

MF3 镍镁锌材料
NI-MG-ZN MATERIALS

MF3 为镍镁锌铁氧体材料，初始磁导率 (μ_i) 约 350，饱和磁通密度 (Bs) 约 330 mT (25 °C) / 230 mT (100 °C)，居里温度高于 160 °C。本材料是本组的信号级：温度系数约 $10 \times 10^{-6}/K$ 、损耗因子 20×10^{-6} (0.1 MHz) / 25×10^{-6} (1.0 MHz)，温度漂移与损耗之低在本组配方中相当突出，可在频率与温度变动下维持稳定的感量与 Q 值。典型应用为 RFID 线圈、低频与高频射频滤波器，以及宽频 EMI 抑制磁环。在 MF 系中，MF3 损耗最低、特性最均衡 (MF1 为低 μ_i 高频支、MF2 为高 μ_i 低频支)；若需要更高的温度等级，可对照纯镍锌之 DL3 / MGB1 (同 μ_i 350 档)。

MF3 is a Ni-Mg-Zn ferrite with an initial permeability (μ_i) of approx. 350, a saturation flux density (Bs) of approx. 330 mT at 25 °C (230 mT at 100 °C) and a Curie temperature above 160 °C. It is the signal-grade member of this group: a temperature coefficient of about $10 \times 10^{-6}/K$ and a loss factor of 20×10^{-6} at 0.1 MHz / 25×10^{-6} at 1.0 MHz — remarkably low drift and loss for this composition class — keep inductance and Q stable against frequency and temperature. Typical uses are RFID coils, LF/HF RF filters and broadband EMI suppression rings. Within the MF line, MF3 has the lowest loss and the most balanced characteristics (MF1 is the low- μ_i high-frequency branch, MF2 the high- μ_i low-frequency branch); for a higher temperature class, see the NiZn grades DL3/MGB1 at the same $\mu_i \approx 350$ step.

- RFID Coil
- RF Filter
- Broadband Suppression Ring

电磁特性 MAGNETIC CHARACTERISTICS

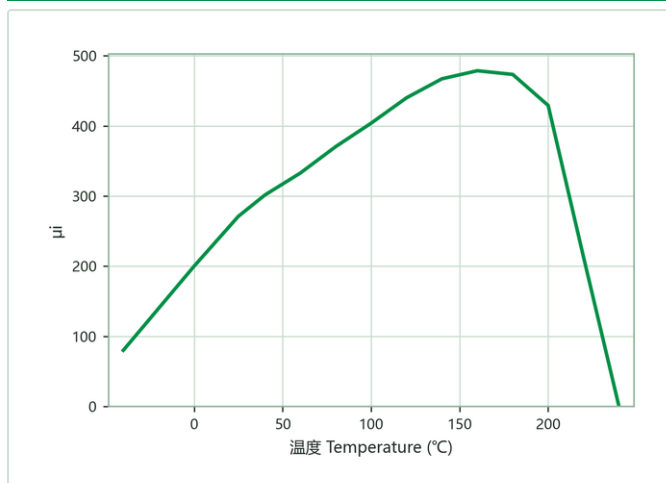
特性 Characteristic	条件 Condition	值 Value	单位 Unit
初始磁导率 μ_i Initial Permeability	100 kHz & <0.2 mT	350±25%	
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 25 °C 100 Hz	330	mT
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 100 °C 100 Hz	230	mT
残留磁通密度 Br Remanence	3000 A/m · 25 °C 100 Hz	160	mT
残留磁通密度 Br Remanence	3000 A/m · 100 °C 100 Hz	120	mT
矫顽力 Hc Coercivity	3000 A/m · 25 °C 100 Hz	55	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 °C 100 Hz	40	A/m
$\alpha\mu_r$ (温度系数) Temperature coefficient of permeability	20 ~ 60 °C	10	$\times 10^{-6}/K$
相对损耗因子 $\tan\delta/\mu_i$ Relative Loss Factor	0.1 MHz & <0.2 mT	20	$\times 10^{-6}$
相对损耗因子 $\tan\delta/\mu_i$ Relative Loss Factor	1.0 MHz & <0.2 mT	25	$\times 10^{-6}$
居里温度 Tc Curie Temp.	100 kHz & <0.2 mT	>160	°C
密度 D Density	阿基米德法 Archimedes method	4.9	g/cm ³
电阻率 ρ Volume Resistivity	直流电流 DC Current	10 ⁷	$\Omega \cdot m$

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.

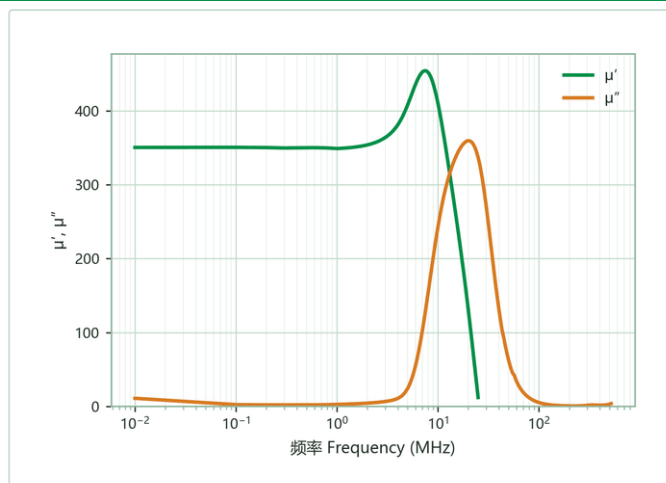
特性曲线详见次页 CHARACTERISTIC CURVES — SEE NEXT PAGE

MF3

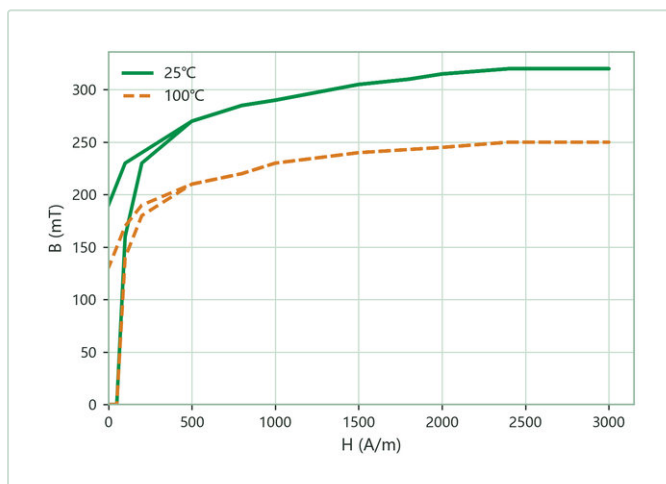
特性曲线 CHARACTERISTIC CURVES



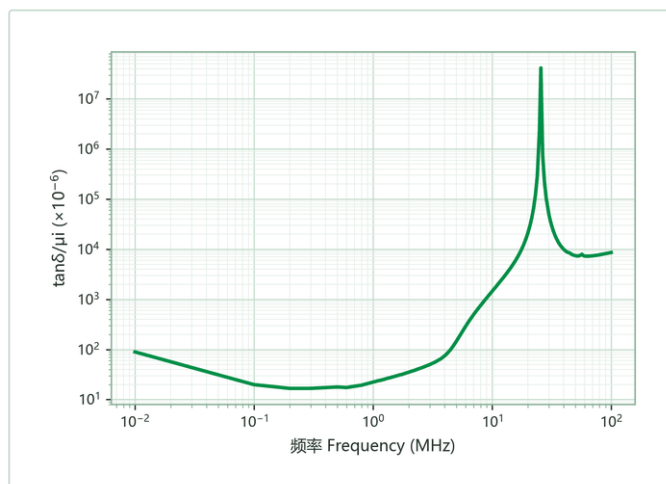
初始磁导率—温度特性
Initial Permeability vs. Temperature



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 ($\tan\delta/\mu_i$) vs. Frequency