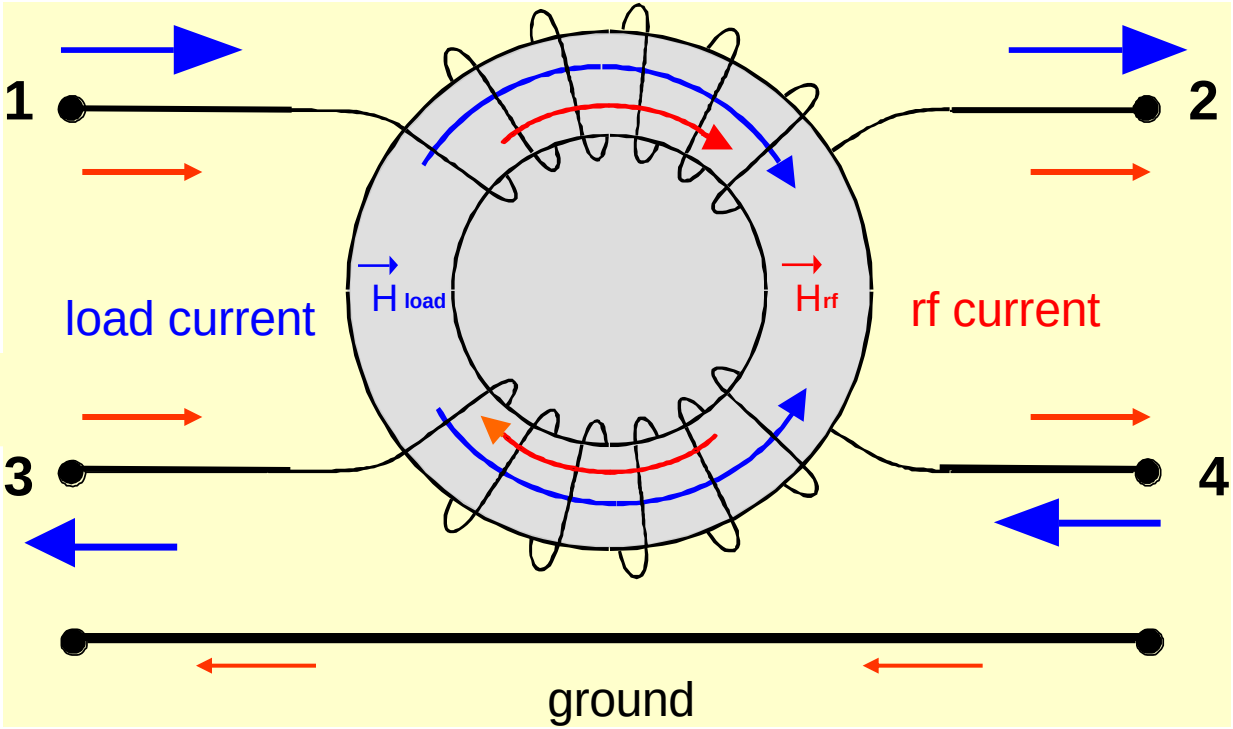
VACUUMSCHMELZE

Common Mode Chokes with VITROPERM®

KB-PM/2005

Common Mode Chokes

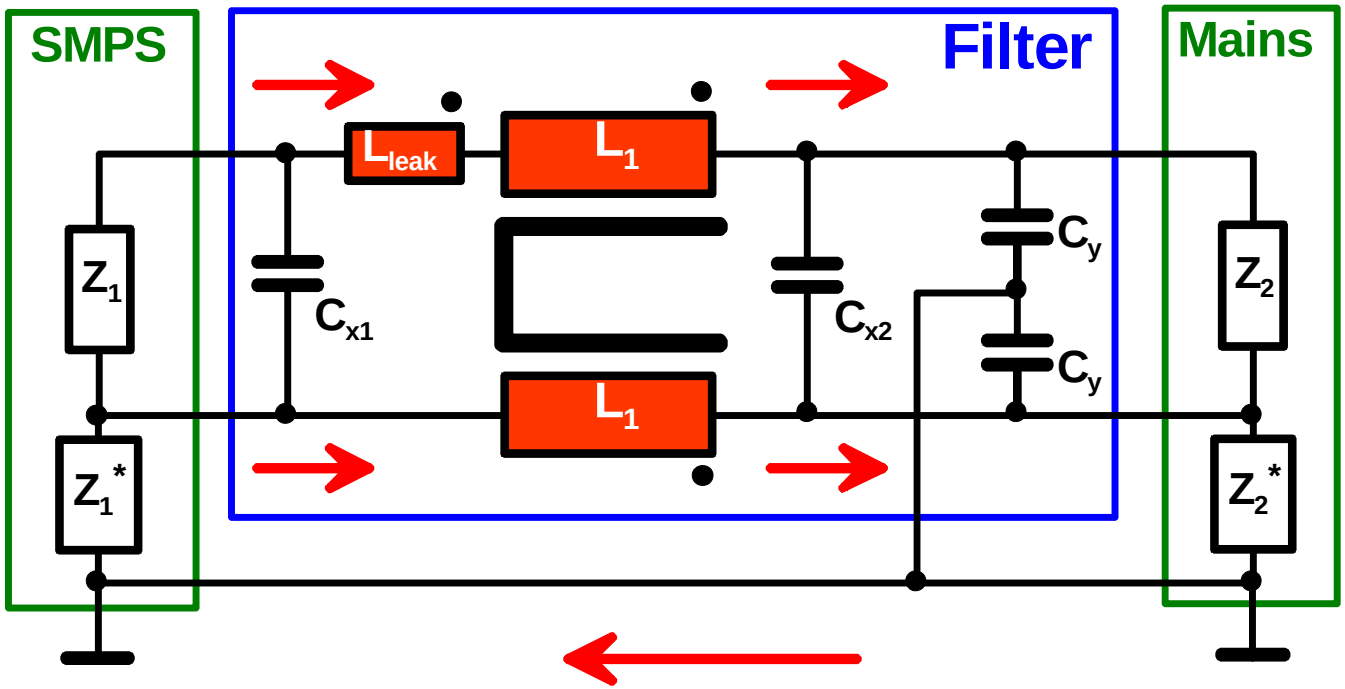
with VITROPERM® Cores



Common Mode Choke Designs

with VITROPERM® Cores

better attenuation – smaller – less stages



VITROPERM® Common Mode Chokes

Properties & Benefits

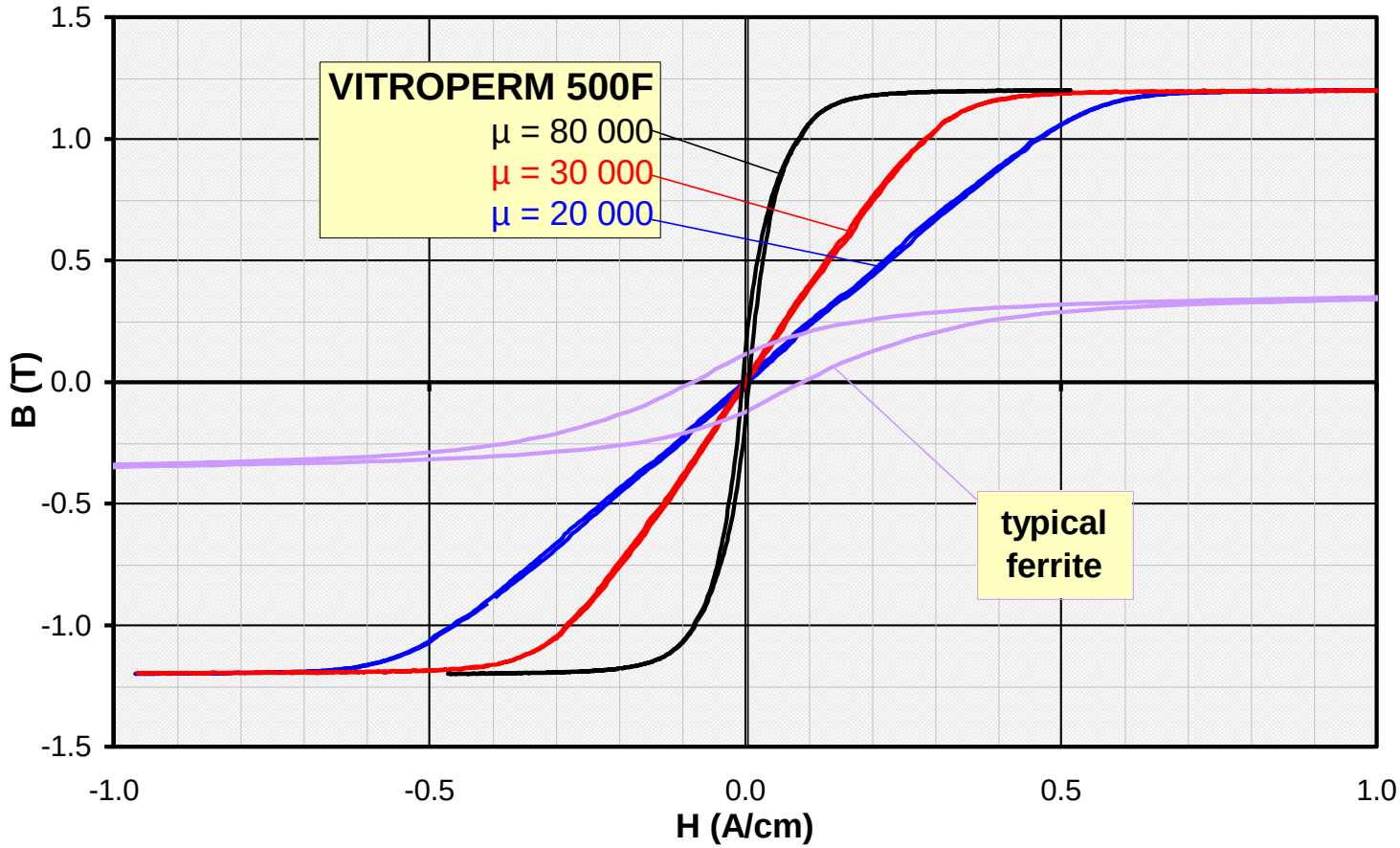
Material: high initial permeability μ_i - low μ(f) - low Q-factor - low temperature dependency - high upper application temperature - high saturation flux density B_s

CMC: high low-frequency attenuation - small size - low no. of turns – low winding capacity – high high-frequency attenuation – easy to design – smooth and steady damping up to high temperatures

Filter: easy to design – less stages possible - smaller volume – lower costs

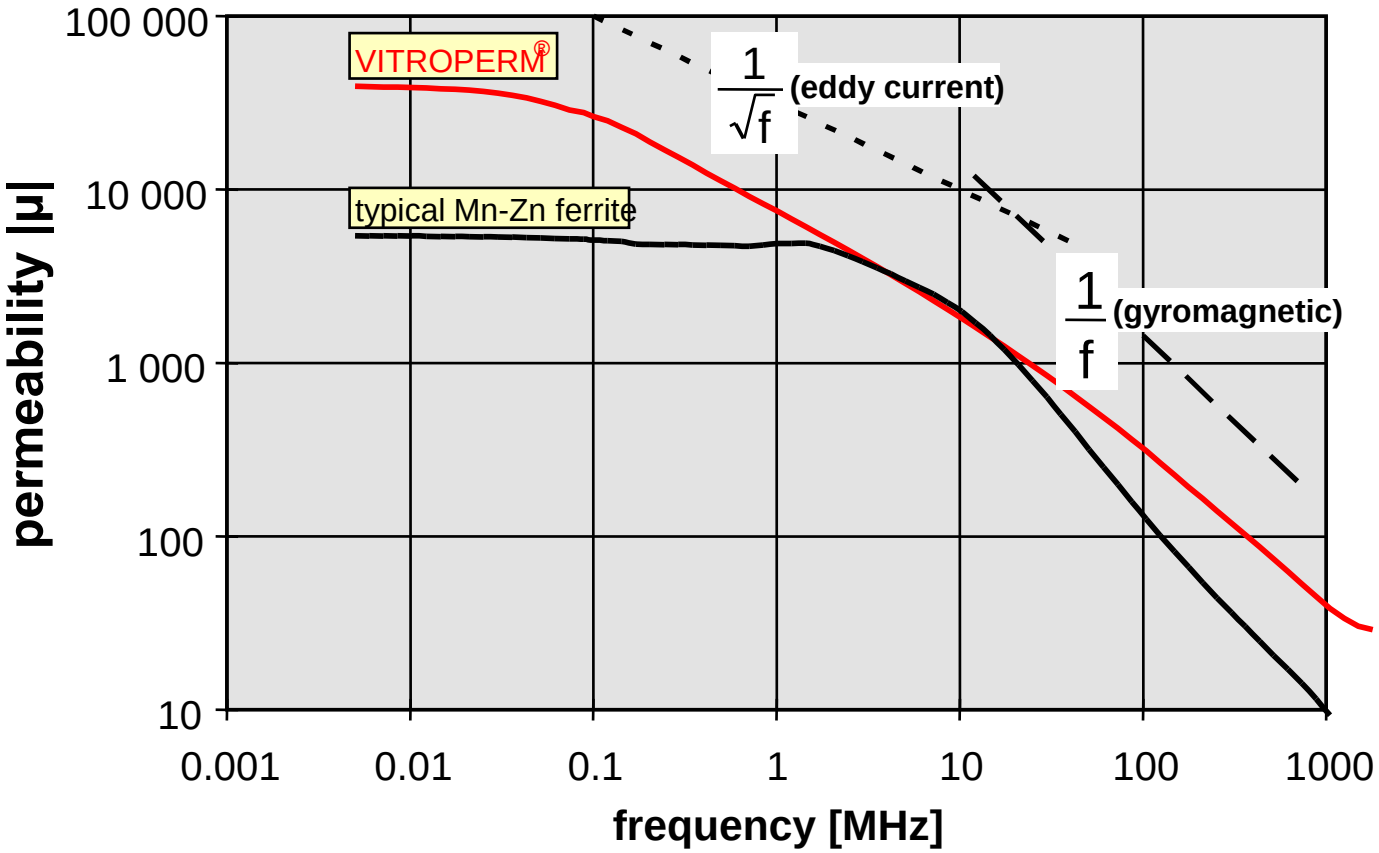
Nanocrystalline VITROPERM®

Basic Advantages I



Nanocrystalline VITROPERM®

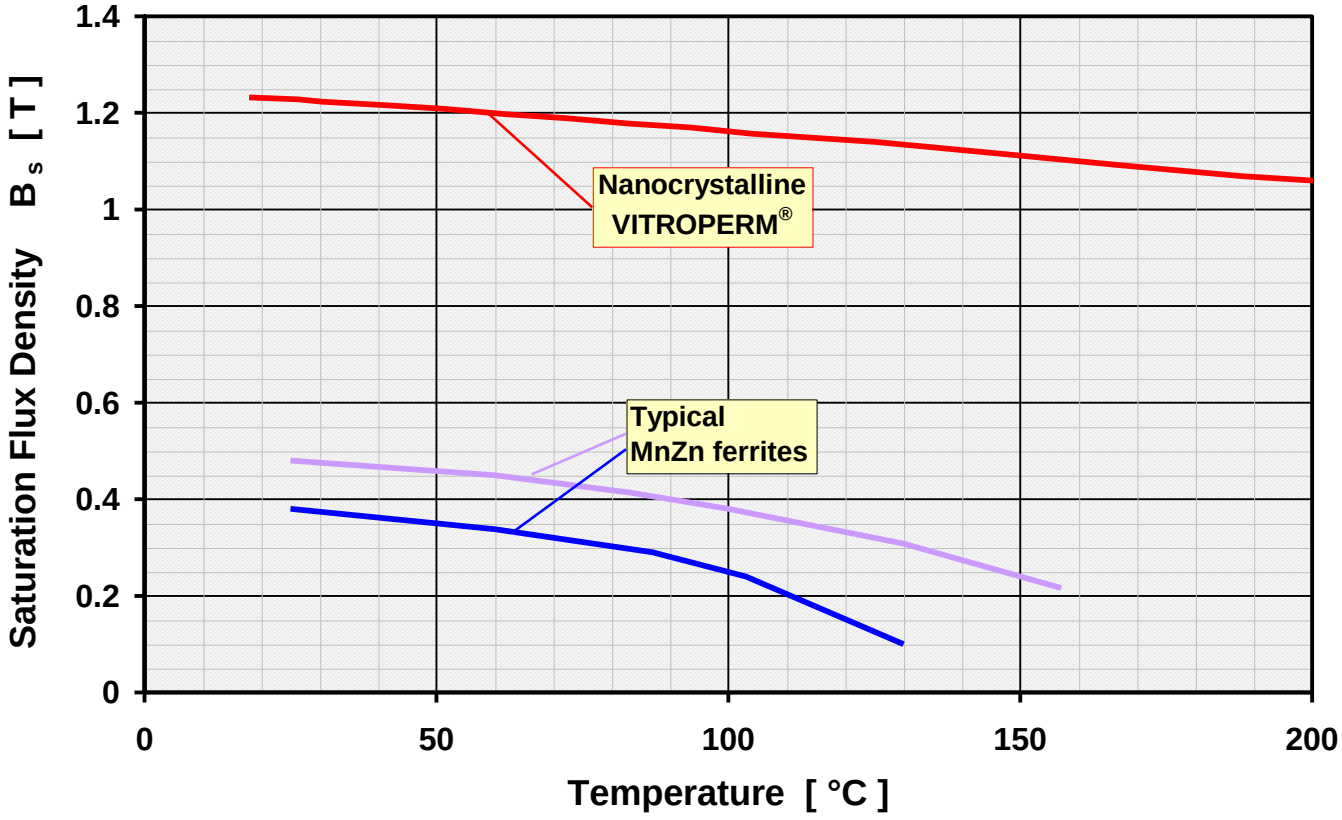
Basic Advantages II



high μ at low and at high frequencies

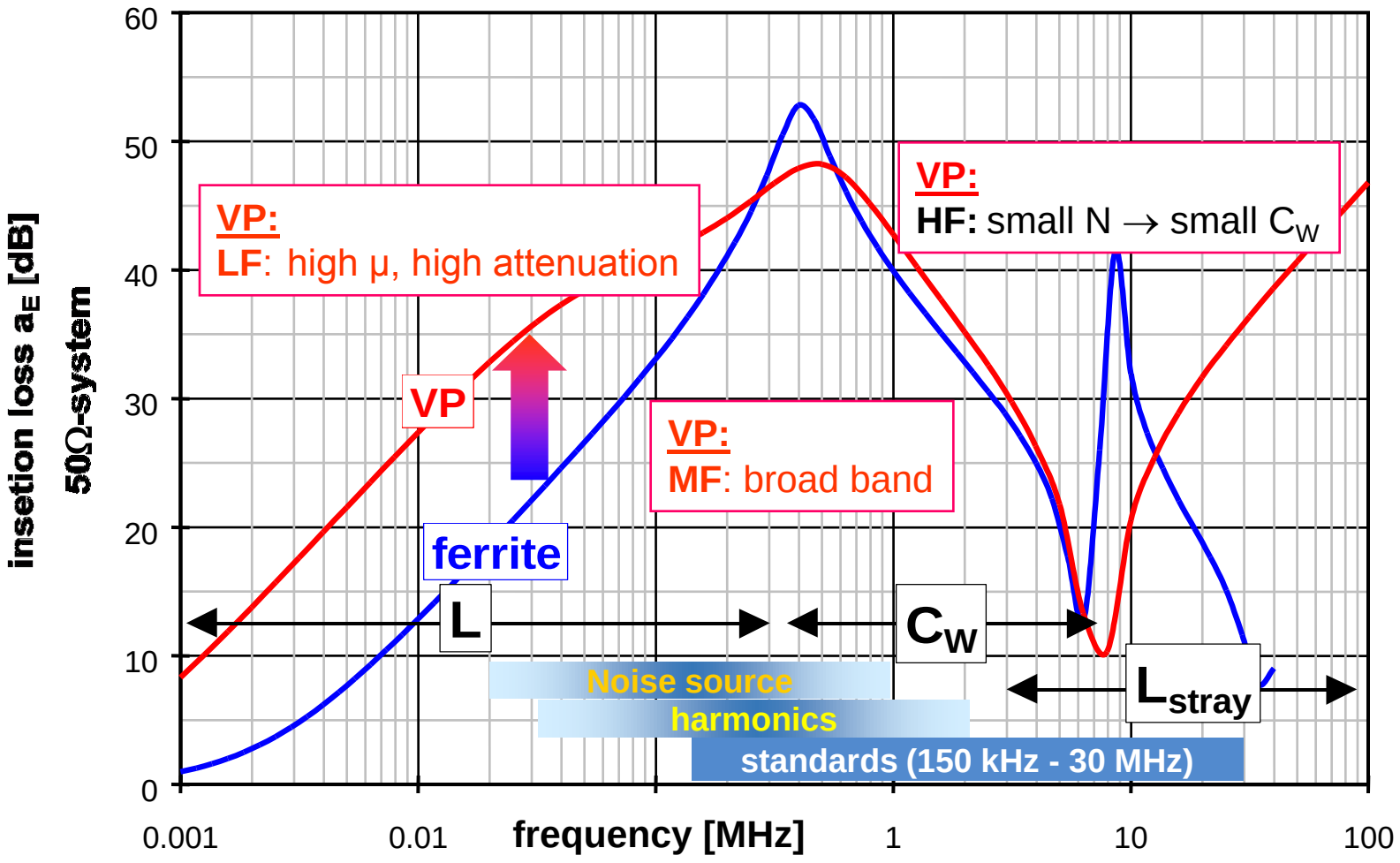
Nanocrystalline VITROPERM®

Basic Advantages III

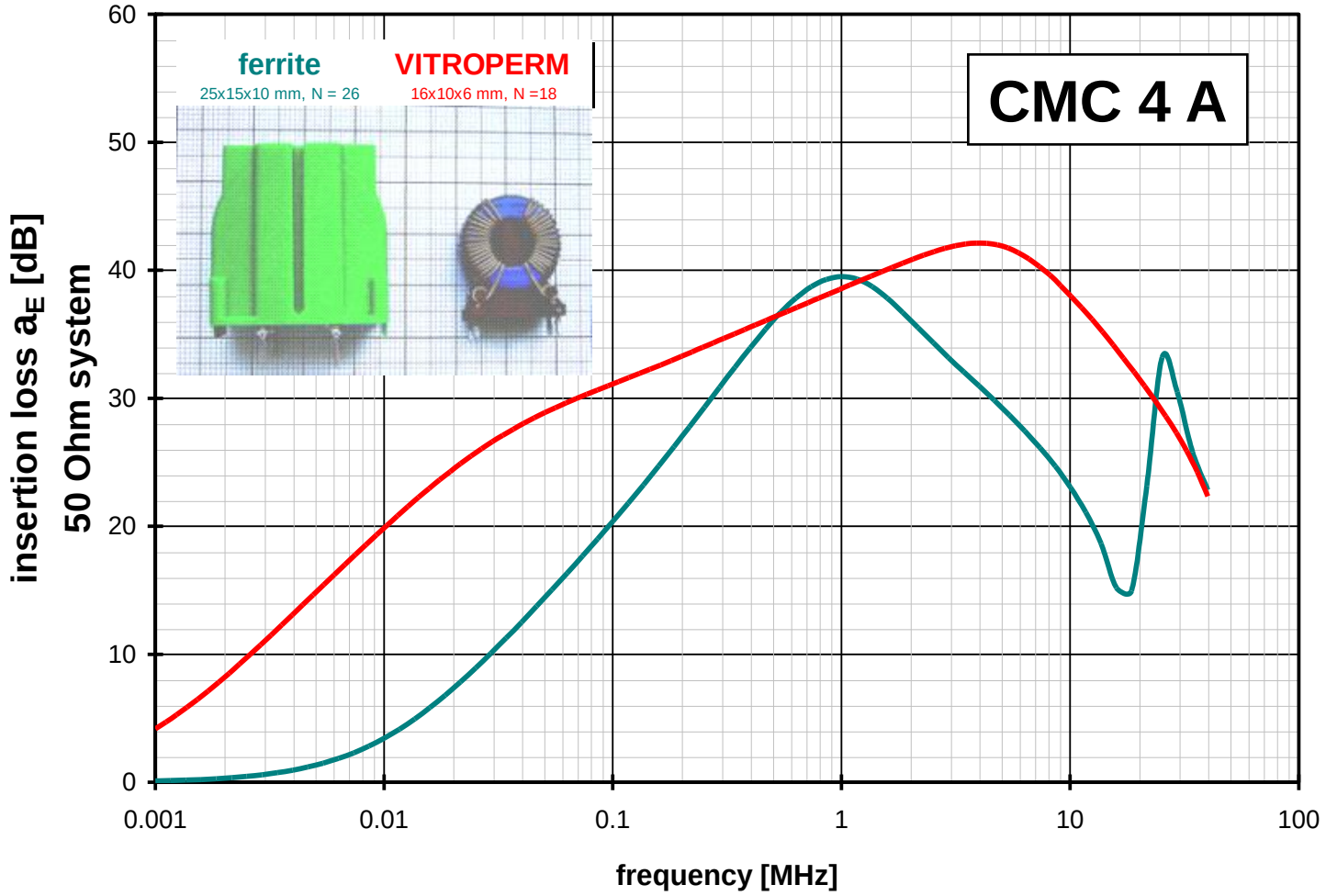


high Bs, extended T - range (140 °C and higher)

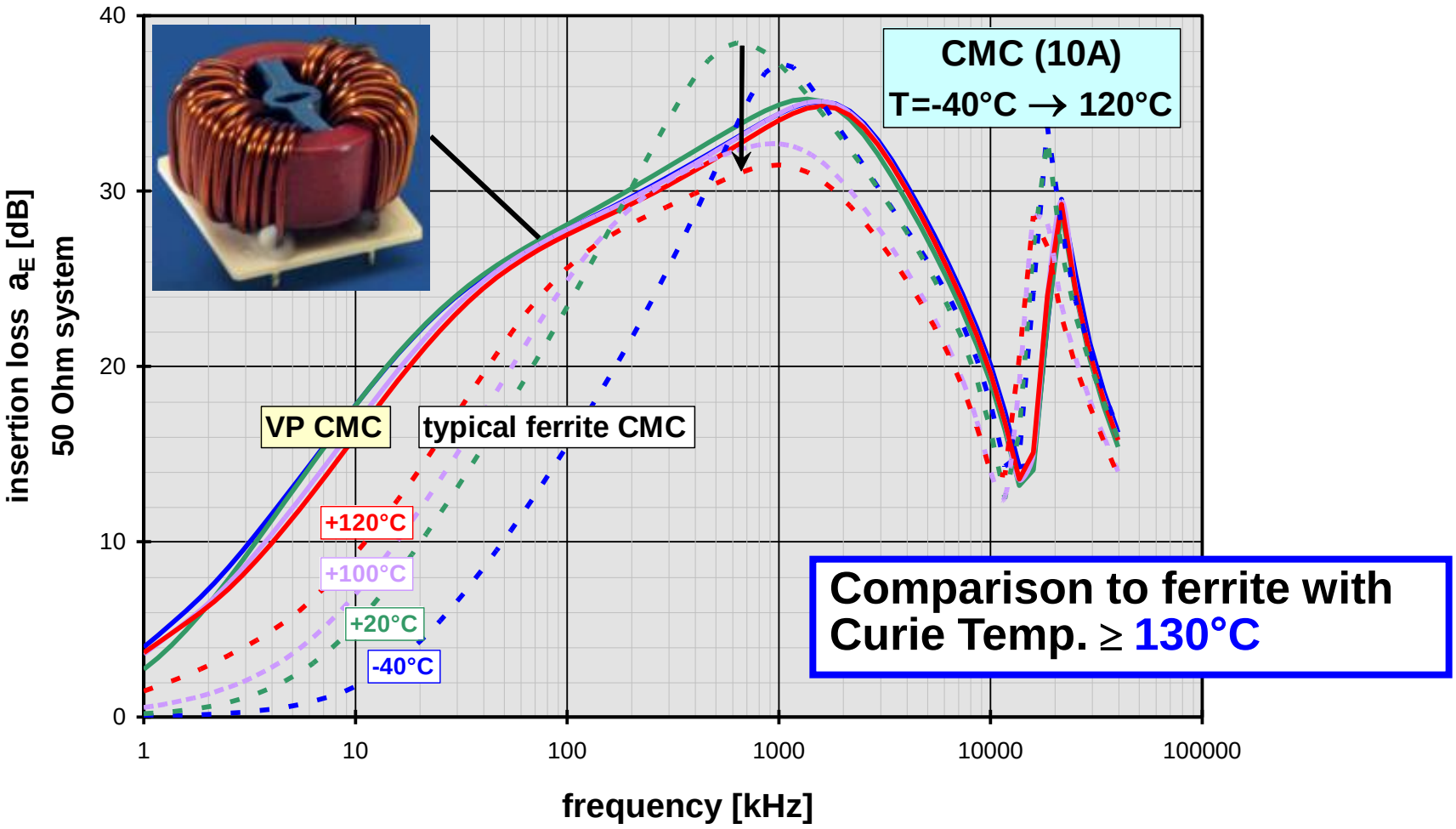
VITROPERM® Chokes in Comparison



VITROPERM® CMC – Design Example I

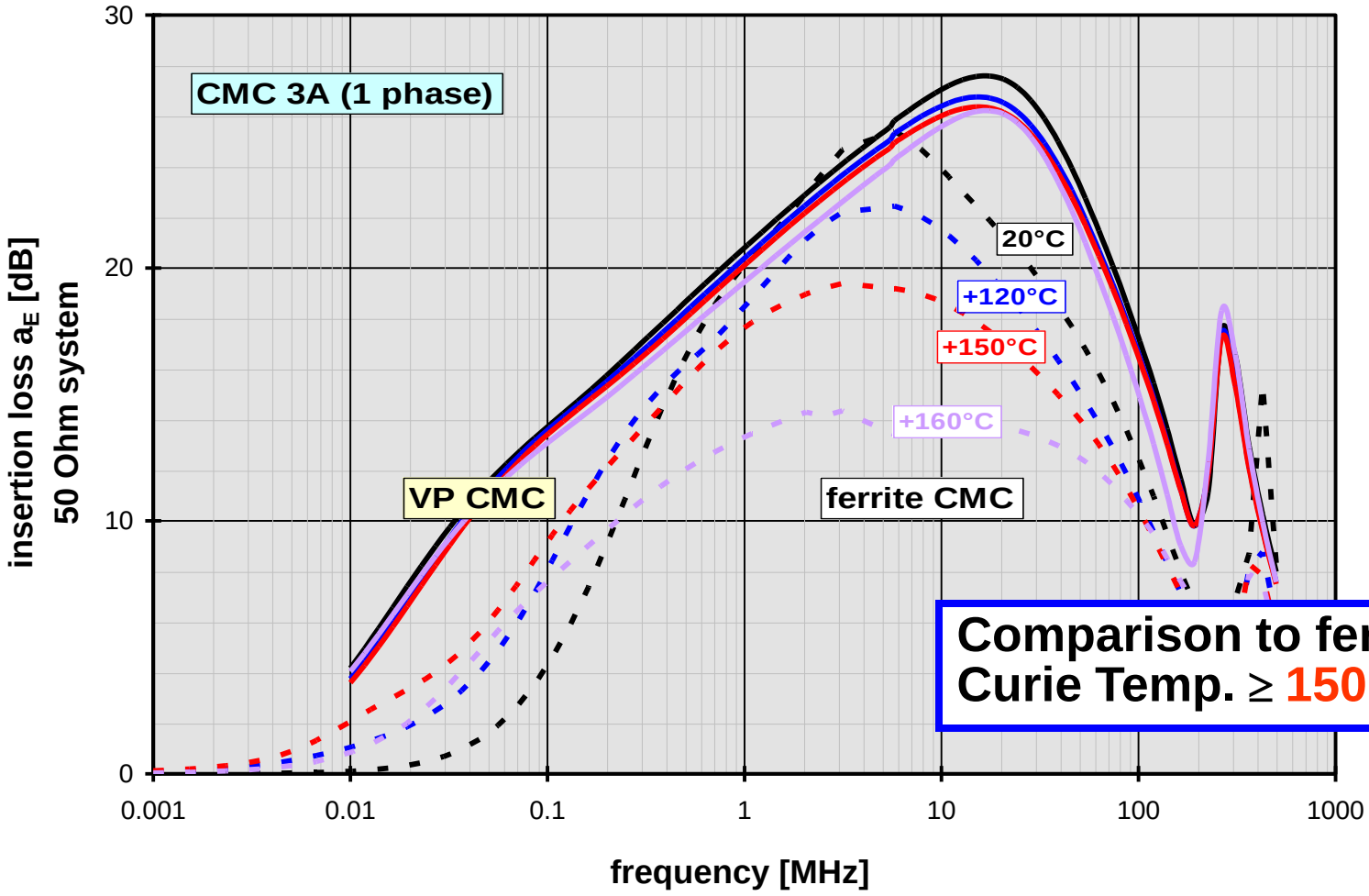


VITROPERM® CMC – Design Example II



Comparison to ferrite with Curie Temp. ≥ 130°C

VITROPERM® CMC – Design Example III

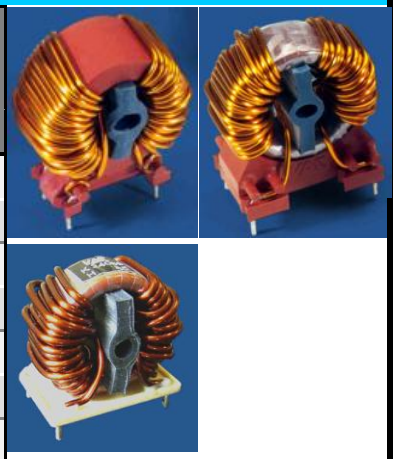


Comparison to ferrite with Curie Temp. ≥ 150°C

Standard CMC‘s (1 phase): Overview

Single-phase CMC‘s with VITROPERM 500F series cores — vertical design

I_N A	L_N at 10 kHz mH	L_N at 100 kHz	|Z| at 100kHz typical Ω	I_{bias} at 10 kHz typical mA	dimensions *) w × d × h mm (max)	part number T6040…
2	2x 12.1	2× 2.8	3000	17	22 x 12 x 25	5-R6131X402
4	2x 7.3	2× 2.3	2300	20	23 x 14 x 25	5-R6161X404
4.5	2x 28.3	2x 6.9	6500	18	27 x 17 x 29	5-R6161X504
6	2x 20.3	2x 6.5	6000	24	35 x 21 x 35	5-R6166X606
8	2x 13	2x 4.15	4000	30	35 x 21 x 35	5-R6166X608
10	2x 9	2x 2.9	2800	36	35 x 21 x 35	5-R6166X510
13	2x 11.4	2x 2.6	3000	30	36 x 21 x 31.5	5-R6122X513
15	2x 6.3	2x 3.8	3300	135	42 x 27 x 40	5-R6128X615
30	2x 6.3	2x 1.5	1400	90	52 x 27 x 47	5-R6128X530



Single-phase CMC‘s with VITROPERM 500F series cores — low profile design

I_N A	L_N at 10 kHz mH	L_N at 100 kHz	|Z| at 100kHz typical Ω	I_{bias} at 10 kHz typical mA	dimensions *) w × d × h mm (max)	part number T6040…
10	2x 9	2x 2.9	2900	36	33 x 30 x 20	5-R6123X510
13	2x 11.4	2x 2.6	3000	30	36 x 30 x 23.5	5-R6123X513
16	2x 13	2x 2.7	3000	37	Ø38 × 24	5-R6123X616
20	2x 1.65	2x 0.46	410	90	33 x 30 x 20	5-R6123X420
20	2x 4.9	2x 3.4	2750	205	Ø53 × 31	5-R6123X620
25	2x 1.25	2x 0.9	620	240	Ø40 × 24	5-R6123X425
25	2x 3.6	2x 2.5	2000	240	Ø53 × 31	5-R6123X625
32	2x 2.6	2x 0.84	750	125	Ø51 × 26	5-R6123X532

Standard CMC‘s (3 phase): Overview

Three-phase CMC’s with VITROPERM 500F series cores — **low profile design**

I_N A	L_N at 10 kHz mH	L_N at 100 kHz	|Z| at 100kHz typical Ω	I_{bias} at 10 kHz typical mA	dimensions *) w × d × h mm (max)	part number T6040...
6	3× 8.6	3× 2.75	3000	48	Ø38 × 27	5-S6123X106
8	3× 9.4	3× 3.0	2600	67	Ø51 × 28	5-S6123X108
8	3× 2.9	3× 2.6	1850	220	Ø38 × 30	5-S6123X208
12	3× 5.2	3× 3.4	2700	142	∅51 x 28	5-S6123X212
16	3× 4.4	3× 2.9	2200	204	Ø59 × 28	5-S6123X216
25	3× 3.5	3× 2.0	1700	255	Ø70 × 38	5-S6123X225
40	3× 2.5	3× 0.6	550	130	Ø51 × 31	5-S6123X140
40	3× 1.5	3× 0.8	650	395	Ø70 × 37	5-S6123X240

VITROPERM® CMC's

Support

- EMC Kit
- Core sample box
- Sample shortly
- Application notes, technical articles
- EXCEL-worksheet „VACSIM 4.0“
- www.vacuumschmelze.com