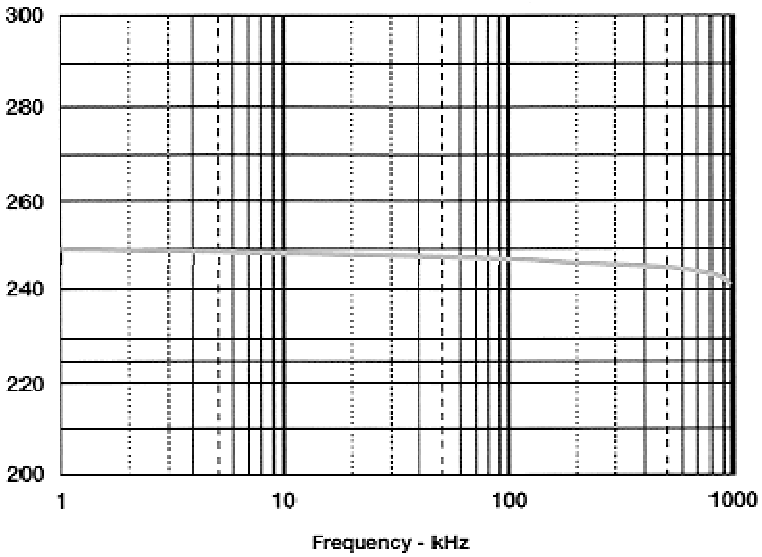
Temperature Dependence of Inductance

MICROLITE μ = 245



Permeability vs. Frequency



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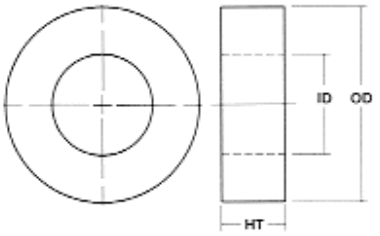

Ordering Information

Example:

MP1710XDGC

METGLAS Products
Outside Diameter (OD)
Height (HT)
Distributed Gap Core

Case Material

Box Type (X)	DuPont Material	UL File No.	Flam. Rating UL 94	Elec. Rel. Temp. Rec. Index (UL746B) Temp.
P	Zytel® 70G33L	E41938	HB	120
L	Zytel® FR50	E41938	V-0	130
V	Rynite® FR530L	E66678	V-0	150
M	Epoxy EPB634SO	E206123	—	— Class B, F

Encapsulated cores are available upon request.

MICROLITE® Toroidal 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)**	**Initial Perm**	**A_L* (nH/N^2)**
MP1005MDGC	11.32	4.47	6.12	2.40	0.10	0.25	0.16	0.016	270	144.1
MP1105MDGC	12.19	6.07	6.29	2.80	0.10	0.27	0.29	0.028	270	116.5
MP1205MDGC	13.66	7.46	6.29	3.22	0.09	0.30	0.44	0.041	270	97.7
MP1306MDGC	14.67	7.46	7.87	3.37	0.15	0.51	0.44	0.066	245	137.8
MP1603MDGC	17.03	8.99	4.70	3.98	0.09	0.34	0.63	0.055	270	73.9
MP1710MDGC	18.68	12.16	11.05	4.74	0.20	0.94	1.16	0.230	245	128.5
MP2010MDGC	21.25	12.16	11.05	5.13	0.30	1.54	1.16	0.348	245	180.1
MP2310MDGC	24.35	12.16	11.05	5.60	0.43	2.38	1.16	0.494	245	233.7
MP2510MDGC	26.84	18.51	11.05	7.01	0.27	1.89	2.69	0.725	245	118.4
MP2610MDGC	26.92	15.97	11.05	6.61	0.37	2.48	2.00	0.751	245	174.6
MP3210MDGC	33.57	21.69	11.05	8.54	0.41	3.52	3.69	1.520	245	148.3
MP3310MDGC	34.06	14.70	11.05	7.49	0.71	5.34	1.70	1.210	245	292.9
MP3505MDGC	36.40	21.69	6.29	8.97	0.26	2.35	3.69	0.968	245	90.0
MP3510MDGC	36.52	18.51	11.05	8.48	0.66	5.58	2.69	1.770	245	238.9
MP3710MDGC	38.50	21.69	11.05	9.29	0.61	5.66	3.69	2.251	245	201.9
MP4010MDGC	41.58	21.69	11.05	9.76	0.73	7.15	3.69	2.706	245	231.1
MP4510MDGC	46.73	21.69	11.05	10.55	0.94	9.91	3.69	3.472	245	274.4
MP7050MDGC	13.23	7.46	6.12	3.14	0.08	0.25	0.44	0.035	245	78.2
MP7089MDGC	46.55	28.95	15.72	11.65	0.94	10.92	6.58	6.170	245	247.7
MP7109MDGC	57.21	37.44	15.32	14.64	1.03	15.13	11.01	11.376	245	217.4
MP7120MDGC	17.31	10.46	7.87	4.24	0.14	0.59	0.86	0.119	245	100.3
MP7195MDGC	54.32	26.97	16.52	12.49	1.60	19.98	5.71	9.136	245	394.1
MP7206MDGC	21.41	13.46	7.87	5.35	0.17	0.89	1.42	0.238	245	96.2
MP7254MDGC	39.38	24.86	15.65	9.91	0.75	7.46	4.85	3.656	245	234.1
MP7310MDGC	23.49	13.46	7.87	5.66	0.22	1.25	1.42	0.315	245	120.7
MP7324MDGC	36.99	23.01	11.05	9.24	0.49	4.50	4.16	2.026	245	162.3
MP7350MDGC	23.53	14.22	9.91	5.79	0.27	1.55	1.59	0.425	245	142.3
MP7380MDGC	18.30	10.23	7.87	4.35	0.17	0.74	0.82	0.140	245	120.6
MP7438MDGC	46.61	25.22	18.99	11.05	1.43	15.80	4.99	7.141	245	398.4
MP7548MDGC	33.25	19.73	11.05	8.15	0.47	3.82	3.06	1.435	245	177.4
MP7585MDGC	34.87	23.95	9.91	9.08	0.32	2.93	4.50	1.452	245	109.3
MP7715MDGC	51.53	32.46	13.89	12.97	0.89	11.57	8.27	7.379	245	211.7
MP7930MDGC	27.18	13.46	11.05	6.21	0.48	2.97	1.42	0.681	245	237.3

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MICROLITE® Toroidal 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)	Initial Perm	A_L* (nH/N^2)
MP1306LDGC	15.80	6.17	8.13	3.37	0.15	0.51	0.30	0.045	245	137.8
MP1306PDGC	15.80	6.17	8.13	3.37	0.15	0.51	0.30	0.045	245	137.8
MP1306VDGC	15.80	6.17	8.13	3.37	0.15	0.51	0.30	0.045	245	137.8
MP1603LDGC	18.24	7.87	4.70	3.98	0.09	0.34	0.49	0.042	270	73.9
MP1603PDGC	18.24	7.87	4.70	3.98	0.09	0.34	0.49	0.042	270	73.9
MP1603VDGC	18.24	7.87	4.70	3.98	0.09	0.34	0.49	0.042	270	73.9
MP1710LDGC	20.22	10.87	11.43	4.74	0.20	0.94	0.93	0.184	245	128.5
MP1710PDGC	20.22	10.87	11.43	4.74	0.20	0.94	0.93	0.184	245	128.5
MP1710VDGC	20.22	10.87	11.43	4.74	0.20	0.94	0.93	0.184	245	128.5
MP2010LDGC	22.78	10.87	11.43	5.13	0.30	1.54	0.93	0.278	245	180.1
MP2010PDGC	22.78	10.87	11.43	5.13	0.30	1.54	0.93	0.278	245	180.1
MP2010VDGC	22.78	10.87	11.43	5.13	0.30	1.54	0.93	0.278	245	180.1
MP2310LDGC	25.91	10.80	11.48	5.60	0.43	2.38	0.92	0.389	245	233.7
MP2310PDGC	25.91	10.80	11.48	5.60	0.43	2.38	0.92	0.389	245	233.7
MP2310VDGC	25.91	10.80	11.48	5.60	0.43	2.38	0.92	0.389	245	233.7
MP2510LDGC	27.79	17.27	11.48	7.01	0.27	1.89	2.34	0.631	245	118.4
MP2510PDGC	27.79	17.27	11.48	7.01	0.27	1.89	2.34	0.631	245	118.4
MP2510VDGC	27.79	17.27	11.48	7.01	0.27	1.89	2.34	0.631	245	118.4
MP2610LDGC	28.32	14.15	11.48	6.61	0.37	2.48	1.57	0.589	245	174.6
MP2610PDGC	28.32	14.15	11.48	6.61	0.37	2.48	1.57	0.589	245	174.6
MP2610VDGC	28.32	14.15	11.48	6.61	0.37	2.48	1.57	0.589	245	174.6
MP3210LDGC	34.95	19.86	11.48	8.54	0.41	3.52	3.10	1.275	245	148.3
MP3210PDGC	34.95	19.86	11.48	8.54	0.41	3.52	3.10	1.275	245	148.3
MP3210VDGC	34.95	19.86	11.48	8.54	0.41	3.52	3.10	1.275	245	148.3
MP3310LDGC	36.07	12.95	11.48	7.49	0.71	5.34	1.32	0.939	245	292.9
MP3310PDGC	36.07	12.95	11.48	7.49	0.71	5.34	1.32	0.939	245	292.9
MP3310VDGC	36.07	12.95	11.48	7.49	0.71	5.34	1.32	0.939	245	292.9
MP3510LDGC	38.10	16.69	11.48	8.48	0.66	5.58	2.19	1.439	245	238.9
MP3510PDGC	38.10	16.69	11.48	8.48	0.66	5.58	2.19	1.439	245	238.9
MP3510VDGC	38.10	16.69	11.48	8.48	0.66	5.58	2.19	1.439	245	238.9
MP4010LDGC	43.05	19.86	11.48	9.76	0.73	7.15	3.10	2.270	245	231.1
MP4010PDGC	43.05	19.86	11.48	9.76	0.73	7.15	3.10	2.270	245	231.1
MP4010VDGC	43.05	19.86	11.48	9.76	0.73	7.15	3.10	2.270	245	231.1
MP4510LDGC	48.13	19.86	11.48	10.55	0.94	9.91	3.10	2.912	245	274.4
MP4510PDGC	48.13	19.86	11.48	10.55	0.94	9.91	3.10	2.912	245	274.4
MP4510VDGC	48.13	19.86	11.48	10.55	0.94	9.91	3.10	2.912	245	274.4

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