



Ferrites and accessories

SIFERRIT material N87

Date: September 2006

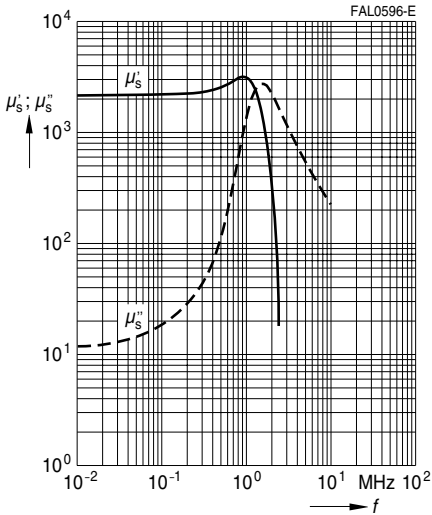
SIFERRIT materials
N87
Material properties

| | | | |
|---|---|----------------------|--------------------|
| Preferred application | | | Power transformers |
| Material | | | N87 |
| Base material | | | MnZn |
| | Symbol | Unit | |
| Initial permeability (T = 25 °C) | μ_i | | 2200 ±25% |
| Flux density (H = 1200 A/m, f = 10 kHz) | B _S (25 °C) | mT | 490 |
| | B _S (100 °C) | mT | 390 |
| Coercive field strength (f = 10 kHz) | H _c (25 °C) | A/m | 21 |
| | H _c (100 °C) | | 13 |
| Optimum frequency range | | kHz | 25 ... 500 |
| Hysteresis material constant | η_B | 10 ⁻⁶ /mT | <1.0 |
| Curie temperature | T _C | °C | >210 |
| Mean value of α_F at 25 ... 55 °C | | 10 ⁻⁶ /K | 4 |
| Density (typical values) | | kg/m ³ | 4850 |
| Relative core losses (typical values) | P _V | | |
| 25 kHz, 200 mT, 100 °C | | kW/m ³ | 57 |
| 100 kHz, 200 mT, 100 °C | | kW/m ³ | 375 |
| 300 kHz, 100 mT, 100 °C | | kW/m ³ | 390 |
| 500 kHz, 50 mT, 100 °C | | kW/m ³ | 215 |
| Resistivity | ρ | Ωm | 10 |
| Core shapes | RM, P, PM, ETD, EFD, E, ER, EP, EQ, ELP, U, Toroid | | |

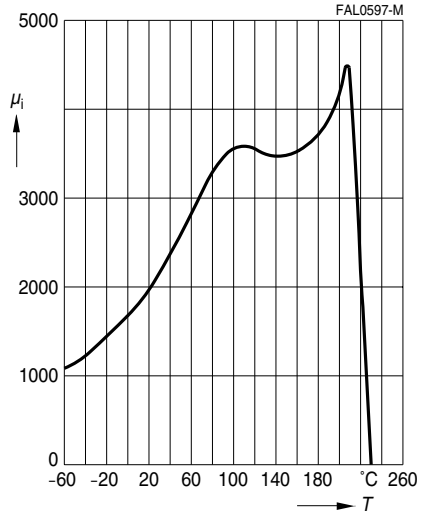
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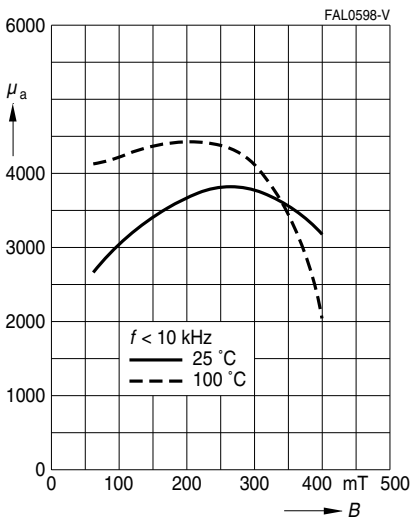
Complex permeability
versus frequency
(measured on R34 toroids, $\hat{B} \leq 0.25$ mT)



Initial permeability μ_i
versus temperature
(measured on R34 toroids, $\hat{B} \leq 0.25$ mT)



Amplitude permeability
versus AC field flux density
(measured on R34 toroids, $\hat{B} \leq 0.25$ mT)

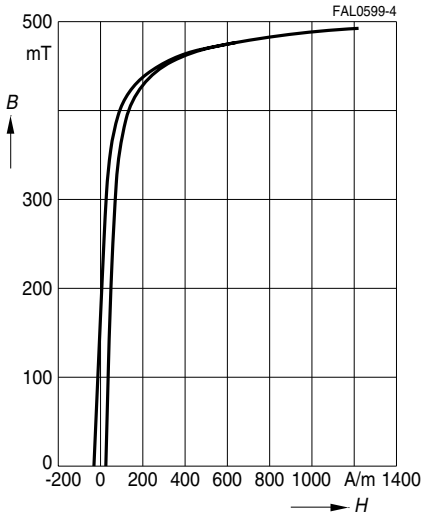


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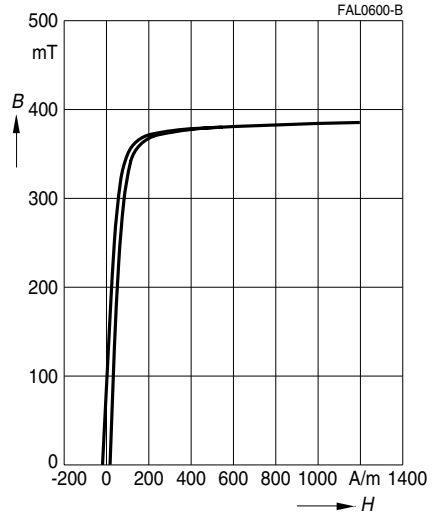
Dynamic magnetization curves
(typical values)

($f = 10 \text{ kHz}$, $T = 25 \text{ °C}$)



Dynamic magnetization curves
(typical values)

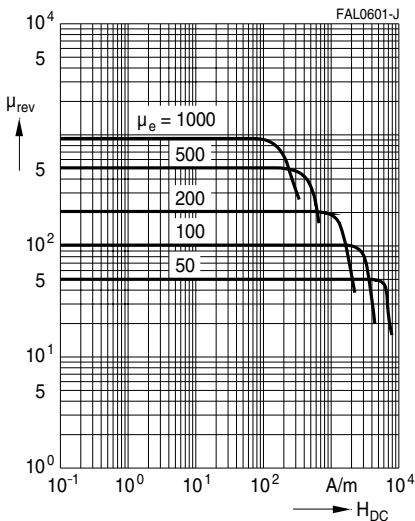
($f = 10 \text{ kHz}$, $T = 100 \text{ °C}$)



DC magnetic bias

of P, RM, PM and E cores

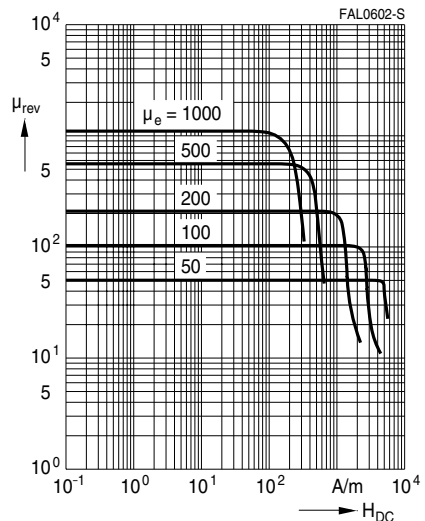
($\dot{B} \leq 0.25 \text{ mT}$, $f = 10 \text{ kHz}$, $T = 25 \text{ °C}$)



DC magnetic bias

of P, RM, PM and E cores

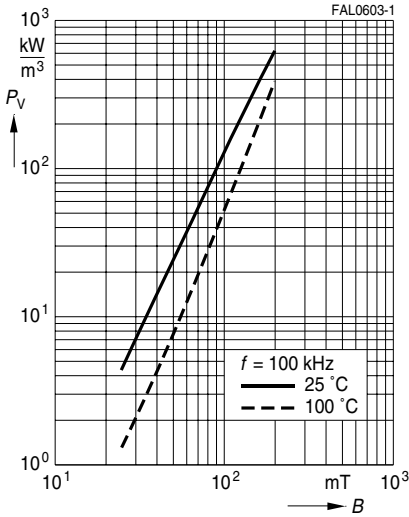
($\dot{B} \leq 0.25 \text{ mT}$, $f = 10 \text{ kHz}$, $T = 100 \text{ °C}$)



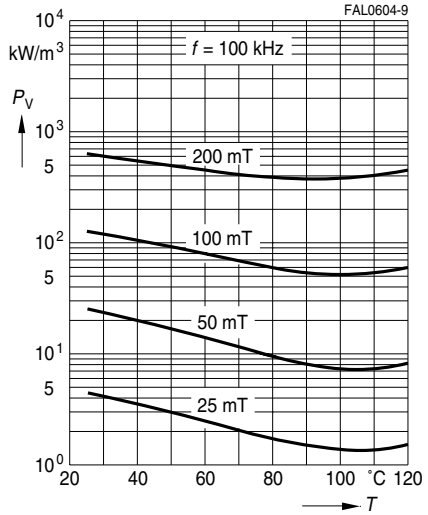
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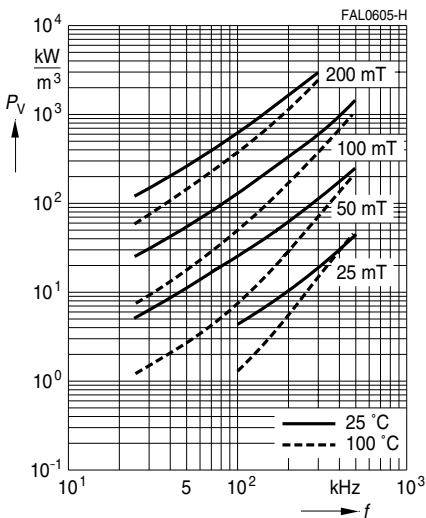
Relative core losses
versus AC field flux density
(measured on R34 toroids)



Relative core losses
versus temperature
(measured on R34 toroids)



Relative core losses
versus frequency
(measured on R34 toroids)



SIFERRIT materials**Cautions and warnings****General**

Based on IEC 60401-3, the data specified here are typical data for the material in question, which have been determined principally on the basis of toroids (ring cores).

The purpose of such characteristic material data is to provide the user with improved means for comparing different materials.

There is no direct relationship between characteristic material data and the data measured using other core shapes and/or core sizes made of the same material. In the absence of further agreements with the manufacturer, only those specifications given for the core shape and/or core size in question are binding.

Effects of core combination on A_L value

Stresses in the core affect not only the mechanical but also the magnetic properties. It is apparent that the initial permeability is dependent on the stress state of the core. The higher the stresses are in the core, the lower is the value for the initial permeability. Thus the embedding medium should have the greatest possible elasticity.

For detailed information see Data Book 2007, chapter "General – Definitions, 8.2".

Heating up

Ferrites can run hot during operation at higher flux densities and higher frequencies.

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