

E02

宽频高磁导率材料

WIDEBAND HIGH-PERMEABILITY FERRITE

E02 为宽频高磁导率锰锌铁氧体，初始磁导率 (μ_i) 2000，饱和磁通密度 (B_s) 370 mT (25 °C) / 210 mT (100 °C)，居里温度高于 130 °C。它是高磁导率族中 μ_i 最低、电阻率最高 (3.0 $\Omega\cdot\text{m}$) 的一支：较低的 μ_i 与较高的电阻率把磁导率的交越频率 ($\mu'' = \mu'$) 与涡流损耗上限往上推，宽频信号变压器的高频段因此延伸得更远；100 kHz 相对损耗因子低于 30×10^{-6} ，磁滞常数 η_B $2.0 \times 10^{-6}/\text{mT}$ ，矫顽力 (H_c) 10 A/m (25 °C) / 5 A/m (100 °C)。残留磁通密度 (B_r) 270 mT (25 °C) 偏高，用于电流互感器时要留意直流暂态后的残磁。典型应用为宽频信号与脉冲变压器、电流互感器、宽频电感与信号滤波。在高磁导率族中，E02 以带宽区隔：需要更高感量与更低失真时选 T05 (μ_i 5000， η_B $0.3 \times 10^{-6}/\text{mT}$)；追求最高共模阻抗选 T10 / T12。居里温度 130 °C 与 100 °C 时 210 mT 的 B_s ，限制它在低磁通、中低温场合使用。

E02 is a wideband high-permeability MnZn ferrite with an initial permeability (μ_i) of 2000, a saturation flux density (B_s) of 370 mT at 25 °C (210 mT at 100 °C) and a Curie temperature above 130 °C. It has the lowest μ_i and highest resistivity (3.0 $\Omega\cdot\text{m}$) in the high-permeability family: both push the permeability roll-off and the eddy-current loss ceiling upward, so the high-frequency end of a wideband signal transformer reaches further; the relative loss factor at 100 kHz is below 30×10^{-6} , the hysteresis constant η_B $2.0 \times 10^{-6}/\text{mT}$ and coercivity (H_c) 10 A/m at 25 °C (5 A/m at 100 °C). Its remanence (B_r) of 270 mT at 25 °C is on the high side, so in current transformers allow for residual flux after a DC transient. Typical uses are wideband signal and pulse transformers, current transformers, wideband inductors and signal filters. Within the high-permeability family E02 is set apart by bandwidth: choose T05 (μ_i 5000, η_B $0.3 \times 10^{-6}/\text{mT}$) for more inductance and lower distortion, T10/T12 for the highest common-mode impedance. A 130 °C Curie point and 210 mT at 100 °C confine it to low-flux, low-to-medium-temperature duty.

Wideband Signal Transformer

Pulse Transformer

Current Transformer

Wideband Inductor

电磁特性 MAGNETIC CHARACTERISTICS

特性 Characteristic	条件 Condition	25 °C	100 °C	单位 Unit
初始磁导率 Initial Permeability μ_i	100 kHz & <0.2 mT	2000 $\pm$ 25%		
饱和磁通密度 Saturation Flux Density B_s	1200 A/m 50 Hz	370	210	mT
残留磁通密度 Remanence B_r	1200 A/m 50 Hz	270	100	mT
矫顽力 Coercivity H_c	1200 A/m 50 Hz	10	5	A/m
相对损耗因子 Loss Factor	100 kHz	<30		10^{-6}
磁滞常数 Hysteresis Constant η_B	10 kHz 1.5-3.0 mT	2.0		$10^{-6}/\text{mT}$
温度系数 Temperature Factor α_f	100 kHz & <0.2 mT	<7		10^{-6}
居里温度 Curie Temperature T_c	100 kHz & <0.2 mT	>130		°C
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	3.0		$\Omega\cdot\text{m}$

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E02

特性曲线

CHARACTERISTIC CURVES

