# TM71

高磁导率功率材料
HIGH-PERMEABILITY POWER FERRITE

TM71 为高磁导率锰锌功率铁氧体，初始磁导率（μi）3800，为功率系列最高，饱和磁通密度（Bs）550 mT（25 ℃）/ 425 mT（100 ℃），居里温度高于 255 ℃。矫顽力（Hc）为 6 A/m（25 ℃）/ 2.5 A/m（100 ℃），100 kHz 相对损耗因子低于 4×10⁻⁶：高 μi 与低 Hc 使同一激磁电感所需匝数最少、激磁电流最小，脉冲之顶降与恢复均快。惟其损耗对温度敏感：100 kHz / 200 mT 之 Pcv 由 25 ℃ 的 400 kW/m³ 升至 100 ℃ 的 1100 kW/m³，500 kHz / 50 mT 为 190 → 525 kW/m³，于升温后不属低损耗材料。典型应用为栅极驱动与脉冲变压器、信号隔离变压器，以及低磁通之储能与滤波电感。于高 Bs 特殊功率材料两种之中，TM71 之优势在 μi 而非损耗（TM82 之优势则在 600 mT 之 Bs 与耐偏磁能力）：磁芯长期高温或大磁通摆幅之主变压器宜改用标准频段之 TM80 / TM83。其 25 ℃ 直流偏磁能力领先，至 100 ℃ 因损耗上升而不再具优势，选用应以实际磁芯温度为准。

TM71 is a high-permeability MnZn power ferrite with an initial permeability (μi) of 3800, the highest in the power series, a saturation flux density (Bs) of 550 mT at 25 °C (425 mT at 100 °C) and a Curie temperature above 255 °C. Its coercivity (Hc) is 6 A/m at 25 °C (2.5 A/m at 100 °C) and its relative loss factor at 100 kHz is below 4×10⁻⁶: high μi and low Hc minimise the number of turns and the magnetising current for a given inductance, giving fast pulse droop and recovery. Its loss is, however, temperature-sensitive: Pcv at 100 kHz / 200 mT rises from 400 kW/m³ at 25 °C to 1100 kW/m³ at 100 °C and at 500 kHz / 50 mT from 190 to 525 kW/m³, so it is not a low-loss grade at elevated temperature. Typical applications are gate-drive and pulse transformers, signal isolation transformers, and low-flux storage and filter inductors. Of the two high-Bs special grades TM71 is distinguished by μi rather than loss (TM82 by its 600 mT Bs and DC-bias tolerance): main transformers operating hot or at large flux swing should use the mid-frequency grades TM80/TM83. Its DC-bias capability leads at 25 °C but no longer at 100 °C owing to the rise in loss, so selection should be based on the actual core temperature.

Gate-Drive Transformer | Pulse Transformer | Signal Isolation Transformer | Low-Flux Storage 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 | 3800±25% | | |
| 增幅磁导率 Amplitude Permeability μa | 25 kHz/400 mT | > 4000 | > 3000 | |
| 饱和磁通密度 Saturation Flux Density Bs | 1200 A/m 100 Hz | 550 | 425 | mT |
| 残留磁通密度 Remanence Br | 1200 A/m 100 Hz | 80 | 150 | mT |
| 矫顽力 Coercivity Hc | 1200 A/m 100 Hz | 6 | 2.5 | A/m |
| 相对损耗因子 Loss Factor | 100 kHz & <0.2 mT | < 4 | | $10^{-6}$ |
| 居里温度 Curie Temperature Tc | 100 kHz & <0.2 mT | > 255 | | ℃ |
| 密度 Density D | 阿基米德法 Archimedes method | 4.9 | | $g/cm^3$ |
| 电阻率 Electrical Resistivity ρ | 直流电流 DC Current | > 5 | | Ω·m |

## 功率损耗 Pcv POWER LOSS · KW/M³

| 测试条件 Condition | 25 ℃ | 100 ℃ |
|---|---|---|
| 100 kHz/200 mT | 400 | 1100 |
| 300 kHz/50 mT | 50 | 170 |
| 500 kHz/50 mT | 190 | 525 |

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

# TM71

## 特性曲线
CHARACTERISTIC CURVES
















