Iron Powder Cores

冠磁企業股份有限公司
CROWN FERRITE ENTERPRISE CO.
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General Material Properties

Material	Reference Permeability (μo)	Temp. Coef. of Perm. (+ppm/^{O}C)	Material Density (g/cm^{3})	Color	Note
Y8	35	255	6.5	Yellow / Red	A good high frequency material.It has low core loss and good linearity under high bias conditions.
G18	55	385	6.6	Green / red	A good DC saturation characteristics. It has low core loss similar to the **Y8** with higher permeability.
Y26	75	825	7.0	Yellow / White	A most popular material.It's useful in a wide variety of power conversion and line filter applications.
G52	75	650	7.0	Green / Blue	It's very popular for new high frequency choke designs.It has lower core loss at high frequency and the same permeability as the **Y26**.

*AL Tolerance +- 10% (Based on a peak AC flux density of 10 gauss(1mT) at a frequency of 10 KHz)

Applications

Typical Application	Y8	G18	Y26	G52
DC Chokes (lower then 50 KHz or low Et/N)			V	
DC Chokes (higher then 50 KHz or higher Et/N)	V	V	V	V
Power Factor Correction Chokes (lower then 50 KHz)			V	
Power Factor Correction Chokes (higher then 50 KHz)	V	V	V	V
60 Hz Differential-mode EMI Line Chokes			V	V
Light Dimmer Chokes			V	

Thermal aging

Iron Powder Cores can be designed for thermal aging free up to 200^{o}C. Cores will not breakdown up to 200^{o}C when exposed to elevated environment temperature or generate elevated temperature by itself.

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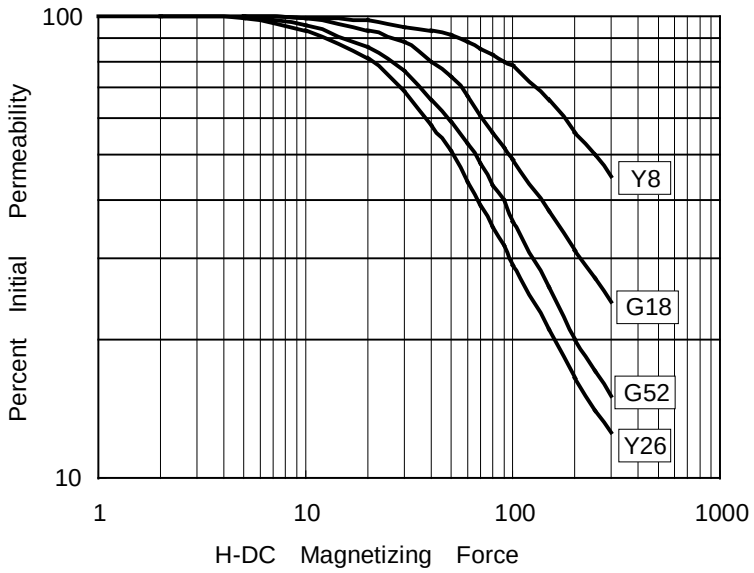
Percent Initial Permeability - DC Magnetizing Force



H=0.4πNI / Le

H = DC Magnetizing Force (Oersteds)

N = Number of Turns

I = DC Current (Amps)

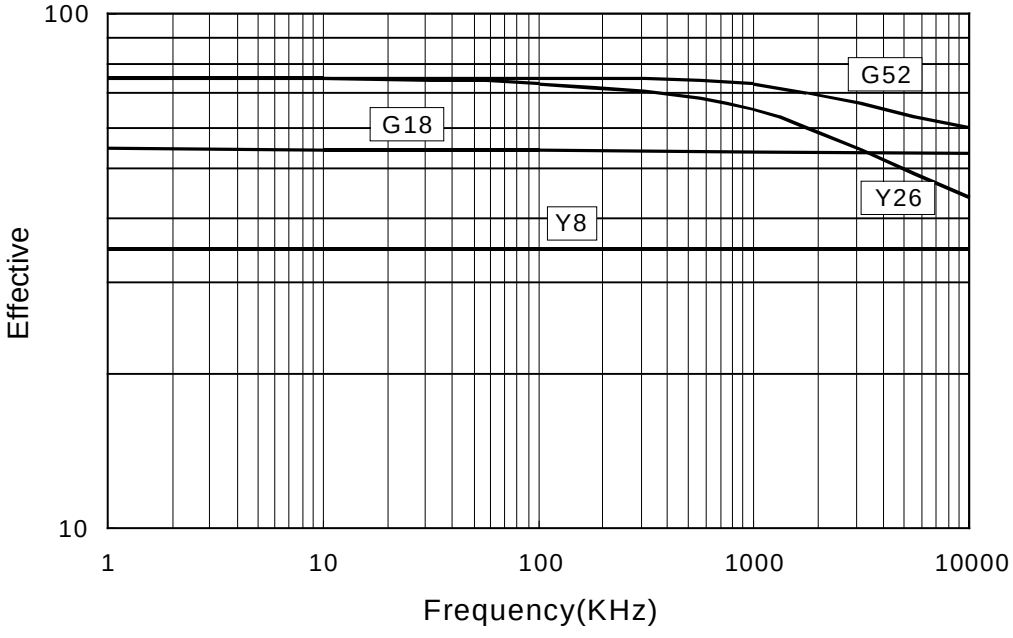
Le = Mean Magnetic Path Lencth (cm)

Permeability with DC bias

H-DC = 50 Oersteds

Material	%μo
Y8	91%
G18	74%
G52	59%
Y26	51%

Effective Permeability - Frequency



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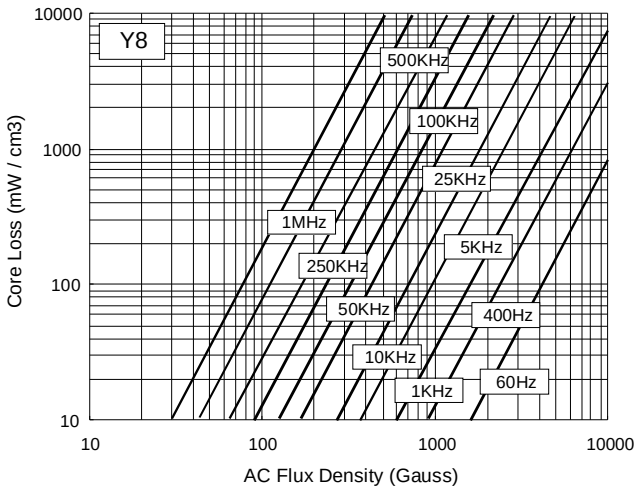
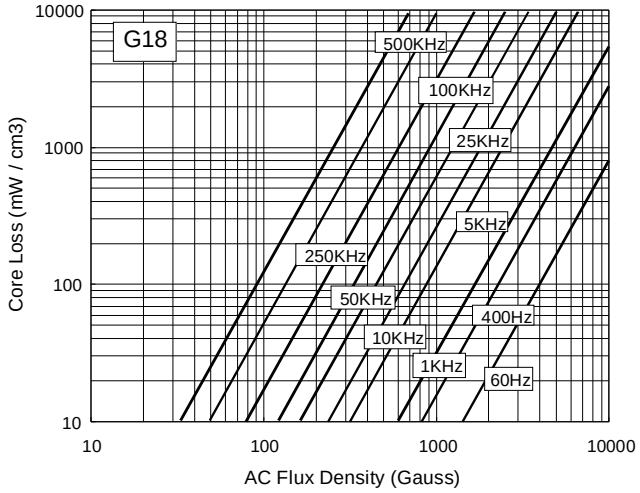
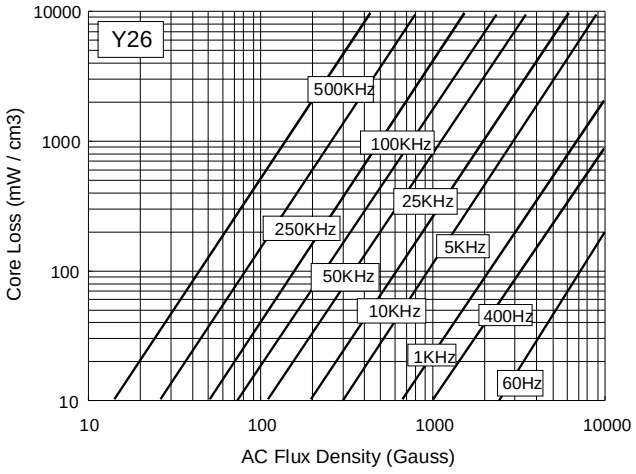
Core Loss - AC Flux Density

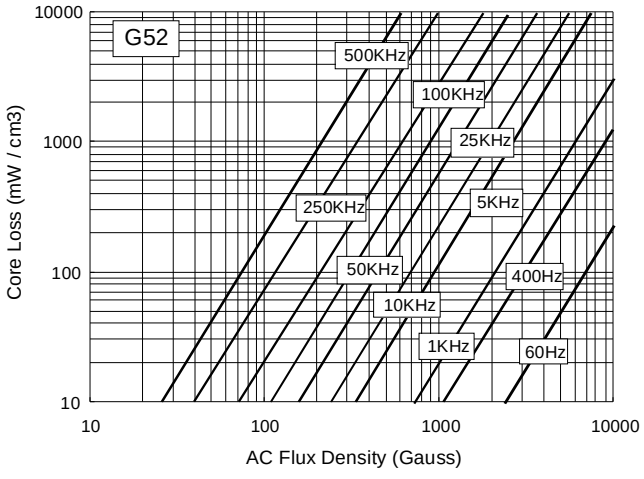
Core Loss Comparison (mW / cm^3)

Material	60Hz @5000G	1KHz @1500G	10KHz @500G	50KHz @225G	100KHZ @140G	500KHz @50G
Y8	150	70	**47**	**41**	**31**	**14**
G18	168	80	**53**	**43**	**36**	**26**
Y26	**42**	**56**	**65**	**90**	**88**	124
G52	**52**	**62**	**59**	**62**	**54**	**63**









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Dimension & AL Value

	Dimension (mm)			AL (nH/N^2)			
ITEM	OD	ID	HT	Y8	G18	Y26	G52
T25-&	6.48	3.05	2.44	10.0	17.0	24.5	23.0
T30-&	7.80	3.84	3.25	14.0	22.0	33.5	30.5
T37-&	9.53	5.21	3.25	12.0	19.0	28.5	26.0
T44-&	11.2	5.82	4.04	18.0	25.5	37.0	35.0
T50-&	12.7	7.70	4.83	17.5	24.0	33.0	33.0
T50-&B	12.7	7.70	6.35	23.0	32.0	43.5	43.5
T50-&D	12.7	7.70	9.53	-	-	72.0	66.0
T60-&	15.2	8.53	5.94	19.0	34.5	50.0	47.0
T60-&D	15.2	8.53	11.9	-	-	97.0	94.0
T68-&	17.5	9.40	4.83	19.5	29.0	43.5	40.0
T68-&A	17.5	9.40	6.35	26.0	39.5	58.0	54.0
T68-&D	17.5	9.40	9.53	-	-	87.0	80.0
T80-&	20.2	12.6	6.53	18.0	31.0	46.0	42.0
T80-&B	20.2	12.6	9.53	29.5	46.5	71.0	63.0
T80-&D	20.2	12.6	12.7	-	-	92.0	83.0
T90-&	22.9	14.0	9.53	30.0	47.0	70.0	64.0
T106-&	26.9	14.5	11.1	45.0	70.0	93.0	95.0
T106-&A	26.9	14.5	7.92	-	49.0	67.0	67.0
T106-&B	26.9	14.5	14.6	-	91.0	124.0	124.0