T07

高磁导率温度稳定材料
TEMPERATURE-STABLE HIGH-PERMEABILITY FERRITE

鐵研 TAK

T07 为温度稳定型高磁导率锰锌铁氧体，初始磁导率（μi）7000，饱和磁通密度（Bs）420 mT（25 ℃）/ 240 mT（100 ℃），居里温度高于 140 ℃。族内最平的温度特性：磁导率温度因子 αf 为 −0.1 ~ 0.5×10⁻⁶，磁滞常数 ηB 0.2×10⁻⁶/mT 亦为族内最低，100 kHz 相对损耗因子低于 12×10⁻⁶，矫顽力（Hc）9.6 A/m（25 ℃）/ 6 A/m（100 ℃）——感量与相位误差几乎不随温度与激磁大小漂移，这正是计量级电流互感器对磁芯的要求。100 ℃ 时 240 mT 的 Bs 高于 T06 / T12，工作窗略宽。典型应用为电能计量与保护用精密电流互感器、宽频与 xDSL 信号变压器、低失真信号电感。在高磁导率族中，T07 是 μi 与温度稳定性的折衷：感量优先选 T10 / T12（μi 10000 / 12000）；需要 310 mT 的热态 Bs 选 T05；一般信号变压器 T06 已足够。选它的理由是稳定而非数值最大，适合校正成本高于磁芯成本的产品。

T07 is a temperature-stable high-permeability MnZn ferrite with an initial permeability (μi) of 7000, a saturation flux density (Bs) of 420 mT at 25 °C (240 mT at 100 °C) and a Curie temperature above 140 °C. It has the flattest temperature behaviour in the family: a permeability temperature factor αf of −0.1 to 0.5×10⁻⁶, the family's lowest hysteresis constant ηB of 0.2×10⁻⁶/mT, a relative loss factor below 12×10⁻⁶ at 100 kHz and a coercivity (Hc) of 9.6 A/m at 25 °C (6 A/m at 100 °C) — inductance and phase error barely move with temperature or drive level, as a metering-grade current transformer requires. With 240 mT at 100 °C its Bs is above T06/T12. Typical uses are precision current transformers for energy metering and protection, wideband and xDSL signal transformers and low-distortion signal inductors. Within the high-permeability family T07 is the compromise between μi and temperature stability: choose T10/T12 (μi 10000/12000) when inductance comes first, T05 for 310 mT of hot-state Bs, T06 for ordinary signal transformers. Pick it for stability rather than the largest number — where calibration costs more than the core.

Precision Current Transformer | Energy-Metering CT | Wideband / xDSL Transformer | Low-Distortion Signal Inductor

电磁特性 MAGNETIC CHARACTERISTICS

特性 Characteristic	条件 Condition	25 ℃	100 ℃	单位 Unit
初始磁导率 Initial Permeability μi	100 kHz & <0.2 mT	7000±25%		
饱和磁通密度 Saturation Flux Density Bs	1200 A/m 50 Hz	420	240	mT
残留磁通密度 Remanence Br	1200 A/m 50 Hz	130	105	mT
矫顽力 Coercivity Hc	1200 A/m 50 Hz	9.6	6	A/m
相对损耗因子 Loss Factor	100 kHz	<12		10^{-6}
磁滞常数 Hysteresis Constant ηB	100 kHz 1.5-3.0 mT	0.2		10^{-6}/mT
温度系数 Temperature Factor αf	100kHz <0.2 mT	-0.1~0.5		10^{-6}
居里温度 Curie Temperature Tc	100 kHz & <0.2 mT	>140		℃
密度 Density D	阿基米德法 Archimedes method	4.9		g/cm³
电阻率 Electrical Resistivity ρ	直流电流 DC Current	0.5		Ω·m

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

T07

特性曲线
CHARACTERISTIC CURVES