TP44

低损耗功率材料
LOW-LOSS POWER FERRITE

TP44 为低损耗锰锌功率铁氧体，初始磁导率（μi）2000，饱和磁通密度（Bs）500 mT（25 ℃）/ 400 mT（100 ℃），居里温度高于 220 ℃。其优势集中于 100 kHz 高磁通区：100 kHz / 200 mT 之 Pcv 为 600 kW/m³（25 ℃）→ 330 kW/m³（100 ℃），较 TP40 之 480 kW/m³ 低约 30 %，25 kHz / 200 mT 于 100 ℃ 为 50 kW/m³；100 ℃ 之残留磁通密度（Br）80 mT、矫顽力（Hc）8 A/m，100 kHz 相对损耗因子低于 5×10⁻⁶，为 TP 系三种材料中最低。于 300 kHz / 100 mT 则为 800 → 500 kW/m³，高于 TP40 之 400 kW/m³，故其最适频段为 100–200 kHz。典型应用为 100–200 kHz 之开关电源主变压器、LED 驱动与工业电源、电源适配器。于标准频段六种材料中，TP44 为 TP 系 100 kHz 区之低损耗版本，μi 与 TP40 相同，可在不变更匝数下直接替换；工作点接近 300 kHz 时以 TP40 / TP45 较适；需以 μi 2500 减少匝数者采 TP45（100 kHz / 200 mT 损耗同级）。

TP44 is a low-loss MnZn power ferrite with an initial permeability (μi) of 2000, a saturation flux density (Bs) of 500 mT at 25 °C (400 mT at 100 °C) and a Curie temperature above 220 °C. Its advantage is concentrated in the 100 kHz high-flux region: Pcv at 100 kHz / 200 mT is 600 kW/m³ at 25 °C and 330 kW/m³ at 100 °C, about 30 % below TP40's 480 kW/m³, and at 25 kHz / 200 mT it is 50 kW/m³ at 100 °C; at 100 °C the remanence (Br) is 80 mT and the coercivity (Hc) 8 A/m, and the relative loss factor at 100 kHz is below 5×10⁻⁶, the lowest of the three TP grades. At 300 kHz / 100 mT it reads 800 → 500 kW/m³, above TP40's 400 kW/m³, so its optimum band is 100–200 kHz. Typical applications are 100–200 kHz switch-mode main transformers, LED drivers, industrial supplies and adapters. Among the six mid-frequency grades TP44 is the low-loss variant of the TP family for the 100 kHz region; with the same μi as TP40 it can be substituted without changing the number of turns. TP40 or TP45 are more appropriate for operating points near 300 kHz; TP45 (μi 2500, equivalent loss at 100 kHz / 200 mT) is recommended where fewer turns are required.

SMPS Main Transformer | LED Driver | Industrial Power | Adapter

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	2000±25%		
增幅磁导率 Amplitude Permeability μa	25 kHz/400 mT	> 3000	> 2700	
饱和磁通密度 Saturation Flux Density Bs	1200 A/m 100 Hz	500	400	mT
残留磁通密度 Remanence Br	1200 A/m 100 Hz	150	80	mT
矫顽力 Coercivity Hc	1200 A/m 100 Hz	12	8	A/m
相对损耗因子 Loss Factor	100 kHz & <0.2 mT	< 5		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	4.8		g/cm^3
电阻率 Electrical Resistivity ρ	直流电流 DC Current	>6.5		Ω·m

功率损耗 Pcv POWER LOSS · KW/M³

测试条件 Condition	25 ℃	100 ℃
25 kHz/200 mT	120	50
100 kHz/200 mT	600	330
300 kHz/100 mT	800	500

Steinmetz 系数 Pcv = K·f^α·B^β

频段 Range	K	α	β
100 ≤500	6.64E-08	1.95132	2.55001

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

TP44

特性曲线
CHARACTERISTIC CURVES











