DL3

高磁通耐热冲击材料
HIGH FLUX & THERMAL SHOCK RESISTANT FERRITE

DL3 为镍锌铁氧体材料，初始磁导率（μi）约 350，饱和磁通密度（Bs）约 350 mT（25 ℃）/ 280 mT（100 ℃），居里温度高于 200 ℃。中等磁导率搭配约 10^7 Ω·m 的高电阻率，使其在低磁通条件下维持极低的相对损耗因子（15×10^{-6} @0.1 MHz / 30×10^{-6} @2.0 MHz），信号失真与插入损耗小；优异的耐热冲击性能可承受回流焊的急剧温变，特别适合 SMD 型元件。典型应用为宽频与平衡–不平衡（Balun）变压器、共模与差模 EMI 抑制、射频调谐元件、中高频小功率电感与 RF choke，亦用于汽车 ABS 传感器等精密磁传感磁芯。在 DL 系列中，DL3 为基准通用型：需要更高灵敏度时选 DL4（μi 约 600）；需要更高饱和磁通与耐温时选 DL5 / DL6；DL5H 则兼顾较高磁导率与较高 Bs。

DL3 is a NiZn ferrite with an initial permeability (μi) of approx. 350, a saturation flux density (Bs) of approx. 350 mT at 25 °C (280 mT at 100 °C) and a Curie temperature above 200 °C. Its medium permeability combined with a high resistivity of about 10^7 Ω·m keeps the relative loss factor very low under low flux (15×10^{-6} at 0.1 MHz / 30×10^{-6} at 2.0 MHz), minimising signal distortion and insertion loss, while its excellent thermal-shock resistance withstands the rapid temperature swings of reflow soldering — well suited to SMD parts. Typical uses are wideband and balun transformers, common- and differential-mode EMI suppression, RF tuning elements, mid/high-frequency low-power inductors and RF chokes, as well as precision sensing cores such as automotive ABS sensors. Within the DL family, DL3 is the general-purpose baseline: choose DL4 (μi approx. 600) for higher sensitivity, DL5/DL6 for higher flux density and temperature capability, or DL5H to balance both.

Wideband / Balun Transformer | EMI Suppression | RF Tuning | Power Inductor / RF Choke | Automotive Sensor

电磁特性 MAGNETIC CHARACTERISTICS

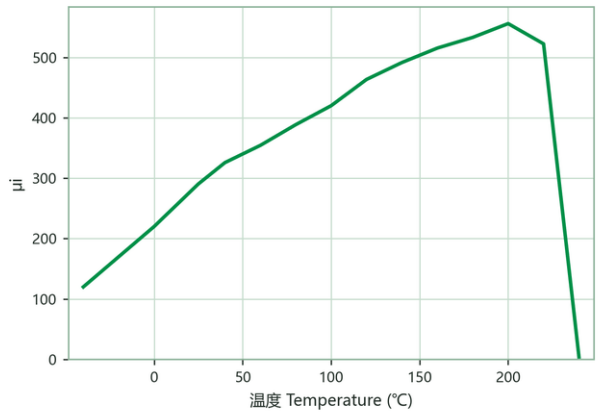
特性 Characteristic	条件 Condition	值 Value	单位 Unit
初始磁导率 μi Initial Permeability	100 kHz & <0.2 mT	350±25%	
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 25 ℃ 100 Hz	350	mT
饱和磁通密度 Bs Saturation Flux Density	3000 A/m · 100 ℃ 100 Hz	280	mT
残留磁通密度 Br Remanence	3000 A/m · 25 ℃ 100 Hz	205	mT
残留磁通密度 Br Remanence	3000 A/m · 100 ℃ 100 Hz	125	mT
矫顽力 Hc Coercivity	3000 A/m · 25 ℃ 100 Hz	45	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 ℃ 100 Hz	40	A/m
αμr（温度系数） Temperature coefficient of permeability	20 ~ 60 ℃	25	$\times10^{-6}$/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	2.0 MHz & <0.2 mT	30	$\times10^{-6}$
居里温度 Tc Curie Temp.	100 kHz & <0.2 mT	>200	℃
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
功率损耗 Pcv Power Loss	100 kHz/100 mT | 500 kHz/30 mT | 1 MHz/30 mT · 25 °C	925 | 422 | 1160	kW/m³

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。25 ℃ 之功率损耗 Pcv 为 T31×19×8 环形磁芯绕线 3 匝实测。

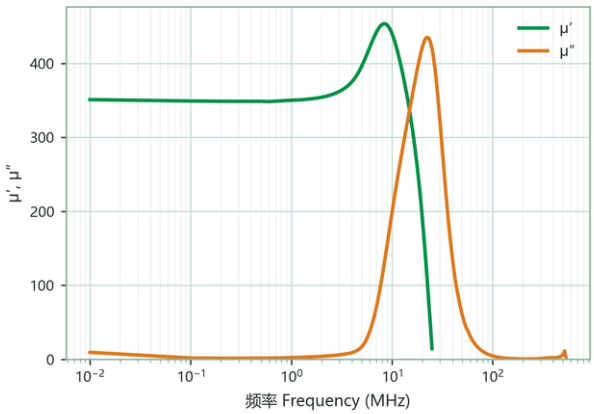
Note: all values are typical data measured on a T31×19×8 toroidal core; actual product specifications will vary with geometry and size. Pcv values at 25 °C are measured on a T31×19×8 toroid wound with 3 turns.

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

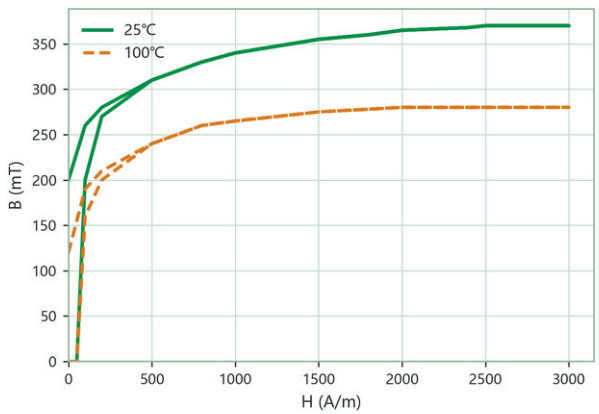
DL3 特性曲线
CHARACTERISTIC CURVES



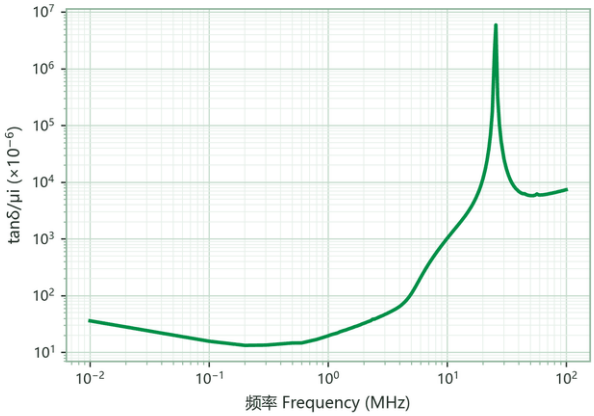
初始磁导率—温度特性
Initial Permeability vs. Temperature



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