

VITROPERM 712 F

NEW NANOCRYSTALLINE CORES TO COVER FULL RANGE OF COMMON MODE CURRENTS



Tape wound cores made of our new alloy VITROPERM® 712 F with a permeability (μ) of 12,000 close the gap between VITROPERM 500 F ($\mu = 17,000 - 100,000$) and VITROPERM 250 F ($\mu = 3,000 - 5,000$).

VITROPERM 712 F offers medium bias current capability (LF and HF) and superior broadband RFI-attenuation in comparison to typical EMI ferrites.

TARGET APPLICATIONS

Wind Generators, High Power Solar Inverters, Variable Frequency Drives, Automotive, Naval.

VITROPERM 712 F offers significant advantages in volume and performance for RFI-noise suppression and is the ultimate choice for reducing bearing currents of inverter driven motors.

Due to high saturation flux density of VITROPERM suitable impedance values in optimized space can be achieved for common mode noise reduction.

In summary, common mode chokes using cores made of VITROPERM 712 F offer the following impressive features:

- saturation current 2.5...4 times higher compared to ferrites with $\mu \approx 10,000$ for same core size and same number of turns
- broadband insertion loss characteristic
- small choke size for volume and weight optimized solutions especially for One-Turn-CMC

MATERIAL DATA OF VITROPERM 712 F (TYPICAL VALUES)

Saturation flux density	1.23 T (room temperature)
Coercivity (static)	< 3 A/m
Saturation magnetostriction	$\sim 0.5 \times 10^{-6}$
Specific electrical resistivity	$1.15 \mu\Omega\text{cm}$
Curie temperature	> 600 °C
Upper operational temperature	plastic case: 130 °C* core mat.: 155 °C 180 °C (lim. time)
Typical permeability μ_3	$\sim 12,000$ (10 kHz)

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

EXAMPLES FOR DIFFERENT VITROPERM CORES

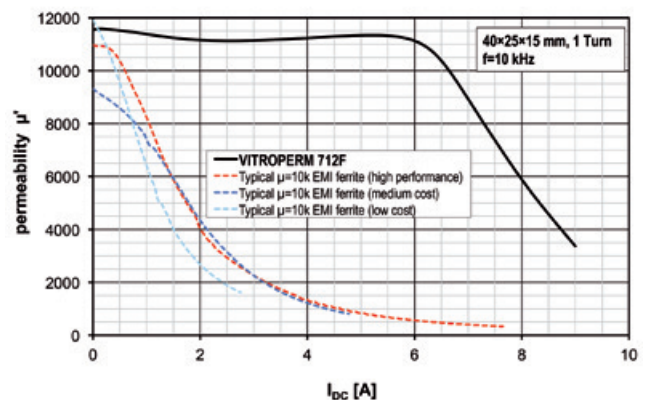
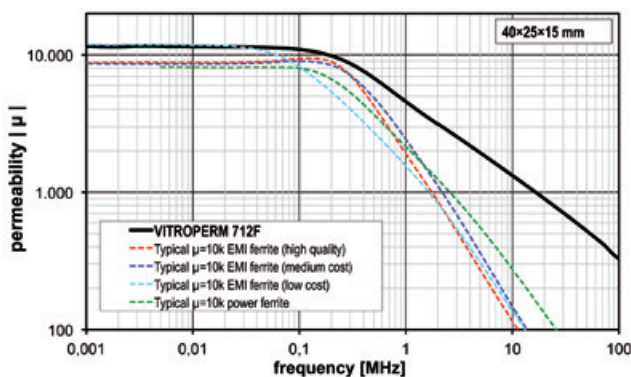
Size: 40 × 25 × 15 mm (finished: 43.1 × 22.5 × 18.5 mm)

$A_{Fe} = 0.86 \text{ cm}^2$, $l_{Fe} = 10.2 \text{ cm}$, typical values

VAC alloy brand	Intrinsic permeability μ_i	A_L 100 kHz	Saturation current I_{cm} at 20 °C, $\sim 70\% B_s$, 10/100 kHz, 1 turn
VP 500F	$\approx 100,000$	23.1 μH	0.45 / 1.0 A
VP 500F	$\approx 24,000$	17.2 μH	2.9 / 4.4 A
VP 712 F	$\approx 12,000$	11.1 μH	5.7 / 6.5 A
VP 250F	$\approx 4,500$	4.1 μH	16.9 / 17.4 A

All listed cores are in plastic cases to achieve good mechanical protection.

TYPICAL CHARACTERISTICS: VITROPERM – FERRITE MATERIALS





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ADVANCED MATERIALS – THE KEY TO PROGRESS