TB2

高矩形比功率材料
HIGH-SQUARENESS POWER FERRITE

TB2 为高矩形比锰锌功率铁氧体，初始磁导率（μi）1500，饱和磁通密度（Bs）580 mT（25 ℃）/ 460 mT（100 ℃），居里温度高于 220 ℃。其特征为残留磁通密度（Br）420 mT（25 ℃）/ 330 mT（100 ℃），矩形比 Br/Bs 约 0.72，磁滞回线接近矩形：磁芯于两饱和态之间切换明确，激磁移除后保有大部分磁通，此即磁放大器与饱和电抗器之工作原理。相应之代价为 30 A/m（25 ℃）/ 25 A/m（100 ℃）之矫顽力（Hc）与较高之损耗（25 kHz / 200 mT：310 → 430 kW/m³；100 kHz / 100 mT：440 → 760 kW/m³）。典型应用为磁放大器稳压、饱和电抗器、电子镇流器之触发磁芯与开关扼流圈。于传统低频功率材料三种之中，TB2 为唯一以矩形比为选用依据者：一般变压器与扼流圈之低损耗需求由 T2 / T2M 承担；更高 Bs 与耐偏磁需求则参见高 Bs 特殊功率材料 TM82。本材料适用于需要开关式磁化行为之电路，不建议用于线性变压器。

TB2 is a high-squareness MnZn power ferrite with an initial permeability (μi) of 1500, a saturation flux density (Bs) of 580 mT at 25 °C (460 mT at 100 °C) and a Curie temperature above 220 °C. Its characteristic feature is a remanence (Br) of 420 mT at 25 °C (330 mT at 100 °C), a squareness ratio Br/Bs of about 0.72 and a near-rectangular hysteresis loop: the core switches distinctly between its two saturated states and retains most of its flux after excitation is removed, which is the operating principle of magnetic amplifiers and saturable reactors. The corresponding penalty is a coercivity (Hc) of 30 A/m at 25 °C (25 A/m at 100 °C) and higher loss (25 kHz / 200 mT: 310 → 430 kW/m³; 100 kHz / 100 mT: 440 → 760 kW/m³). Typical applications are mag-amp regulators, saturable reactors, ballast trigger cores and switching chokes. Among the three conventional low-frequency grades TB2 is the only one selected for squareness: low-loss transformer and choke duty is served by T2/T2M, and higher Bs and DC-bias tolerance by the high-Bs special grade TM82. The grade is intended for circuits requiring switching-type magnetisation and is not recommended for linear transformers.

Magnetic Amplifier | Saturable Reactor | Ballast Trigger Core | Switching Choke

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	1500±25%		
增幅磁导率 Amplitude Permeability μa	25 kHz/400 mT	> 900	> 500	
饱和磁通密度 Saturation Flux Density Bs	1200 A/m 100 Hz	580	460	mT
残留磁通密度 Remanence Br	1200 A/m 100 Hz	420	330	mT
矫顽力 Coercivity Hc	1200 A/m 100 Hz	30	25	A/m
相对损耗因子 Loss Factor	100 kHz & <0.2 mT	< 40		10^{-6}
居里温度 Curie Temperature Tc	100 kHz & <0.2 mT	>220		℃
密度 Density D	阿基米德法 Archimedes method	4.90		g/cm^3
电阻率 Electrical Resistivity ρ	直流电流 DC Current	>4		Ω·m

功率损耗 Pcv POWER LOSS · KW/M³

测试条件 Condition	25 ℃	100 ℃
25 kHz/200 mT	310	430
100 kHz/100 mT	440	760

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

TB2

特性曲线
CHARACTERISTIC CURVES











