鐵研 TAK

M63

高频稳定材料
HIGH FREQUENCY STABLE MATERIALS

M63 为镍锌铁氧体材料，初始磁导率（μi）约 180，饱和磁通密度（Bs）约 365 mT（25 ℃）/ 290 mT（100 ℃），居里温度高于 300 ℃。在中高磁导率下仍保持低损耗（损耗因子 50×10^{-6} @0.5 MHz / 80×10^{-6} @5.0 MHz），且 Bs 365 mT、Tc 高于 300 ℃——磁导率、损耗、磁通与耐温四者的均衡使其成为中低频至 HF 功率电感的通用主力。作为 EMI 抑制材料，其标准化阻抗以 RH5×1.5×10 磁珠实测（曲线见次页）。典型应用为中低频至高频功率电感、射频滤波器与工业电子的能量传输模块。阶梯位置在 M61（μi 约 100）与 Q1C1（约 250）之间：需要更高频率上限选 M61，需要更高感量密度选 Q1C1（其居里温度较低，>140 ℃）。

M63 is a NiZn ferrite with an initial permeability (μi) of approx. 180, a saturation flux density (Bs) of approx. 365 mT at 25 °C (290 mT at 100 °C) and a Curie temperature above 300 °C. It keeps losses low at a mid-high permeability (loss factor 50×10^{-6} at 0.5 MHz / 80×10^{-6} at 5.0 MHz) while holding Bs at 365 mT and Tc above 300 °C — a balance of permeability, loss, flux and temperature that makes it the general-purpose workhorse for low/mid-to-HF power inductors. As an EMI-suppression material its normalized impedance is measured on an RH5×1.5×10 bead (curve on the next page). Typical uses are low/mid-to-high-frequency power inductors, RF filters and energy-transfer modules in industrial electronics. In the ladder it sits between M61 (μi approx. 100) and Q1C1 (approx. 250): go to M61 for a higher frequency ceiling, to Q1C1 for higher inductance density (at a lower Curie temperature, >140 °C).

HF Power Inductor | RF Filter | EMI Suppression Bead | Energy-Transfer Module

电磁特性 MAGNETIC CHARACTERISTICS

特性 Characteristic	条件 Condition	值 Value	单位 Unit
初始磁导率 μi Initial Permeability	100 kHz & <0.2 mT	180±25%	
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 25 ℃ 100 Hz	365	mT
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 100 ℃ 100 Hz	290	mT
残留磁通密度 Br Remanence	3000 A/m · 25 ℃ 100 Hz	240	mT
残留磁通密度 Br Remanence	3000 A/m · 100 ℃ 100 Hz	190	mT
矫顽力 Hc Coercivity	3000 A/m · 25 ℃ 100 Hz	200	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 ℃ 100 Hz	150	A/m
αμr（温度系数） Temperature coefficient of permeability	20～60 ℃	10	$\times10^{-6}$/K
相对损耗因子 tanδ/μi Relative Loss Factor	0.5 MHz & <0.2 mT	50	$\times10^{-6}$
相对损耗因子 tanδ/μi Relative Loss Factor	5.0 MHz & <0.2 mT	80	$\times10^{-6}$
居里温度 Tc Curie Temp.	100 kHz & <0.2 mT	>300	℃
密度 D Density	阿基米德法 Archimedes method	4.9	g/cm³
电阻率 ρ Volume Resistivity	直流电流 DC Current	10^7	Ω·m

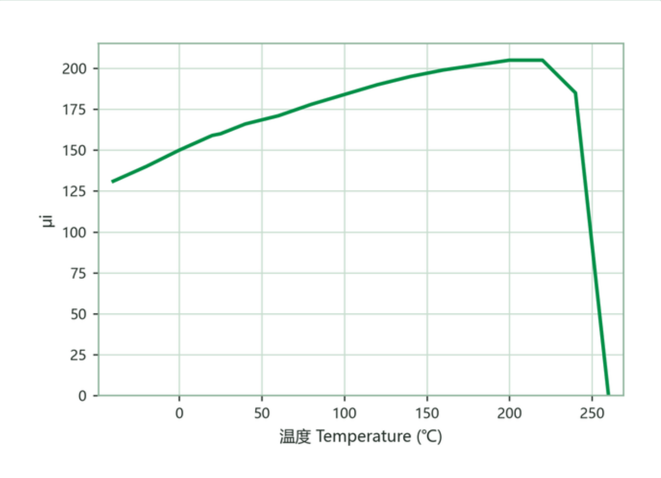
备注：各项数值均为环形磁芯T31×19×8测得的典型数值，由于几何形状和尺寸的影响，产品规格将与这些数据有所差异。

Note: all values are typical data measured on a T31×19×8 toroidal core; actual product specifications will vary with geometry and size.

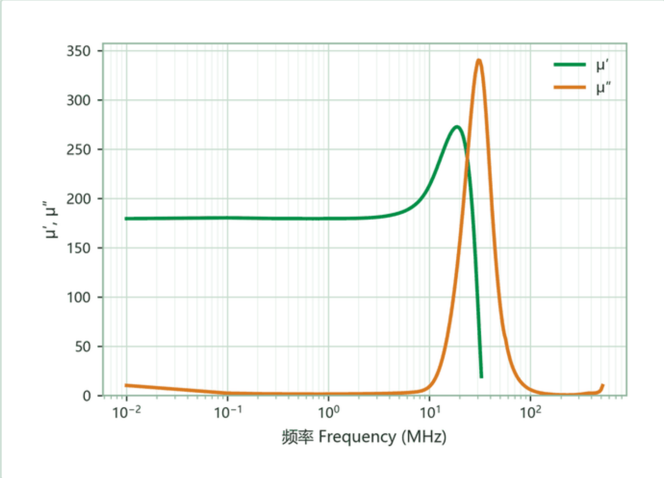
特性曲线详见次页 CHARACTERISTIC CURVES — SEE NEXT PAGE

M63 特性曲线

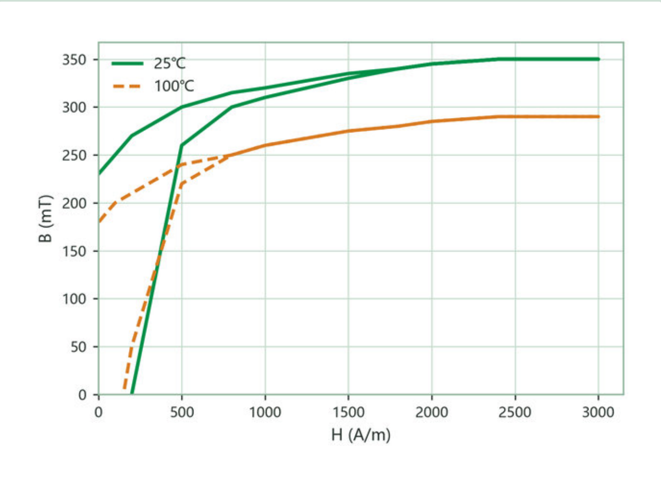
CHARACTERISTIC CURVES



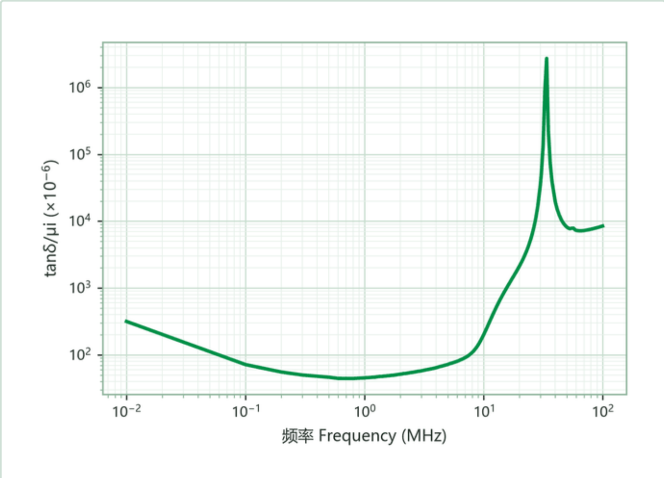
初始磁导率—温度特性
Initial Permeability vs. Temperature



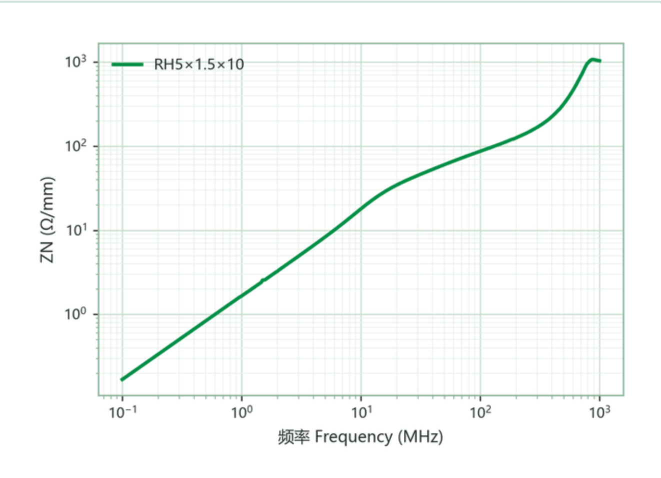
复数磁导率—频率特性
Complex Permeability (μ′, μ″) vs. Frequency



静态磁化曲线
Static Magnetization Curves (B–H)



相对损耗因子—频率特性
Relative Loss Factor (tanδ/μi) vs. Frequency



标准化阻抗—频率特性（Φ0.5 mm 漆包线 100 mm · 单圈测量）
Normalized Impedance ZN vs. Frequency (single turn of Φ0.5 mm wire, 100 mm long)