When H is now decreased, the B-H loop transverses a path to Br (remanent flux density), where H is zero and the core is still magnetized. The magnetizing force H is now reversed to give a negative value. The magnetizing force required to reduce the flux Br to zero is called the coercive force (Hc). Along the initial magnetization curve, B increases from the origin nonlinearly with H until the material saturates. In practice, the magnetization of a core in an excited inductor never follows this curve, because the core is never in the totally demagnetized state when the magnetizing force is first applied.

Flux Density, Magnetic Induction, B [Gauss ; Tesla]
The corresponding parameter for the induced magnetic field in an area perpendicular to the flux path. Flux density is determined by the field strength and permeability of the medium in which it is measured. $1T=10^4$ Gauss

Incremental Permeability (μ_Δ) Refer to Permeability.

Inductor
A passive device that prevents a variance of the current. Magnetic flux is induced in the inductor when current flows through the inductor, and the voltage induced by magnetic flux prevents the change of current. Induced voltage

$\xi = L \cdot di/dt$

Initial Permeability (μ_i) Refer to Permeability.

Leakage Flux
Leakage flux is the small fraction of the total magnetic flux in a transformer or common mode choke that does not contribute to the magnetic coupling of the windings of the device. The presence of leakage flux in a transformer or common mode choke is modeled as a small "leakage" inductance in series with each winding. In a multi-winding choke or transformer, leakage inductance is the inductance measured at one winding with all other windings short circuited.

Litz Wire
A wire made by twisting and bundling some insulated wire. It can decrease the copper loss at high frequency by reducing the skin effect.

Magnetic Hysteresis Refer to Hysteresis Loop.

Magnetizing Force, H [Oe ; A/m]
The magnetic field strength which produces magnetic flux. The mmf per unit length. H can be considered to be a measure of the strength or effort that the magnetomotive force applies to magnetic circuit to establish a magnetic field. H may be expressed as $H=NI/\ell$, where ℓ is the mean length of the magnetic circuit in meters.
1 oersted=79.58A/m

Mean Magnetic Path Length (ℓ)
The effective magnetic path length of a core structure (cm). Refer to Magnetic Design Formulae.

Normal Mode Noise Refer to Differential Mode Noise.

Noise
Unnecessary electrical energy arises in circuit. The main cause of it is clock signal in switching or digital circuit.

Operating Temperature Range
The temperature where a device can be operated normally. Above this temperature, the characteristics of the device become inferior or the device may be operated abnormally. In case of the inductor, this temperature means the temperature rise by the copper loss or core loss. Refer to temperature rise.

Permeability (μ)
In magnetics, permeability is the ability of a material to conduct flux. The magnitude of the permeability at a given induction is a measure of the ease with which a core material can be magnetized to that induction. It is defined as the ratio of the flux density B to the magnetizing force H.

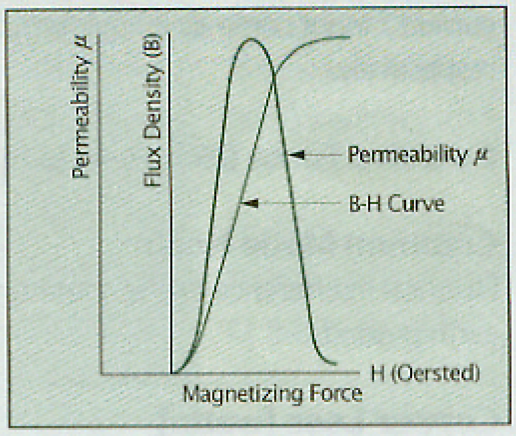

Figure 3. Variation of μ along the Magnetization Curve

Permeability : μ = B/H [Gauss/Oersted]

The slope of the initial magnetization curve at any given point gives the permeability at that point. Permeability can be plotted against a typical B-H curve as shown in Figure 3 Permeability is not constant, therefore its value can be stated only at a given value of B or H. There are many different kinds of permeability.

Absolute Permeability (μ_o) Permeability in a vacuum

Initial Permeability (μ_i)
Slope of the initial magnetization curve at the origin, that is, the value of permeability at a peak AC flux density of 10 gauss (1 millitesla).

μ= B/H (Figure 4)

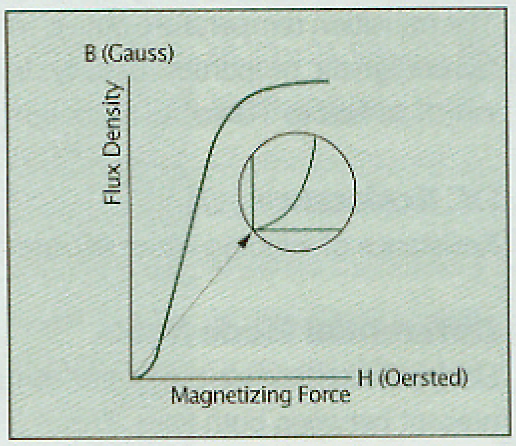

Figure 4. Initial Permeability

Incremental Permeability (μ_Δ)
Slope of the magnetization curve for finite values of peak-to-peak flux density with superimposed DC magnetization (Figure 5). Initial permeability can be thought as incremental permeability with 0 DC magnetization at small inductions. The incremental permeability is expressed as the slope of the B-H characteristic at around the given operating point.