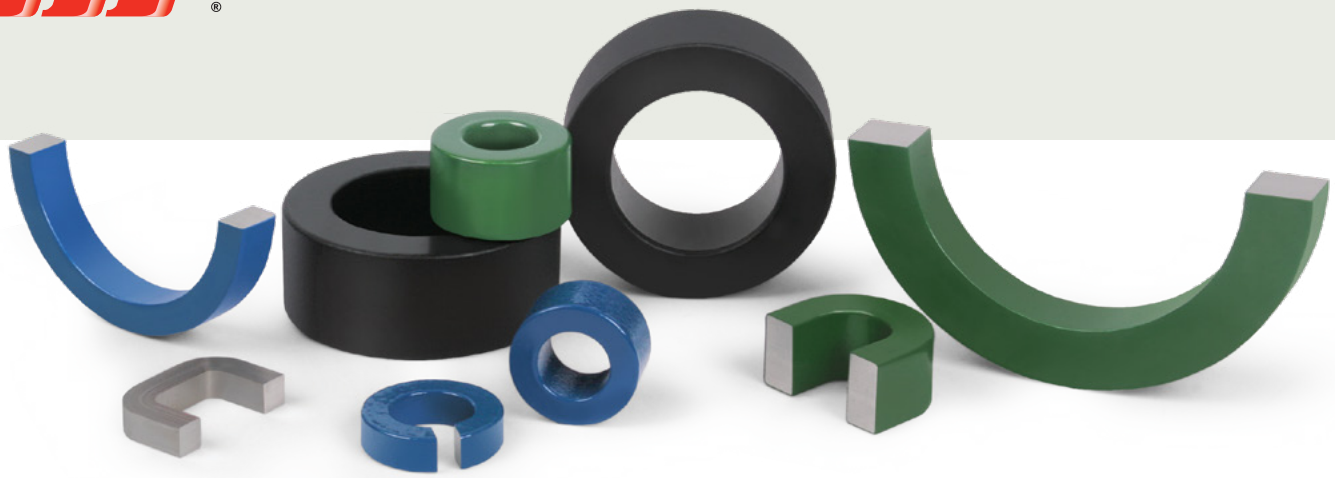
Nanocrystalline Cores

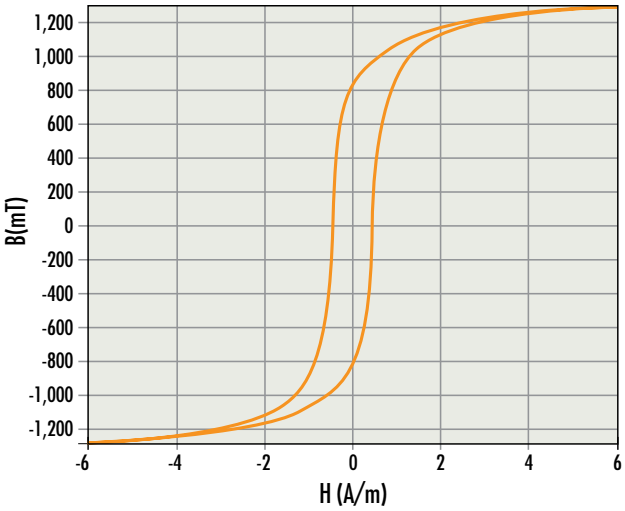


Nanocrystalline cores are an optimal choice for applications such as common mode chokes and current transformers as they exhibit high permeability, low power loss, and high saturation. Available in toroids, cut toroids, slotted toroids, and cut cores from 5 mm to 145 mm, Magnetics' nanocrystalline cores can also be used in switched-mode power supplies (SMPS), uninterruptible power supplies (UPS), solar inverters, frequency converters, EMC filters, EV chargers, and automotive and welding applications.

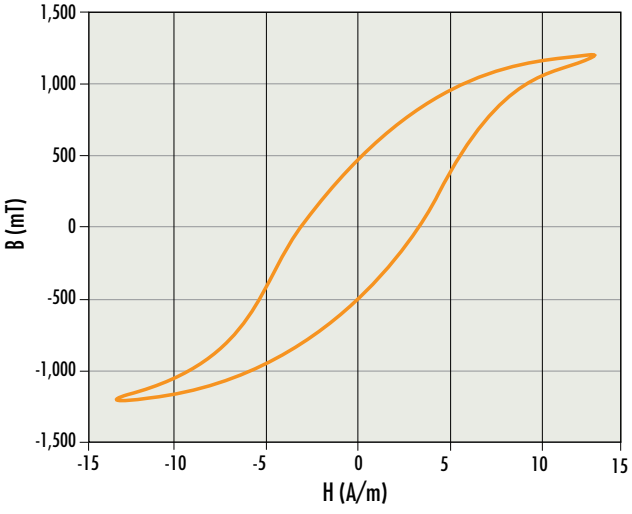
When compared to ferrite cores, nanocrystalline cores provide significantly higher impedance at high frequencies. Due to nanocrystalline's high permeability, common mode chokes and current transformers can be smaller in size, lighter in weight, and handle higher current. Saturation induction of 1.25T and a wide temperature range mean that common mode chokes, current transformers, and magnetic amplifiers (mag amps) made with nanocrystalline cores are less vulnerable to current imbalance and loss of performance at high temperature.

Nanocrystalline cores are a lower cost alternative to permalloy and exhibit improved accuracy compared to silicon steel. The material's low AC losses result in excellent efficiency, and the option of durable cases - available in polyester (<130°C) and rynite polyester (<155°C) - makes cores suitable for winding with thick wire.

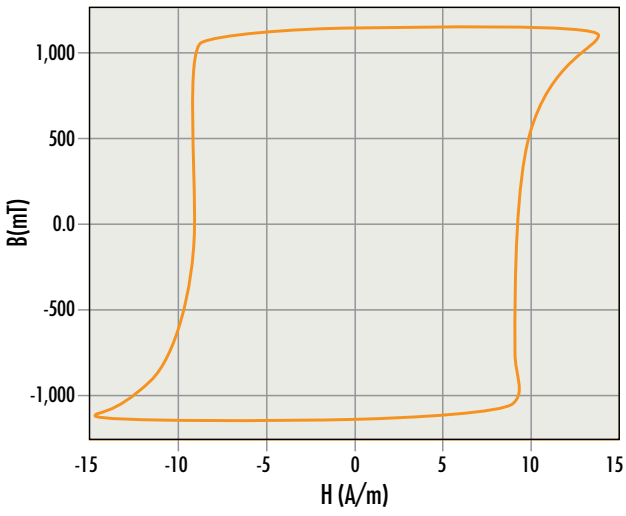
BH Loop Current Transformer (CT)



BH Loop Common Mode Choke (CM)

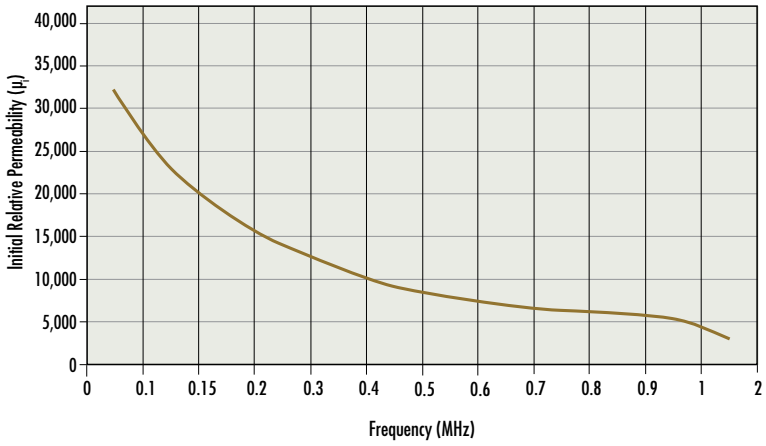


BH Loop Mag Amp (MA)



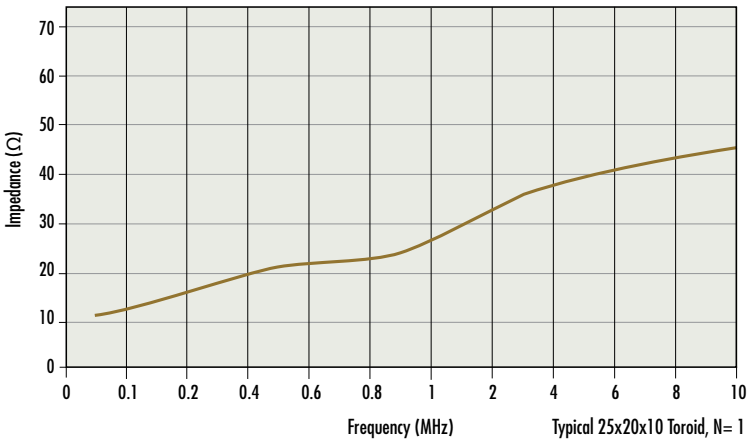
Permeability vs. Frequency

Common Mode Choke (CM)



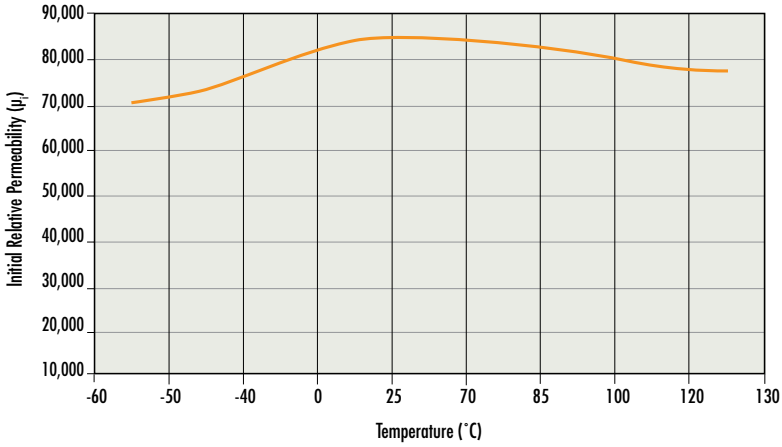
Impedance vs. Frequency 100 kHz – 10 MHz

Common Mode Choke (CM)



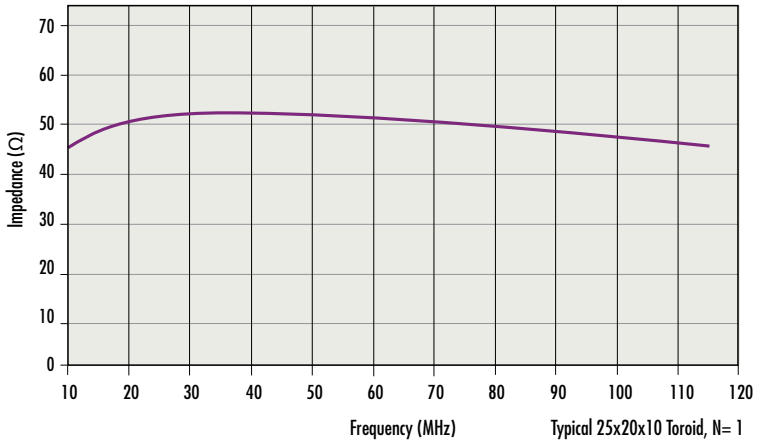
Permeability vs. Temperature @ 10kHz

Common Mode Choke (CM)



Impedance vs. Frequency 10 MHz – 120 MHz

Common Mode Choke (CM)



NANOCRYSTALLINE CUT CORE IDENTIFICATION

CM B 060 050 030 H XX CC

- CC: Optional Additional Specifications; CC = Cut Core, EL = Oval Shape, ELC = Cut Oval Shape
- XX: Optional Material and Anneal Identifiers; 85 = Common Mode Choke, 81 = Current Transformer, etc.
- H: Category of Material; H = High Perm, L = Lower Perm, M = Mag Amp
- 030: Height (rounded mm)
- 050: Length of other side (rounded mm)
- 060: Length of side containing cut or longest side if uncut (rounded mm)
- B: Protective Coating; C = Standard Case, P = Painted, B = Bare, F = FR530 Case
- CM: Application; CM = Common Mode Choke, CT = Current Transformer, MA = Mag Amp, PT = Power Transformer

NANOCRYSTALLINE TOROID CORE IDENTIFICATION

CM C 016 010 008 H XX

- XX: Optional Material and Anneal Combinations; 85 = Common Mode Choke, 81 = Current Transformer, etc.
- H: Category of Material; H = High, L = Low, M = Mag Amp
- 008: HT (rounded mm)
- 010: ID (rounded mm)
- 016: OD (rounded mm)
- C: Protective Coating; C = Standard Case, P = Painted, B = Bare, F = FR530 Case
- CM: Application; CM = Common Mode Choke, CT = Current Transformer, MA = Mag Amp, PT = Power Transformer

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