MF1

镍镁锌材料
NI-MG-ZN MATERIALS

鐵研 TAK

MF1 为镍镁锌铁氧体材料，初始磁导率（μi）约 180，饱和磁通密度（Bs）约 350 mT（25 ℃）/ 185 mT（100 ℃），居里温度高于 210 ℃。低磁导率使其可用频率上限较高，配合高于 210 ℃ 的居里温度，在 MHz 级的 RF / IF 频段维持稳定；Bs 350 mT 亦具备一定的磁通承载。典型应用为 RF / IF 滤波器、谐振电感与高频信号线 EMI 抑制，属于以最低材料成本覆盖高频小信号用途的档位。MF 系编号与磁导率并非依序对应——MF1 是低 μi 高频支、MF2（μi 约 800）才是高磁导低频支、MF3（约 350）居中且损耗最低——选型时请以 μi 与频段对应，勿以编号推测。

MF1 is a Ni-Mg-Zn ferrite with an initial permeability (μi) of approx. 180, a saturation flux density (Bs) of approx. 350 mT at 25 °C (185 mT at 100 °C) and a Curie temperature above 210 °C. The low permeability raises its usable frequency ceiling, and with the Curie point above 210 °C it stays stable in the MHz-range RF/IF bands, while Bs of 350 mT retains a fair flux capability. Typical uses are RF/IF filters, resonant inductors and HF signal-line EMI suppression — the step that covers high-frequency small-signal duties at the lowest material cost. Note that MF numbering does not follow permeability: MF1 is the low-μi high-frequency branch, MF2 (μi approx. 800) is the high-permeability low-frequency branch, and MF3 (approx. 350) sits between with the lowest loss — select by μi and band, not by the numeral.

RF / IF Filter | Resonant Inductor | Signal-Line EMI Suppression

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	350	mT
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 100 ℃ 100 Hz	185	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	85	mT
矫顽力 Hc Coercivity	3000 A/m · 25 ℃ 100 Hz	25	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 ℃ 100 Hz	15	A/m
αμr（温度系数） Temperature coefficient of permeability	20 ~ 60 ℃	35	$\times10^{-6}$/K
相对损耗因子 tanδ/μi Relative Loss Factor	0.1 MHz & <0.2 mT	55	$\times10^{-6}$
相对损耗因子 tanδ/μi Relative Loss Factor	0.5 MHz & <0.2 mT	70	$\times10^{-6}$
居里温度 Tc Curie Temp.	100 kHz & <0.2 mT	>210	℃
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

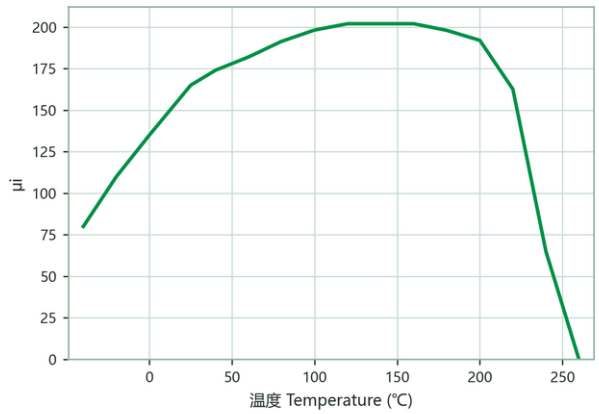
备注：各项数值均为环形磁芯T31×19×8测得的典型数值，由于几何形状和尺寸的影响，产品规格将与这些数据有所差异。

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

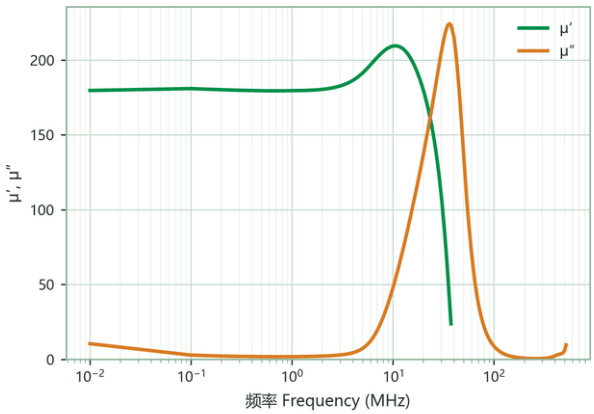
特性曲线详见次页 CHARACTERISTIC CURVES — SEE NEXT PAGE

MF1

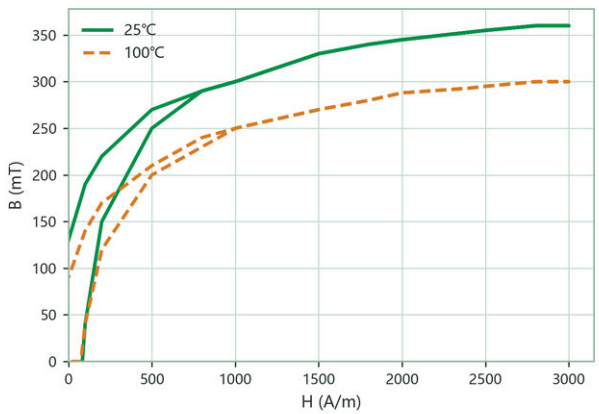
特性曲线
CHARACTERISTIC CURVES



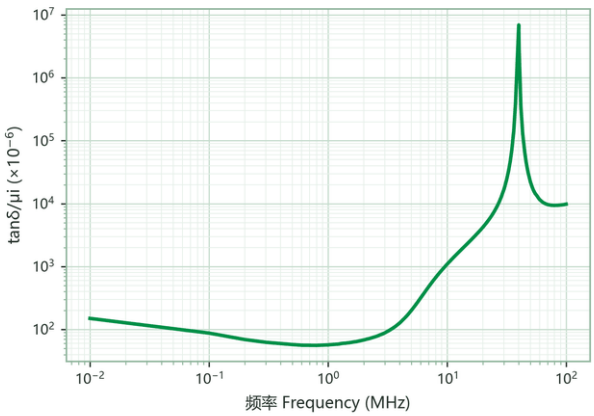
初始磁导率—温度特性
Initial Permeability vs. Temperature



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