L8A

高磁导EMI材料
HIGH PERM. & EMI MATERIALS

鐵研 TAK

L8A 为镍锌铁氧体材料，初始磁导率（μi）约 1600，饱和磁通密度（Bs）约 300 mT（25 ℃）/ 110 mT（100 ℃），居里温度高于 120 ℃。高磁导率使其在数百 kHz 至数 MHz 的低频段即可建立显著阻抗，适合以有限匝数抑制电源线与大电流线路的传导噪声；低磁通损耗因子 15×10^{-6}（0.1 MHz）/ 35×10^{-6}（0.3 MHz）。标准化阻抗曲线提供 T31×19×8 环形与 RH5×1.5×10 磁珠两种夹具实测（见次页），依元件型态选用对应数据。典型应用为低频 EMI 滤波器、大尺寸共模扼流圈与电源线抗干扰磁环，常见于电源系统与工控设备。在 L 系阶梯中，L8A 位于 L6A（μi 约 1200）与 L22A（约 2200）之间；本材料居里温度较低（>120 ℃）、100 ℃ 时磁通余裕明显缩小，工作温度偏高的场合应改选 L6A 或 L43。

L8A is a NiZn ferrite with an initial permeability (μi) of approx. 1600, a saturation flux density (Bs) of approx. 300 mT at 25 °C (110 mT at 100 °C) and a Curie temperature above 120 °C. The high permeability builds significant impedance already in the hundreds-of-kHz to few-MHz range, suppressing conducted noise on power lines and high-current paths with a limited number of turns; the low-flux loss factor is 15×10^{-6} at 0.1 MHz / 35×10^{-6} at 0.3 MHz. Normalized-impedance curves are given for two fixtures — a T31×19×8 toroid and an RH5×1.5×10 bead (see next page); use the data matching the component type. Typical uses are low-frequency EMI filters, large common-mode chokes and power-line suppression rings in power systems and industrial equipment. In the L-family ladder L8A sits between L6A (μi approx. 1200) and L22A (approx. 2200); its Curie temperature is on the low side (>120 °C) and the flux margin shrinks markedly at 100 °C — prefer L6A or L43 when the operating temperature runs high.

Low-Frequency EMI Filter | Large Common-Mode Choke | Power-Line Suppression Ring

电磁特性 MAGNETIC CHARACTERISTICS

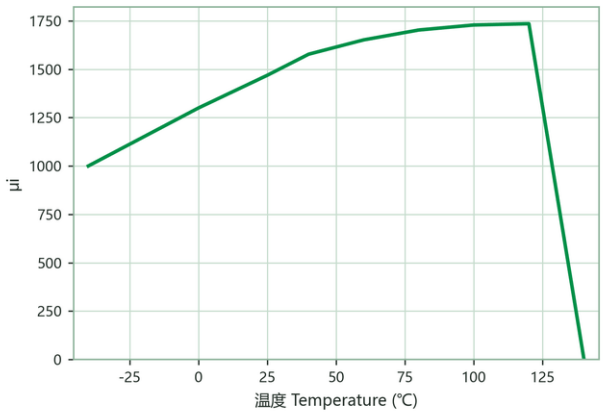
特性 Characteristic	条件 Condition	值 Value	单位 Unit
初始磁导率 μi Initial Permeability	100 kHz & <0.2 mT	1600±25%	
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 25 ℃ 100 Hz	300	mT
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 100 ℃ 100 Hz	110	mT
残留磁通密度 Br Remanence	3000 A/m · 25 ℃ 100 Hz	120	mT
残留磁通密度 Br Remanence	3000 A/m · 100 ℃ 100 Hz	30	mT
矫顽力 Hc Coercivity	3000 A/m · 25 ℃ 100 Hz	15	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 ℃ 100 Hz	11	A/m
αμr（温度系数） Temperature coefficient of permeability	20 ~ 60 ℃	4	$\times10^{-6}$/K
相对损耗因子 tanδ/μi Relative Loss Factor	0.1 MHz & <0.2 mT	15	$\times10^{-6}$
相对损耗因子 tanδ/μi Relative Loss Factor	0.3 MHz & <0.2 mT	35	$\times10^{-6}$
居里温度 Tc Curie Temp.	100 kHz & <0.2 mT	>120	℃
密度 D Density	阿基米德法 Archimedes method	5.0	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.

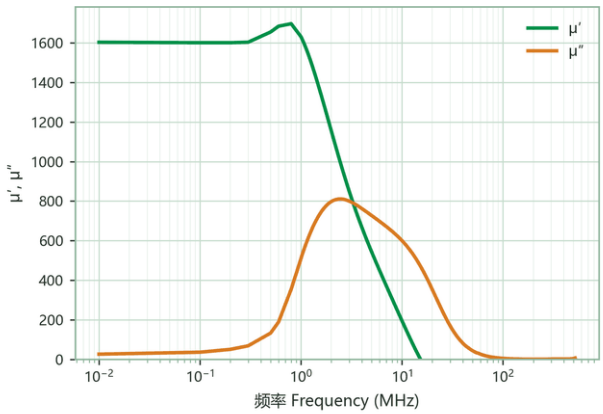
特性曲线详见次页 CHARACTERISTIC CURVES — SEE NEXT PAGE

L8A

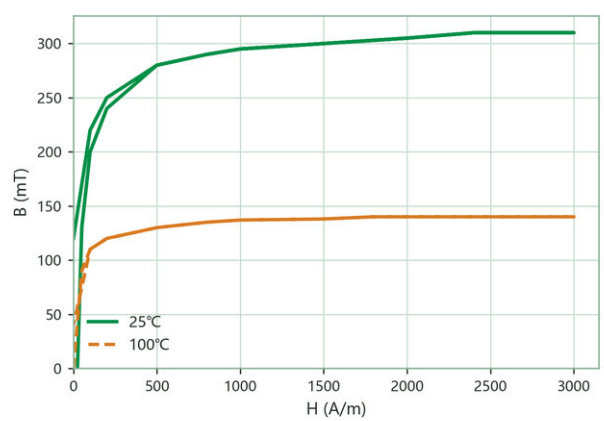
特性曲线
CHARACTERISTIC CURVES



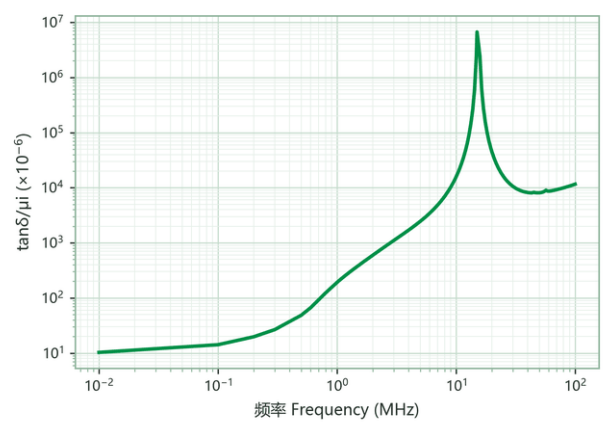
初始磁导率—温度特性
Initial Permeability vs. Temperature



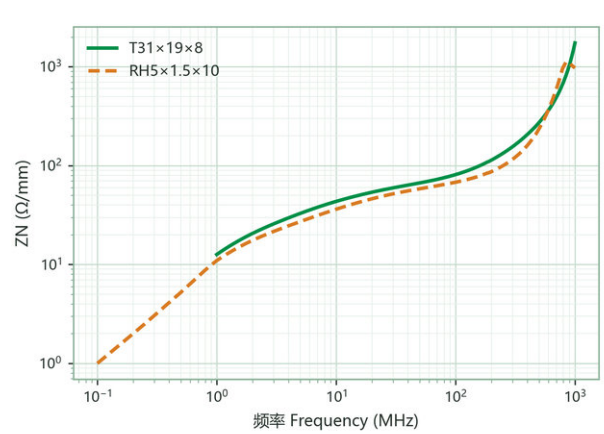
复数磁导率—频率特性
Complex Permeability (μ′, μ″) vs. Frequency



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)