鐵研 TAK

M61

高频稳定材料
HIGH FREQUENCY STABLE MATERIALS

M61 为镍锌铁氧体材料，初始磁导率（μi）约 100，饱和磁通密度（Bs）约 340 mT（25 ℃）/ 280 mT（100 ℃），居里温度高于 300 ℃。本材料的最大特点是温度稳定性：温度系数约 -2×10^{-6}/K、几乎为零，配合高于 300 ℃ 的居里温度，感量与阻抗在宽温域内几乎不漂移；20 MHz 以下维持低损耗。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）。典型应用为中频电感、EMI 共模扼流圈与功率射频模块的滤波元件，磁珠型 EMI 抑制亦适用。与名称相近的 M61H 同为 μi≈100：M61 以近零温度漂移见长，M61H（Bs 约 420 mT）以功率承载见长——温度稳定选 M61、大电流选 M61H。

M61 is a NiZn ferrite with an initial permeability (μi) of approx. 100, a saturation flux density (Bs) of approx. 340 mT at 25 °C (280 mT at 100 °C) and a Curie temperature above 300 °C. Its signature is temperature stability: a temperature coefficient of about -2×10^{-6}/K — essentially zero — together with the >300 °C Curie point keeps inductance and impedance nearly drift-free over a wide temperature span, while losses stay low below 20 MHz. 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 mid-frequency inductors, EMI common-mode chokes and filter elements in RF power modules, as well as bead-type EMI suppression. M61H shares the same μi ≈ 100 despite the similar name: M61 leads in near-zero drift, M61H (Bs approx. 420 mT) in power capability — pick M61 for temperature stability, M61H for high current.

Mid-Frequency Inductor | EMI Common-Mode Choke | RF Power Filter | EMI Suppression Bead

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	100±25%	
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 25 ℃ 100 Hz	340	mT
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 100 ℃ 100 Hz	280	mT
残留磁通密度 Br Remanence	3000 A/m · 25 ℃ 100 Hz	220	mT
残留磁通密度 Br Remanence	3000 A/m · 100 ℃ 100 Hz	180	mT
矫顽力 Hc Coercivity	3000 A/m · 25 ℃ 100 Hz	400	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 ℃ 100 Hz	200	A/m
αμr（温度系数） Temperature coefficient of permeability	20 ~ 60 ℃	-2	$\times10^{-6}$/K
相对损耗因子 tanδ/μi Relative Loss Factor	1.0 MHz & <0.2 mT	80	$\times10^{-6}$
相对损耗因子 tanδ/μi Relative Loss Factor	5.0 MHz & <0.2 mT	100	$\times10^{-6}$
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

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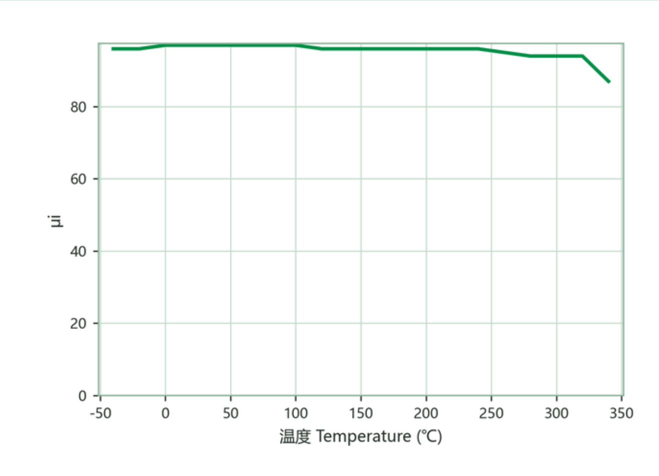
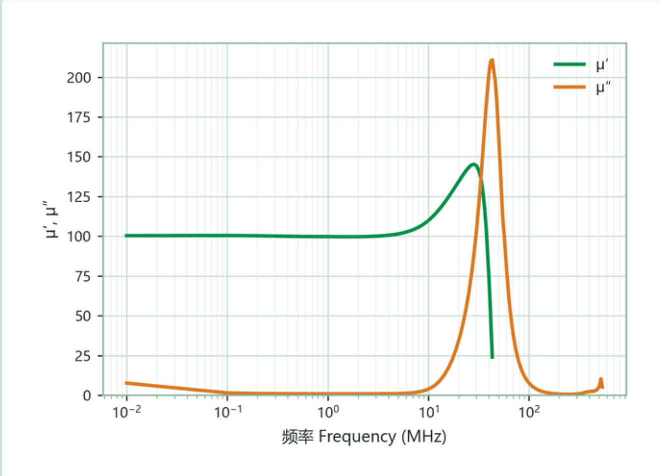
M61

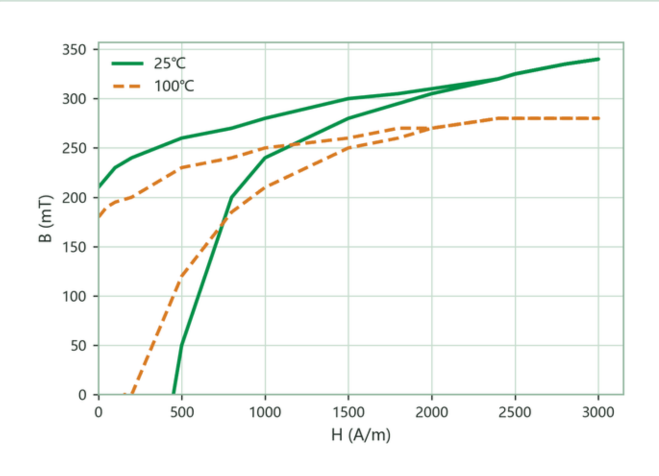
特性曲线
CHARACTERISTIC CURVES



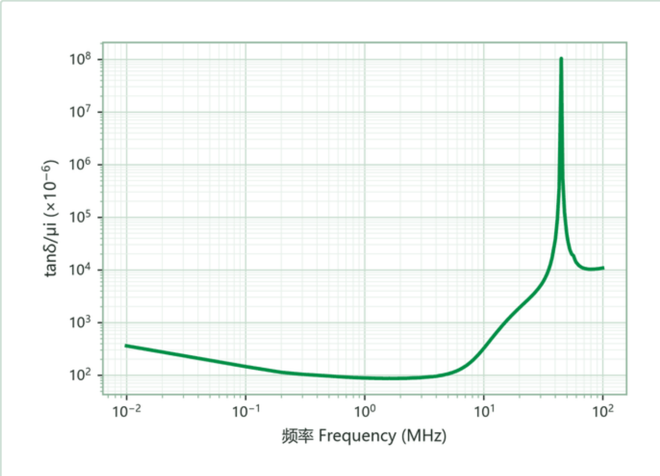
初始磁导率—温度特性
Initial Permeability vs. Temperature



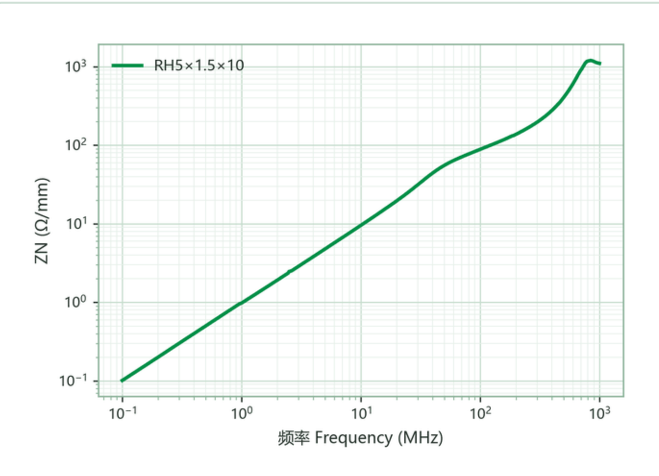
复数磁导率—频率特性
Complex Permeability (μ′, μ″) vs. Frequency



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)