

nanocrystalline cores for high common mode currents or high unbalanced currents (AC or DC)

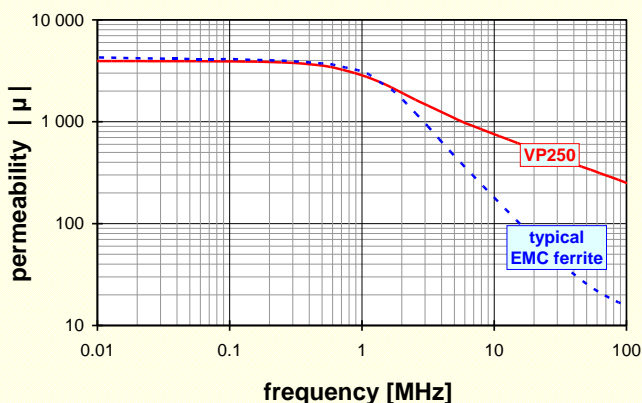
These tape wound cores made of nanocrystalline VITROPERM 250F offer increased bias current capabilities and superior broadband RFI-attenuation in comparison to typical EMI ferrites. They have been designed for all EMI problems with high common mode currents or high unbalanced currents (AC or DC).

VITROPERM 250F offers significant advantages in volume and performance for RFI-noise suppression, for reduction of shaft voltages or as a solution for bearing currents of motors driven by Variable Frequency Drives or high unbalanced currents in Welding Units and some other applications. Based on the high saturation induction of VITROPERM, higher inductance values to attenuate common mode noise and higher leakage inductance to attenuate differential mode noise at the same nominal current can be achieved. Due to low core losses, VITROPERM leads to lower operational temperature of the component. Vice versa, the low core losses and the extended temperature range allow miniaturization of the common mode choke.

In summary common mode chokes with nanocrystalline cores of VITROPERM 250F offer the following features:

- about 2.5 times higher saturation currents than ferrites ($\mu \sim 5000$) for same core size and same number of turns
- broadband insertion loss characteristic with good attenuation performance over a wide frequency band
- small choke size for volume and weight optimized solutions
- simple design and improved product reliability

permeability vs. frequency: ferrite – VITROPERM



material data of VITROPERM 250F (typical values):

Saturation flux density (room temperature)	1.2 T
Coercivity (static)	< 3 A/m
Saturation magnetostriction	$\sim 8 \times 10^{-6}$
Specific electrical resistance	$1.15 \Omega \text{ mm}^2/\text{m}$
Curie temperature	> 600 °C
Upper operation temperature (for continuous operation)	130°C ^{*)}
Upper operation temperature (short term)	180 °C
Typical Permeability μ_3 (at 10 kHz)	~ 4000

^{*)} Plastic cases suitable for upper continuous application temperatures of 155°C are available on request.

Standard type series

core dimensions mm	finished dimensions (limiting values)			effective core cross- section A_{Fe} cm ²	mean core path length l_{Fe} cm	A_L - value typ. A_L (100 kHz) μH	saturation current (20°C, ~70% B_s) I_{cm} (100 kHz) A	part number, order code T60006-...
	O.D. mm	I.D. mm	H mm					
16 × 10 × 6	17.9	8.1	8.1	0.14	4.08	2.0	5.6	L2016-V165
25 × 16 × 10	27.9	13.6	12.5	0.36	6.44	3.1	9.6	L2025-W980
30 × 20 × 10	32.8	17.6	12.5	0.40	7.85	2.8	11.8	L2030-W981
40 × 32 × 15	43.3	28.8	18.3	0.46	11.3	2.2	17.1	L2040-W964
50 × 40 × 20	53.5	36.3	23.4	0.76	14.1	3.0	20.5	L2050-V166
63 × 50 × 25	67.3	46.5	28.6	1.24	17.8	3.2	30.9	L2063-W985
80 × 50 × 20	85.8	44.6	25.5	2.28	20.4	9.2	27.3	L2080-V091
90 × 60 × 20	95.4	56.1	24.7	2.28	23.6	4.5	41.8	L2090-W984
102 × 76 × 25	108.1	70.0	30.3	2.47	28.0	4.2	48.5	L2102-W947
160 × 130 × 25	166.7	124.1	30.6	2.85	45.6	2.9	81.1	L2160-W982

All listed cores are in plastic cases, fixed with silicone rubber (Fix 022) to achieve good magnetic properties and good mechanical protection. Our plastic cases are suitable for direct winding.

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