FERROXCUBE 3F37

Material Data Sheet

September 22nd, 2025

Ferroxcube's 3F37 is a high-performance MnZn ferrite material engineered for power conversion applications operating in the frequency range of 300 kHz to 1 MHz. It delivers optimal performance around 500 kHz, making it particularly suitable for next-generation high-efficiency converters and compact power modules. Characterized by its low core losses and remarkable thermal stability, 3F37 maintains a flat loss profile across a wide temperature range. Additionally, its high saturation flux density (Bsat) supports compact designs with elevated power densities, ensuring reliable operation under demanding electrical and thermal conditions.

Ferroxcube 3F37			
SYMBOL	CONDITIONS	VALUE	UNIT
μ_i	25ºC; 10kHz; 0.25mT	1600 ± 20%	
μ_a	100ºC; 100kHz; 200mT	≈ 2750	
B	25ºC; 10kHz; 1200A/m	≈ 520	mT
	100ºC; 10kHz; 1200A/m	≈ 420	
	140ºC; 10kHz; 1200A/m	≈ 360	
Pv	100ºC; 400kHz; 100mT	≈ 350	kW/m^3
	100ºC; 500kHz; 100mT	≈ 550	
Pv	25ºC; 500kHz; 50mT	≈ 60	kW/m^3
	100ºC; 500kHz; 50mT	≈ 60	
	140ºC; 500kHz; 50mT	≈ 95	
Pv	100ºC; 800kHz; 50mT	≈ 150	kW/m^3
	100ºC; 1000kHz; 50mT	≈ 270	
ρDC	25ºC	≈ 12	Ωm
Tc		≥ 260	ºC
Density		≈ 4800	kg/m^3
Measured on T25/15/8			

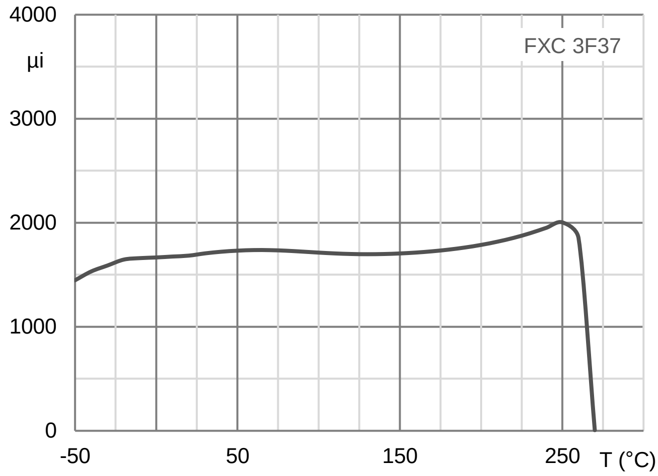

Fig. 1: Initial permeability vs temperature

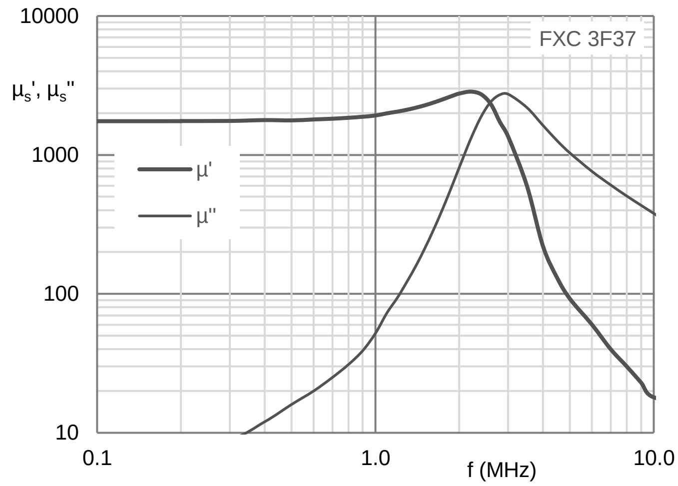

Fig.2: Complex permeability vs frequency

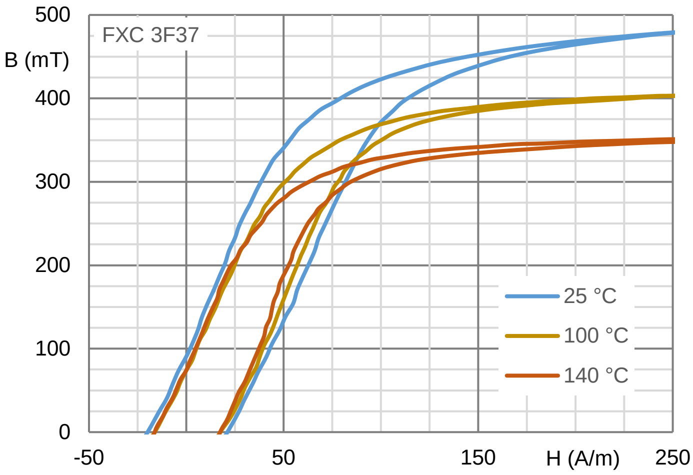

Fig. 3: Typical B-H loops at 10 kHz, 250 A/m

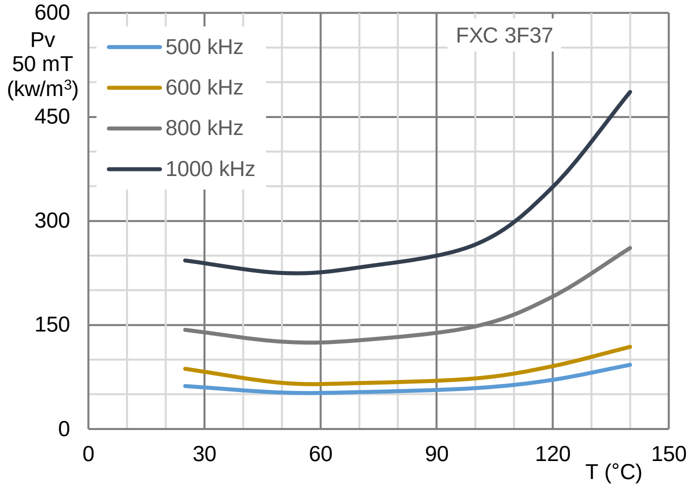

Fig 4: Specific power loss at **50 mT** vs temperature

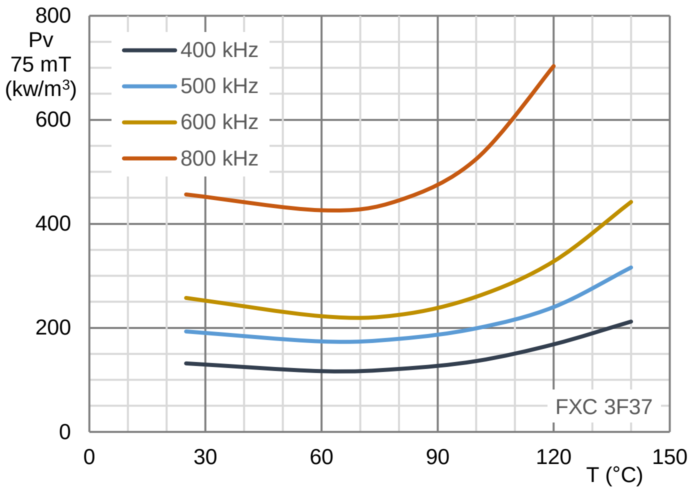

Fig. 5: Specific power loss at **75 mT** vs temperature

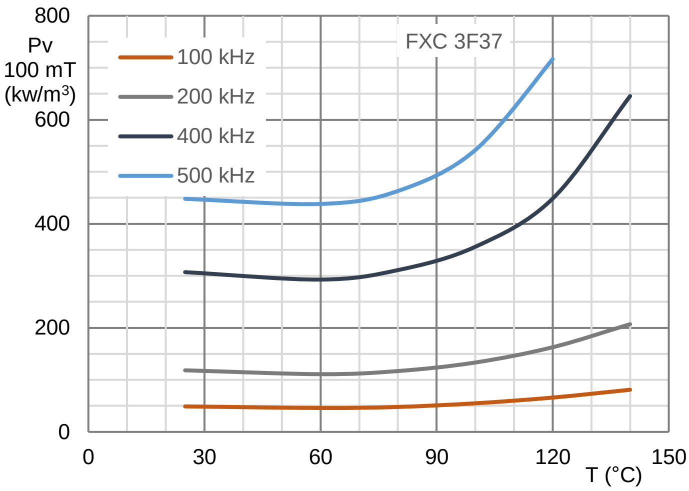

Fig. 6: Specific power loss at **100 mT** vs temperature

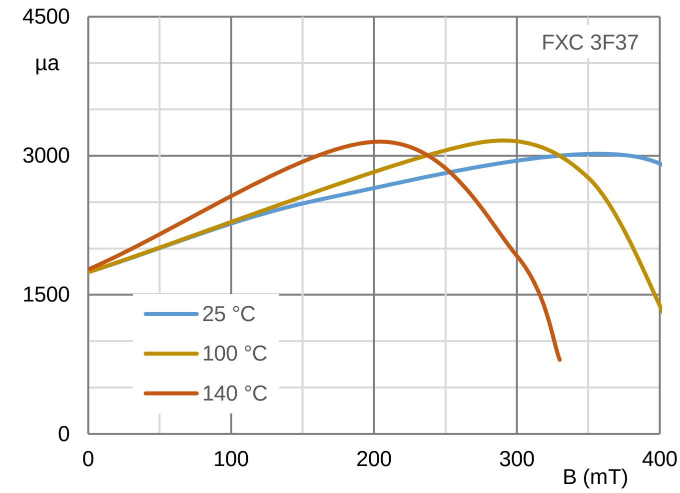

Fig. 7: Amplitude permeability vs peak flux density at 100 kHz

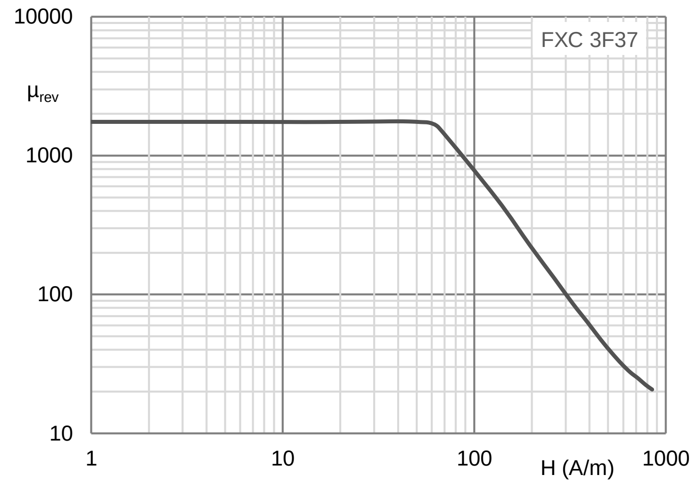

Fig. 8: Reversible permeability vs magnetic field strength

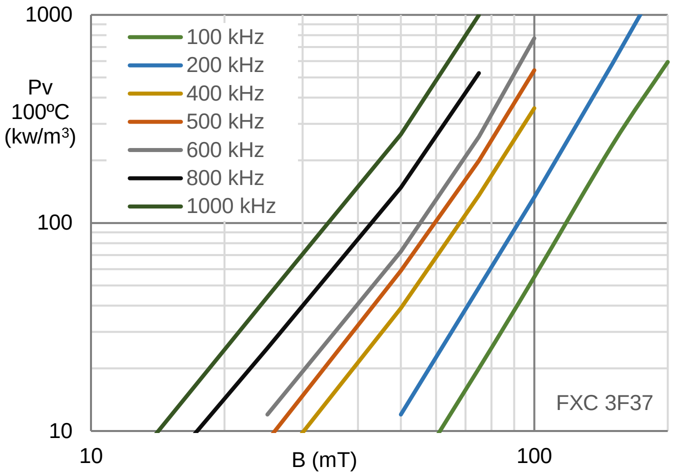

Fig. 9: Specific power loss at **100ºC** vs flux density

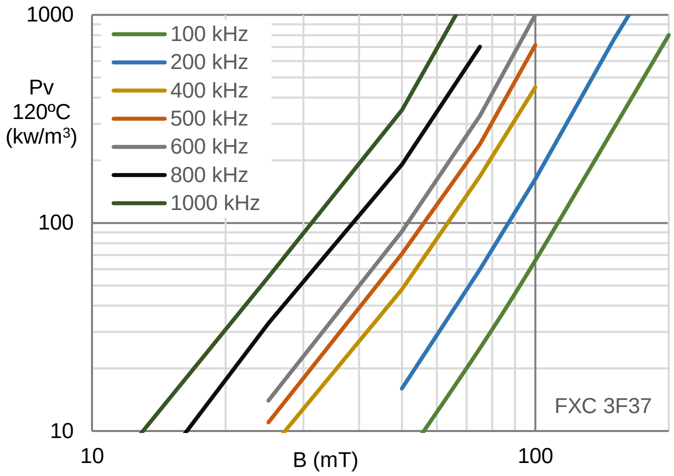

Fig 10: Specific power loss at **120ºC** vs flux density

Ferroxcube 3F37 Steinmetz Coefficients						
Frequency Range (kHz)	Cm	x	y	Ct2	Ct1	Ct
100 to 450	0.1017	1.227	3.369	1.067	9.53E-03	8.86E-05
451 to 700	0.1001	1.188	3.085	1.249	1.41E-02	1.16E-04
701 to 1000	0.0984	1.114	2.537	1.314	1.81E-02	1.50E-04

The Steinmetz coefficients provided are derived from Pv measurements on T25/15/8 samples and are intended for reference only. In practical applications, actual core performance may deviate due to factors such as eddy currents, flux concentration at corners, and mechanical stress introduced during machining or handling. These effects typically result in higher power losses than those indicated by the coefficients.

$$Pv = Cm \times f^x \times B^y \times (Ct_2 \times T^2 - Ct_1 \times T + Ct) \quad [f: Hz, B: T, T: °C]$$

Table 2: Steinmetz coefficients calculated on T25/15/8

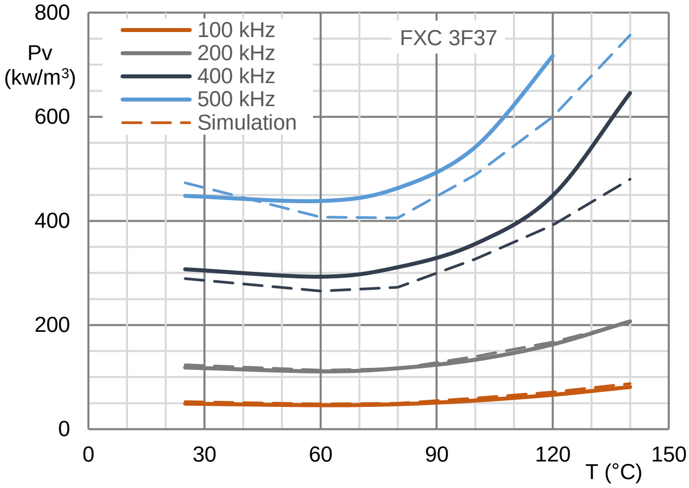

Fig. 11: Steinmetz simulation vs measurement at **100 mT**

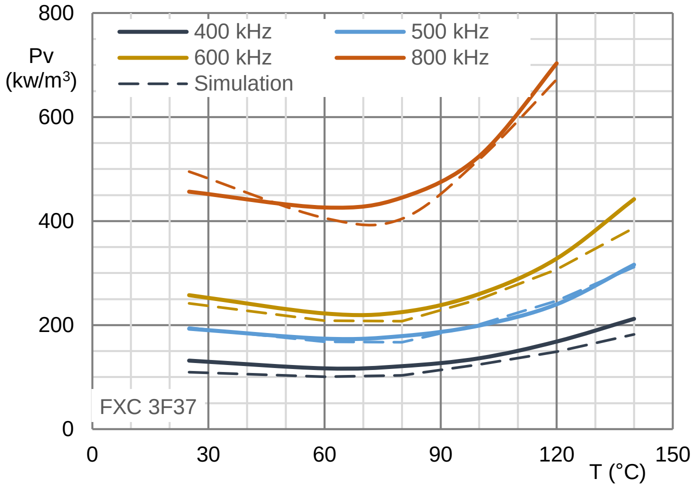

Fig. 12: Steinmetz simulation vs measurement at **75 mT**

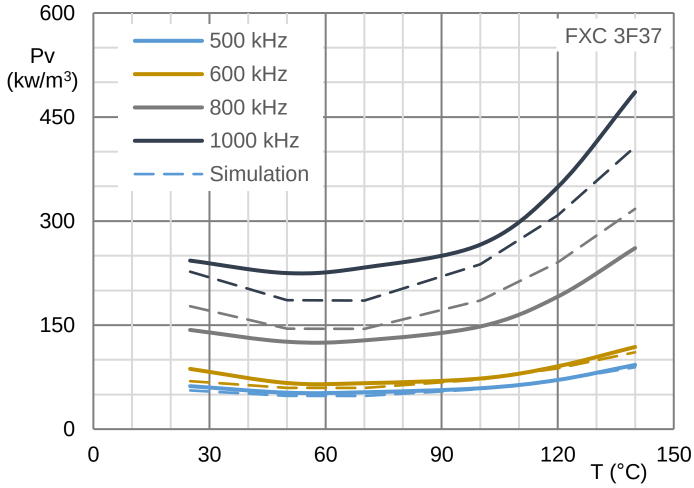

Fig. 13: Steinmetz simulation vs measurement at **50 mT**