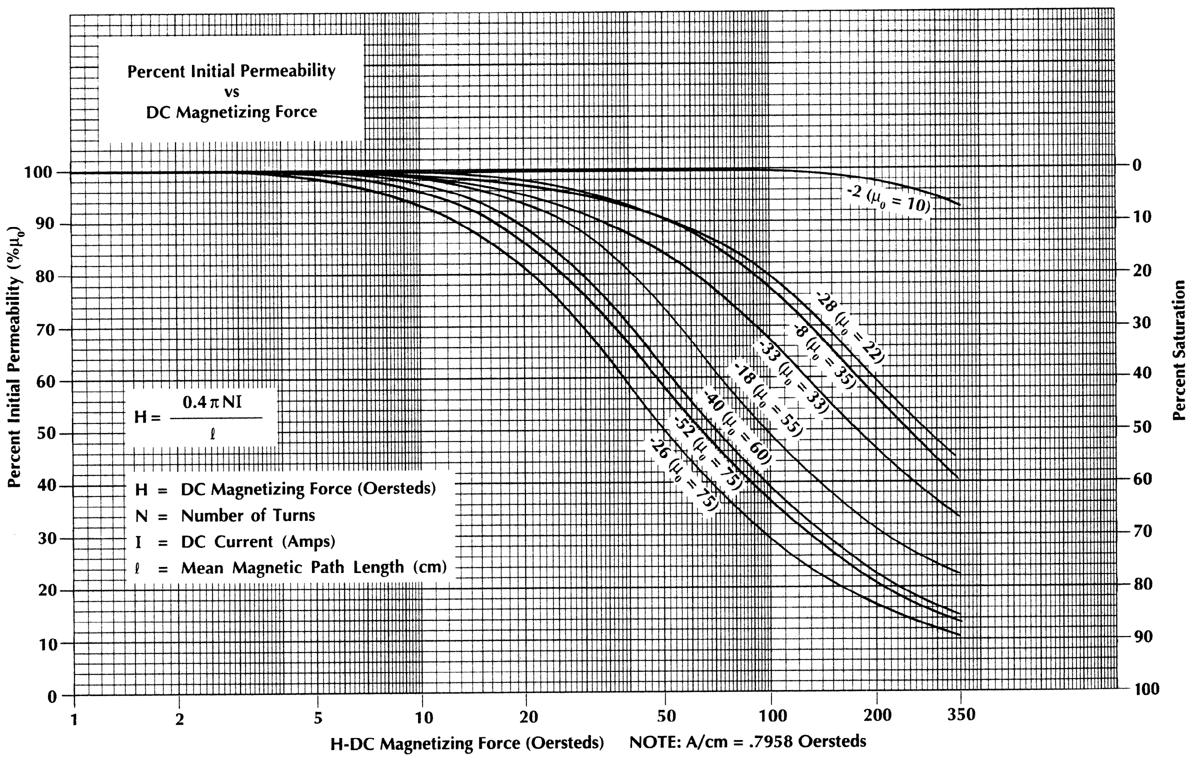
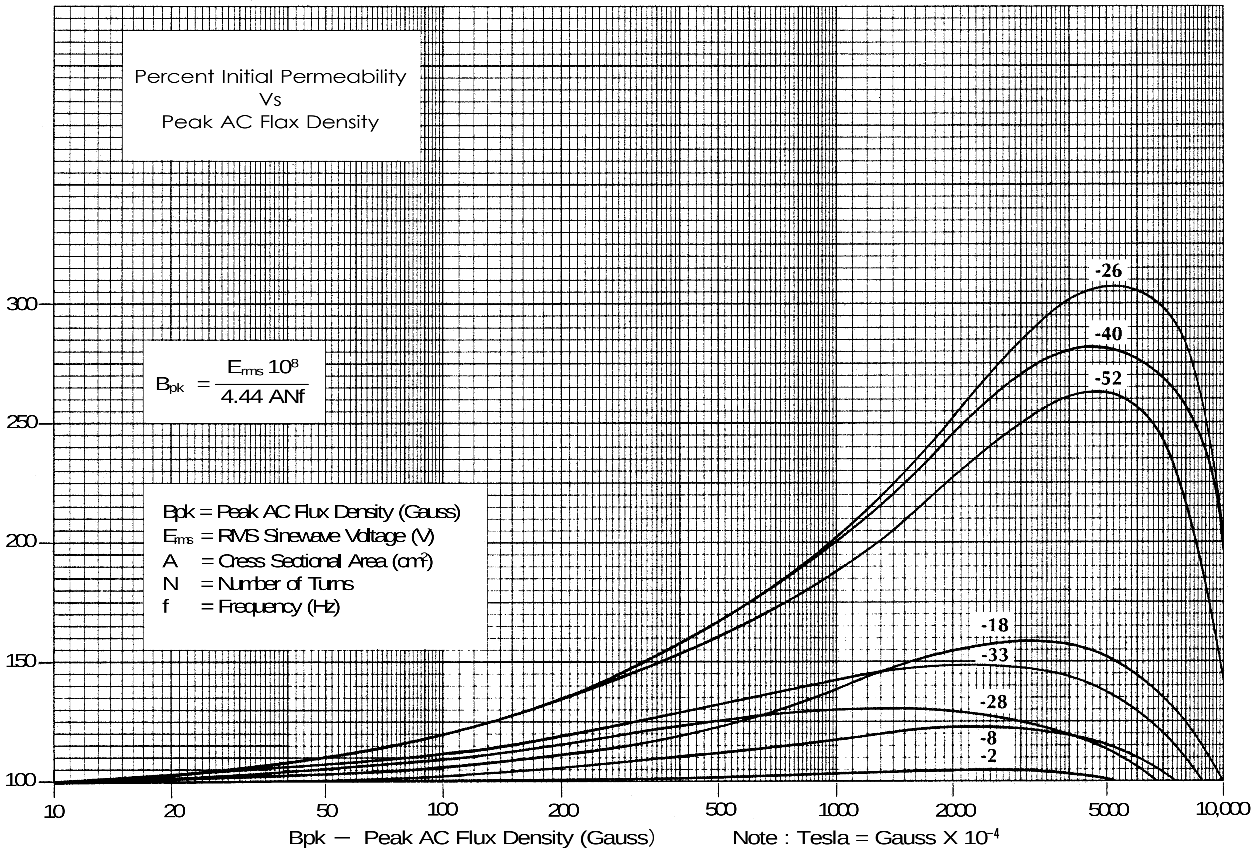
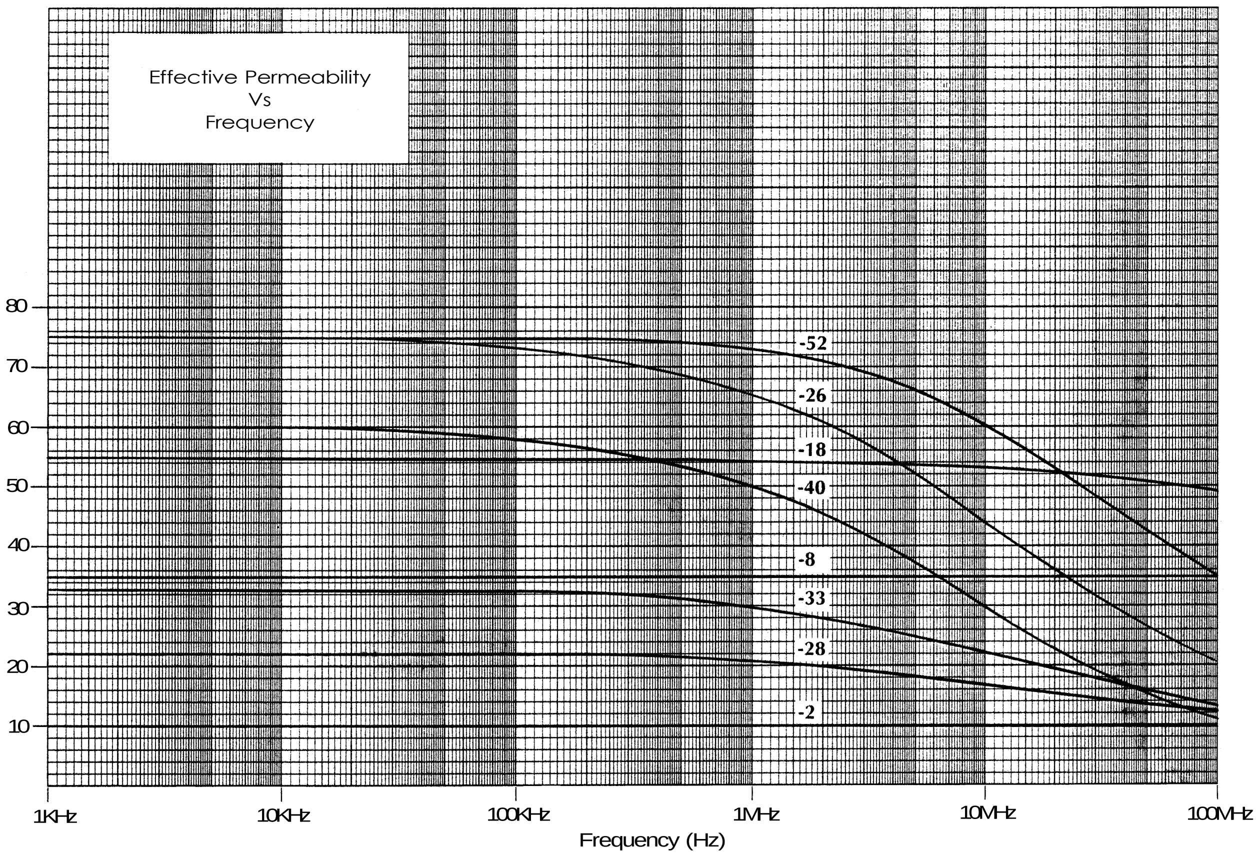
紹介

General information: The magnetic characteristics shown on pages 20-28 result from testing toroidal cores. The magnetization curves on pages 20 and 21 have a typical tolerance of ±10％. Other configurations such as E Cores and U Cores will produce slightly different results due to the effects of leakage associated with the geometry.
These characteristics were measured at room temperature.
The temperature coefficient of initial permeability for each material is listed on page 14. The temperature coefficient of percent permeability versus both DC magnetizing force and peak AC flux density ranges from -100 to -400 ppm/℃.
The combination of these coefficients will generally result in higher inductance at high temperature even under biased conditions. The percent change in permeability is directly proportional to the percent change in AL value. The cores are manufactured to the AL value rather than to the referenced permeability. Since iron powder cores are normally used in inductor applications the magnetization curves provided are in relation to permeability. B-H curves are shown on page 22.
DC Magnetization: The curves at the bottom of this page illustrate the effect of DC Magnetizing force on percent initial permeability for the materials shown. As the level of DC magnetizing force increases, the materials gradually experience a reduction in permeability. This "soft" saturation characteristic results from the distributed air gap in the iron powder core materials. The formula in the body of the graph is used to calculate the DC Magnetizing Force in Oersted. The mean magnetic path(ℓ)for each core is included in the part number listing. These curves are based on a peak AC flux density of 10 gauss(1 mT). The response to DC magnetizing force is affected by the level of peak AC flux density present.
AC Magnetization: The curves at the top of page 21 illustrate the effect of Peak AC Flux Density on percent initial permeability. As the level of peak AC flux density increases, the materials experience an increase in permeability up to an AC flux density of between 3000 and 6000 gauss. Beyond this level, the material begins to saturate. These curves are the result of tests performed from 60 Hz to 10 KHz. The formula in the body of the graph is used to calculate the peak AC flux density in gauss. The Cross-Sectional Area(A)for each core is included in the part number listing· The AL values listed are based on a peak AC flux density of 10 gauss (ImT).Testing cores at a higher flux density can have a significant effect on measured results.
Frequency Response: The curves at the bottom of page 21 show how the permeability of each materials affected by frequency·
A typical coil wound with multiple turns will have a measurable amount of intertwining capacitance which acts in parallel with the coil . This intertwining capacitance will cause the coil to become self-resonant. In order to avoid this effect, the data at the highest frequencies was taken with a single turn.




Percent Initial Permeability
Vs
Peak AC Flax Density
$B_{pk} = \frac{E_{rms}\,10^8}{4.44\,ANf}$
Bpk = Peak AC Flux Density (Gauss)
E_{rms} = RMS Sinewave Voltage (V)
A = Cress Sectional Area (cm^2)
N = Number of Turns
f = Frequency (Hz)
-26
-40
-52
-18
-33
-28
-8
-2
300
250
200
150
100
10
20
50
100
200
500
1000
2000
5000
10,000
Bpk — Peak AC Flux Density (Gauss)
Note : Tesla = Gauss X 10^{-4}


Effective Permeability
Vs
Frequency
-52
-26
-18
-40
-8
-33
-28
-2
80
70
60
50
40
30
20
10
1KHz
10KHz
100KHz
1MHz
10MHz
100MHz
Frequency (Hz)