XFlux®

Material Property Curves

- DC Magnetization Curves
- Core Loss Density Curves
- Permeability versus Temperature Curves
- Permeability versus DC Bias Curves
- Permeability versus Frequency Curves
- Permeability versus AC Flux Curves
- Core Selection Chart

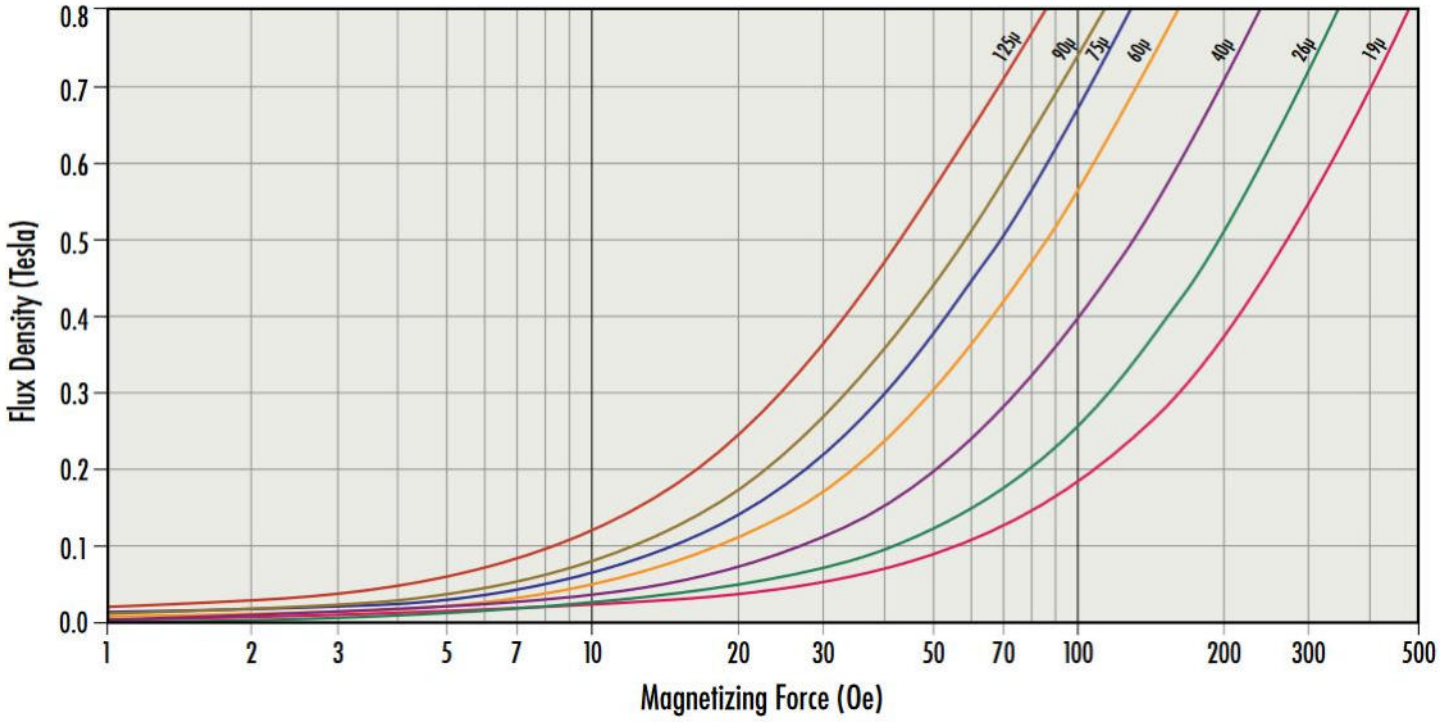
DC Magnetization Curves

Fit Formula

$$B = \left[\frac{a + bH + cH^2}{1 + dH + eH^2}\right]^x$$ where B = Tesla (T), H = Oersteds (Oe)

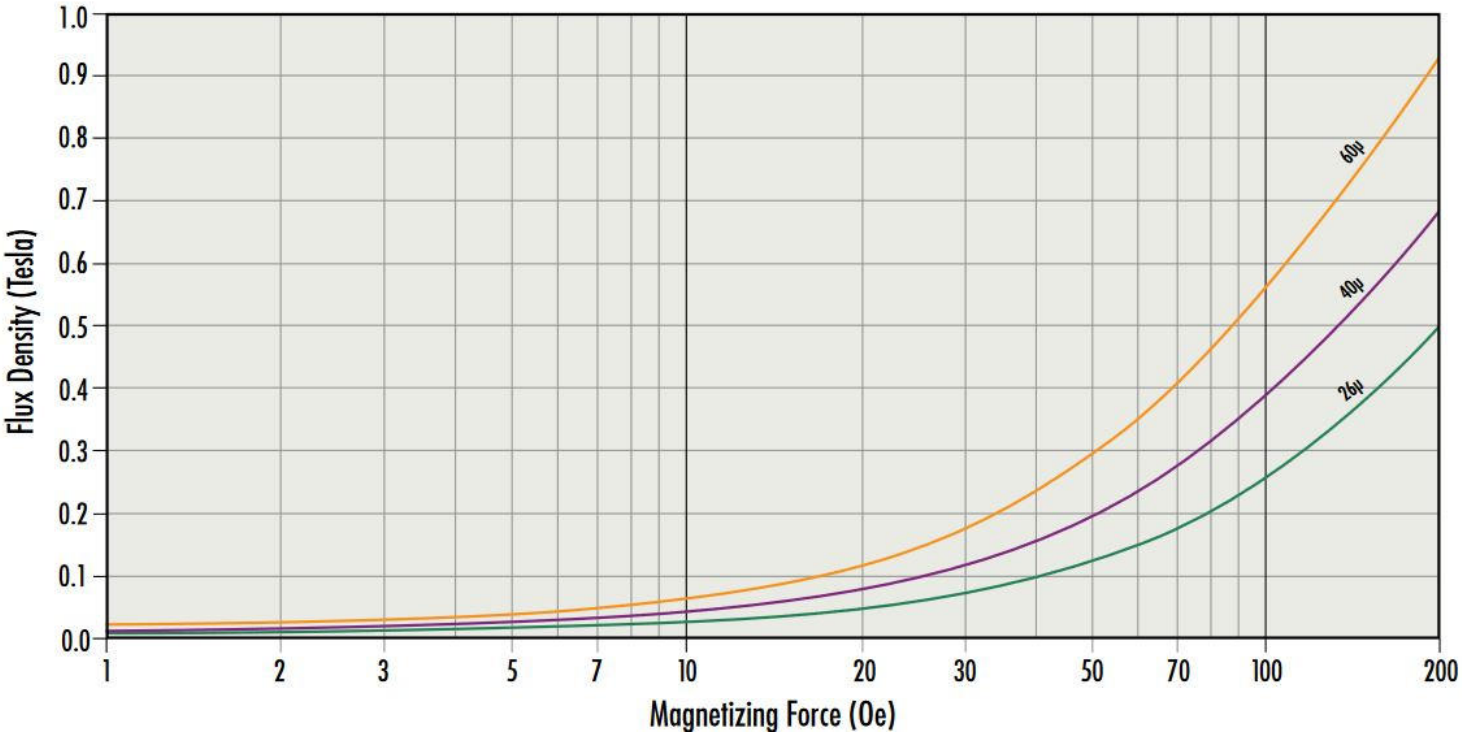
	Perm	a	b	c	d	e	x
XFlux® Toroids	19μ	3.986E-02	2.164E-02	5.311E-04	1.504E-01	3.344E-04	1.783
	26μ	4.042E-02	2.042E-02	5.962E-04	1.164E-01	3.934E-04	1.872
	40μ	5.119E-02	1.602E-02	6.640E-04	9.034E-02	4.405E-04	1.679
	60μ	3.880E-02	1.648E-02	6.982E-04	6.611E-02	4.705E-04	1.623
	75μ	4.142E-02	1.414E-02	7.119E-04	5.584E-02	4.648E-04	1.461
	90μ	3.621E-02	1.987E-02	6.675E-04	4.921E-02	4.657E-04	1.542
	125μ	3.814E-02	1.729E-02	6.277E-04	3.363E-02	4.649E-04	1.307
XFlux® E Cores, U Cores & Blocks	26μ	1.126E-01	2.161E-02	4.759E-04	8.359E-02	3.582E-04	2.224
	40μ	1.318E-01	2.607E-02	7.203E-04	8.601E-02	5.547E-04	2.245
	60μ	9.021E-02	1.098E-02	5.520E-05	1.094E-02	3.781E-05	1.642
XFlux® EQ Cores	26μ	5.323E-02	1.676E-02	5.699E-04	1.331E-01	2.869E-04	1.643
	40μ	1.870E-01	4.023E-02	9.117E-04	1.125E-01	6.537E-04	2.685
	60μ	5.234E-02	1.533E-02	7.304E-04	7.100E-02	4.452E-04	1.583
	75μ	5.314E-02	1.469E-02	7.596E-04	5.794E-02	4.911E-04	1.518

XFlux® Toroids

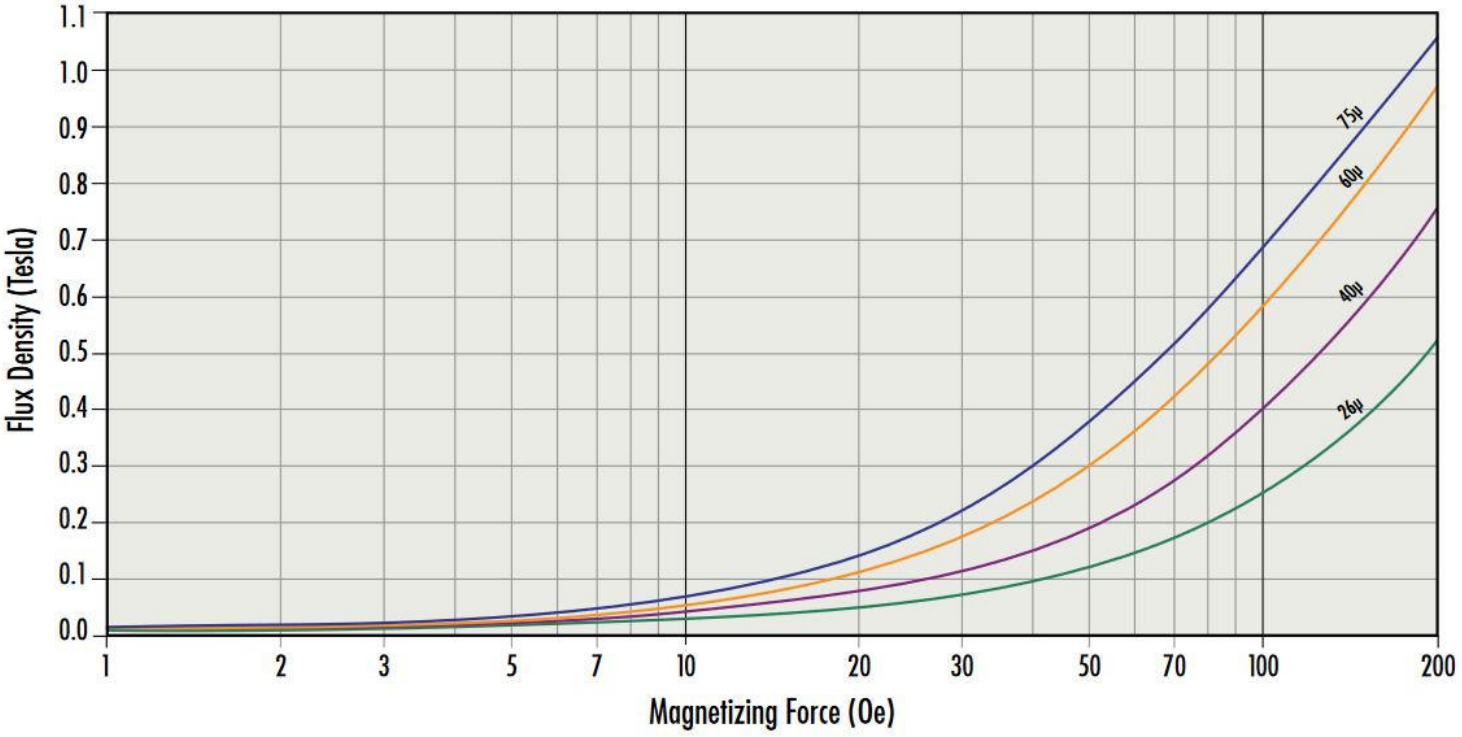


DC Magnetization Curves

XFLUX® E Cores, U Cores & Blocks



XFLUX® EQ Cores



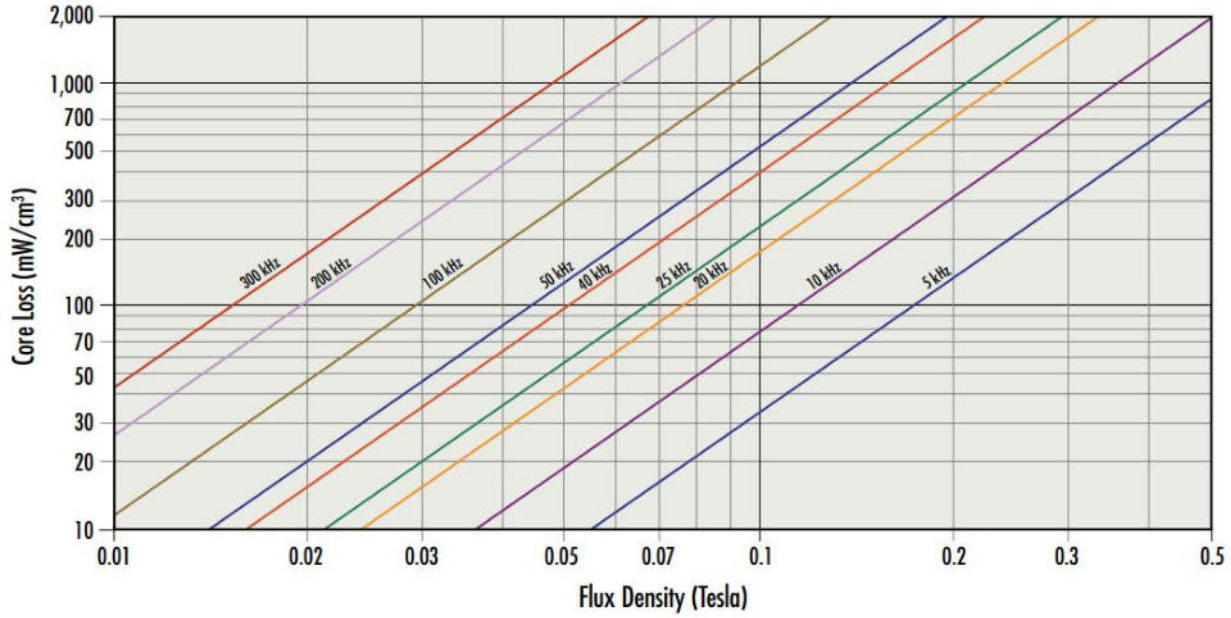
Core Loss Density Curves

Fit Formula

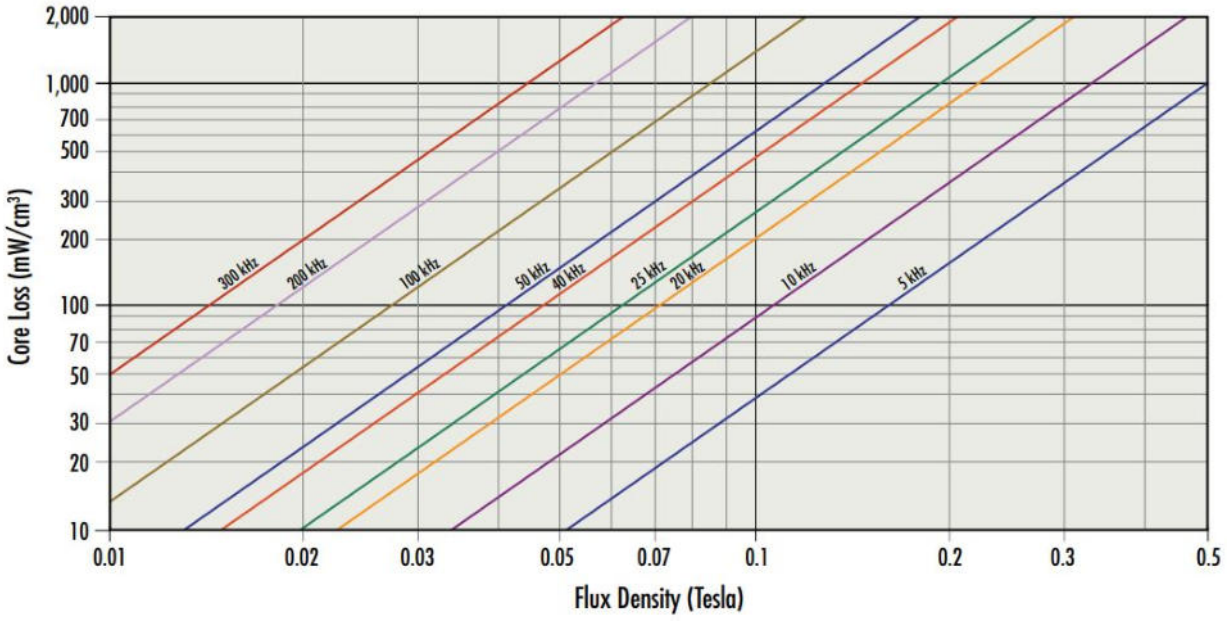
$P = aB^bf^c$ where B = Tesla (T), f = kilohertz (kHz)

	Perm	a	b	c
XFLUX® Toroids	19µ	509.27	2.015	1.194
	26µ, 40µ	581.54	2.015	1.194
	60µ, 75µ, 90µ, 125µ	542.77	2.015	1.194
XFLUX® E Cores, U Cores & Blocks	26µ	242.31	2.015	1.194
	40µ	387.69	2.015	1.194
	60µ	436.16	2.015	1.194
XFLUX® EQ Cores	26µ	165.70	2.182	1.509
	40µ	425.80	2.209	1.250
	60µ	644.20	2.192	1.152

XFLUX® Toroids 19µ

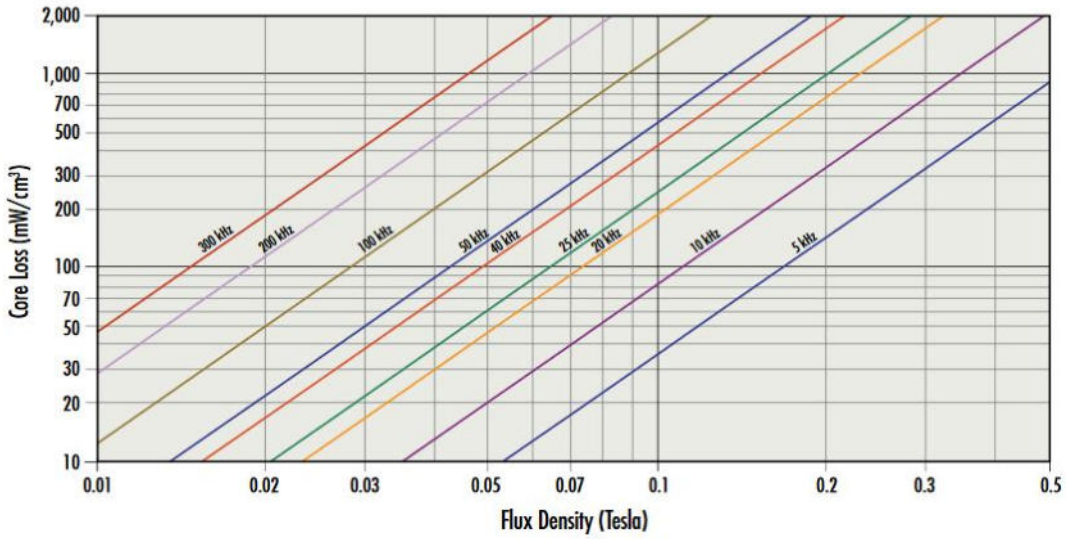


XFLUX® Toroids 26µ, 40µ

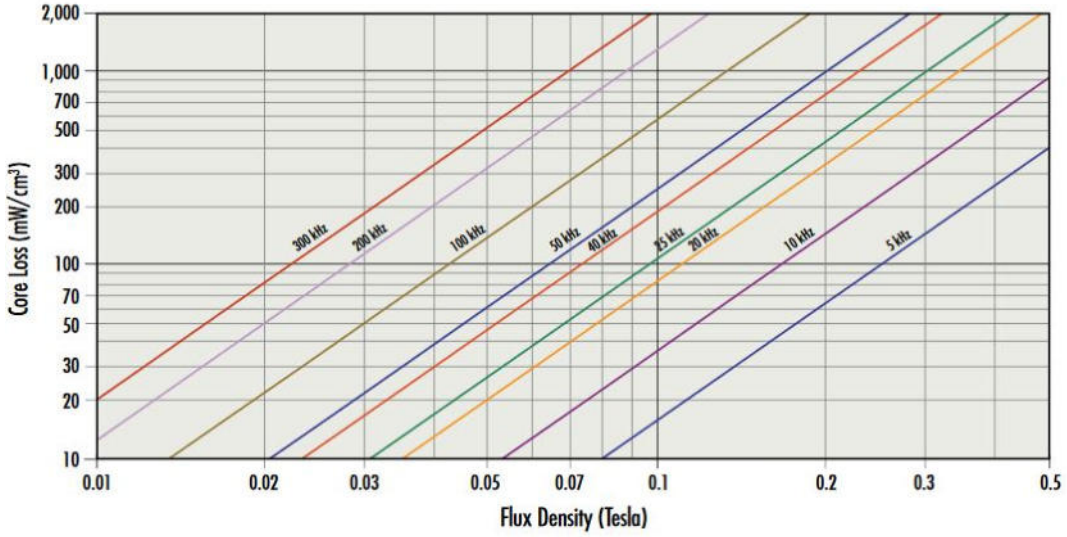


Core Loss Density Curves

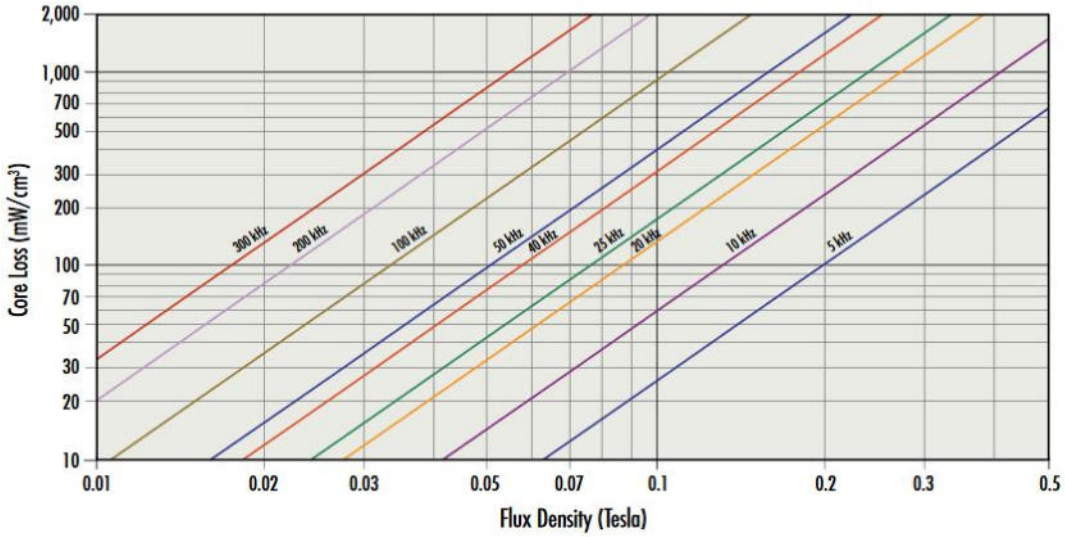
XFLUX® Toroids 60µ, 75µ, 90µ, 125µ



XFLUX® E Cores, U Cores & Blocks 26µ

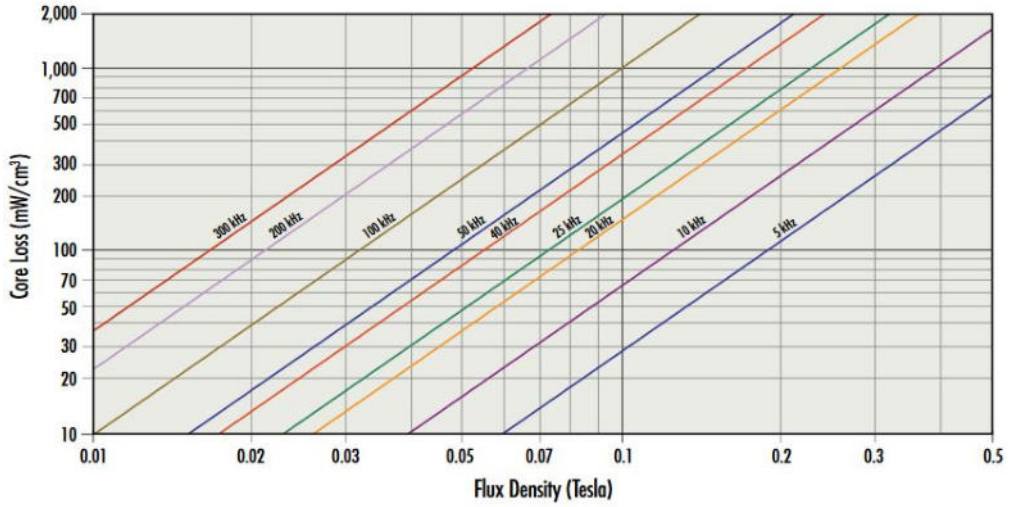


XFLUX® E Cores, U Cores & Blocks 40µ

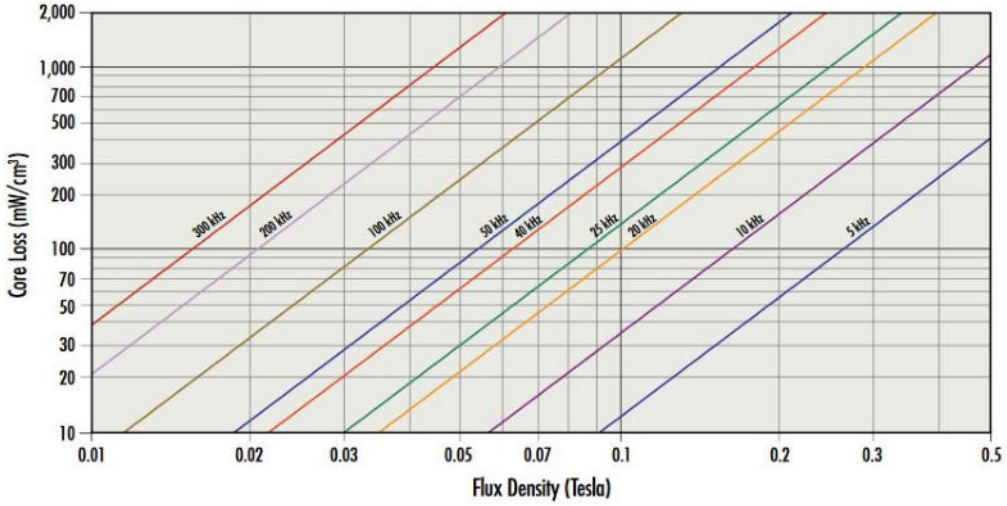


Core Loss Density Curves

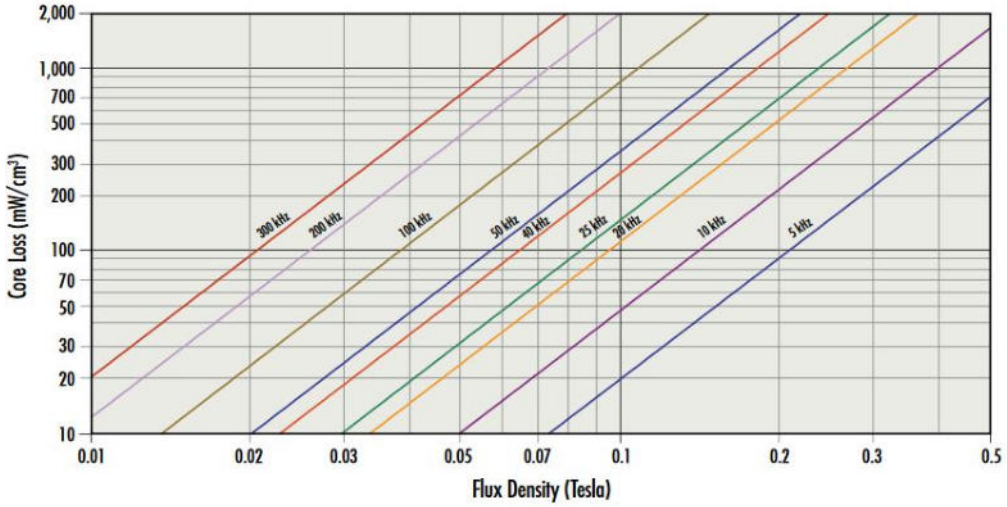
XFLux® E Cores, U Cores & Blocks 60µ



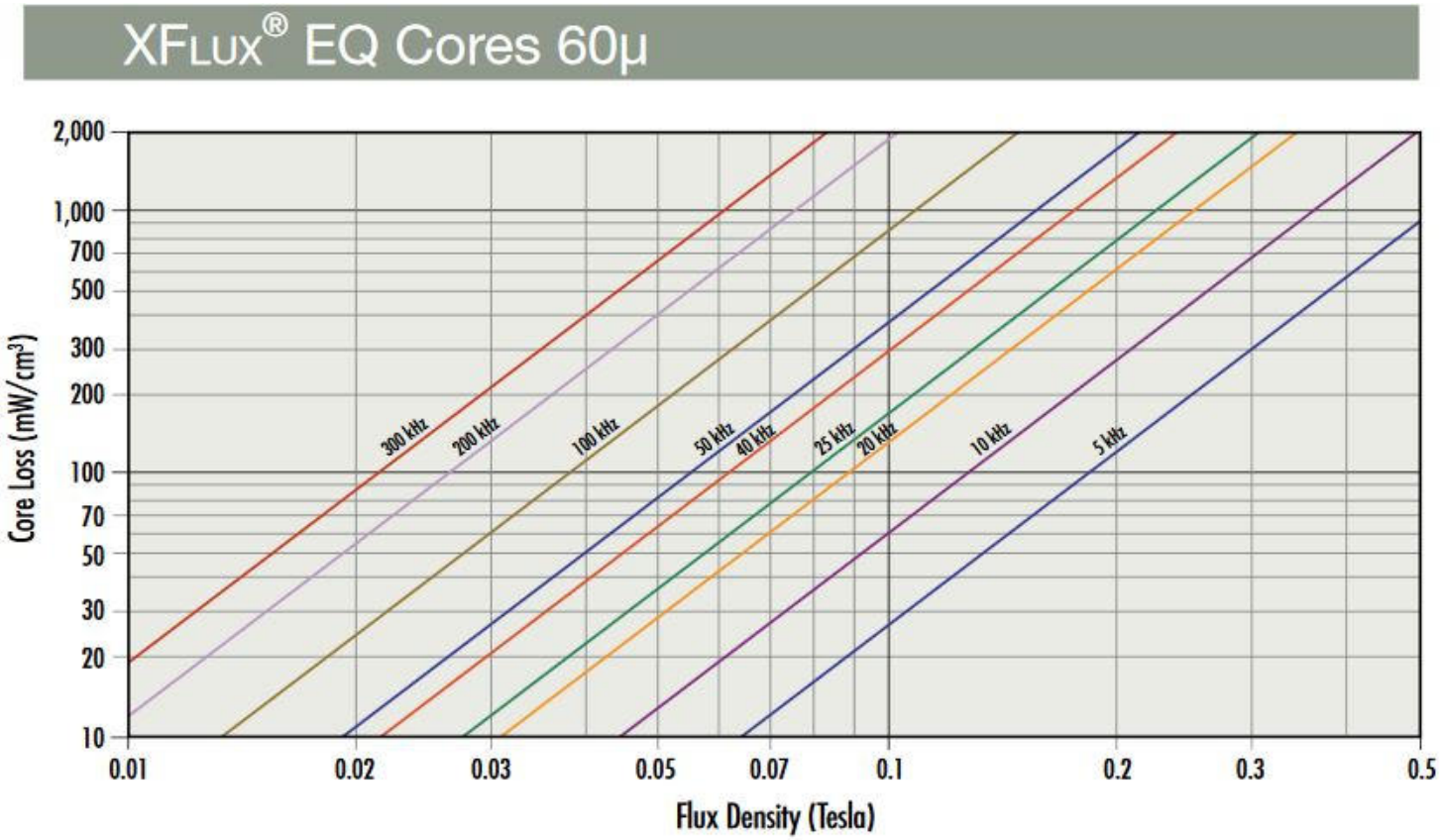
XFLux® EQ Cores 26µ



XFLux® EQ Cores 40µ

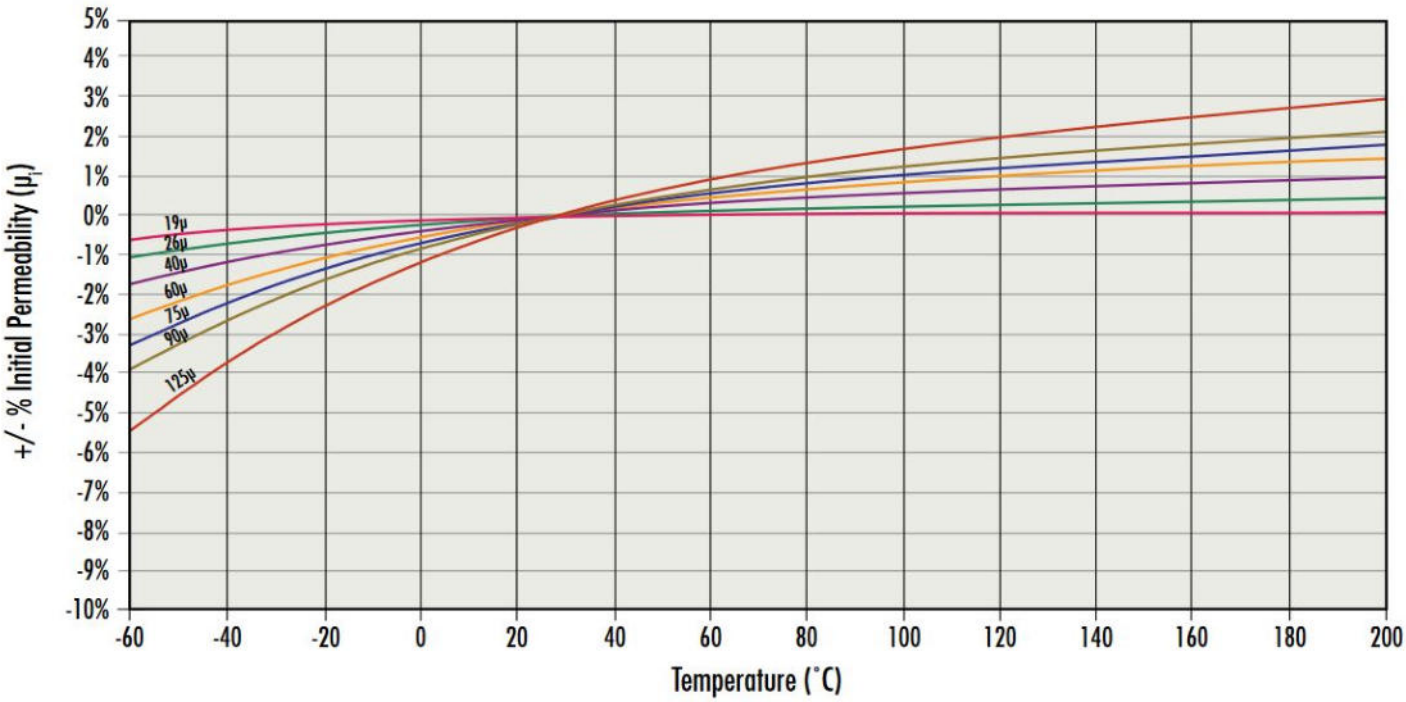


Core Loss Density Curves



Permeability versus Temperature Curves

XFLUX®



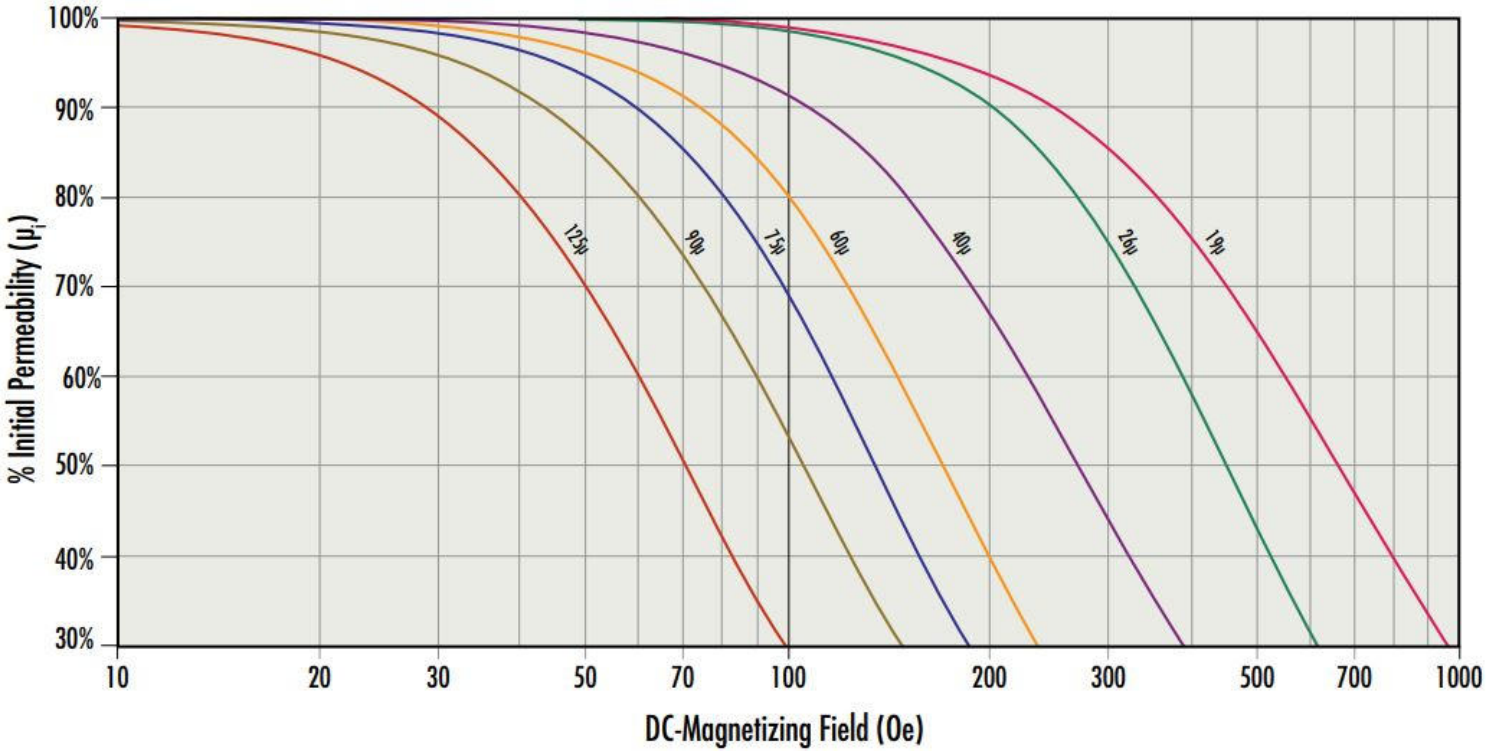
Fit Formula

$$\text{Change compared with } \mu_{25^\circ C} = \frac{\mu_T - \mu_{25^\circ C}}{\mu_{25^\circ C}} = a + bT + cT^2 + dT^3 + eT^4$$

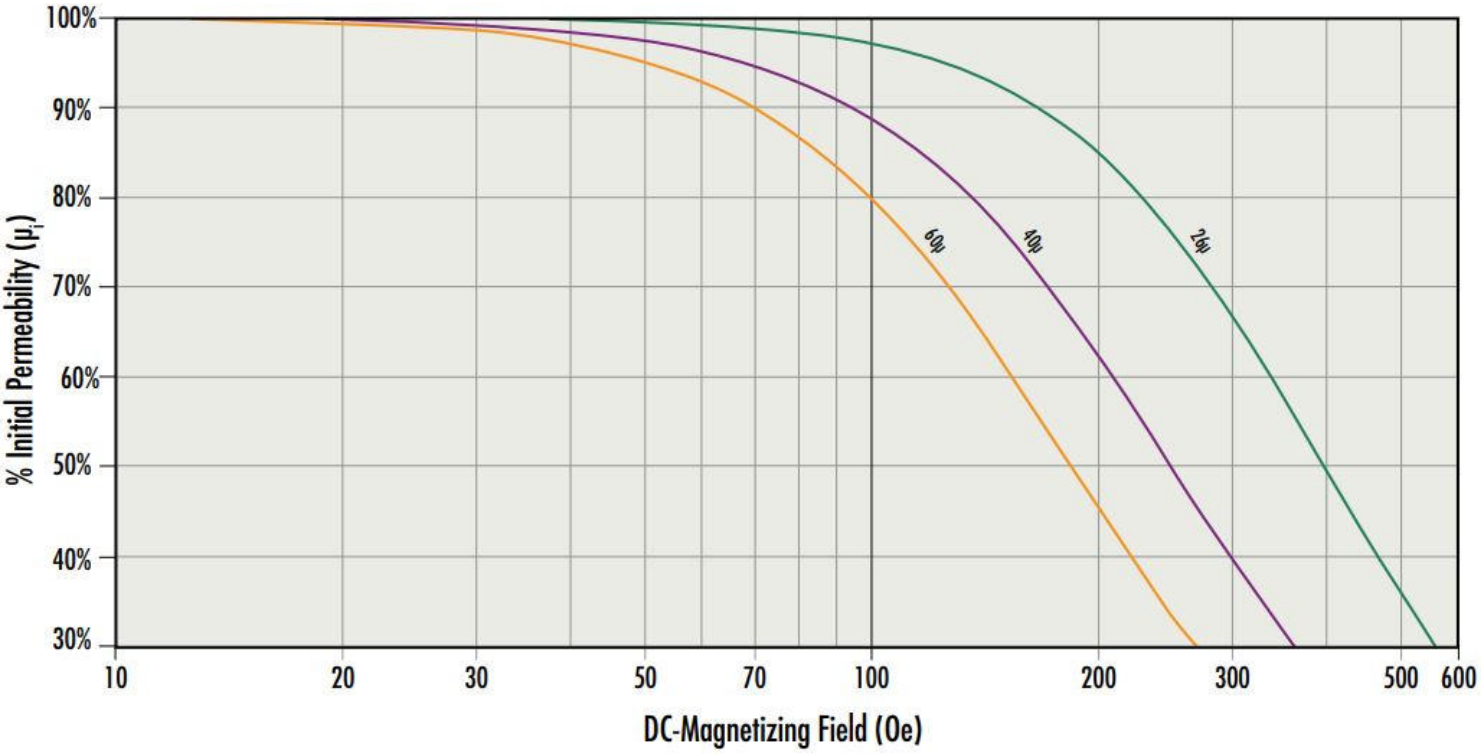
	Perm	a	b	c	d	e
XFLUX®	19μ	-8.147E-04	4.387E-05	-5.911E-07	3.367E-09	-6.573E-12
	26μ	-2.000E-03	8.887E-05	-6.792E-07	2.949E-09	-4.823E-12
	40μ	-3.723E-03	1.578E-04	-9.501E-07	3.325E-09	-4.372E-12
	60μ	-5.585E-03	2.367E-04	-1.425E-06	4.988E-09	-6.558E-12
	75μ	-6.981E-03	2.959E-04	-1.781E-06	6.234E-09	-8.198E-12
	90μ	-8.377E-03	3.551E-04	-2.138E-06	7.481E-09	-9.837E-12
	125μ	-1.163E-02	4.931E-04	-2.969E-06	1.039E-08	-1.366E-11

Permeability versus DC Bias Curves

XFLUX® Toroids

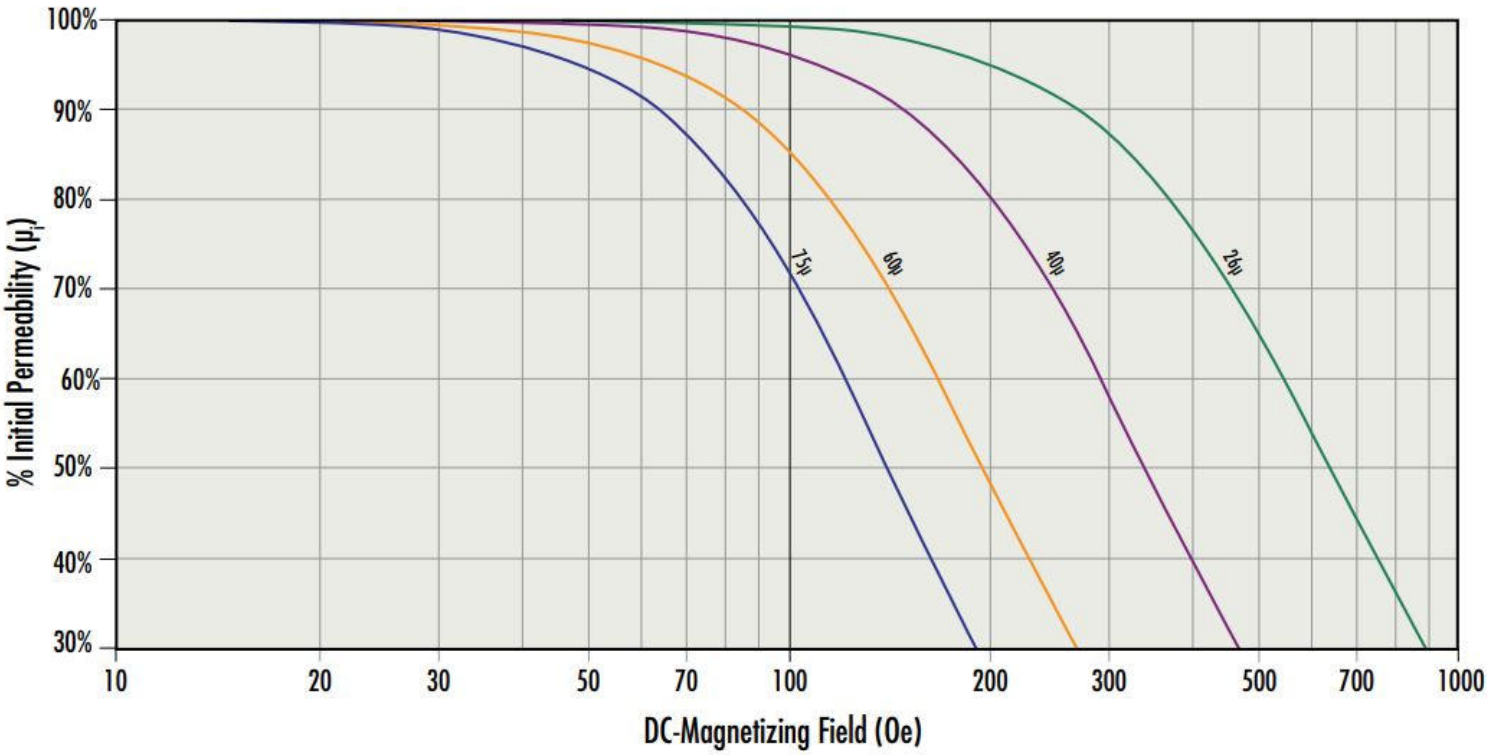


XFLUX® E Cores, U Cores & Blocks



Permeability versus DC Bias Curves

XFLUX® EQ Cores



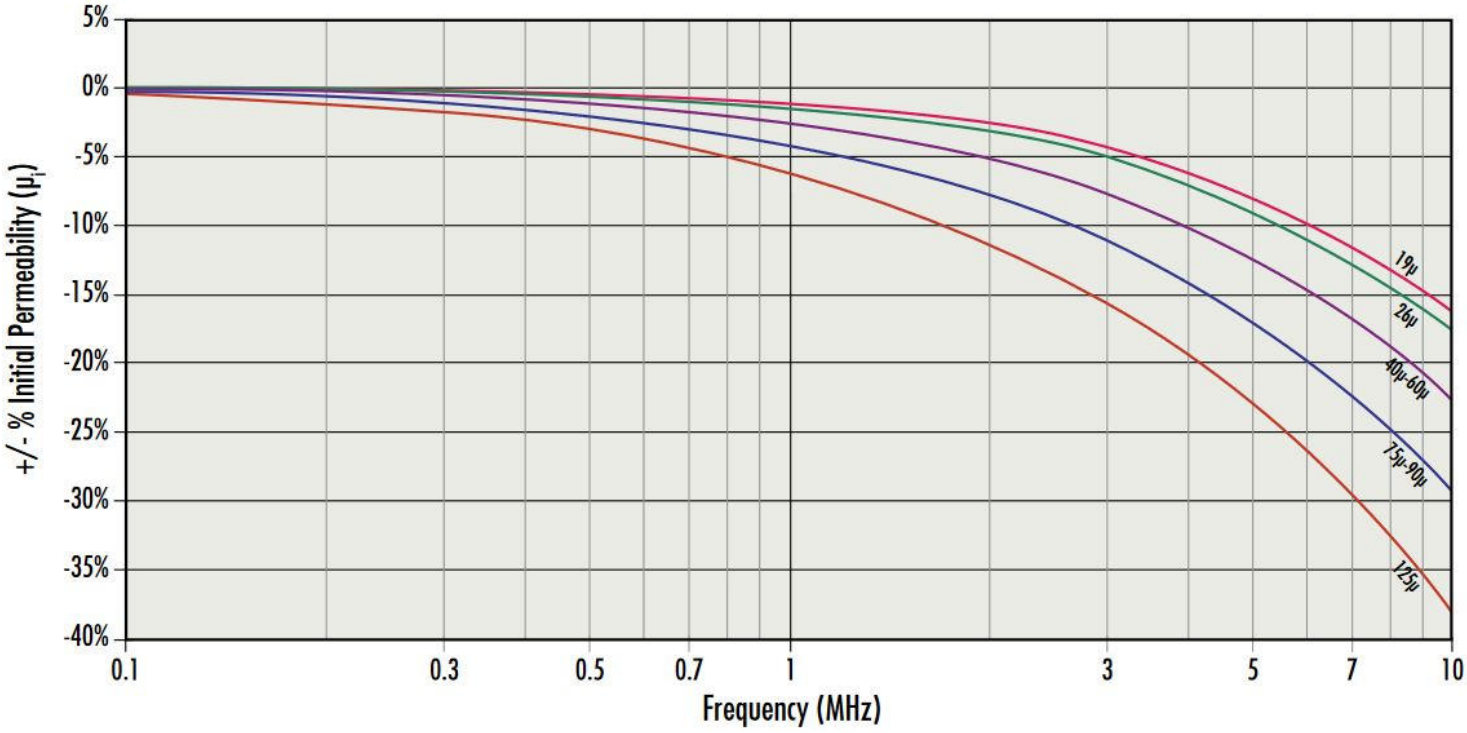
Fit Formula

$$\% \text{ initial permeability} = \frac{1}{(a + bH^c)} \quad \text{where H is Oersteds (Oe)}$$

	Perm	a	b	c
XFLUX® Toroids	19μ	0.01	4.976E-09	2.236
	26μ	0.01	6.304E-10	2.714
	40μ	0.01	1.843E-08	2.358
	60μ	0.01	1.489E-08	2.613
	75μ	0.01	2.269E-08	2.649
	90μ	0.01	9.841E-08	2.477
	125μ	0.01	2.687E-07	2.477
XFLUX® E Cores, U Cores & Blocks	26μ	0.01	3.031E-09	2.505
	40μ	0.01	4.028E-08	2.250
	60μ	0.01	7.781E-08	2.253
XFLUX® EQ Cores	26μ	0.01	7.955E-10	2.530
	40μ	0.01	2.434E-09	2.613
	60μ	0.01	9.731E-09	2.625
	75μ	0.01	1.091E-08	2.778

Permeability versus Frequency Curves

XFLUX®



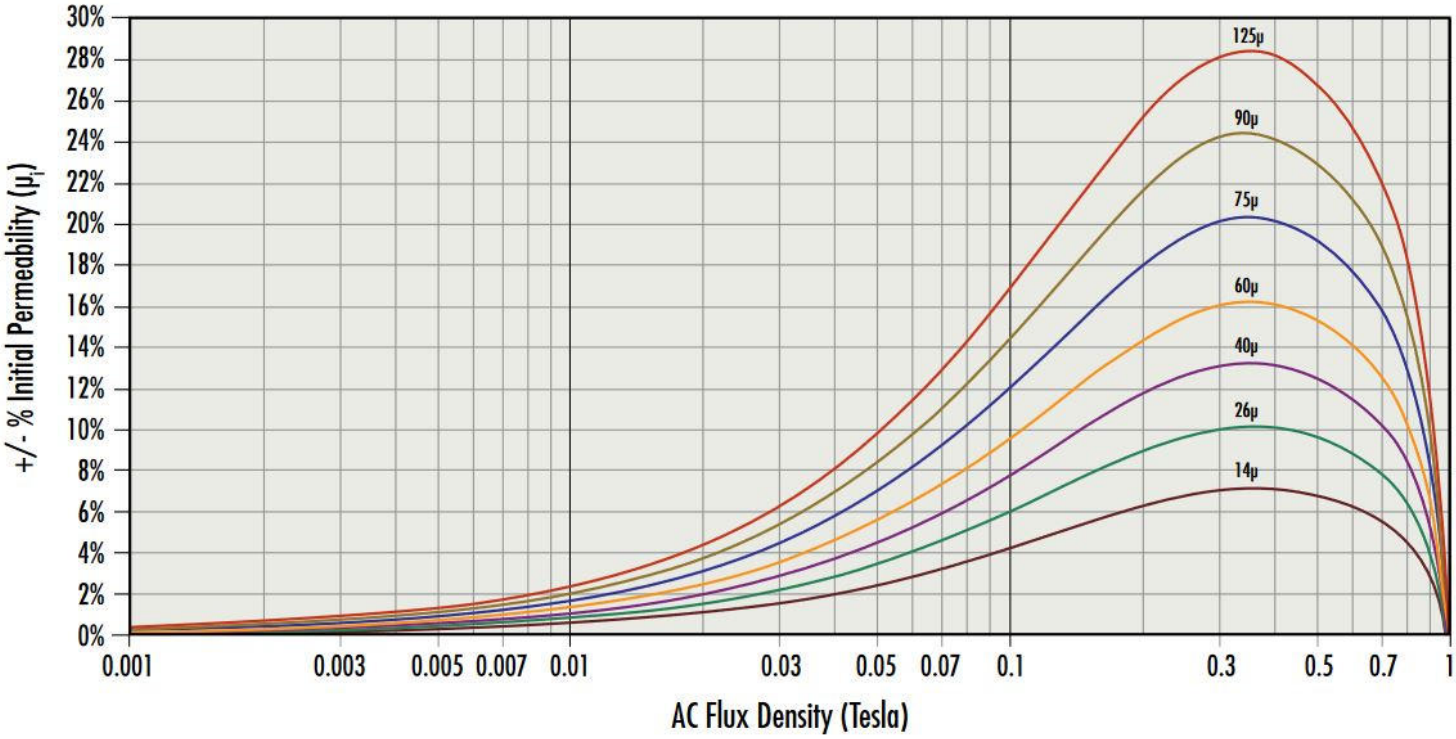
Fit Formula

$\pm \%\mu_i = a + bf + cf^2 + df^3 + ef^4$ where f = megahertz (MHz)

	Perm	a	b	c	d	e
XFLUX®	19μ	4.454E-04	-7.911E-03	-3.405E-03	4.290E-04	-1.724E-05
	26μ	6.652E-04	-1.222E-02	-2.602E-03	3.447E-04	-1.399E-05
	40-60μ	1.419E-03	-2.699E-02	1.514E-04	5.563E-05	-2.844E-06
	75-90μ	2.440E-03	-4.699E-02	3.880E-03	-3.358E-04	1.225E-05
	125μ	3.775E-03	-7.315E-02	8.755E-03	-8.477E-04	3.199E-05

Permeability versus AC Flux Curves

XFLUX®



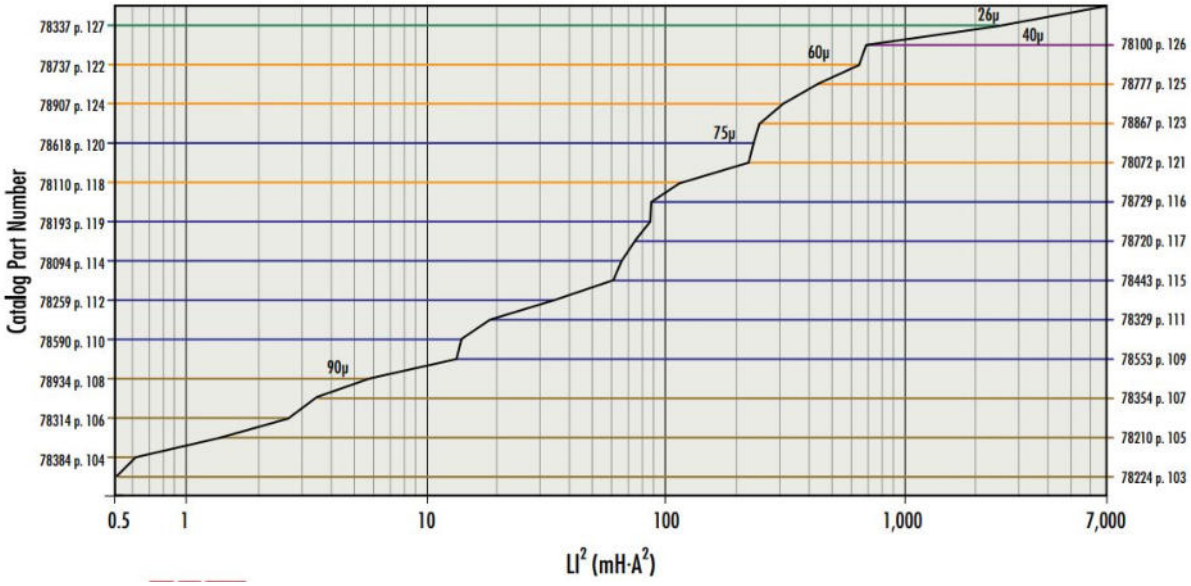
Fit Formula

$$\pm\%\mu_i = (a + bB + cB^2 + dB^3 + eB^4) \quad \text{where B is Tesla}$$

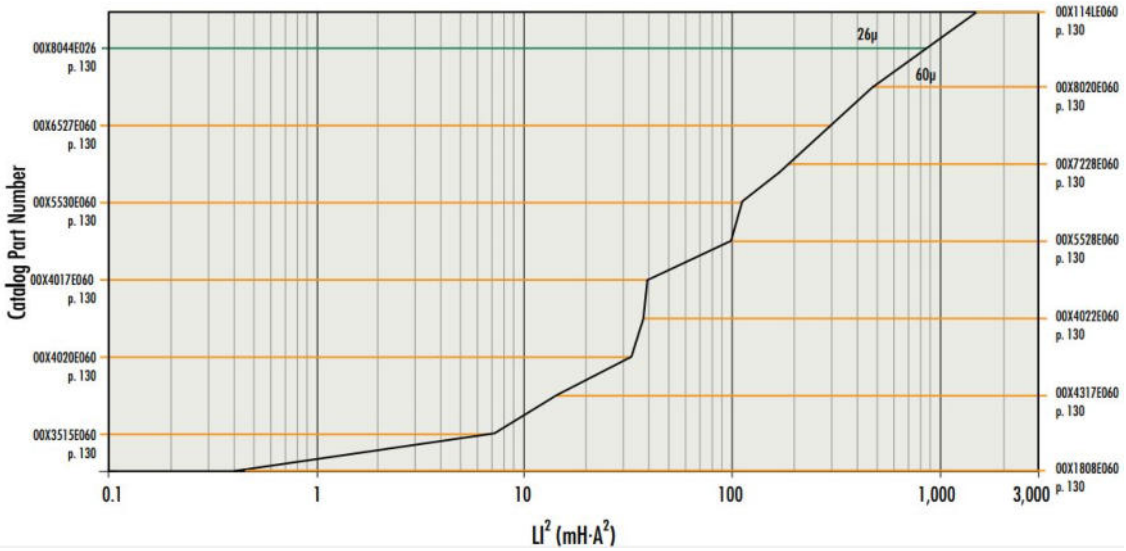
	Perm	a	b	c	d	e
XFLUX®	19μ	4.533E-04	5.521E-01	-1.516E+00	1.750E+00	-7.866E-01
	26μ	6.475E-04	7.888E-01	-2.166E+00	2.499E+00	-1.124E+00
	40μ	8.418E-04	1.025E+00	-2.816E+00	3.249E+00	-1.461E+00
	60μ	1.036E-03	1.262E+00	-3.466E+00	3.999E+00	-1.798E+00
	75μ	1.295E-03	1.578E+00	-4.333E+00	4.999E+00	-2.248E+00
	90μ	1.554E-03	1.893E+00	-5.199E+00	5.999E+00	-2.697E+00
	125μ	1.813E-03	2.209E+00	-6.066E+00	6.998E+00	-3.147E+00

Core selection charts

XFLUX® Toroids



XFLUX® E Cores



XFLUX® EQ Cores