MnZn Ferrites





YUTE Magnetics

Zhejiang Yute Intelligent Technology Co., Ltd.

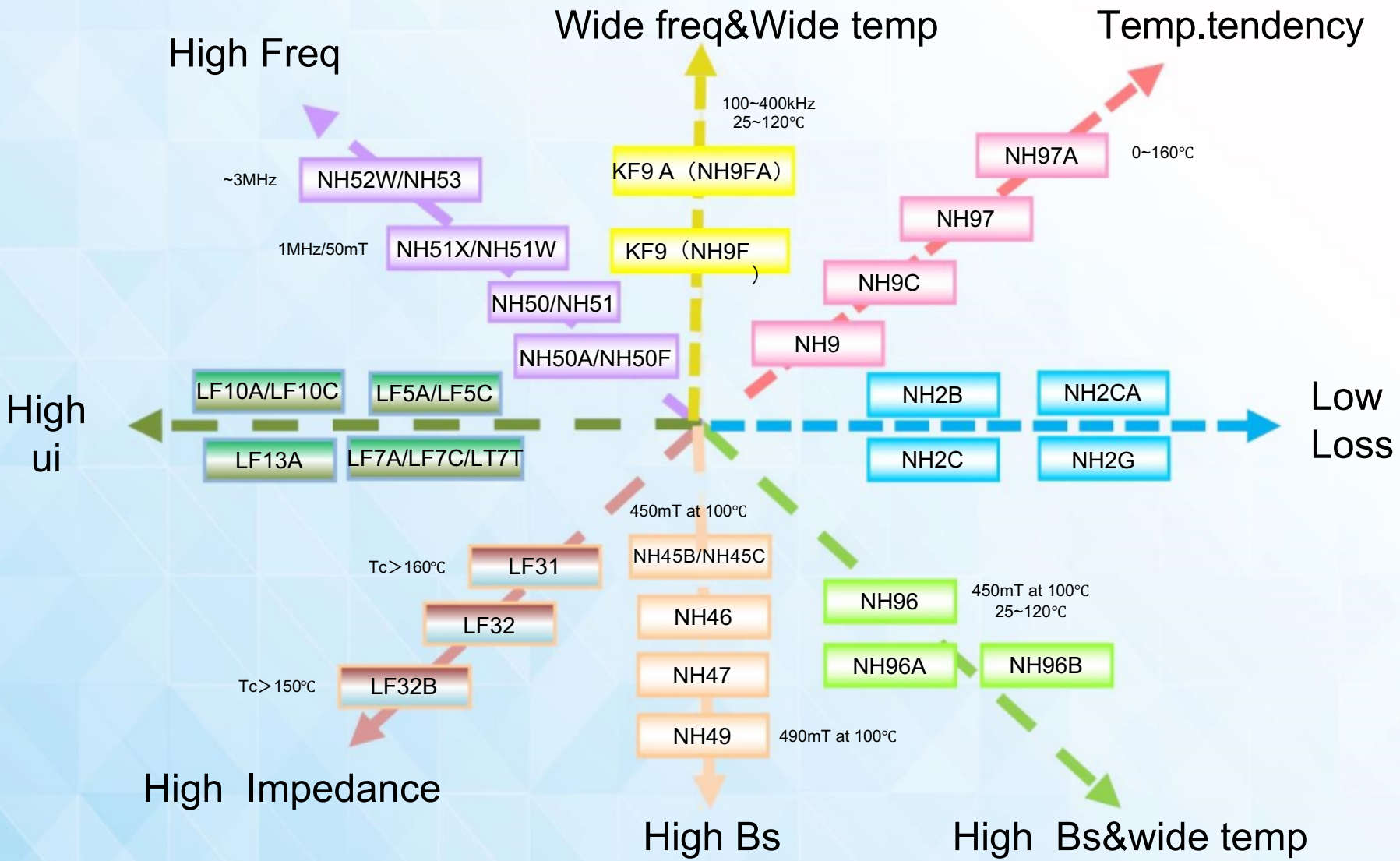
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Catalogue

- Material System Diagram
- Power Ferrites
- High Permeability Ferrites
- High Impedance Ferrites

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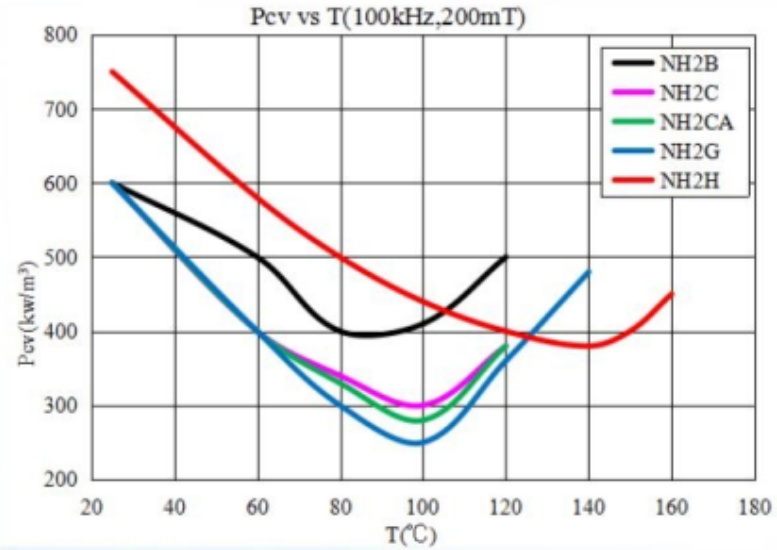
Material System Diagram

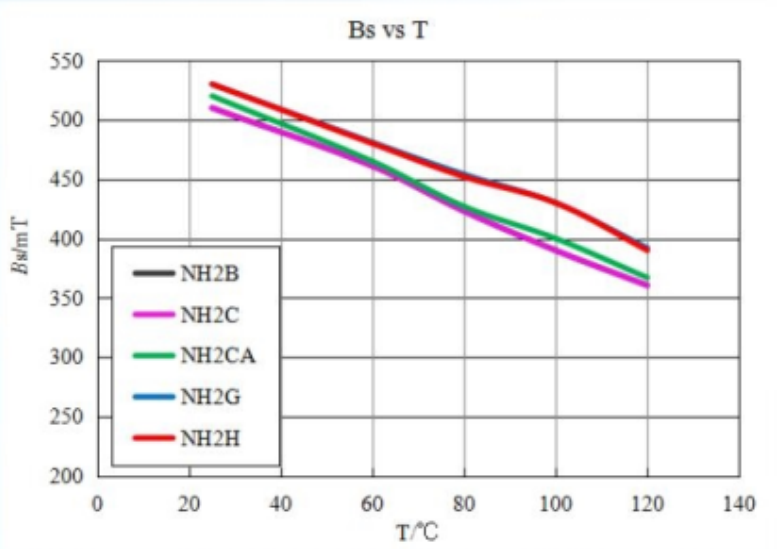


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Low loss ferrites

材料特性 Material Characteristics		单位Unit		NH2B	NH2C	NH2CA	NH2G	NH2H
起始磁导率 μ_i Initial Permeability				2300 ±25%	2400 ±25%	2500 ±25%	2500 ±25%	1800 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density (Bs)@H=1194A/m		25℃	mT	510	510	520	530	530
		100℃	mT	390	390	400	420	430
居里温度 Tc Curie Temperature(Tc)		℃		≥215	≥215	≥215	≥230	≥230
磁芯损耗 Pcv Core Loss	100kHz 200mT	25℃	kW/m³	600	600	600	600	750
		80℃		500	400	400	400	-
		100℃		410	300	280	250	450
		120℃		500	380	380	360	400
		140℃		-	-	-	-	380



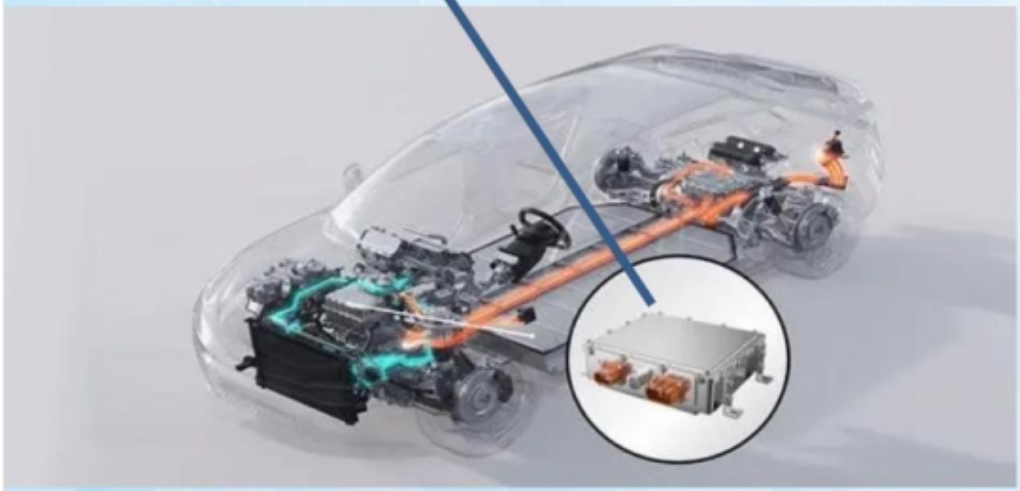


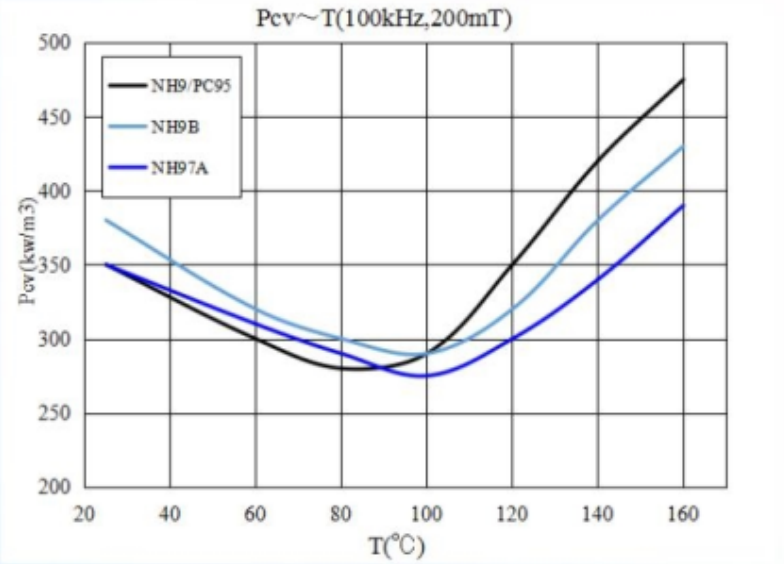
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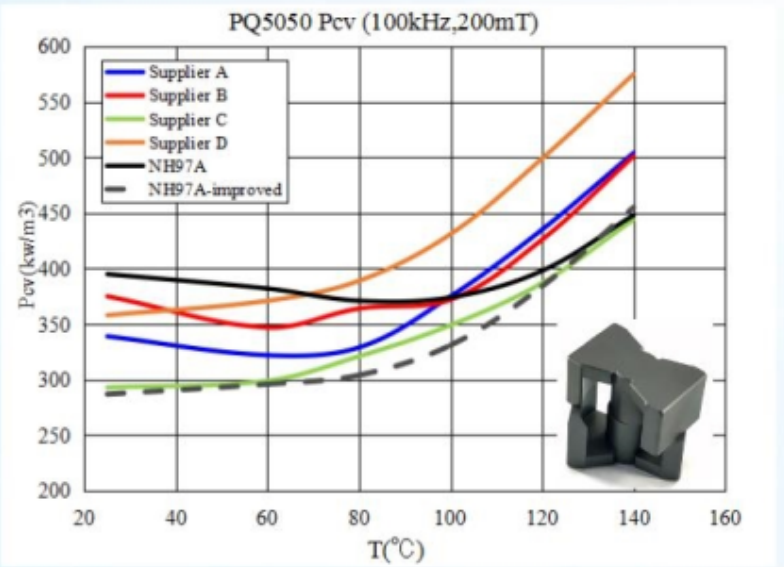
Wide-temp ferrites





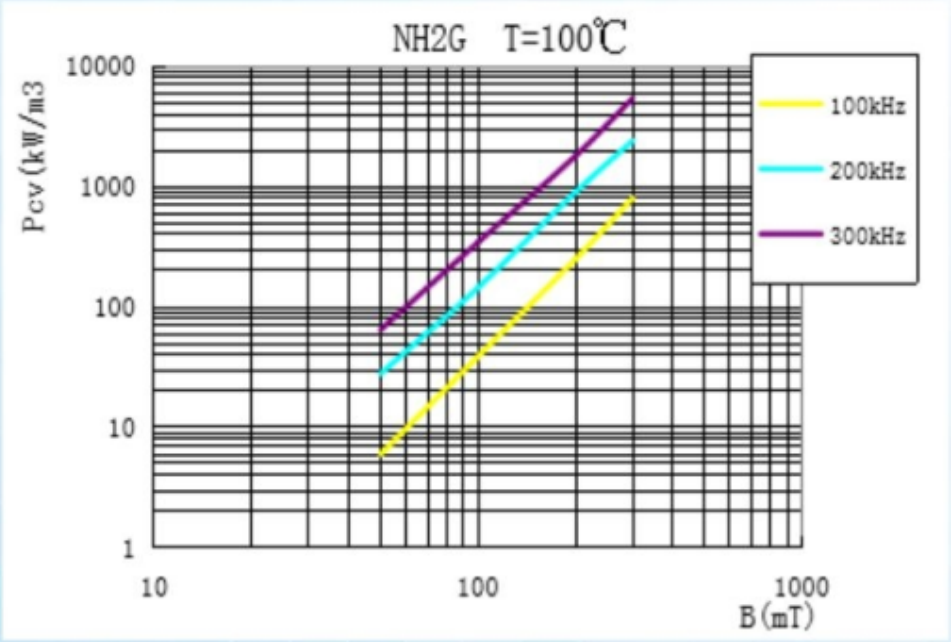






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Low loss ferrites



Power loss estimates are based on the Steinmetz equation or a logarithmic graph of losses. Compared with wide-temperature materials, the accuracy of power loss estimation of non-wide-temperature materials is poor.

$$P_{cv} = C_m \cdot f^x \cdot B^y$$

$$P_{cv} = C_m \cdot f^x \cdot B^y (Ct_0 - Ct_1 * T + Ct_2 * T^2)$$

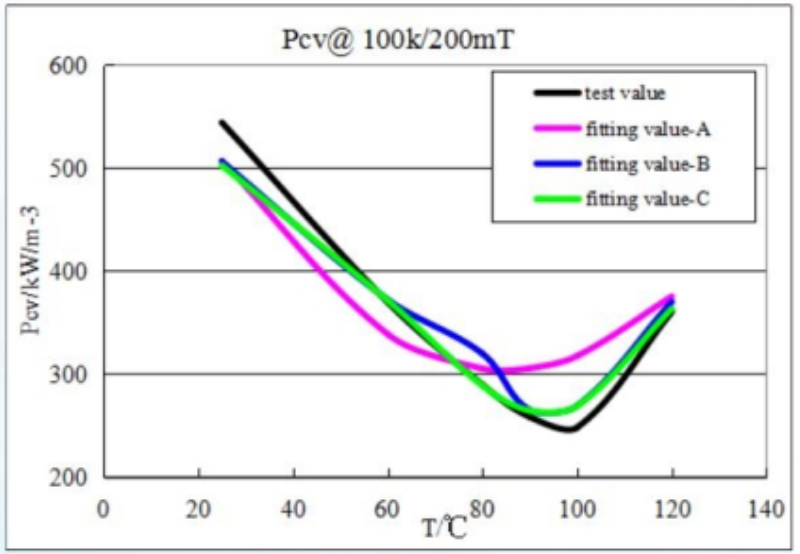
Calculation of power loss for NH2G

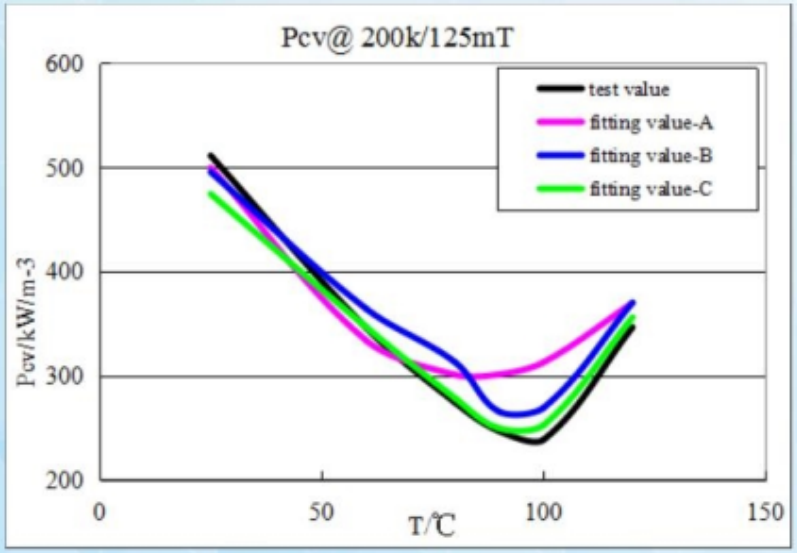
Material grade	*Cm*	*x*	*y*	*Ct0*	*Ct1*	*Ct2*	Frequency range (kHz)	Bm range (mT)	Temperature range (℃)	Input calculation area			Pcv (kW/m³)
										f(KHz)	Bm(mT)	T(℃)	
NH2G	5.41E-08	1.441	2.398	4.62E+01	4.15E-01	1.64E-03	50~250	50~300	25~120	**100**	**200**	**25**	503
	5.41E-08	1.441	2.398	4.62E+01	4.15E-01	1.64E-03	50~250	50~300	25~120	**100**	**200**	**60**	372
	3.38E-08	1.533	2.617	3.66E+01	6.47E-01	3.46E-03	50~250	50~300	25~120	**100**	**200**	**80**	289
	3.38E-08	1.533	2.617	3.66E+01	6.47E-01	3.46E-03	50~250	50~300	25~120	**100**	**200**	**100**	269
	3.38E-08	1.533	2.617	3.66E+01	6.47E-01	3.46E-03	50~250	50~300	25~120	**100**	**200**	**120**	363

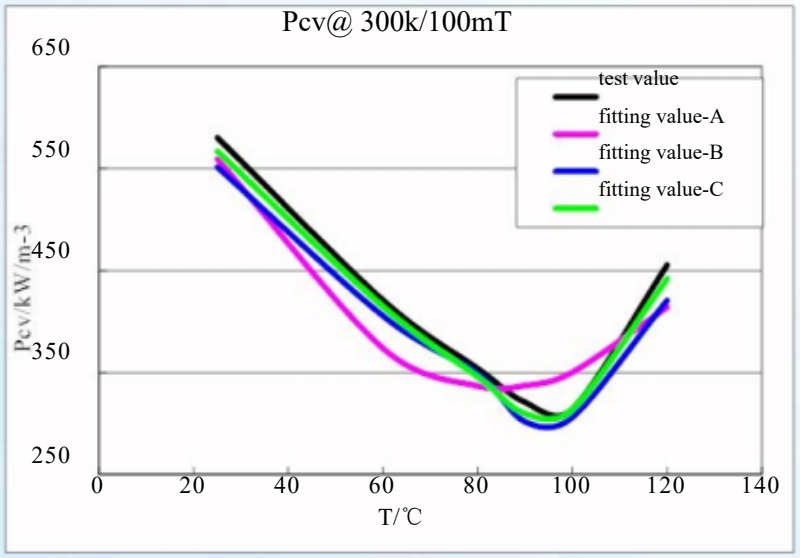
Low loss ferrites

For the power loss calculation with temperature coefficient, the calculated loss value obtained by the fitting method of sub-band & temperature zone is closer to the actual value than the traditional fitting method.

- **test value：actual value**
- **fitting value A：traditional method**
- **fitting value B：Temperature zone**
- **fitting value C：Temperature zone & frequency band**

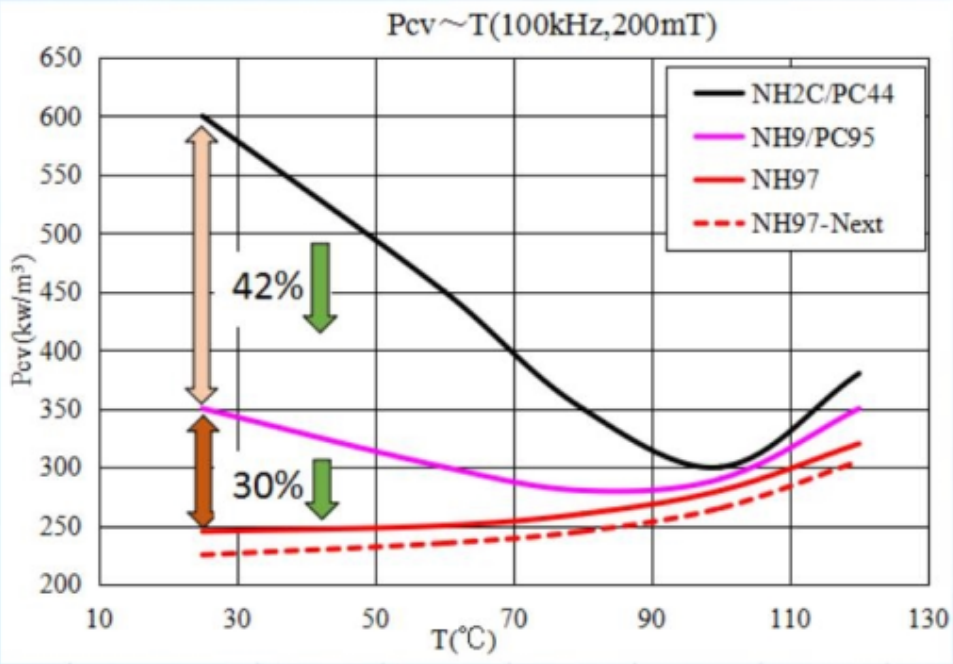




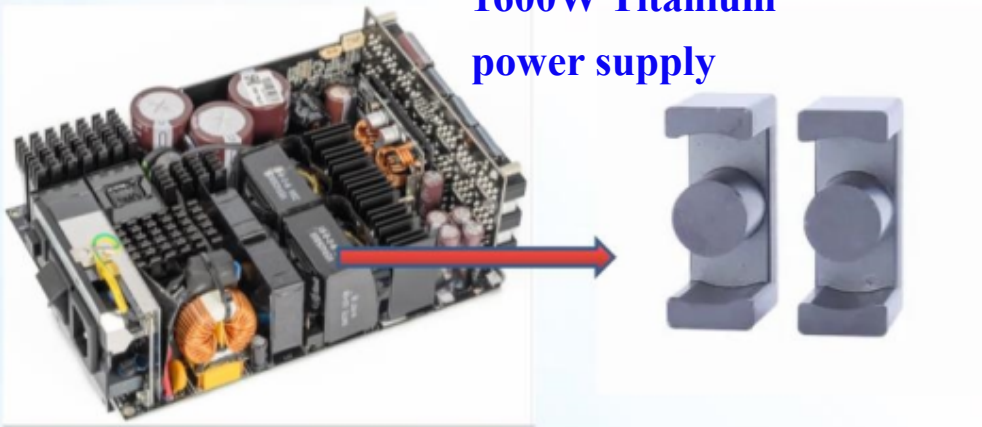


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Wide-temp ferrites

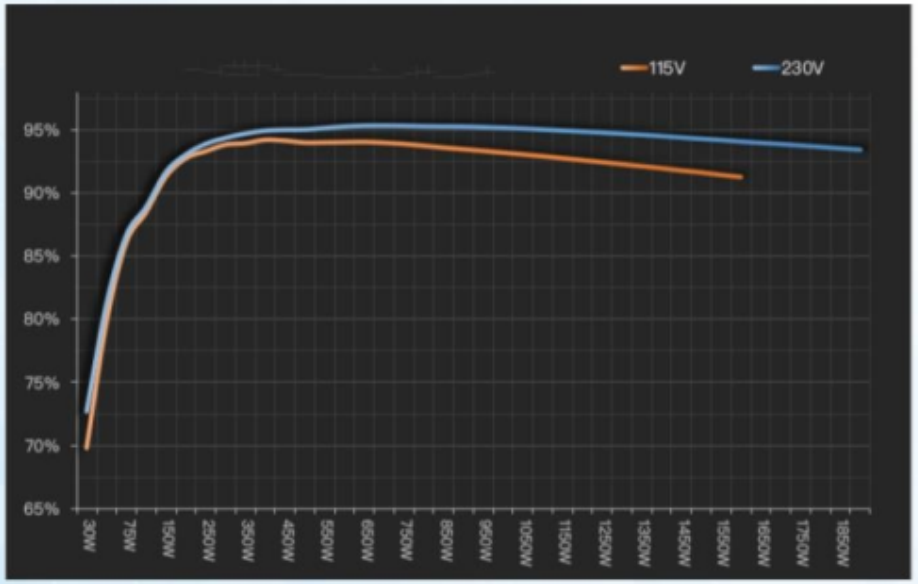


1600W Titanium power supply



230V Internal

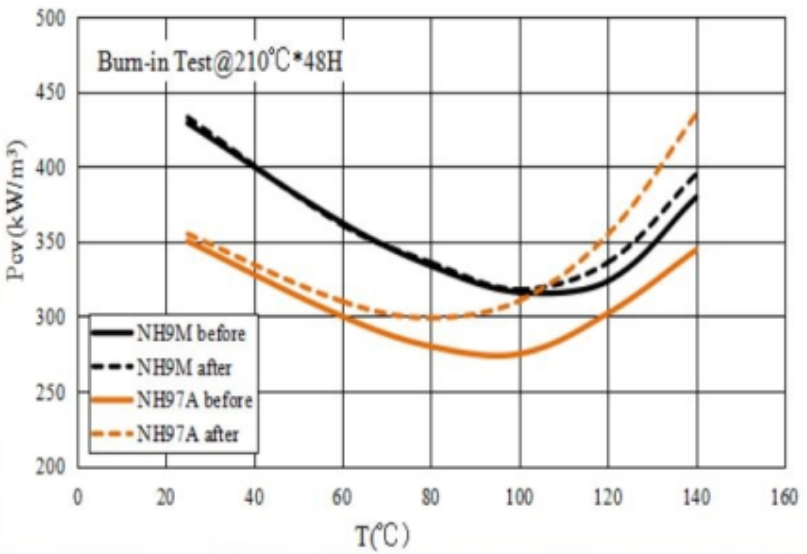
Percent of loading	Standard	Bronze	Silver	Gold	Platinum	Titanium
10%	N/A	N/A	N/A	N/A	N/A	90%
20%	N/A	81%	85%	88%	90%	94%
50%	N/A	85%	89%	92%	94%	96%
100%	N/A	81%	85%	88%	91%	91%



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NH9M

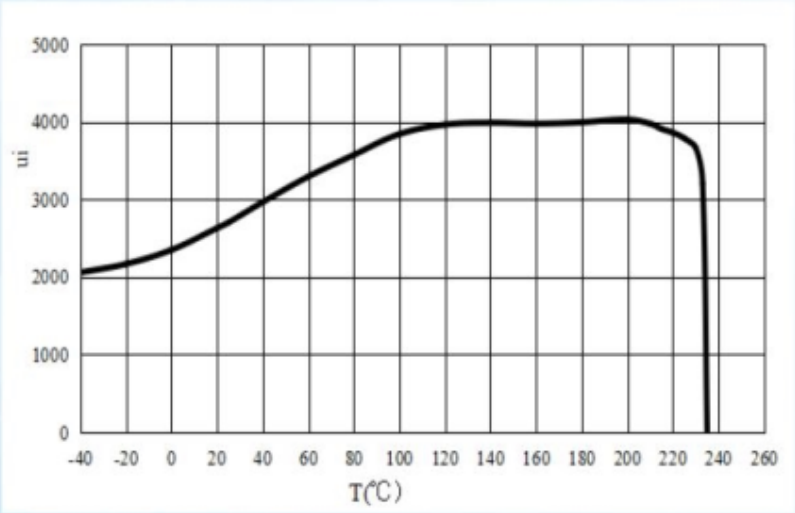
材料特性 Material Chatacteristics		单位Unit		NH9M
起始磁导率μ_i Initial Permeaility				3000±25%
饱和磁通密度Bs Saturation Matnetic Flux Density @H=1194A/m		mT	25℃	530
			100℃	410
			120℃	375
			140℃	335
居里温度Tc Curie Temperature		℃		≥225
磁芯损耗Pcv Core Loss	50kHz 250mT	kW/m³	25℃	300
			80℃	240
			100℃	235
			120℃	250
			140℃	280
	100kHz 200mT	kW/m³	25℃	440
			80℃	340
			100℃	320
			120℃	330
			140℃	390
	200kHz 100mT	kW/m³	25℃	230
			80℃	160
			100℃	150
			120℃	155
			140℃	190

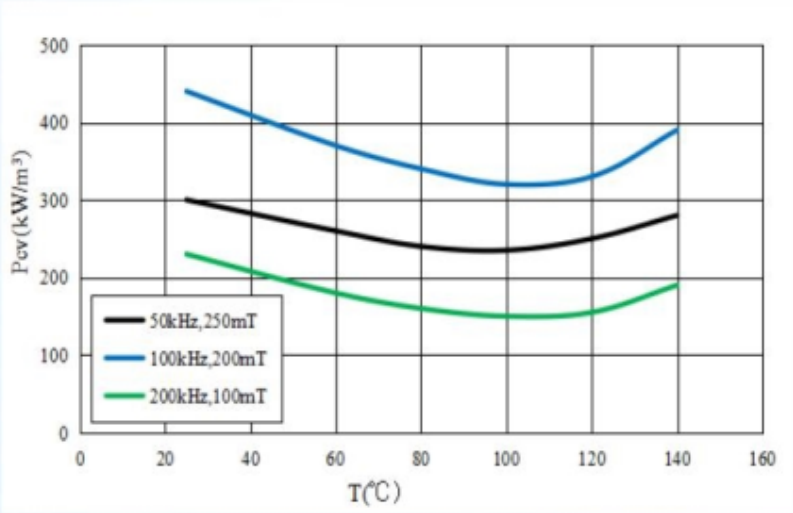


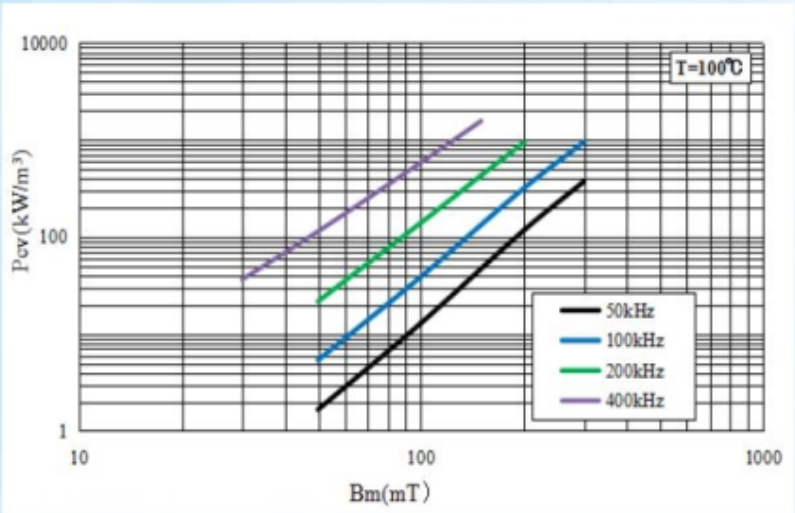


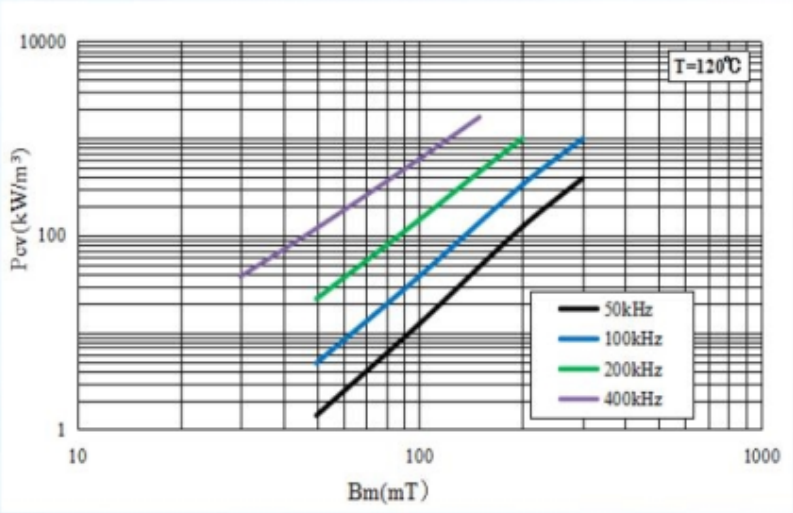
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NH9M









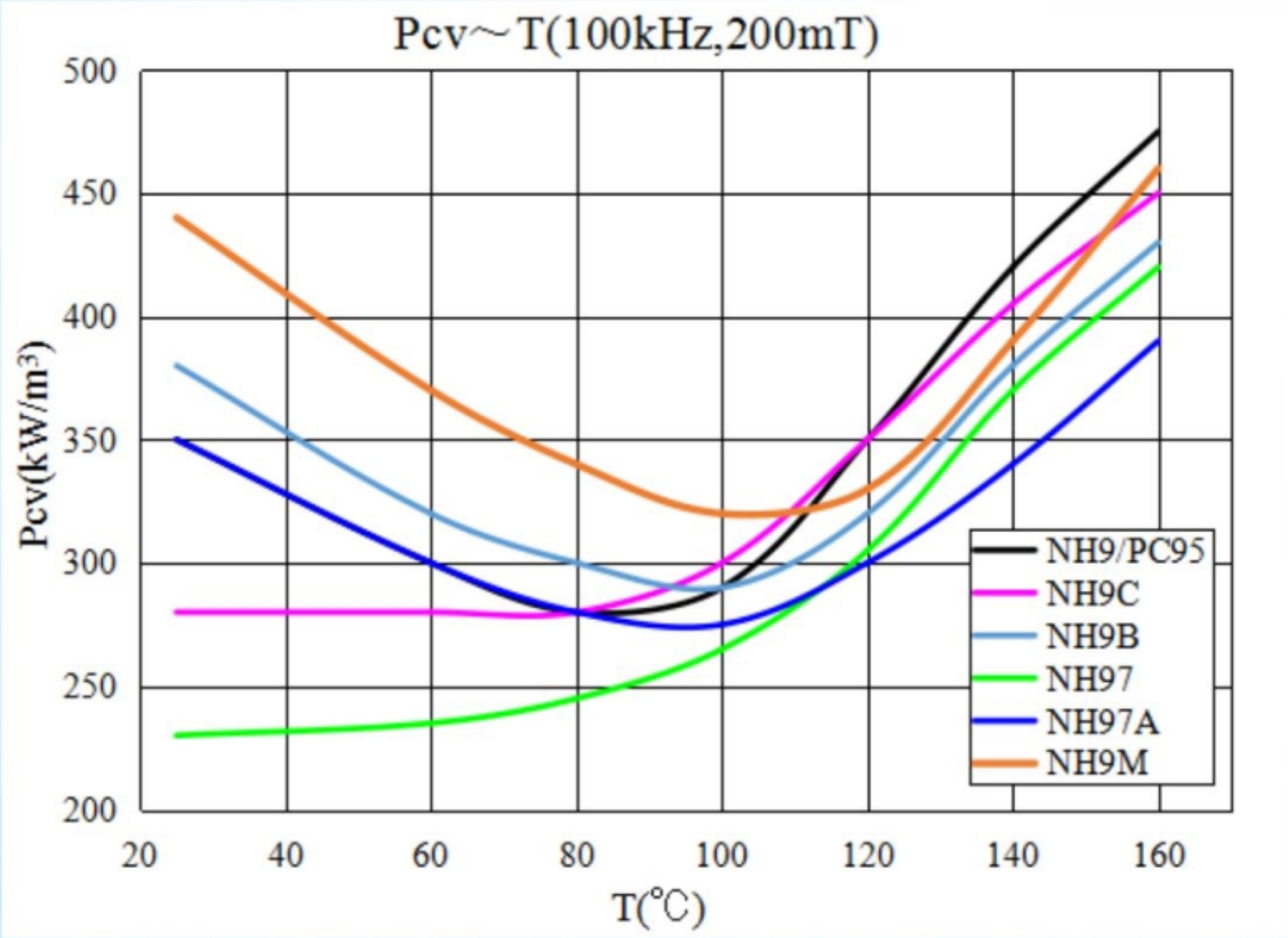
YUTE Magnetics

Wide-temperature-range materials

材料特性 Material Characteristics			单位Unit		NH9	NH9C	NH97	NH9B	NH97A	NH9M
起始磁导率 μ_i Initial Permeability					3300±25% 3000±25%	3300±25%	3300±25%	3000±25%	3300±25%	
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m			25℃	mT	530	540	540	530	540	530
			100℃	mT	410	430	430	410	430	410
居里温度 Tc Curie Temperature			℃		≥220	≥220	≥220	≥220	≥220	≥225
磁芯损耗 Pcv Core Loss	100kHz 200mT Pcv	25℃	kW/m³		350	280	230	380	350	440
		60℃			300	280	235	320	-	370
		100℃			290	300	265	290	275	320
		120℃			350	350	305	320	300	330
		140℃			420	400	370	380	340	390
		160℃			475	450	420	430	390	460

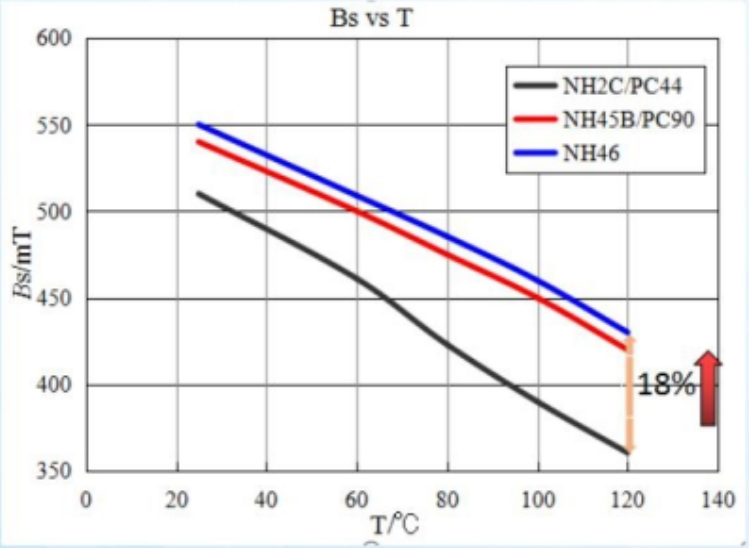
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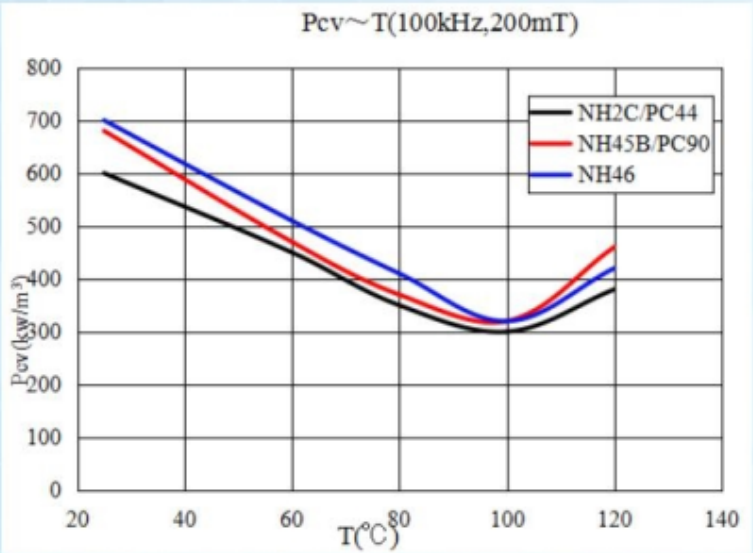
Comparison of Power Loss Curves for Wide-Temperature, Low-Loss Materials

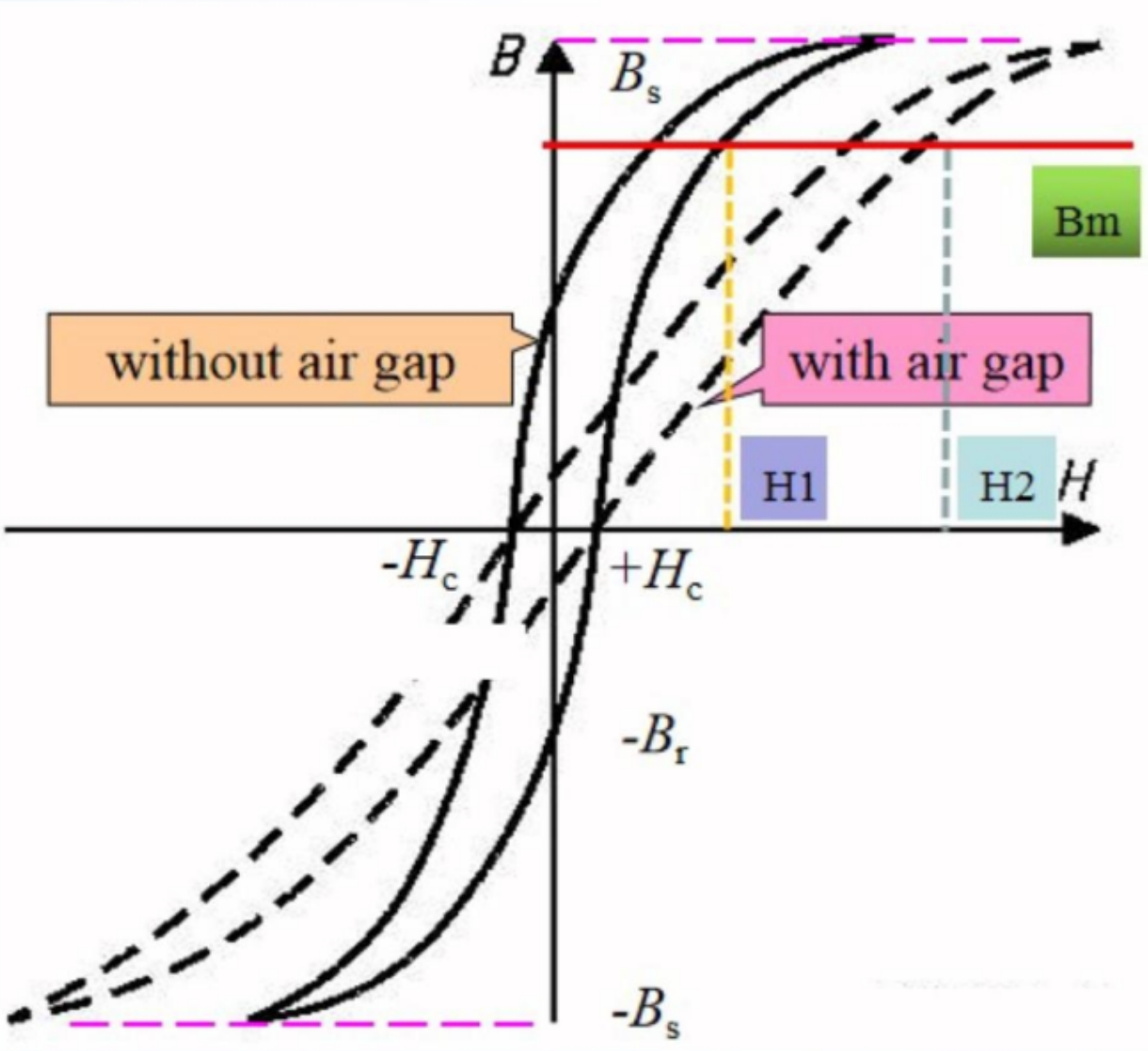


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High Bs ferrites



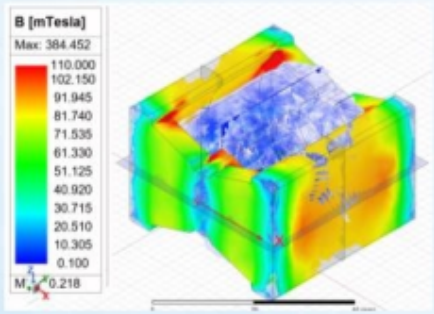


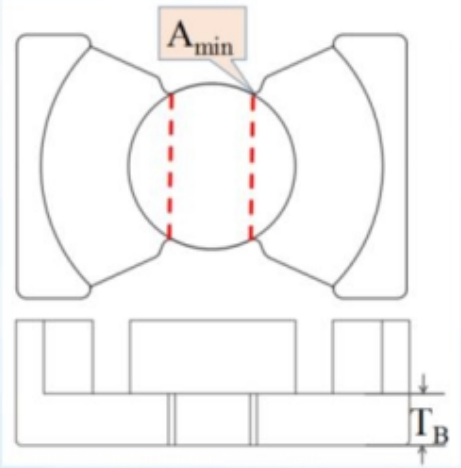


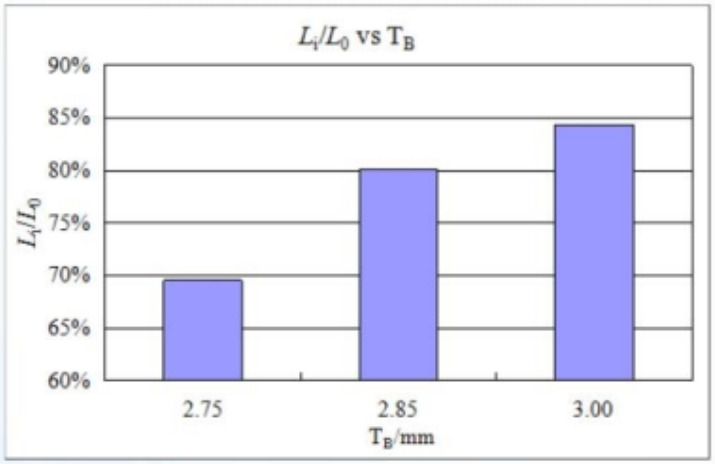
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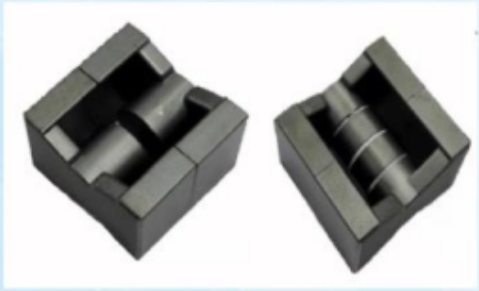
High Bs ferrites

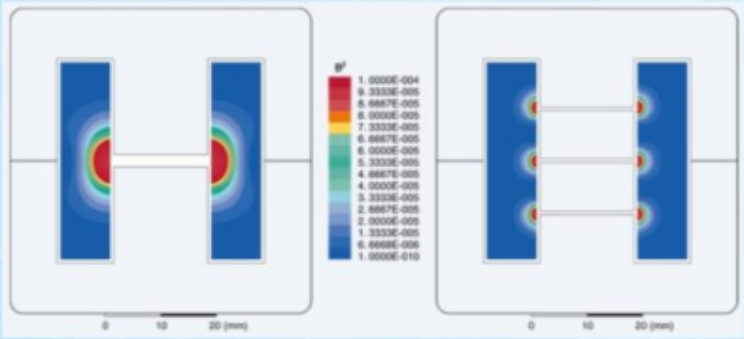


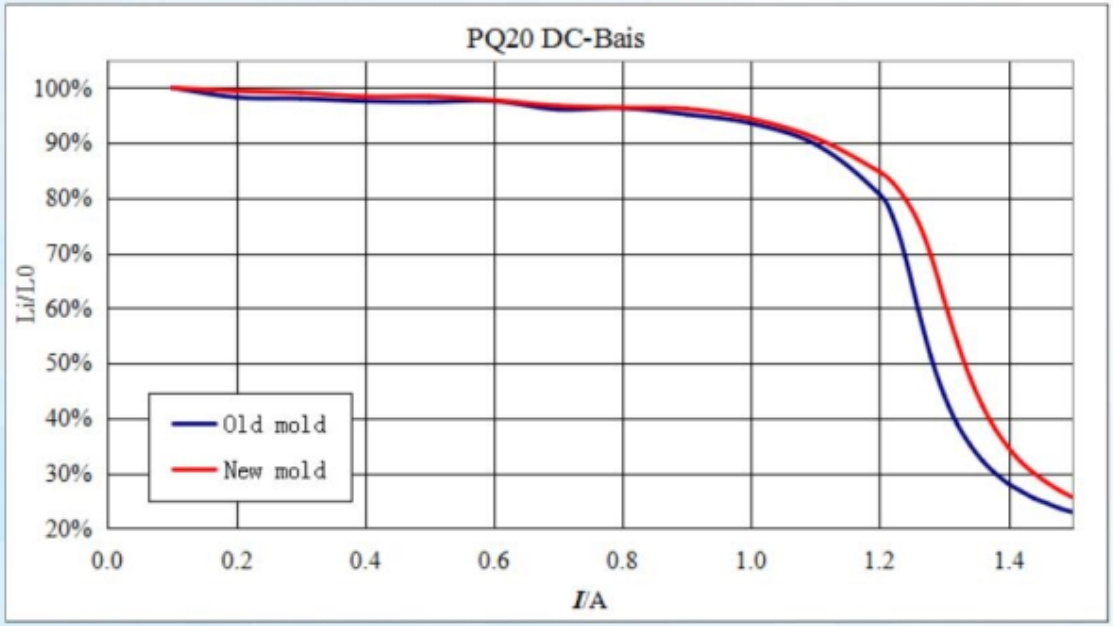










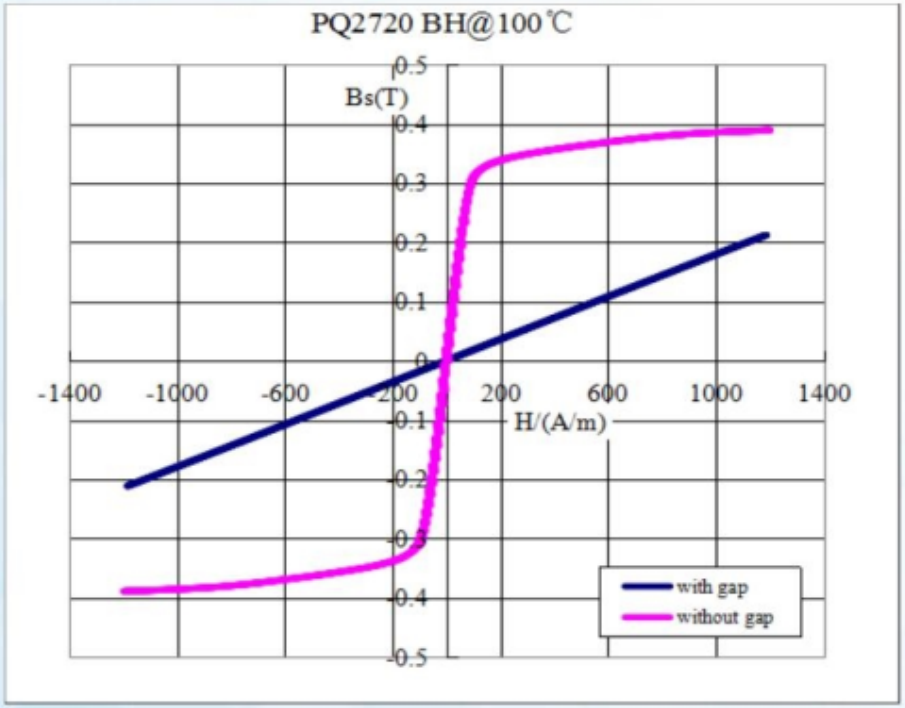


YUTE Magnetics

High Bs ferrites

材料特性 Material Chatacteristics		单位 Unit		NH46
初始磁导率 μ_i Initial Permeaility				2000±25%
饱和磁通密度 Bs Saturation Matnetic Flux Density @H=1194A/m		25℃	mT	550
		100℃	mT	460
剩余磁通密度 Br Remanence Flux Density		25℃	mT	200
		100℃	mT	62
矫顽力 Hc Coercive force		25℃	A/m	11
		100℃	A/m	4.2
居里温度 Tc Curie Temperature		℃		>280
磁芯损耗 Pcv Core Loss 100kHz 200mT	25℃	kW/m³		700
	100℃			320
	120℃			420

NH46 PQ2720	Br @1kHz/100℃		
	150A/m	400A/m	1194A/m
with gap	0.01	0.08	0.43
without gap	19.8	21.7	23.0

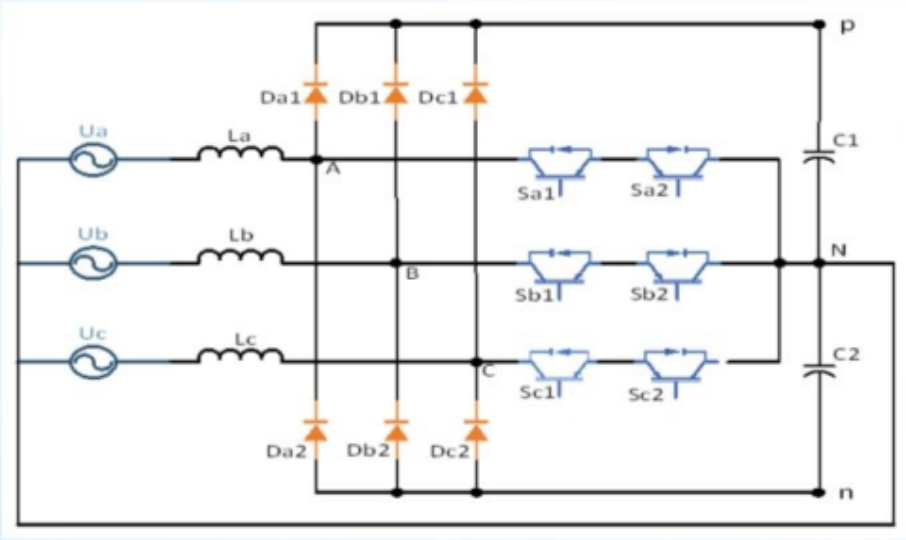


YUTE Magnetics

High Bs ferrites

材料特性 Material Characteristics		单位 Unit		NH49
初始磁导率 μ_i Initial Permeability				1500±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m		25℃	mT	590
		100℃	mT	490
剩余磁通密度 Br Remanence Flux Density		25℃	mT	120
		100℃	mT	40
磁芯损耗 Pcv Core Loss	25kHz/ 200mT	25℃	kW/m³	150
		60℃		100
		100℃		150
		120℃		170
	100kHz /200mT	25℃		820
		60℃		600
		100℃		900
		120℃		1020
居里温度 Tc Curie Temperature		℃		≥300
密度 d Density		kg/m³		4.9x10³

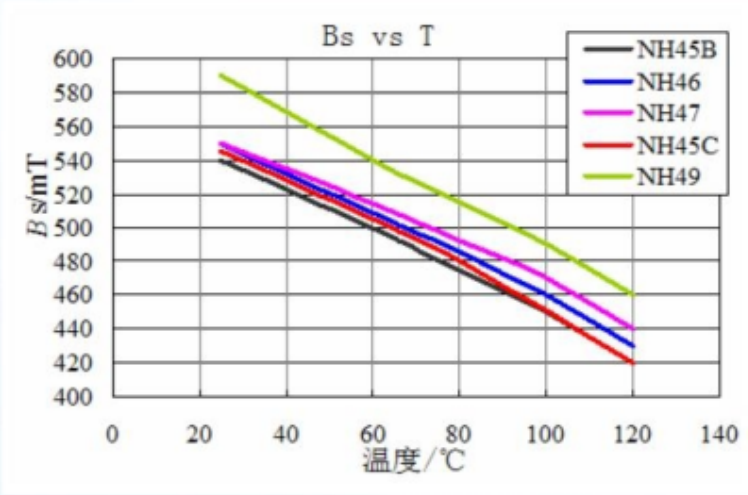
Index	OBC(Si)	OBC(SiC)
Switching Frequency/kHz	25	100~150
Volume/cm3	4593	1986
Weight/g	7708	3074
Power Density/(kW/L)	2.1	3.3
Efficiency/%	94	97.7

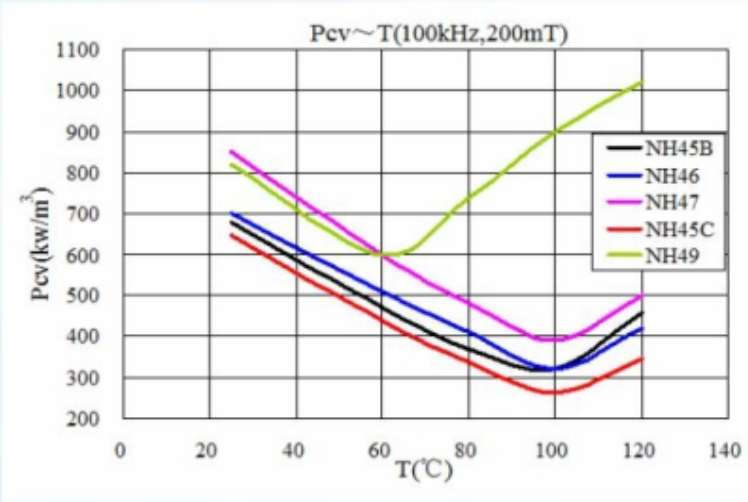


YUTE Magnetics

High Bs ferrites

材料特性 Material Characteristics	单位Unit		NH45B	NH45C	NH46	NH47	NH49
起始磁导率 μ_i Initial Permeability			2200 ±25%	2200 ±25%	2000 ±25%	1500 ±25%	1500 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density (Bs)@H=1194A/m	25℃	mT	540	540	550	550	590
	100℃	mT	450	450	460	470	490
居里温度 Tc Curie Temperature	℃		≥240	≥240	≥250	≥280	≥300
磁芯损耗 Pcv Core Loss 100kHz 200mT	25℃	kW/m³	680	650	700	850	820
	80℃		380	340	410	480	740
	100℃		320	275	320	390	900
	120℃		460	360	420	500	1020





YUTE Magnetics

High Bs ferrites

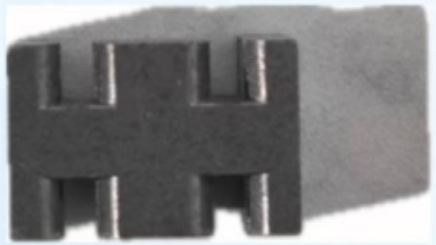
YT-1

FeNi50 材料设计指标
Material Design Specs of FeNi50 metirial

Bs≥1.35T，相对磁导率≥60 Bs≥1.35 T, Relative Permeability≥60			
频率 Frequency (KHz)	50mT 损耗 Core Loss @50 mT (mw/cm^3)	100mT损耗 Core Loss @100 mT (mw/cm^3)	150mT损耗 Core Loss@150 mT (mw/cm^3)
100	不考量 N/A	300	780
500	420	2100	5400
1000	1176	5760	14400







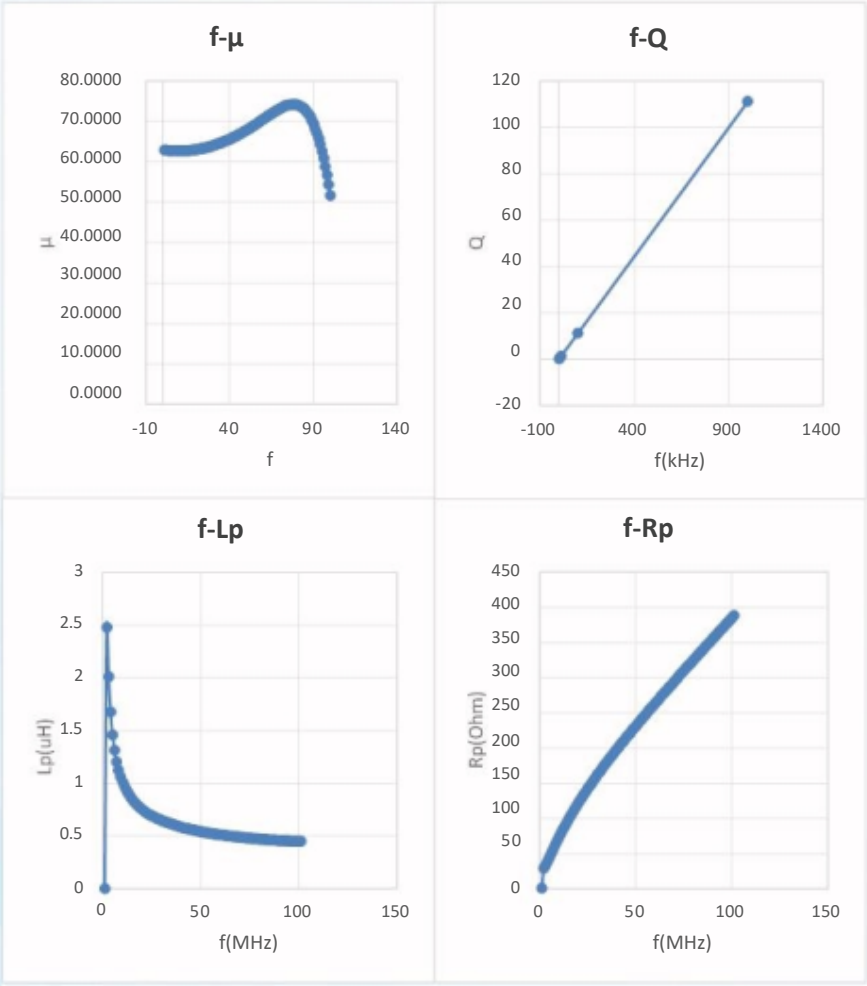
High Bs ferrites

YT-1

元件电感与磁导率

Component Inductance & Permeability

测试频率 Frequency (KHz)	电感 Inductance Ls(uH)	相对磁导率 Relative Permeability μ
1k	2.75526	64.6887
10k	2.74730	64.4939
100k	2.73840	64.2850
1M	2.71334	63.6967



High Bs ferrites

YT-1

耐压
Withstand Voltage

	样品1 磁环耐压 Core Withstand V（V）	样品2 磁环耐压 Core Withstand V（V）	样品3 磁环耐压 Core Withstand V（V）
1	84	207	589
2	111	309	539
3	103	340	579

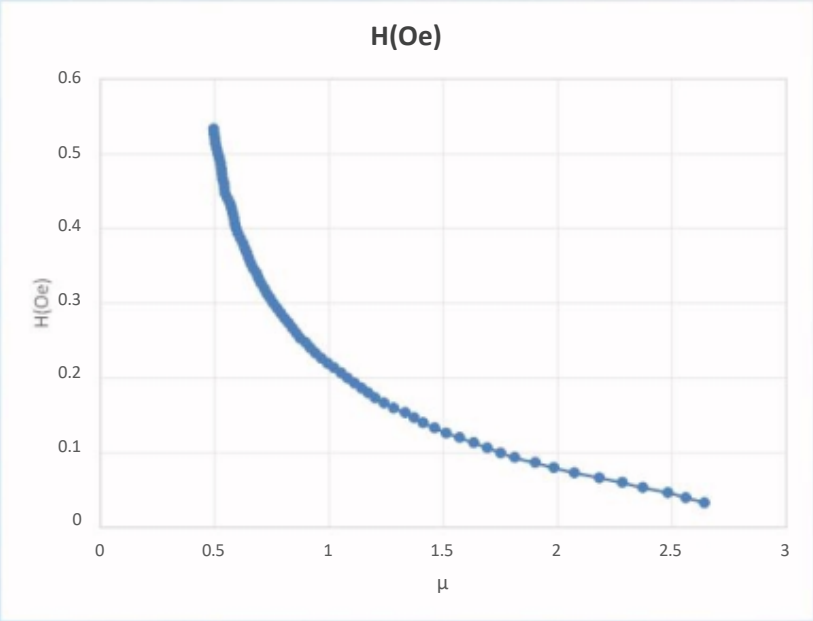
支持最大定制规格：
30*30mm

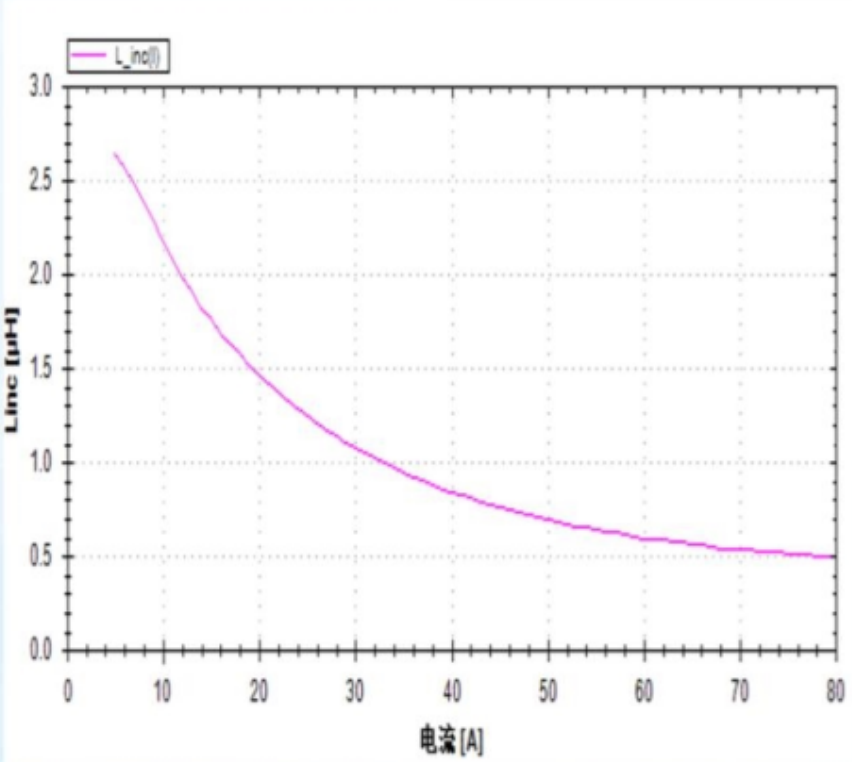
We can provide custom sizes up to 30×30 mm

High Bs ferrites

YT-1

元件直流叠加
DC Superposition of Components

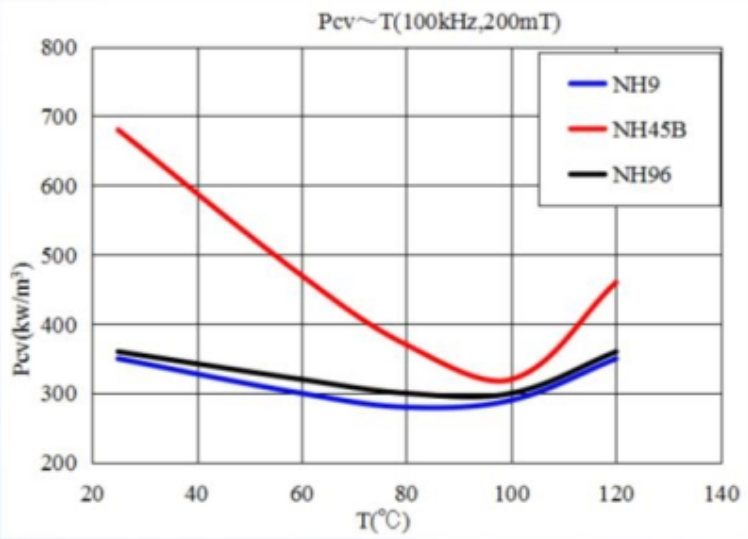


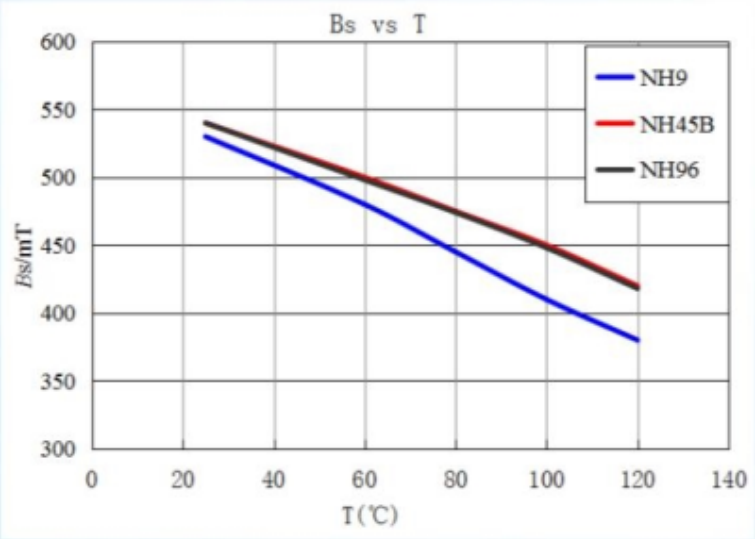


YUTE Magnetics

High Bs & wide-temp ferrites

材料特性 Material Characteristics		单位Unit		NH96	NH96B	NH96A (developing)
起始磁导率 μ_i Initial Permeability				3000 ±25%	3000 ±25%	3000 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density (Bs)@H=1194A/m		25℃	mT	540	540	540
		100℃	mT	450	440	440
剩余磁通密度 Br		25℃	mT	90	70	70
		100℃	mT	60	60	60
磁芯损耗 Pcv Core Loss	100kHz 200mT	25℃	kW/m³	360	250	290
		100℃		300	300	260
		120℃		360	350	290





YUTE Magnetics

Wide-freq & wide-temp ferrites

Material characteristics

- wide operating frequency
- low loss in the wide temperature range
- high permeability

Typical cores

PQ35/34.75/ER3230/CC3315

PQ3415/CC37

Application

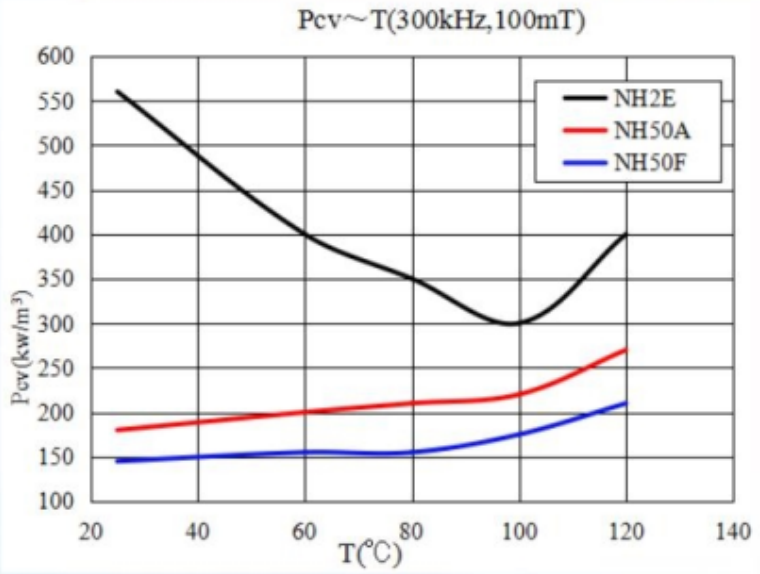
- server power
- automobile electronics
- PV Inverter
- LED lighting

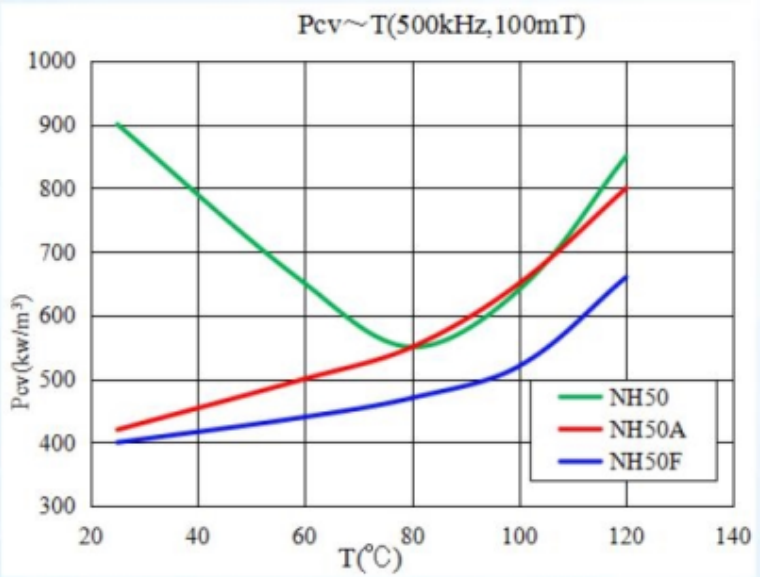
材料特性 Material Characteristics		单位 Unit		KF9(NH9F)	KF9A(NH9FA)
起始磁导率 μ_i Initial Permeability				3400 ±25%	3000 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m		mT	25℃	530	540
		mT	100℃	410	430
居里温度 Tc Curie Temperature		℃		≥215	≥215
磁芯损耗 Pcv Core Loss	100kHz 200mT	kW/m³	25℃	290	245
			80℃	270	270
			100℃	280	280
			120℃	320	320
	200kHz 125mT	kW/m³	25℃	250	175
			80℃	240	195
			100℃	250	210
			120℃	270	235
	300kHz 100mT	kW/m³	25℃	270	190
			80℃	260	210
			100℃	270	240
			120℃	300	270

YUTE Magnetics

Medium-high-freq ferrites

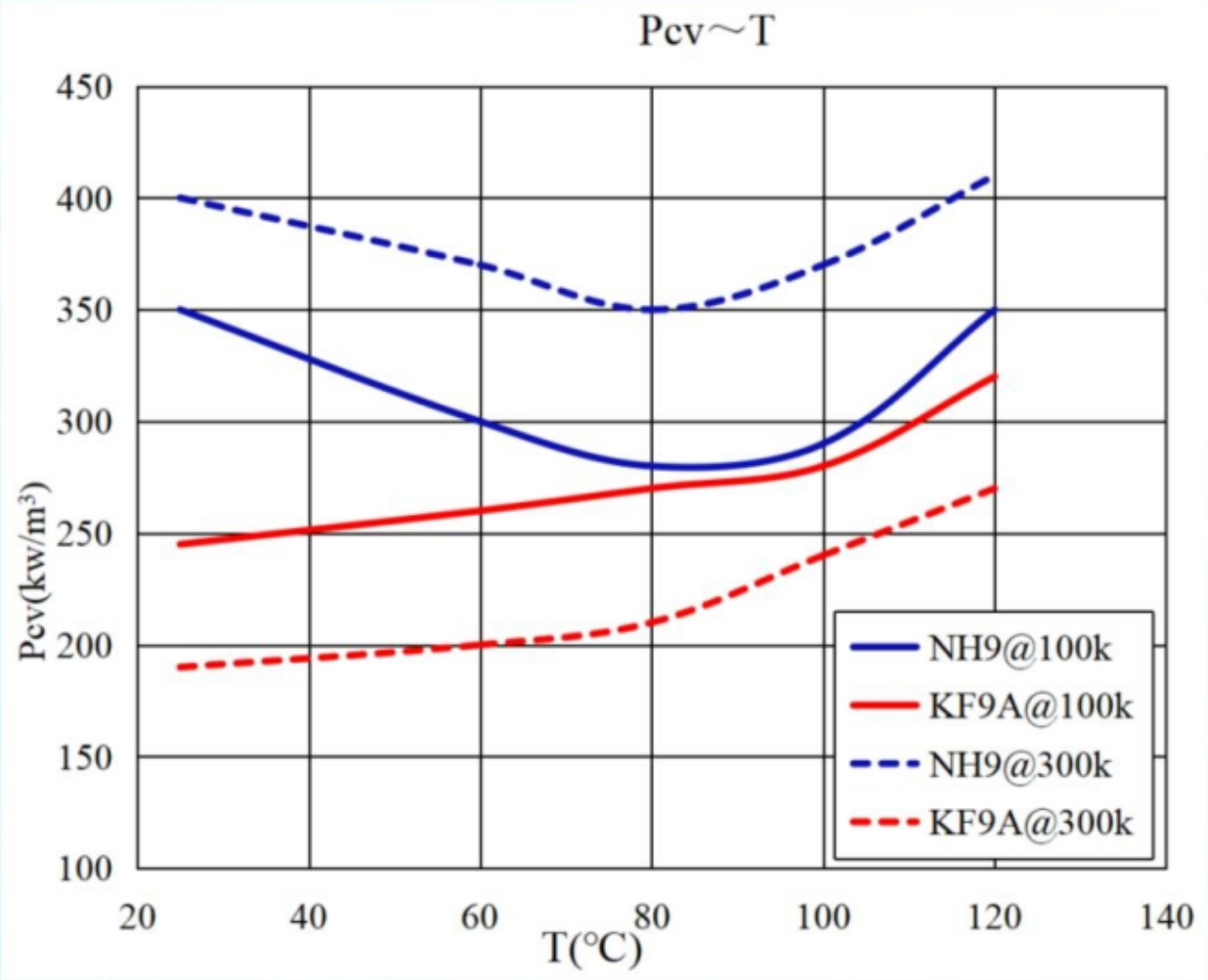
材料特性 Material Characteristics		单位 Unit		NH2E	NH50A	NH50F
起始磁导率 μ_i Initial Permeability				2200 ±25%	2700 ±25%	2500 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m		25℃	mT	500	520	530
		100℃	mT	380	410	420
居里温度 Tc Curie Temperature		℃		≥215	≥240	≥240
磁芯损耗 Pcv Core Loss	200kHz/100mT	25℃	kW/m³	300		
		100℃		140		
		120℃		180		
	300kHz/100mT	25℃	kW/m³	560	180	150
		100℃		300	220	175
		120℃		400		230
	500kHz/100mT	25℃	kW/m³		450	400
		100℃			620	520
		120℃				660





YUTE Magnetics

Wide-freq & wide-temp ferrites







YUTE Magnetics

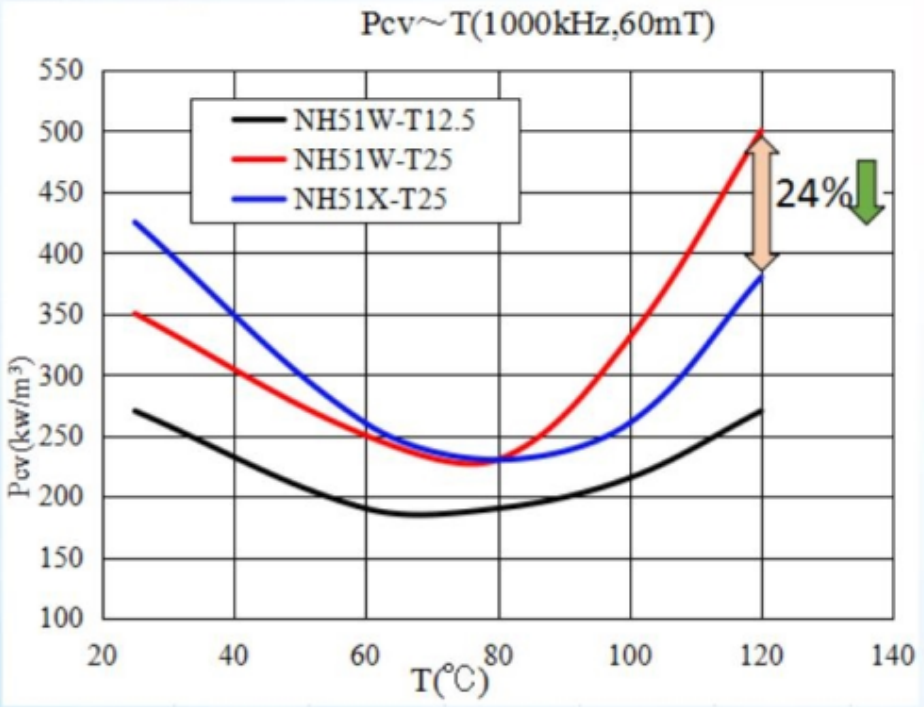
High-freq ferrites

材料特性 Material Characteristics			单位 Unit		NH51X
初始磁导率 μ_i Initial Permeability					1300 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m			25℃	mT	500
			100℃	mT	410
磁芯损耗 Pcv Core Loss	500kHz/ 100mT	25℃	kW/m³		600
		80℃			480
		100℃			600
		120℃			830
	1MHz/ 60mT	25℃	kW/m³		425
		80℃			230
		100℃			260
		120℃			380
居里温度 Tc Curie Temperature			℃		≥260

Note: Typical values are tested based on T25 * 15 *8 magnetic rings

y≈4

$$P_{cv} = C_m \cdot f^x \cdot B^y$$

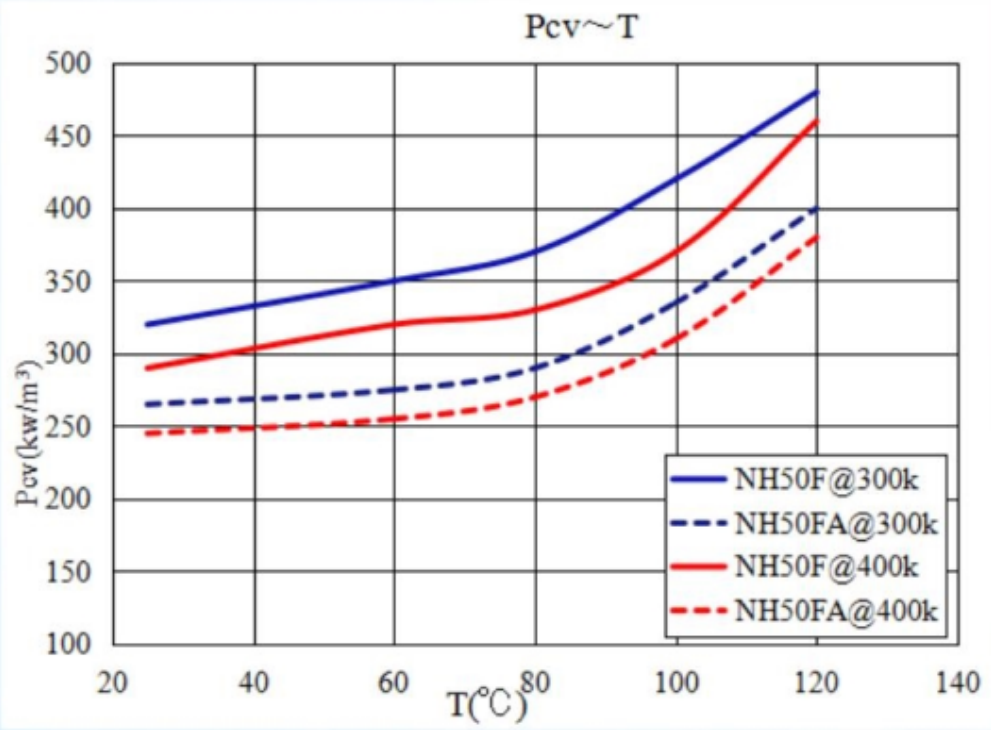


YUTE Magnetics

Medium-high-freq ferrites

材料特性 Material Characteristics		单位 Unit		NH50F	NH50FA (开发中)
起始磁导率 μ_i Initial Permeability				2500 ±25%	2500 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m		25℃	mT	530	520
		100℃	mT	420	410
居里温度 Tc Curie Temperature		℃		≥240	≥240
磁芯损耗 Pcv Core Loss	300kHz/120mT	25℃	kW/m³	320	265
		80℃		370	290
		100℃		420	335
		120℃		480	400
	400kHz/100mT	25℃	kW/m³	290	245
		80℃		330	270
		100℃		390	310
		120℃		460	380

注：以上为T25*15*8磁环，3Ts测试的典型数据



YUTE Magnetics

High-freq ferrites

材料特性 Material Characteristics		单位 Unit		NH50	NH51	NH51W	NH51X	NH55 (developing)
起始磁导率 μ_i Initial Permeability				1400±25%	1100±25%	900±25%	1300±25%	1000±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m		25℃	mT	470	500	530	500	530
		100℃	mT	380	410	435	410	430
磁芯损耗 Pcv Core Loss	500kHz /50mT	25℃	kW/m³	130	95			
		100℃		80	70			
	1000kHz /50mT	25℃	kW/m³			120		
		100℃				100		
	1000kHz /60mT	25℃	kW/m³	720	370	270	425	130
		100℃		400	310	215	260	90
	1000kHz /90mT	25℃	kW/m³					700
		100℃						650
居里温度 Tc Curie Temperature		℃		≥240	≥240	≥260	≥260	

Note: Typical values are tested based on T12.5 * 7.5 * 7 magnetic rings

YUTE Magnetics

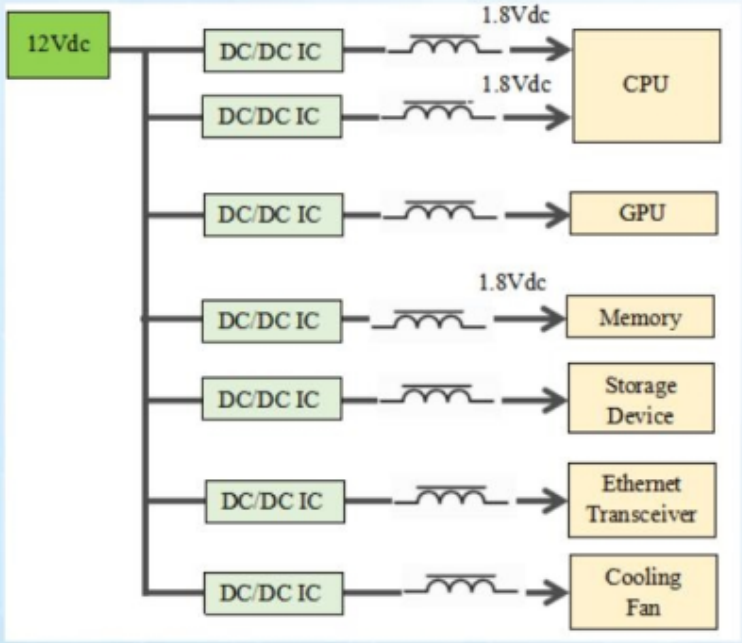
High-freq ferrites

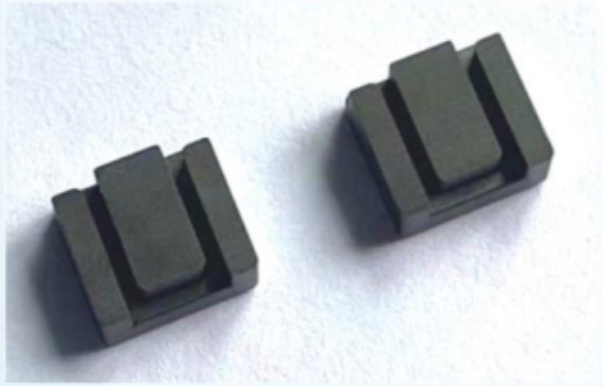
材料特性 Material Characteristics		单位 Unit		NH52W	NH53
起始磁导率 μ_i Initial Permeability				600 ±25%	900 ±25%
饱和磁通密度 Bs Saturation Magnetic Flux Density @H=1194A/m		25℃	mT	530	560
		100℃	mT	420	460
磁芯损耗 Pcv Core Loss	500kHz /100mT	25℃	kW/m³		600
		100℃	kW/m³		600
	1000kHz /50mT	25℃	kW/m³	100	70
		100℃	kW/m³	80	70
	2000kHz /50mT	25℃	kW/m³		300
		100℃	kW/m³		300
	3000kHz /30mT	25℃	kW/m³	220	
		100℃	kW/m³	200	

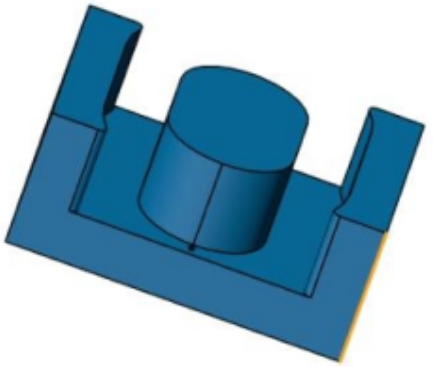
Note: Typical values are tested based on T12.5 * 7.5 * 7 magnetic rings

YUTE Magnetics

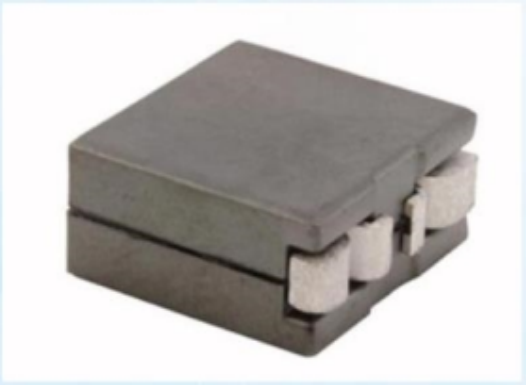
High-freq ferrites













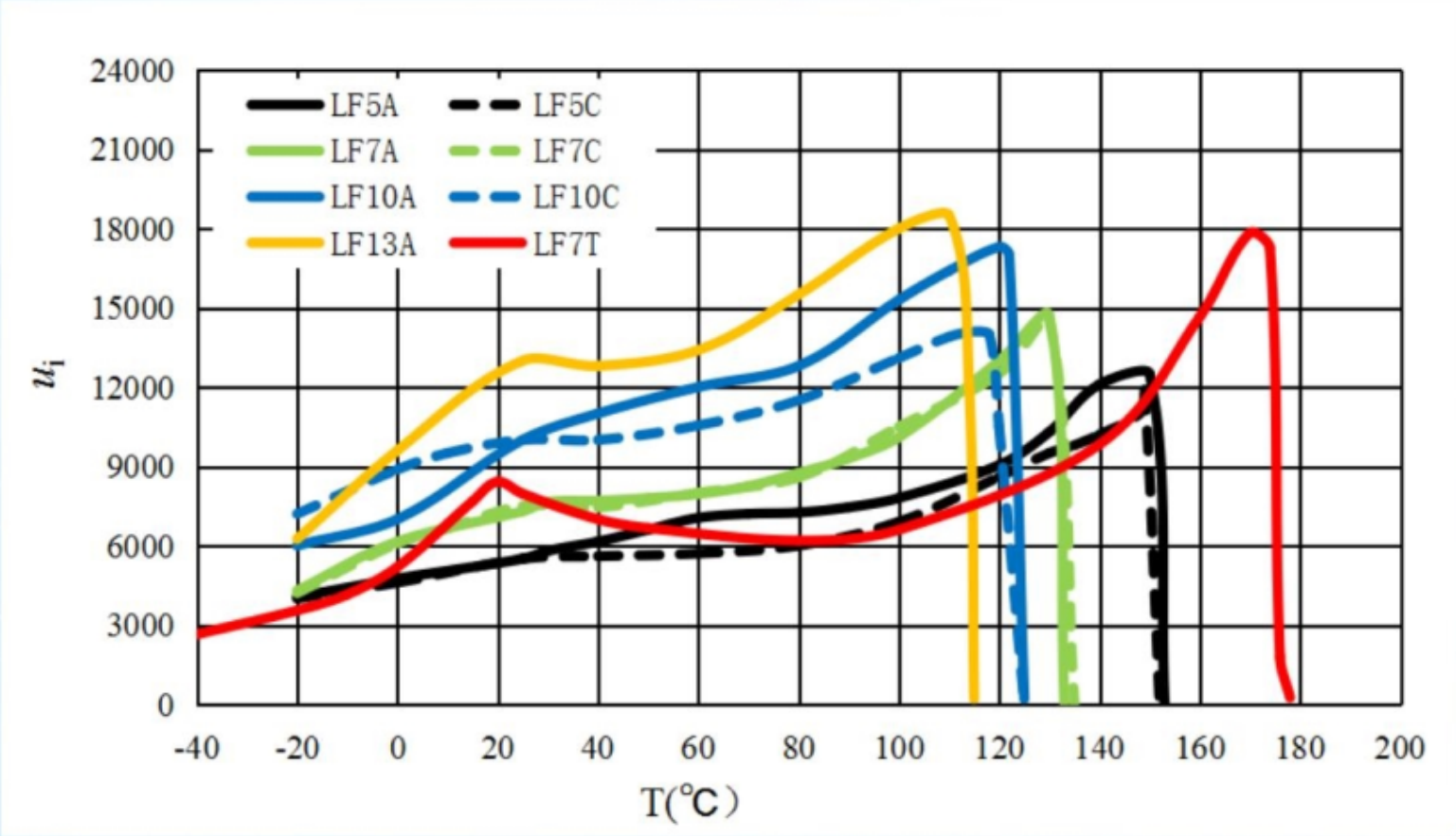
YUTE Magnetics

High permeability ferrites

材料特性 Material Chatacteristics	单位 Unit	LF5A	LF7A	LF7T	LF10A	LF13A	LF5C	LF7C	LF10C
起始磁导率 μi Initial permeability		5500 ±25%	7500 ±25%	7500 ±25%	10000 ±30%	13000 ±30%	5500 ±25%	7500 ±25%	10000 ±25%
饱和磁通密度 Bs Saturation Matnetic Flux Density @H=1194A/m	mT	410	420	480	400	390	410	410	390
剩余磁通密度 Br Remanence Flux Density	mT	70	90	80	90	100	70	80	120
矫顽力 Hc Effective Coercivity	A/m	7.2	6	5	6	5	6	6	5
比损耗tanδ/μi(10kHz) Relative loss factor	$\times 10^{-6}$	<3.5	<6.5	<4	<7	<7	10 (100kHz)	30 (100kHz)	30 (100kHz)
居里温度Tc	℃	>140	>130	>170	>120	>110	>130	>130	>120
密度 Density	$kg/m^3 \times 10^3$	4.85	4.9	4.9	4.9	4.95	4.9	4.9	4.9

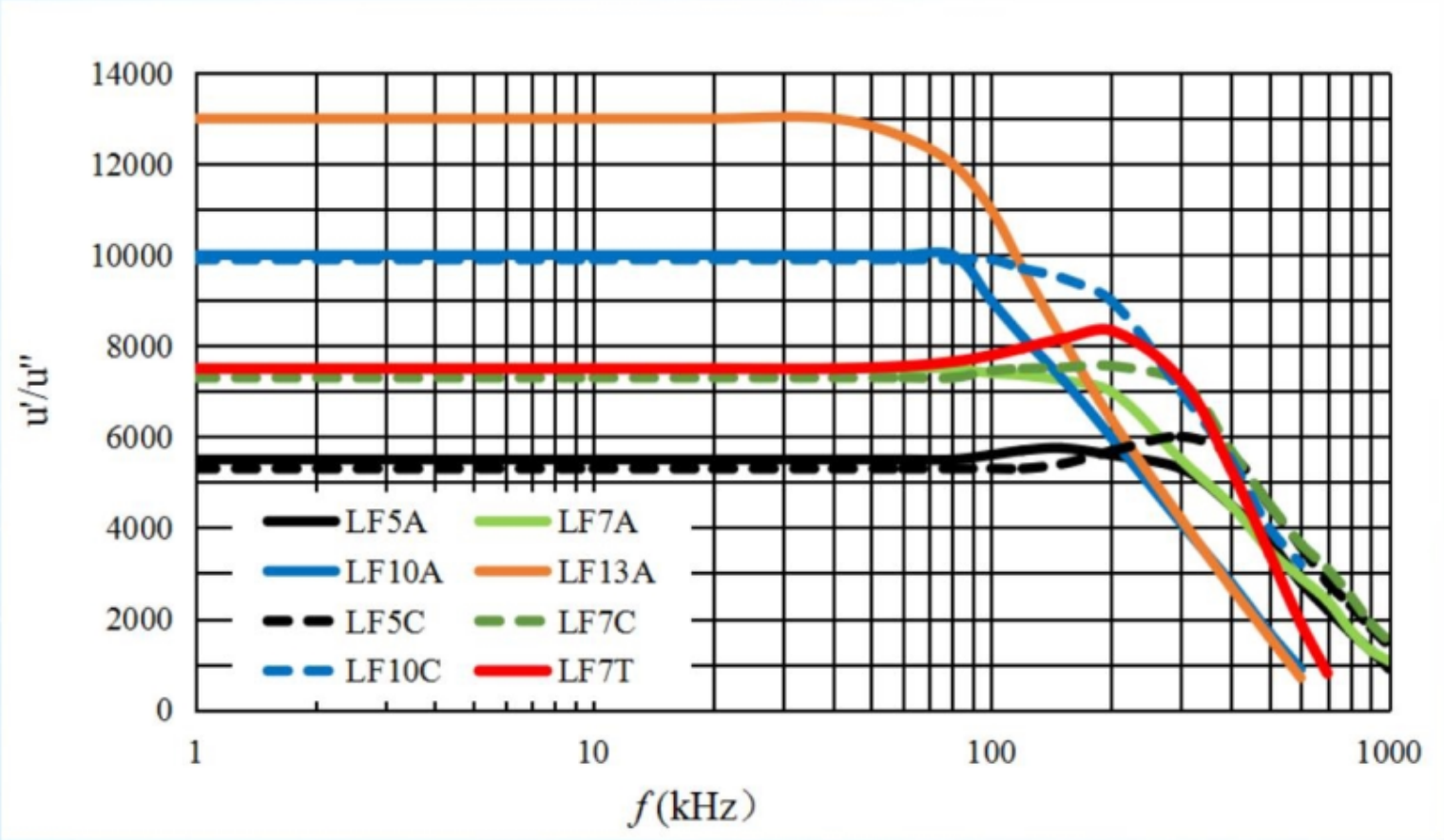
YUTE Magnetics

High permeability ferrites



YUTE Magnetics

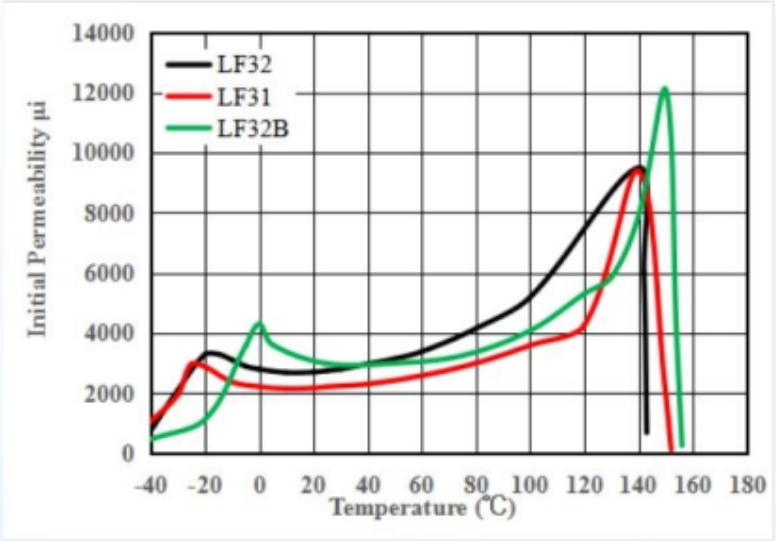
High permeability ferrites

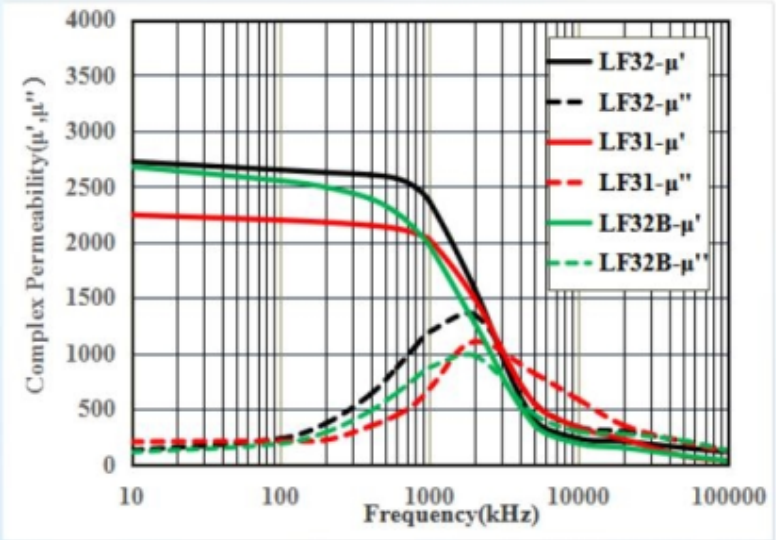


YUTE Magnetics

High impedance ferrites

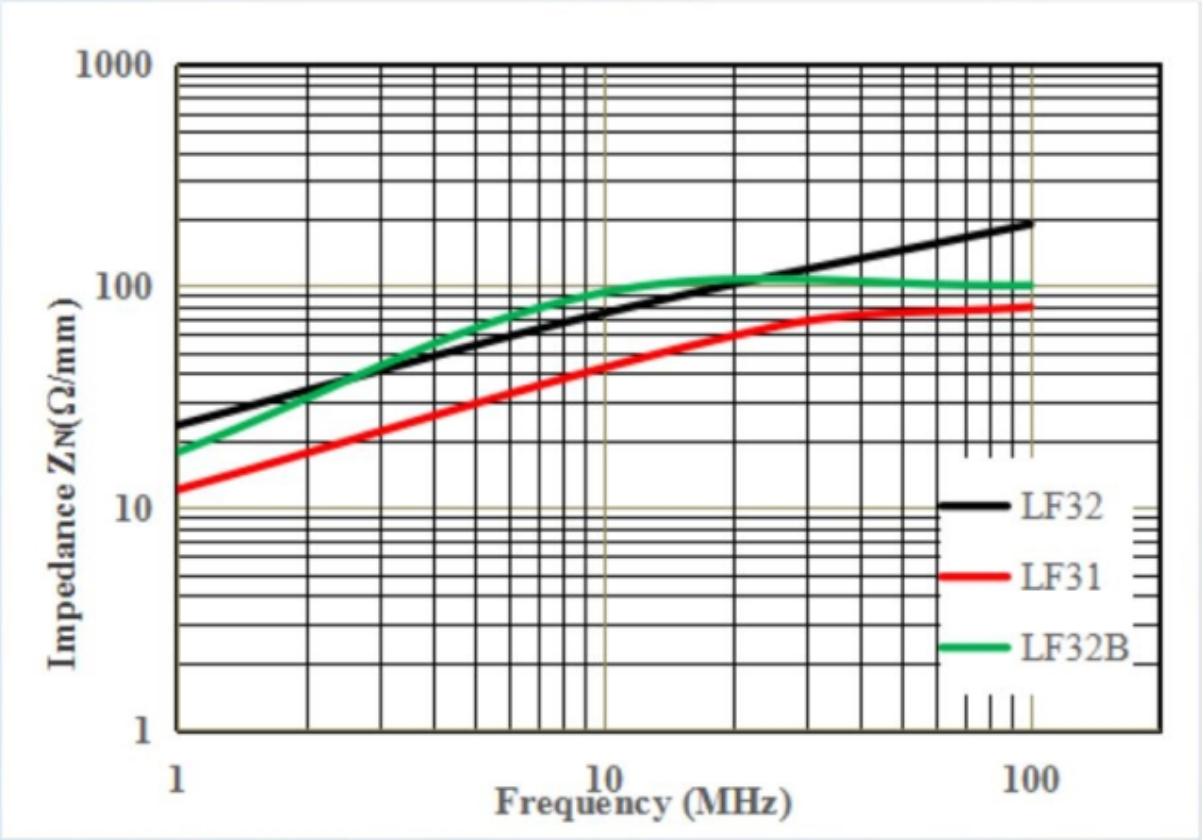
材料特性 Material Chatacteristics	单位 Unit		LF32	LF32B	LF31
起始磁导率μ_i Initial Permeability			3000 ±25%	3000 ±25%	2200 ±25%
饱和磁通密度Bs Saturation Magnetic Flux Density @H=1194A/m	mT	25℃	400	410	410
剩余磁通密度Br Remanence Flux Density	mT	25℃	200	220	270
矫顽力Hc Coercivity	A/m	25℃	15	10	13
比损耗因子tanδ/μ_i Relative Loss Factor @f=100kHz	×10^{-6}	25℃	50	50	20
居里温度T_c Curie Temperature	℃		≥140	≥150	≥160
密度d Density	kg/m^3		4.80x10^3	4.85x10^3	4.90x10^3





YUTE Magnetics

High impedance ferrites



High impedance ferrites

THANK YOU

