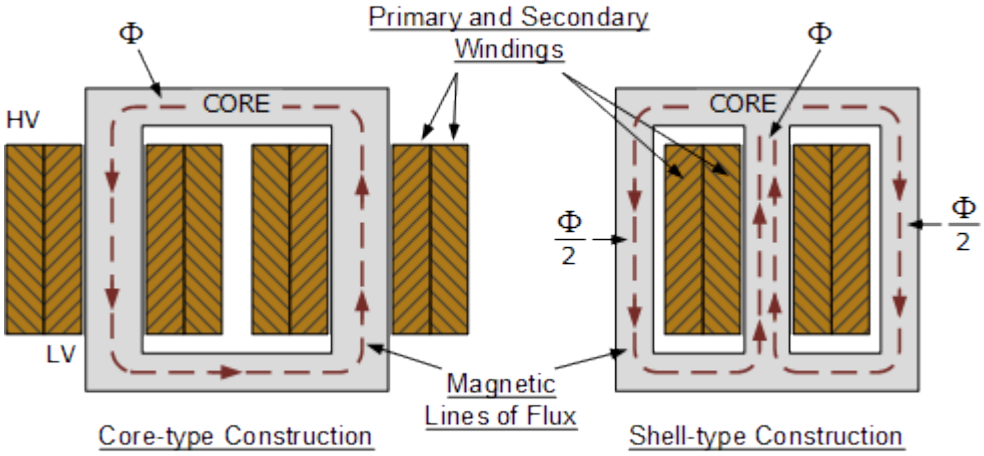
Transformer Construction

Generally, the name associated with the construction of a transformer is dependant upon how the primary and secondary windings are wound around the central laminated steel core. The two most common and basic designs of transformer construction are the Closed-core Transformer and the Shell-core Transformer.

In the “closed-core” type (core form) transformer, the primary and secondary windings are wound outside and surround the core ring. In the “shell type” (shell form) transformer, the primary and secondary windings pass inside the steel magnetic circuit (core).



EMC and EMI

Electromagnetic compatibility (EMC) and electromagnetic interference (EMI) are frequently referred to when discussing the regulatory testing and compliance of electronic and electrical products. However, while they might be closely related, it is important to understand that EMC and EMI are not the same thing.

EMI is the interference caused by an electromagnetic disturbance which affects the performance of a device. Sources of EMI can be environmental, such as electrical storms and solar radiation but more usually will be another electronic device or electrical system. If the interference is in the radio frequency spectrum it is also known as radio frequency interference or RFI.

EMC is a measure of a device's ability to operate as intended in its shared operating environment while, at the same time, not affecting the ability of other equipment within the same environment to operate as intended.

Transformers used in high frequency applications

High-frequency transformers operate using the same basic principles as standard transformers. The primary difference is that, as their name implies, they operate at much higher frequencies — while most line voltage transformers operate at 50 or 60 Hz, high-frequency transformers use frequencies from 20 KHz to over 1MHz.

Operating at a higher frequency has many benefits, the first of which is size. For any given power rating, the higher the frequency, the smaller the transformer can be. Second, because the transformer is smaller, less copper wire is needed, thus reducing the losses and helping to make the transformer more efficient. Also, since the core is typically ferrite, a wide variety of geometries are available so the transformer can be tailor-made for the application. Whether additional shielding or a specific form factor is required, the chances are good that a ferrite core exists to meet the requirement