ARNOLD® MAGNETIC TECHNOLOGIES

Technical Bulletin

Iron base amorphous alloy Powder Cores

Instruction

This product is composed of Iron base amorphous alloy Powder. And the low core loss and excellent DC bias characteristic of amorphous powder cores contribute to highly efficient switching. It also offers " Significant Size & Weight Reduction " compared with other powder cores like MPP,HF,SMSS. This size reduction is direct consequence of higher material saturation flux density and lower volumetric losses.

Benefits:

- Smaller Size.
- Lighter Weight.
- Higher Saturation Flux Density(1.5T).
- Excellent DC Bias
- Lower core Loss(60μ，300~400 mw/cc @0.1T,50KHZ).

Applications:

- Switched Mode Powder supply
- Common Mode Chokes
- Telecom Interface Transformers and Signal Filters
- High Accuracy Current Transformers

Material Property Comparison

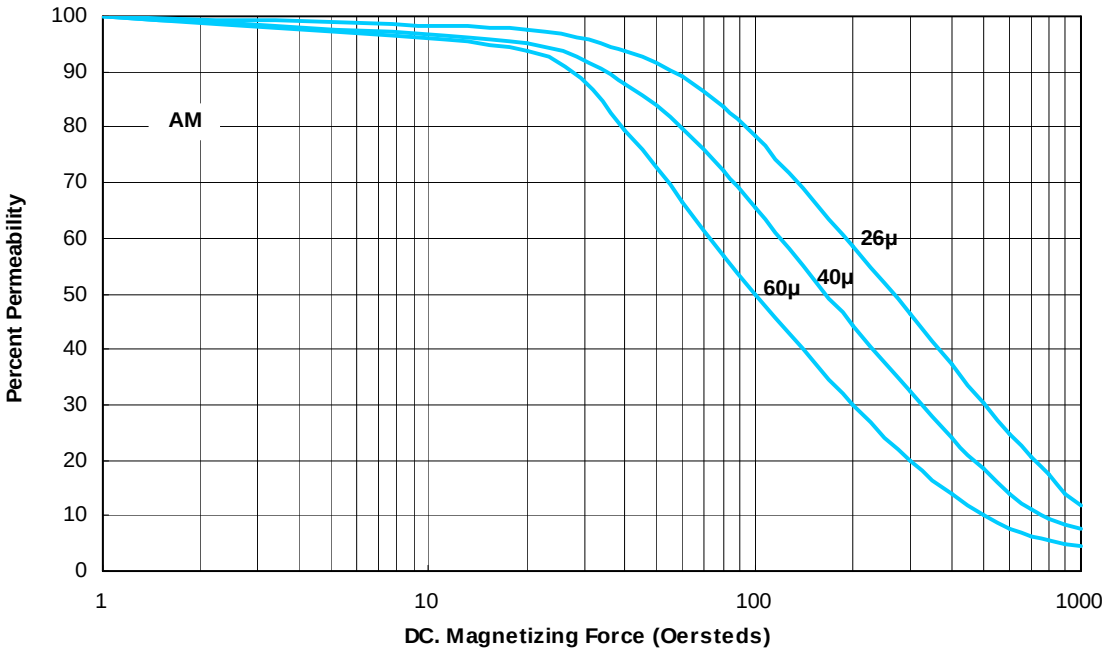
Property	Amorphous	MPP	High Flux	Sendust	FS
Composition	Fe-Si-B-C-Cr	Fe-Ni-Mo	Fe-Ni	Fe-Al-Si	Fe-Si
Bs	1.5 Tesla	0.75 Tesla	1.5 Tesla	1.0 Tesla	1.5 Tesla
Typical loss @ 100KHz 500G	140	120	260	200	300
DC Bias Hield for 50%u	115 Oe	100 Oe	120 Oe	90 Oe	115 Oe
Perm Value	14~60	14~350	14~160	14~160	14~125
Cost	Medium	High	Medium	Low	Low

Core Geometries

Arnold Magnetics can supply a wide range of standard toroid O.D. sizes from 0.14 inch (3.6 mm) to 5.218 inch (133 mm), as with Arnold MPP, High-Flux™ and Super-MSS™ powder core series. Arnold is also capable of providing non-standard, customer-specified physical dimensions.

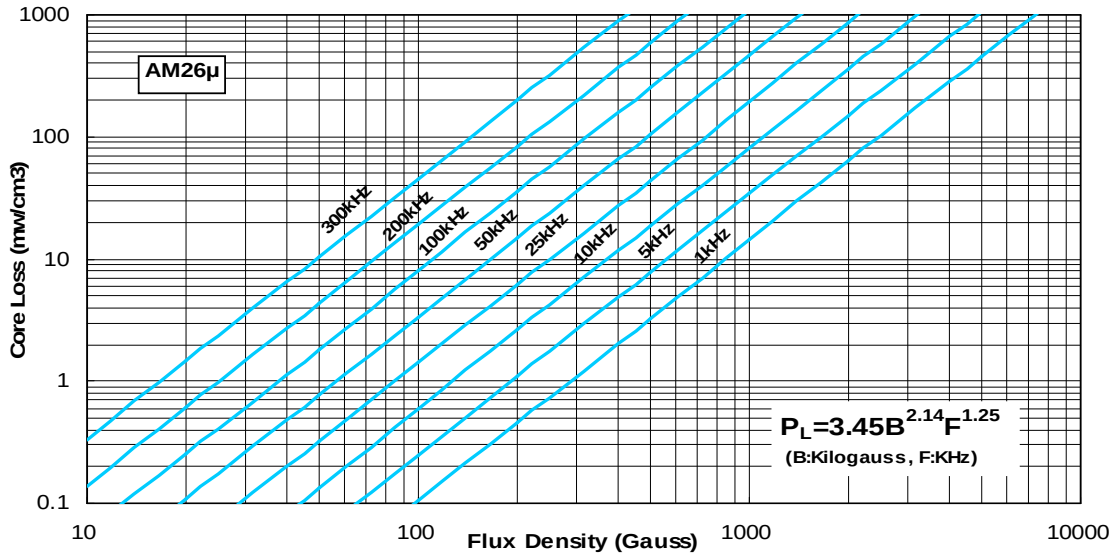
Typical Incremental Permeability vs. D.C. Bias

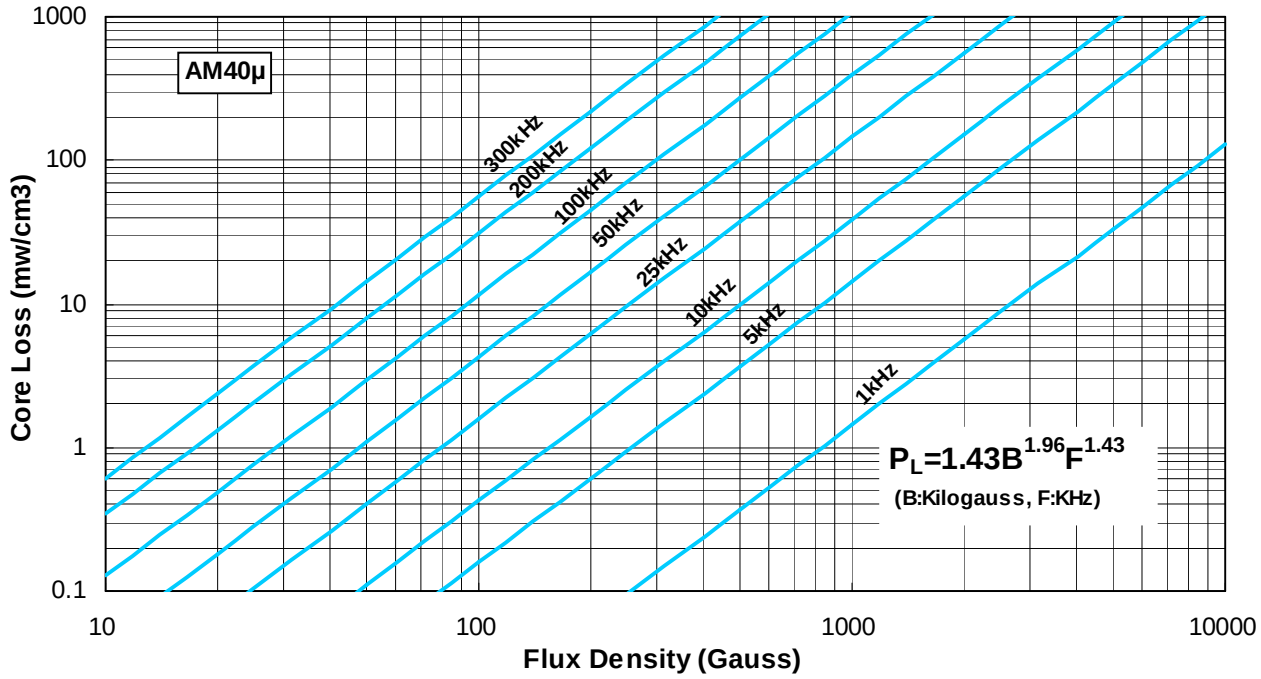
The DC bias curves (below) demonstrate that Iron base amorphous alloy Powder core is excellent when compared with SMSS (Sendust) and MPP cores around 120 Oe and even can bear comparison with High flux and Iron silicon powder cores at 200 Oe and above on similar permeabilities and size. The curves presented here were measured based on standard 1.06 inch OD toroid core samples using a signal of 10 kHz and 100 mA AC.

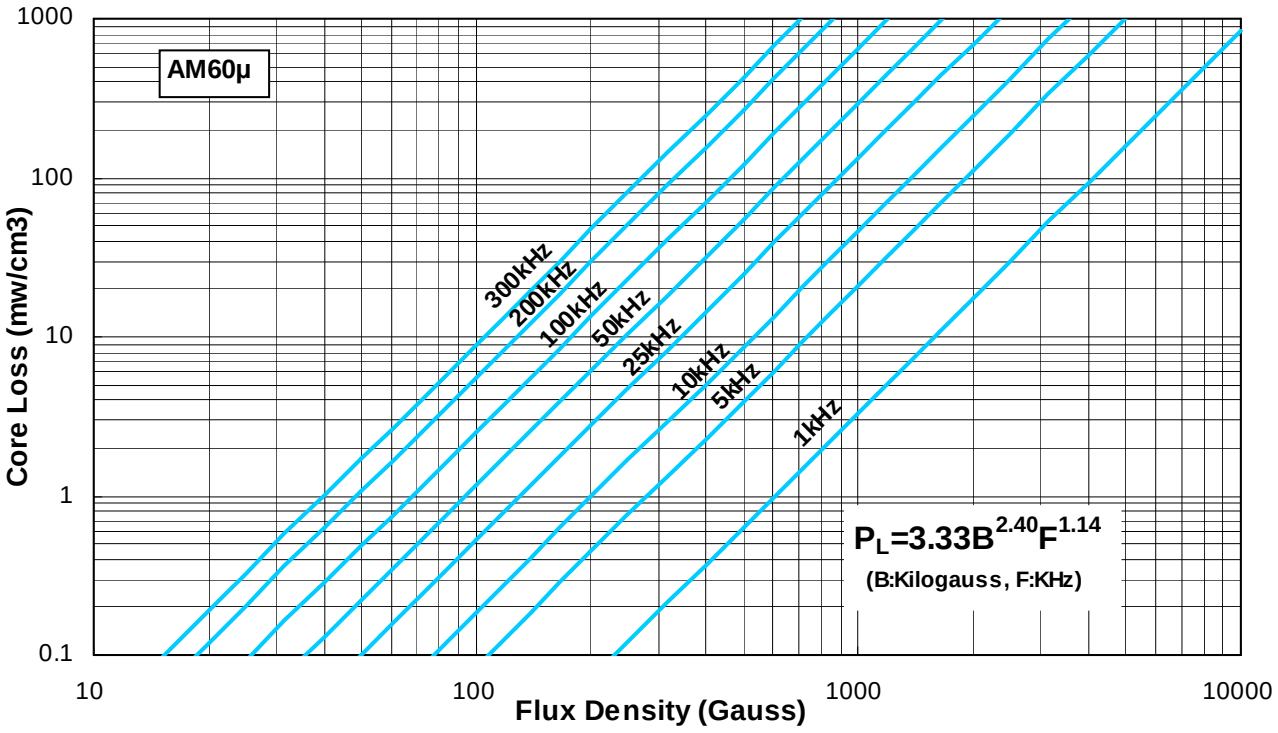


Typical Core Loss Curves

The Core loss curves (below) demonstrate that Iron base amorphous alloy Powder cores are excellent when compared with SMSS (Sendust), High flux and Iron silicon cores and close to MPP core loss performance on similar permeabilities and size. The curves presented here were measured based on standard 1.06 inch OD toroid core.

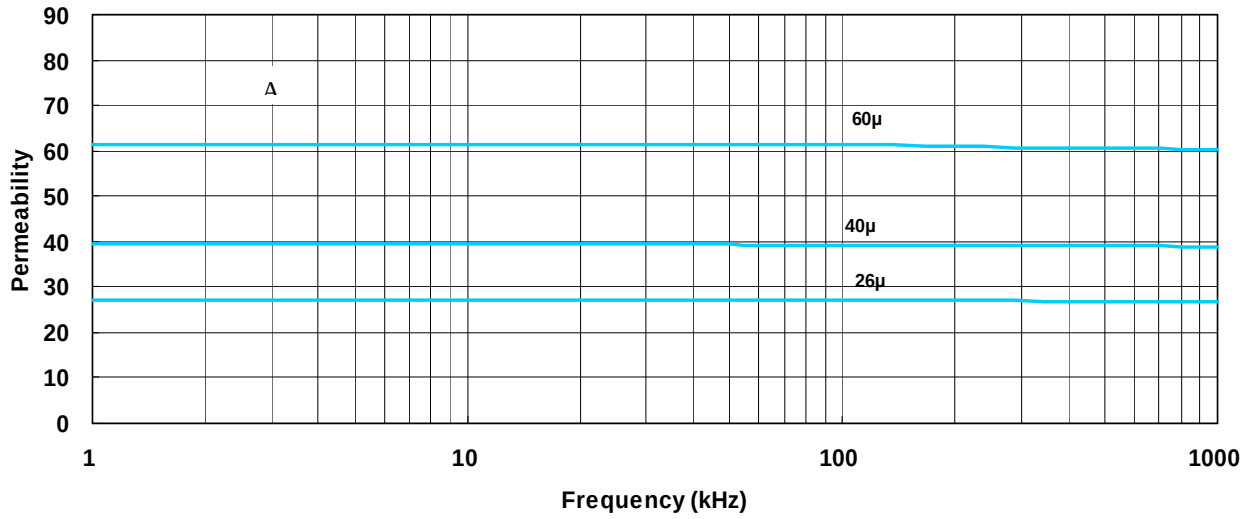






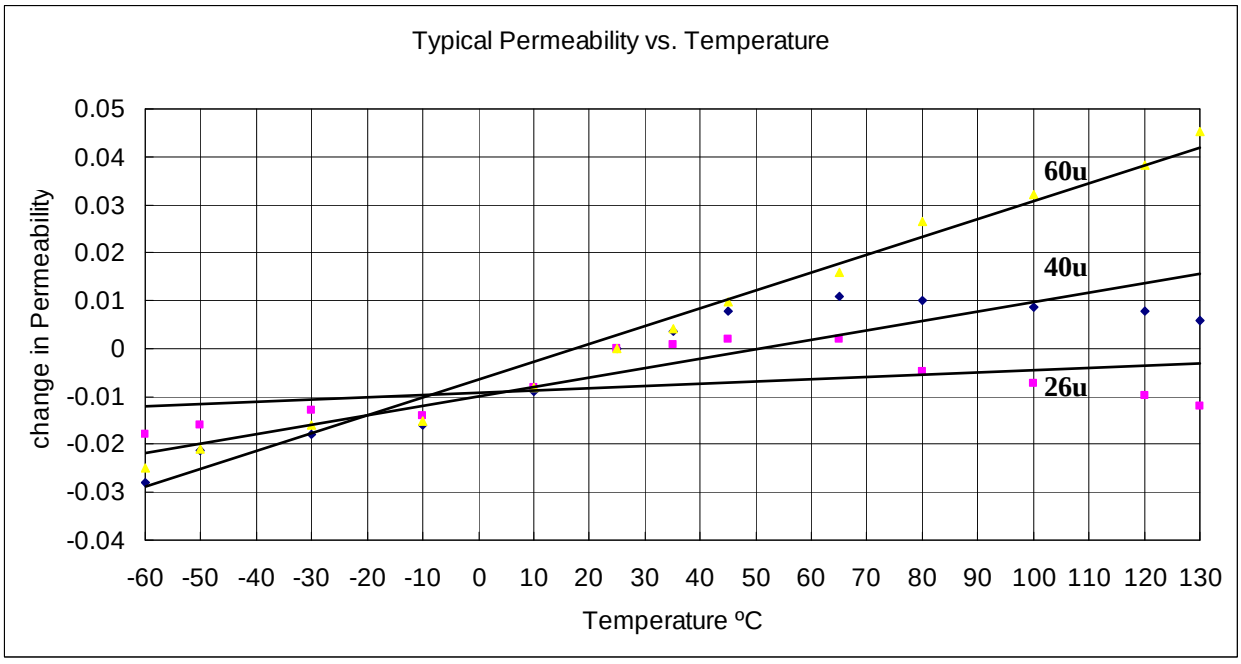
Typical Permeability vs. Frequency

The inductance versus frequency graph demonstrates the near linear performance of Iron-Silicon powder cores to 1 MHz. Roll-off in permeability from low frequencies to 1 MHz is less than 2.0 percent!



Permeability versus Temperature

Arnold Iron base amorphous alloy Powder cores are stable with temperature compared to common ferrite cores and tape wound cores.



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