SL80

宽温稳定材料
WIDE TEMP STABLE MATERIALS

鐵研 TAK

SL80 为镍锌铁氧体材料，初始磁导率（μi）约 800，饱和磁通密度（Bs）约 350 mT（25 ℃）/ 260 mT（100 ℃），居里温度高于 170 ℃。本材料是宽温稳定家族的高磁导支：温度系数 αμr 在 −40 ~ 140 ℃ 全范围内仅 0 ~ 4×10⁻⁶/K，磁导率全温域几乎持平；相对损耗因子 15×10⁻⁶（0.1 MHz）/ 30×10⁻⁶（1.0 MHz），滤波与阻抗特性不随温度漂移。较高的 μi 在环形等闭磁路中提供较高的单位匝数感量与阻抗，可以较少匝数达成滤波目标。典型应用为 EMI 滤波器、共模扼流圈与信号线抗干扰磁环，以及 RF/IF 线圈与高频小电流电感；亦用于车载传感器与 ADAS、RFID 天线、无线充电与通信设备滤波器等需要全温域一致特性的场合。与 SL50（μi 约 500、αμr 0 ~ 2）相比，SL80 以略宽的温度系数换取约六成的标称磁导率增幅。另外，TAK 有三种标称 μi≈800 的材料——SL80、G5A 与 L43——适用频段相近，依需求分流：需要全温域低漂移选 SL80；需要高 Bs 的差模 / 功率承载选 G5A（Bs 约 400 mT）；以 EMI 宽频抑制为主选 L43。

SL80 is a NiZn ferrite with an initial permeability (μi) of approx. 800, a saturation flux density (Bs) of approx. 350 mT at 25 °C (260 mT at 100 °C) and a Curie temperature above 170 °C. It is the high-permeability member of the wide-temperature-stable family: the temperature coefficient αμr stays within 0–4×10⁻⁶/K across −40 to 140 °C, keeping permeability essentially flat over the whole range, and with a relative loss factor of 15×10⁻⁶ at 0.1 MHz / 30×10⁻⁶ at 1.0 MHz the filtering and impedance characteristics do not drift with temperature. The higher μi delivers more inductance and impedance per turn in toroids and other closed magnetic circuits, reaching filtering targets with fewer turns. Typical uses are EMI filters, common-mode chokes and signal-line suppression rings, plus RF/IF coils and HF small-current inductors; it also serves automotive sensors and ADAS, RFID antennas, wireless charging and communication-equipment filters where characteristics must hold across the full temperature range. Against SL50 (μi approx. 500, αμr 0–2), SL80 trades a slightly wider temperature coefficient for roughly 60 % more nominal permeability. TAK offers three grades at a nominal μi of approx. 800 — SL80, G5A and L43 — with similar frequency reach; split by need: SL80 for the lowest drift across temperature, G5A (Bs approx. 400 mT) for differential-mode/power current capability, and L43 for broadband EMI suppression.

EMI Filter | Common-Mode Choke | RF / IF Coil | Wireless Charging Coil | RFID Antenna

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	800±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	260	mT
残留磁通密度 Br Remanence	3000 A/m · 25 ℃ 100 Hz	190	mT
残留磁通密度 Br Remanence	3000 A/m · 100 ℃ 100 Hz	109	mT
矫顽力 Hc Coercivity	3000 A/m · 25 ℃ 100 Hz	50.5	A/m
矫顽力 Hc Coercivity	3000 A/m · 100 ℃ 100 Hz	44.5	A/m
αμr（温度系数） Temperature coefficient of permeability	-40 ~ 140 ℃	0~4	×10⁻⁶/K
相对损耗因子 tanδ/μi Relative Loss Factor	0.1 MHz & <0.2 mT	15	×10⁻⁶
相对损耗因子 tanδ/μi Relative Loss Factor	1.0 MHz & <0.2 mT	30	×10⁻⁶
居里温度 Tc Curie Temp.	100 kHz & <0.2 mT	>170	℃
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	630 | 189 | 593	kW/m³

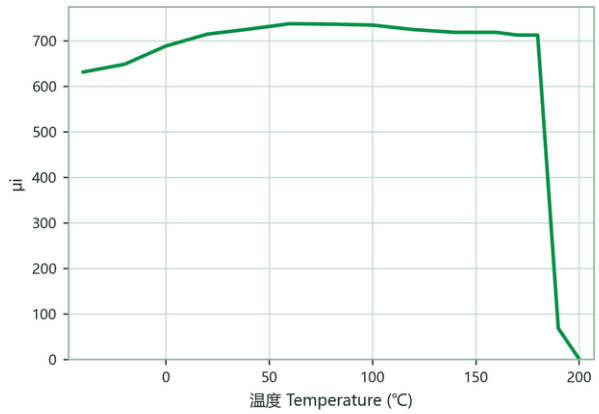
备注：各项数值均为环形磁芯T22×14×8测得的典型数值，由于几何形状和尺寸的影响，产品规格将与这些数据有所差异。25 ℃ 之功率损耗 Pcv 为 T22×14×8 环形磁芯绕线 3 匝实测。

Note: all values are typical data measured on a T22×14×8 toroidal core; actual product specifications will vary with geometry and size. Pcv values at 25 °C are measured on a T22×14×8 toroid wound with 3 turns.

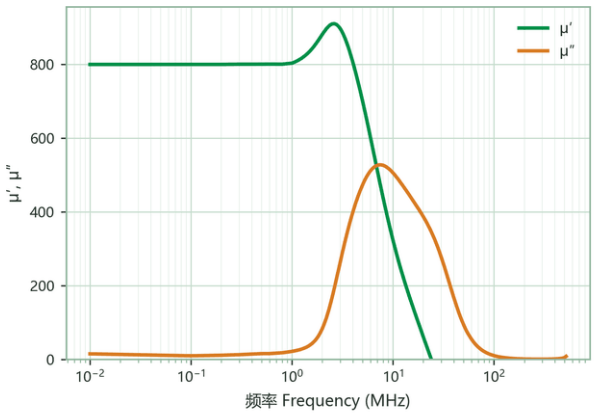
特性曲线详见次页 CHARACTERISTIC CURVES — SEE NEXT PAGE

SL80

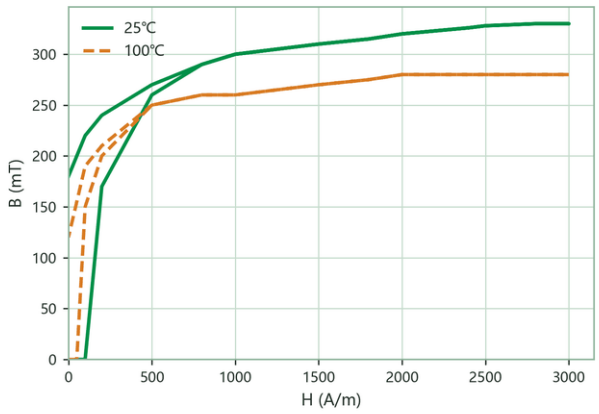
特性曲线
CHARACTERISTIC CURVES



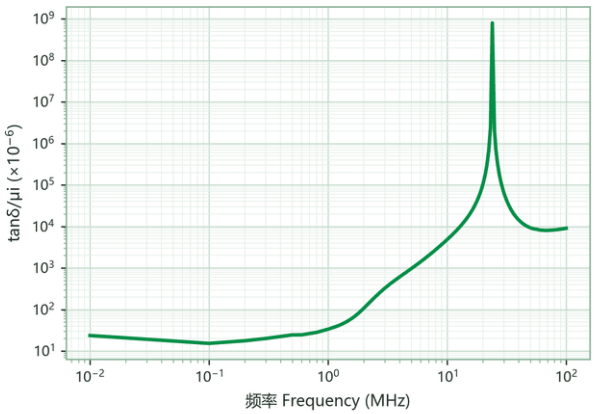
初始磁导率—温度特性
Initial Permeability vs. Temperature



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