Design Soft Ferrite Cores for Maximum Inductance Under DC Current Bias Conditions

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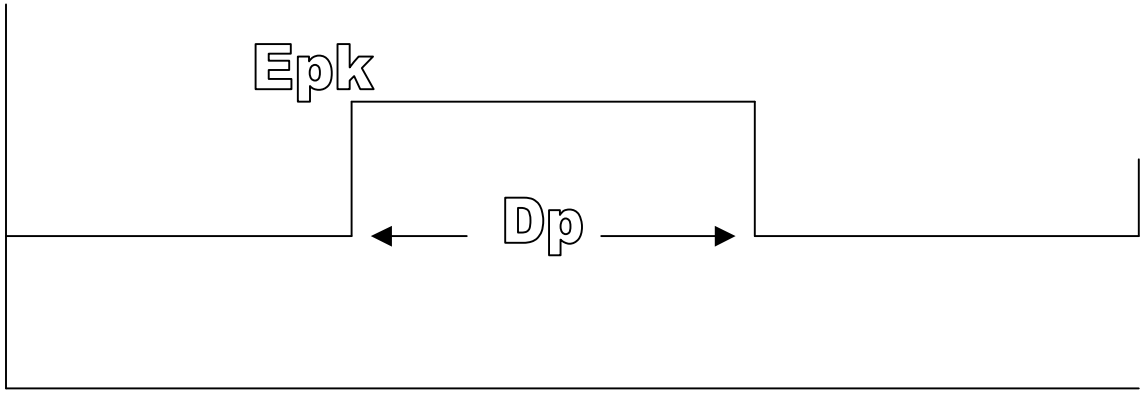
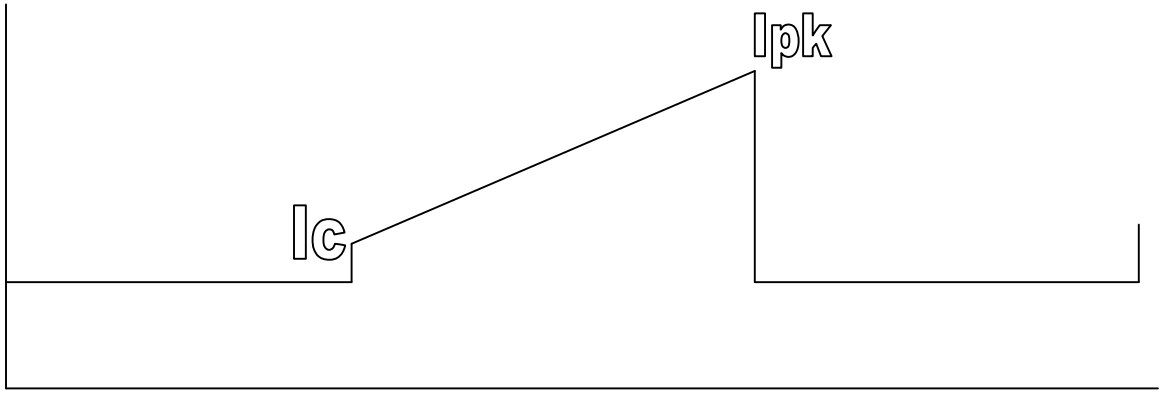


Voltage Waveform



Current Waveform

Ipk = ((Epk)(Dp) / Inductance) + Ic

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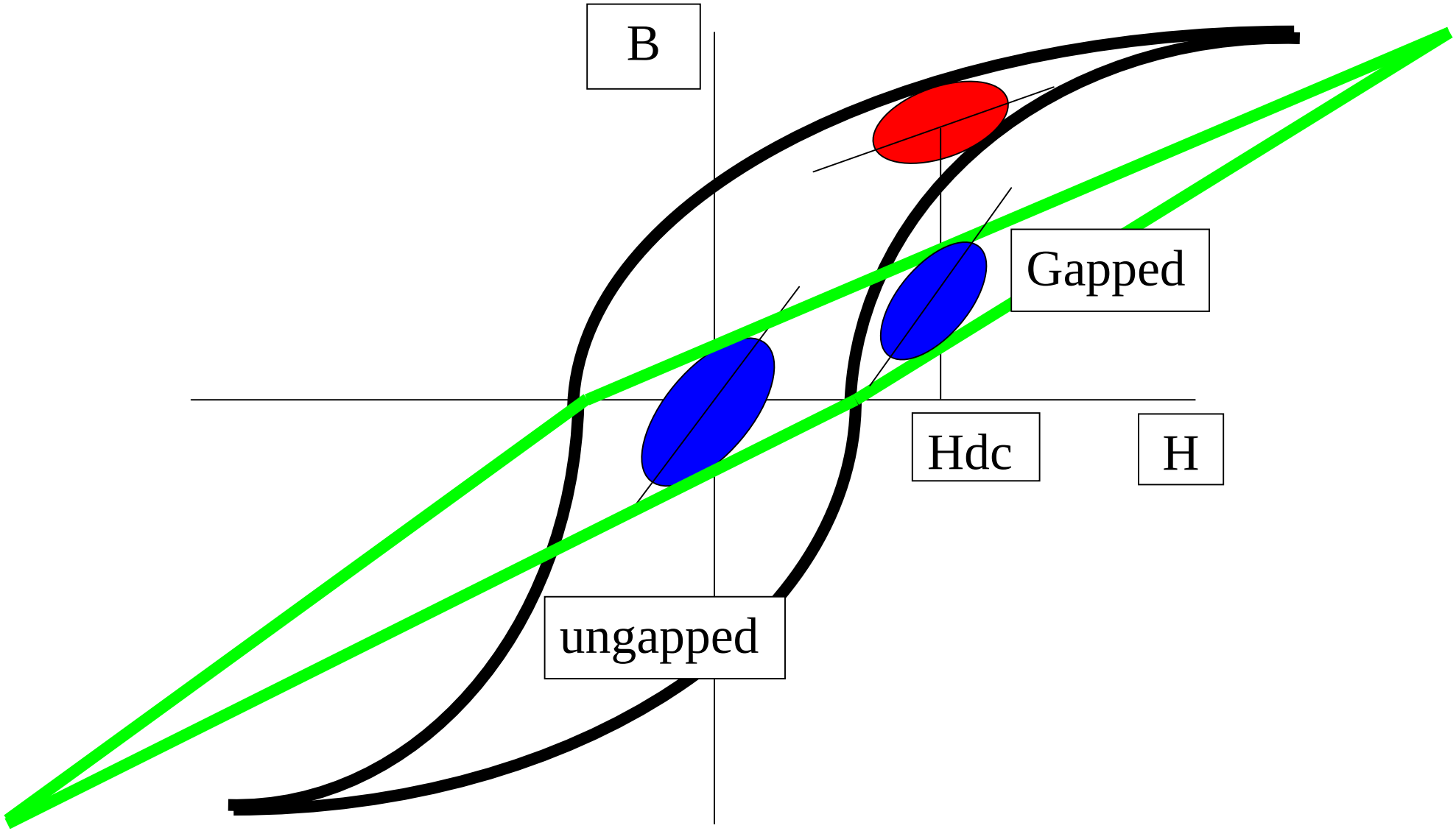
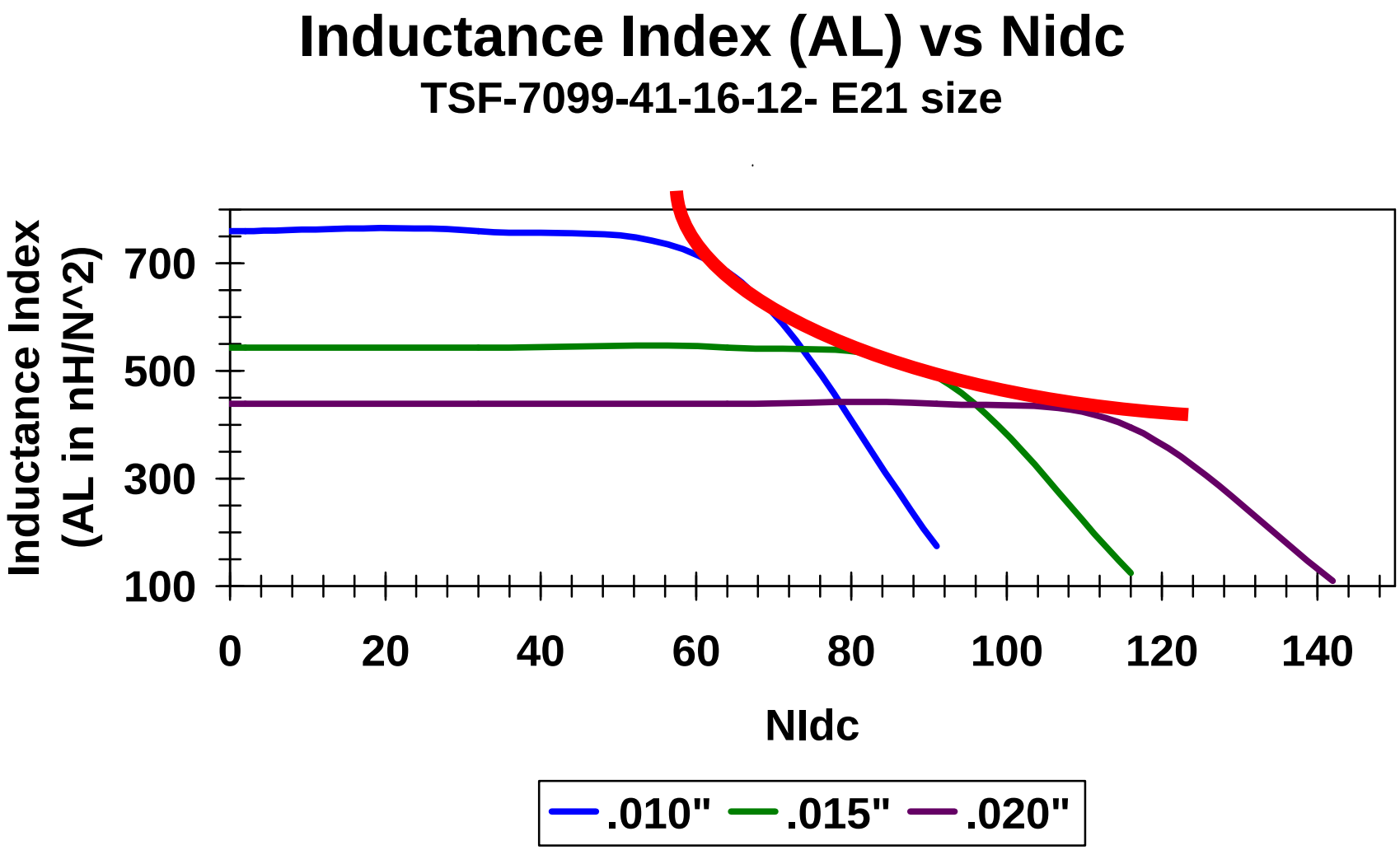
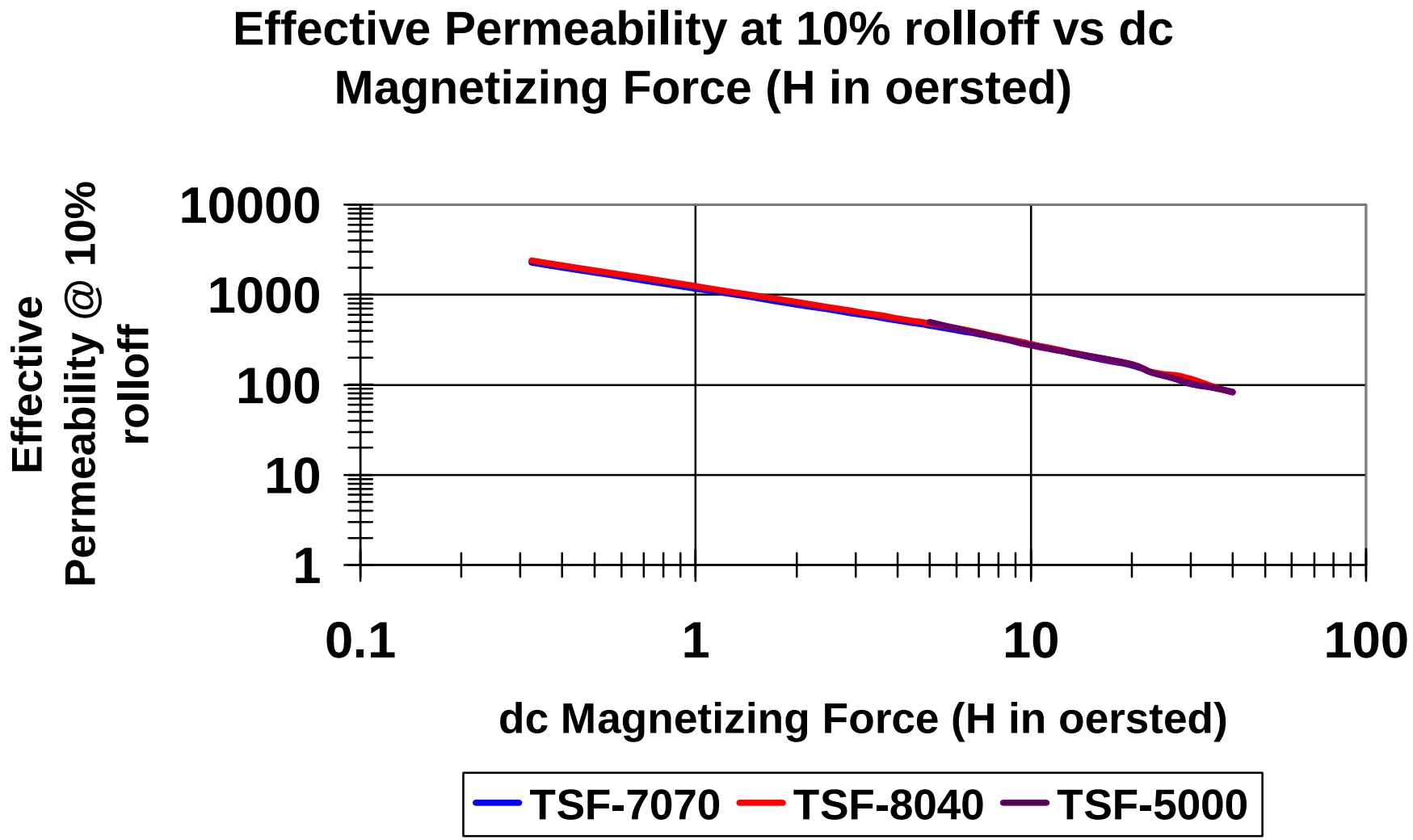


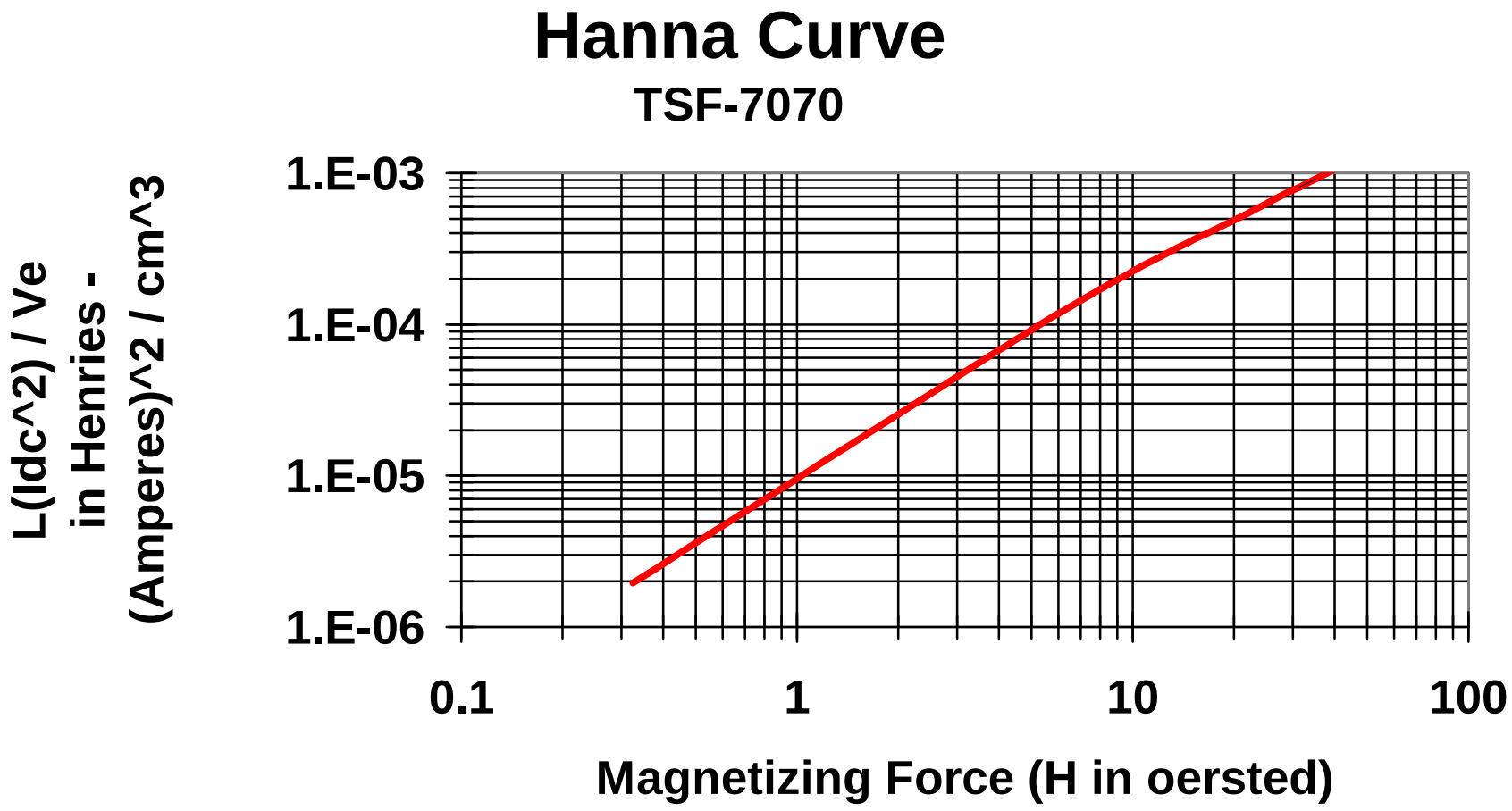


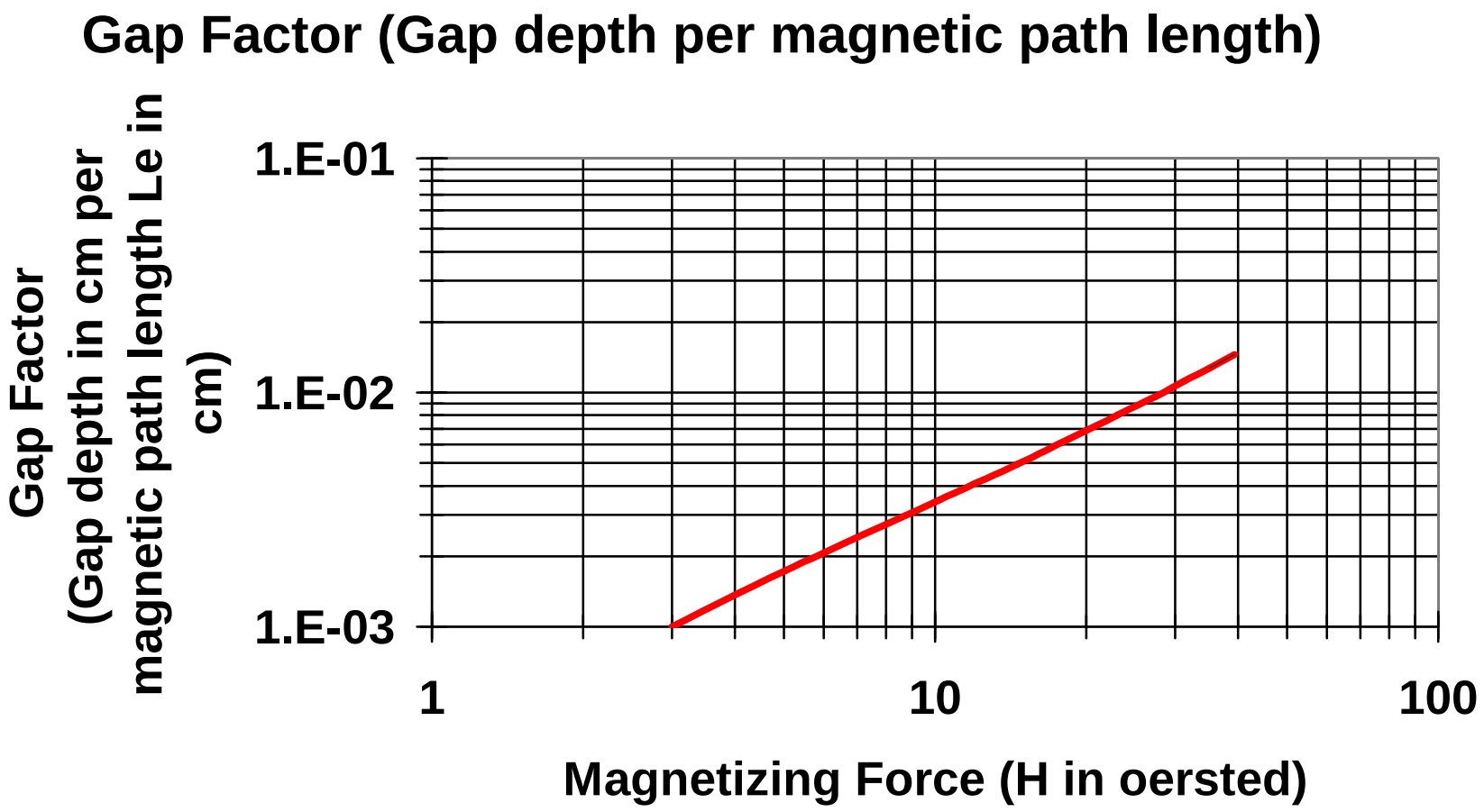
Effective Permeability $\mu_e = L / Lair$

$$\mu_e = (AL)(N^2) / (4\Pi A_e 10^{-9} / L_e)$$

Magnetizing Force (H) $=.4\Pi NIdc/L_e$







$$N = H\,Le / (.4\Pi Idc)$$

N = number of turns
H = magnetizing force in oersteds
Le = magnetic path length in cm
Idc = dc current in amps

$$\text{Gap depth} = GF\,Le / 2.54$$

GF = Gap Factor from curve
Le = magnetic path length in cm

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Part #	Le	Ae	Ve	Wa	L	Idc
TSF-7070-25-10-13	4.899	0.787	3.856	0.850	0.001	1.0
TSF-7070-25-16-06	7.408	0.399	2.954	1.652	0.001	1.0
TSF-7070-25-10-06	4.899	0.394	1.928	0.850	0.001	1.0

Part #	LIdc/Ve	H	N	NIdc	AL	Lair	Perm	Gap
TSF-7070-25-10-13	2.59E-4	12	47	47	457	2.02	226	0.0077
TSF-7070-25-16-06	3.39E-4	15	88	88	128	0.68	189	0.0146
TSF-7070-25-10-06	5.19E-4	21	82	82	149	1.01	148	0.0135

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