

Magnetic Powder Cores

HTC200[™] Iron Powder Cores

Iron Powder Cores



HTC200™
Iron Powder Cores

产品介绍 Introduction of products

铁粉芯的热老化问题 传统铁粉芯一般是采用有机材料（如环氧树脂等）作粘合剂，由于有机材料其耐温等级较低，一般仅达到125℃左右，最大的也在150℃以下，所以采用这类粘合剂的铁粉芯做应力退火处理时，其退火温度一般都在150℃以下，故其应力消除不彻底，会造成磁性能的缺陷；同时，随着电子工业的不断发展，对高功率和高磁场强度的要求不断提高，其使用环境也越来越恶劣，元器件长时间暴露在高温环境下，这导致传统铁粉芯在使用很短一段时间就会产生热老化的问题，磁芯的涡流损耗会加剧，从而使磁芯过热，最终导致磁芯的永久性损坏。

Thermal Aging problem of Iron Powder Cores In general, conventional iron powder cores use the organic material as binder, such as epoxy. Due to the organic material's low resistance to high temperature, the general resin breakdown temperature is only about 125℃ to 150℃. Iron powder cores using these binders will have their annealing temperature below 150℃. The stress force has not been eliminated completely and the cores' performance is affected. In the meantime, the demanding requirement of power and board density by electronics industry worsen the working environment. The elevated temperature operating environment causes the conventional iron powder cores to age in very short period of time. The eddy current loss will increase during the thermal aging process and cause overheating which eventually leads to the permanent damage of the core.

HTC200™铁粉芯系列 是采用KDM专属的耐高温材料作粘合剂，专为在200℃的情况下不产生热老化问题设计的新一代铁粉芯；由于采用了耐高温粘合剂，在做磁芯应力退火处理时，其退火温度最高可达500℃，应力也得到更好的消除，对磁芯的性能也有显著的提高，使我们的铁粉芯在200℃的情况下使用也不会产生热老化问题。当工程设计人员在选择我们HTC200™铁粉芯系列产品时，他们可以有更多的自由和空间去设计他们的产品。

KDM HTC200™ Iron Powder Cores Series are designed to be thermal aging free up to 200℃ using KDM's state-of-the-art proprietary high temperature resistance binder. With the use of the high temperature resistance binder, core's annealing temperature can reach 500℃. The stress force can be better eliminated and the cores' property is improved. This enables our HTC200™ cores to operate up to 200℃ without breakdown. Design engineers can have more flexibility and peace of mind when they select KDM's HTC200™ Iron Powder Cores Series for their power supply designs.

HTC200™是浙江科达磁电有限公司的注册商标

HTC200™ is registered trademark of Zhejiang KEDA Magnetolectricity Co., Ltd.

材质性能 Material Properties

KDM Mix No.	Perm. (μ_e)	Core Loss(mW/cm ³)		DC-Bias(% μ_o)		Color Code	Micrometals Mix No.	CURIE (居磁) Mix No.
		100kHz 140Gs	250kHz 300Gs	HDC=50 Oe	HDC=100 Oe			
HTC200-76	75	58	950	59	36	全蓝/ Blue	/	75H-TAF200
HTC200-75	75	83	1200	51	31	全黄/ Yellow	/	75-TAF200
HTC200-55	55	46	650	75	50	全绿/ Green	-60	55-TAF200 SF53-TAF200
HTC200-35	35	82	1500	85	68	全灰/ Gray	-61	33-TAF200
Si-Fe-35 μ_i	35	30	490	92	77	全蓝/ Blue	-63	35-TAF200 SF36Q-TAF200
Si-Fe-45 μ_i	45	28	390	85	70	全蓝/ Blue	/	SF49Q-TAF200
Si-Fe-55 μ_i	55	28	480	80	63	全蓝/ Blue	/	SF56Q-TAF200
Si-Fe-66 μ_i	66	21	440	65	40	全蓝/ Blue	-66	/

*Si-Fe是合金系列产品，其性能指标详见KDM 2010.Issue E说明书。
Si-Fe cores belongs to Alloy powder cores series, please See the details in the KDM 2010.Issue E catalogue.

表面涂层 Surface Coating

本公司生产的HTC200™铁粉芯环型磁芯，其表面均涂有改良型的环氧树脂涂层并符合欧盟RoHS环保要求，其涂层耐温可达H级，涂层可抵抗大多数清洗剂的擦洗，但过度接触某些溶剂会产生不良影响，各种涂层在50Hz下的最小介电强度为600Vrms。

表面涂层绝缘强度的测试是，将两片导电板分别放在磁粉芯的两个端面,用50Hz，1250V（AC有效电压）测试电压，时间为5秒。

KDM HTC200™ Iron Powder Cores Series are coated by improved epoxy that can resist high temperature up to H grade. The coating also complies with the requirement of environmental protection and RoHS. The finishing has a minimum dielectric strength of 600Vrms at 50Hz and can resist most cleaning solvents. However, extended exposures to certain solvents may have detrimental effects.

The method of testing the insulation strength of the surfacing coating: put two electroplates on the corners of the cores' two surfaces, applies 50Hz，1250Vrms and last for 5 seconds.

尺寸公差 Size Tolerance(mm)

Toroidal Cores 环型磁芯	KDM Part No.	OD	ID	Ht	KDM Part No.	OD	ID	Ht
	KT16 – KT20	± 0.25	± 0.25	± 0.25	KT150 – KT225	± 0.63	± 0.63	± 0.75
	KT25 – KT38	± 0.38	± 0.38	± 0.50	KT249 – KT400	± 0.75	± 0.75	± 0.75
	KT40 – KT72	± 0.50	± 0.50	± 0.50	KT520 – KT650	± 1.25	± 1.25	± 1.25
	KT80 – KT141	± 0.50	± 0.50	± 0.63				

公差包括涂层 Tolerance includes coating

耐高温铁粉芯 HTC200™ Iron Powder Cores

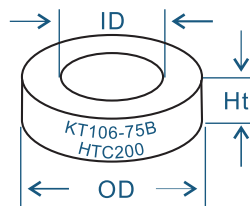
TYPICAL PART NO. KT106-75B-HTC200

环型磁芯KDM Toroidal Cores
规格特称OD in 100th inches
材质编码KDM Material Mix No.
不同高度区别码Letter Indicates Alternate Height
耐高温铁粉芯HTC200™ Iron Powder Cores

ℓ_e : 平均磁路长度 (Mean Magnetic Path Length)

A_e : 横截面积 (Cross Section Area)

V : 磁芯体积 (Core Volume)



KDM Part No.	OD in/mm	ID in/mm	Ht in/mm	ℓ_e cm	A_e cm ²	V cm ³	A_L (nH/N ²) $\pm 10\%$			
							76	75	55	35
KT16	.160/4.06	.078/1.98	.060/1.52	.930	.015	.014	13.5	14.5	9.5	6.0
KT20	.200/5.08	.088/2.24	.070/1.78	1.15	.023	.026	17.5	18.5	13.0	7.8
KT25	.225/6.48	.120/3.05	.096/2.44	1.50	.037	.055	23.0	24.5	17.0	10.0
KT26	.265/6.73	.105/2.67	.190/4.83	1.47	.090	.133	56.0	57.0	41.5	24.0
KT27	.280/7.11	.151/3.84	.128/3.25	1.71	.047	.080	25.5	27.5	18.5	11.5
KT30	.307/7.80	.151/3.84	.128/3.25	1.84	.060	.110	30.5	33.5	22.0	14.0
KT37	.375/9.53	.205/5.21	.128/3.25	2.31	.064	.147	26.0	28.5	19.0	12.0
KT38	.375/9.53	.175/4.45	.190/4.83	2.18	.114	.248	49.0	49.0	36.0	20.0
KT40	.400/10.2	.205/5.21	.163/4.14	2.41	.093	.223	36.0	36.0	26.0	16.5
KT44	.440/11.2	.229/5.82	.159/4.04	2.68	.099	.266	35.0	37.0	25.5	18.0
KT44D	.440/11.2	.229/5.82	.338/8.59	2.68	.212	.567	70.0	72.0	51.5	33.0
KT50	.500/12.7	.303/7.70	.190/4.83	3.19	.112	.358	33.0	33.0	24.0	17.5
KT50B	.500/12.7	.303/7.70	.250/6.35	3.19	.148	.471	43.5	43.5	32.0	23.0
KT50C	.500/12.7	.303/7.70	.335/8.51	3.19	.200	.637	59.0	61.0	43.0	28.3
KT50D	.500/12.7	.303/7.70	.375/9.53	3.19	.223	.711	66.0	72.0	48.5	31.0
KT51C	.500/12.7	.200/5.08	.250/6.35	2.79	.223	.622	75.0	83.0	55.0	37.0
KT60	.600/15.2	.336/8.53	.234/5.94	3.74	.187	.699	47.0	50.0	34.5	19.0
KT60D	.600/15.2	.336/8.53	.470/11.9	3.74	.374	1.400	94.0	97.0	69.0	44.0
KT68	.690/17.5	.370/9.40	.190/4.83	4.23	.179	.759	40.0	43.5	29.0	19.5

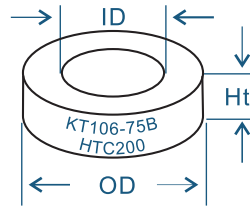
耐高温铁粉芯 HTC200™ Iron Powder Cores

磁粉芯

TYPICAL PART NO. KT106-75B-HTC200

环型磁芯KDM Toroidal Cores
规格特称OD in 100th inches
材质编码KDM Material Mix No.
不同高度区别码Letter Indicates Alternate Height
耐高温铁粉芯HTC200™ Iron Powder Cores

ℓ_e :平均磁路长度 (Mean Magnetic Path Length)
 A_e :横截面积(Cross Section Area)
 V :磁芯体积(Core Volume)



KDM Part No.	OD in/mm	ID in/mm	Ht in/mm	ℓ_e cm	A_e cm ²	V cm ³	A_L (nH/N ²) $\pm 10\%$			
							76	75	55	35
KT68A	.690/17.5	.370/9.40	.250/6.35	4.23	.242	1.03	54.0	58.0	39.5	26.0
KT68D	.690/17.5	.370/9.40	.375/9.53	4.23	.358	1.52	80.0	87.0	59.0	38.0
KT72	.720/18.3	.280/7.11	.260/6.60	4.01	.349	1.40	82.0	90.0	60.0	36.0
KT80	.795/20.2	.495/12.6	.250/6.35	5.14	.231	1.19	42.0	46.0	31.0	18.0
KT80B	.795/20.2	.495/12.6	.375/9.53	5.14	.347	1.78	63.0	71.0	46.5	29.5
KT80D	.795/20.2	.495/12.6	.500/12.7	5.14	.453	2.33	83.0	92.0	61.0	44.0
KT90	.900/22.9	.550/14.0	.375/9.53	5.78	.395	2.28	64.0	70.0	47.0	30.0
KT94	.942/23.9	.560/14.2	.312/7.92	5.97	.362	2.16	57.0	60.0	42.0	25.0
KT106	1.060/26.9	.570/14.5	.437/11.1	6.49	.659	4.28	95.0	93.0	70.0	45.0
KT106A	1.060/26.9	.570/14.5	.312/7.92	6.49	.461	3.00	67.0	67.0	49.0	31.5
KT106B	1.060/26.9	.570/14.5	.575/14.6	6.49	.858	5.57	124.0	124.0	91.0	58.0
KT124	1.245/31.6	.710/18.0	.280/7.11	7.75	.459	3.55	56.0	58.0	41.0	26.0
KT130	1.300/33.0	.780/19.8	.437/11.1	8.28	.698	5.78	79.0	81.0	58.0	35.0
KT130A	1.300/33.0	.780/19.8	.225/5.72	8.28	.361	2.99	41.0	41.0	30.0	19.0
KT131	1.300/33.0	.640/16.3	.437/11.1	7.72	.885	6.84	108.0	116.0	79.0	52.5
KT132	1.300/33.0	.700/17.8	.437/11.1	7.96	.805	6.41	95.0	103.0	70.0	44.5
KT141	1.415/35.9	.880/22.4	.412/10.5	9.14	.674	6.16	69.0	75.0	51.0	32.0
KT150	1.510/38.4	.845/21.5	.437/11.1	9.38	.887	8.31	89.0	96.0	65.0	41.5
KT150A	1.510/38.4	.845/21.5	.325/8.26	9.38	.657	6.16	66.0	66.0	48.5	31.0

耐高温铁粉芯 HTC200™ Iron Powder Cores

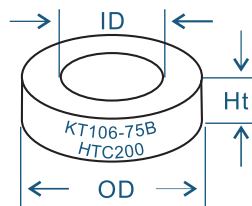
TYPICAL PART NO. KT106-75B-HTC200

环型磁芯KDM Toroidal Cores
规格特称OD in 100th inches
材质编码KDM Material Mix No.
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ℓ_e : 平均磁路长度 (Mean Magnetic Path Length)

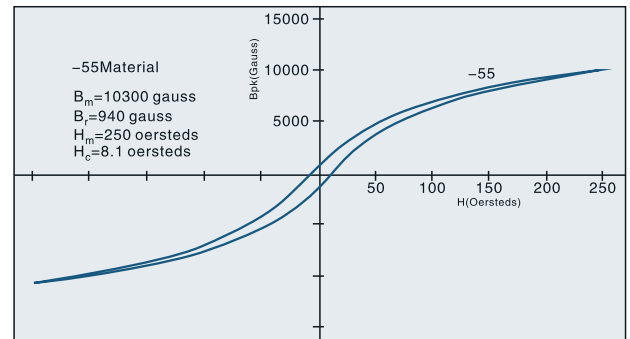
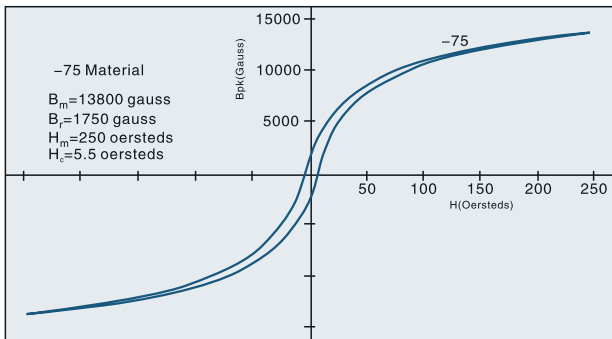
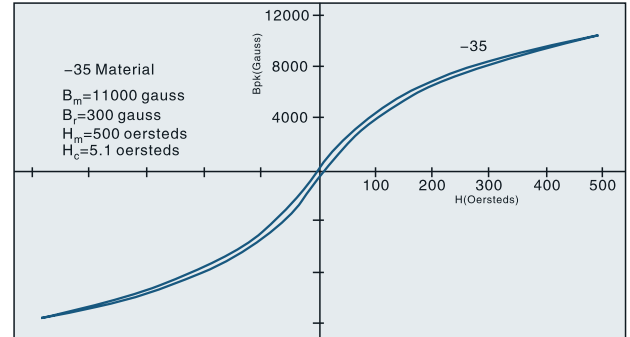
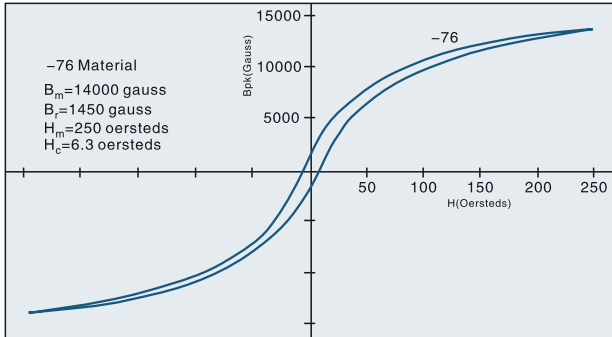
A_e : 横截面积 (Cross Section Area)

V : 磁芯体积 (Core Volume)

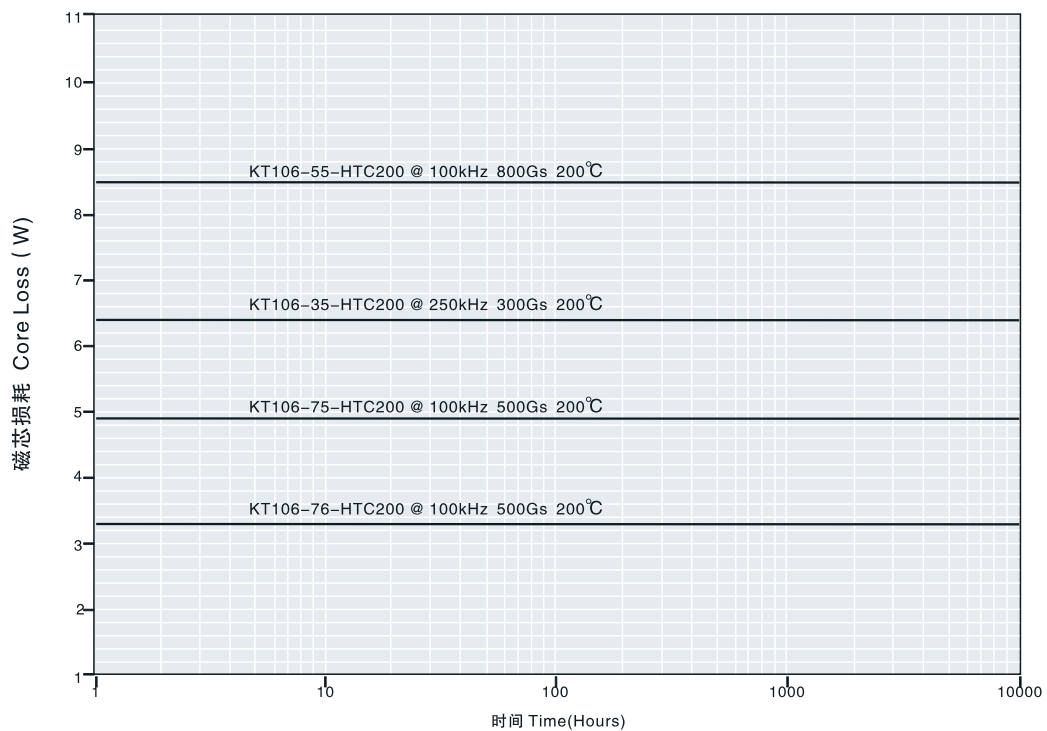


KDM Part No.	OD in/mm	ID in/mm	Ht in/mm	ℓ_e cm	A_e cm ²	V cm ³	A_L (nH/N ²) $\pm 10\%$			
							76	75	55	35
KT157	1.570/39.9	.950/24.1	.570/14.5	10.1	1.06	10.7	99.0	100.0	73.0	42.0
KT175	1.750/44.5	1.070/27.2	.650/16.5	11.2	1.34	15.0	105.0	105.0	82.0	48.0
KT184	1.840/46.7	.950/24.1	.710/18.0	11.2	1.88	21.0	159.0	169.0	116.0	72.0
KT200	2.000/50.8	1.250/31.8	.550/14.0	13.0	1.27	16.5	92.0	92.0	67.0	42.5
KT200B	2.000/50.8	1.250/31.8	1.000/25.4	13.0	2.32	30.0	155.0	160.0	120.0	78.5
KT201	2.000/50.8	.950/24.1	.875/22.2	11.8	2.81	33.2	224.0	224.0	164.0	104.0
KT224C	2.250/57.2	1.250/31.8	.750/19.1	14.0	2.31	32.2	155.0	155.0	114.0	72.0
KT225	2.250/57.2	1.405/35.7	.550/14.0	14.6	1.42	20.7	92.0	98.0	67.0	42.5
KT225B	2.250/57.2	1.405/35.7	1.000/25.4	14.6	2.59	37.8	155.0	160.0	114.0	72.0
KT249	2.500/63.5	1.405/35.7	1.000/25.4	15.6	3.36	52.3	203.0	203.0	149.0	95.0
KT250	2.500/63.5	1.250/31.8	1.000/25.4	15.0	3.84	57.4	242.0	242.0	177.0	113.0
KT300	3.040/77.2	1.930/49.0	.500/12.7	19.8	1.68	33.4	80.0	80.0	58.0	37.0
KT300D	3.040/77.2	1.930/49.0	1.000/25.4	19.8	3.38	67.0	160.0	160.0	116.0	74.0
KT350	3.500/89.0	2.140/54.4	1.000/25.4	22.5	4.39	98.0	171.0	171.0	125.0	79.0
KT400	4.000/102	2.250/57.2	.650/16.5	25.0	3.46	86.4	131.0	131.0	96.0	60.0
KT400D	4.000/102	2.250/57.2	1.300/33.0	25.0	6.85	171	262.0	262.0	192.0	120.0
KT520	5.200/132	3.080/78.2	.800/20.3	33.1	5.24	173	137.0	149.0	100.0	68.0
KT520D	5.200/132	3.080/78.2	1.600/40.6	33.1	10.5	347	274.0	298.0	200.0	130.0
KT650	6.500/165	3.500/88.9	2.000/50.8	39.9	18.4	734	405.0	434.0	310.0	200.0

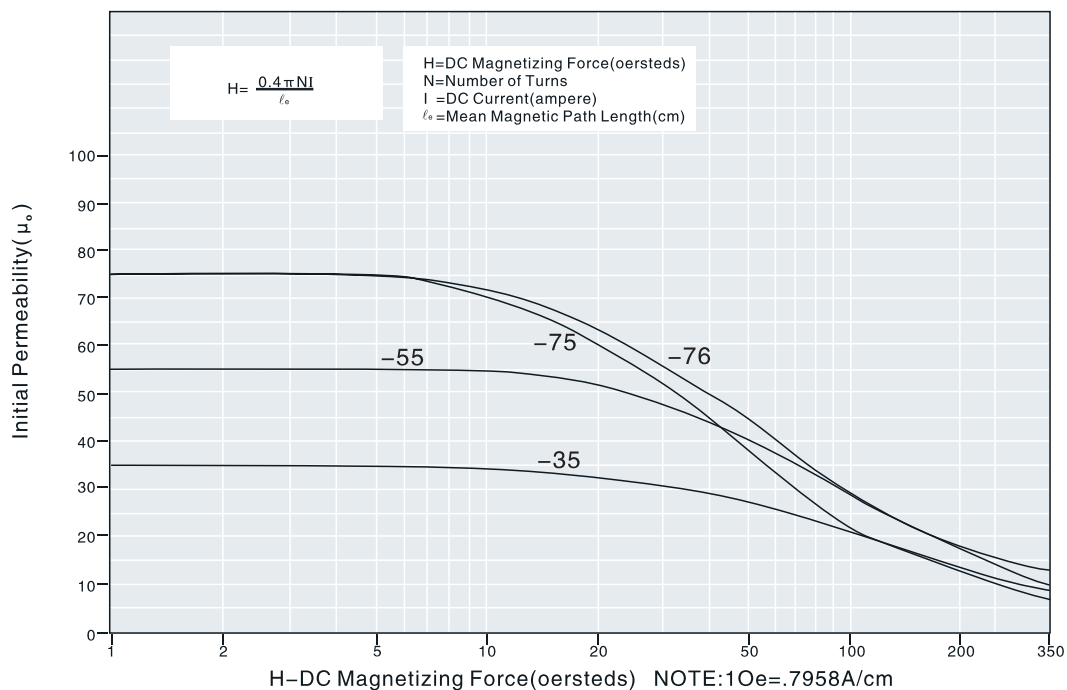
B-H曲线图 B-H Curves



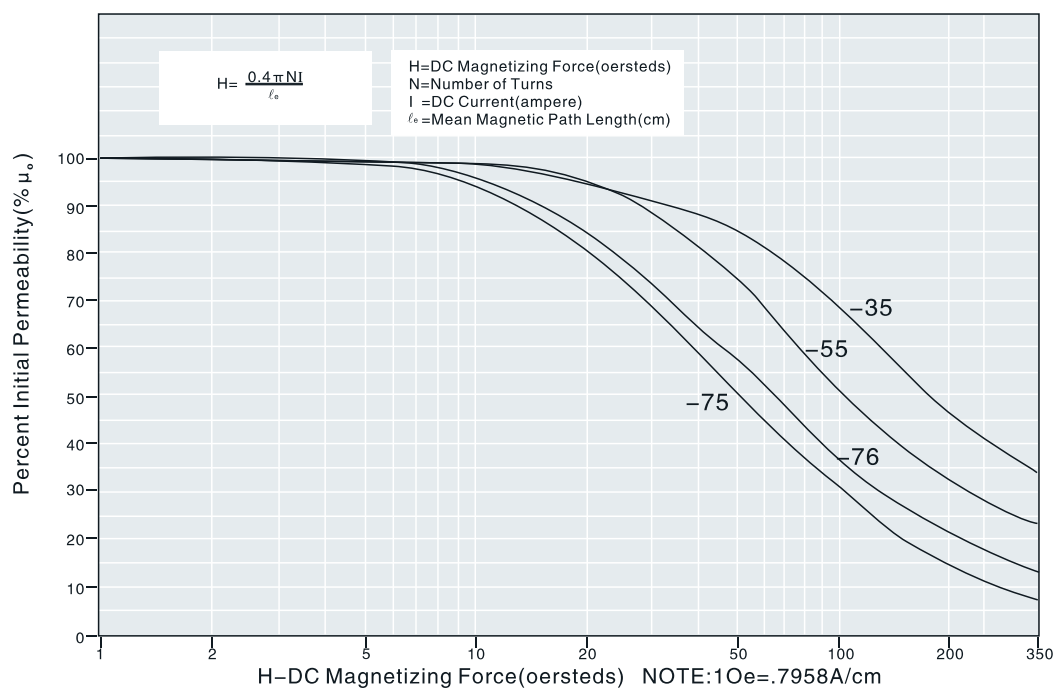
磁芯损耗与时间关系曲线 Core Loss vs Time



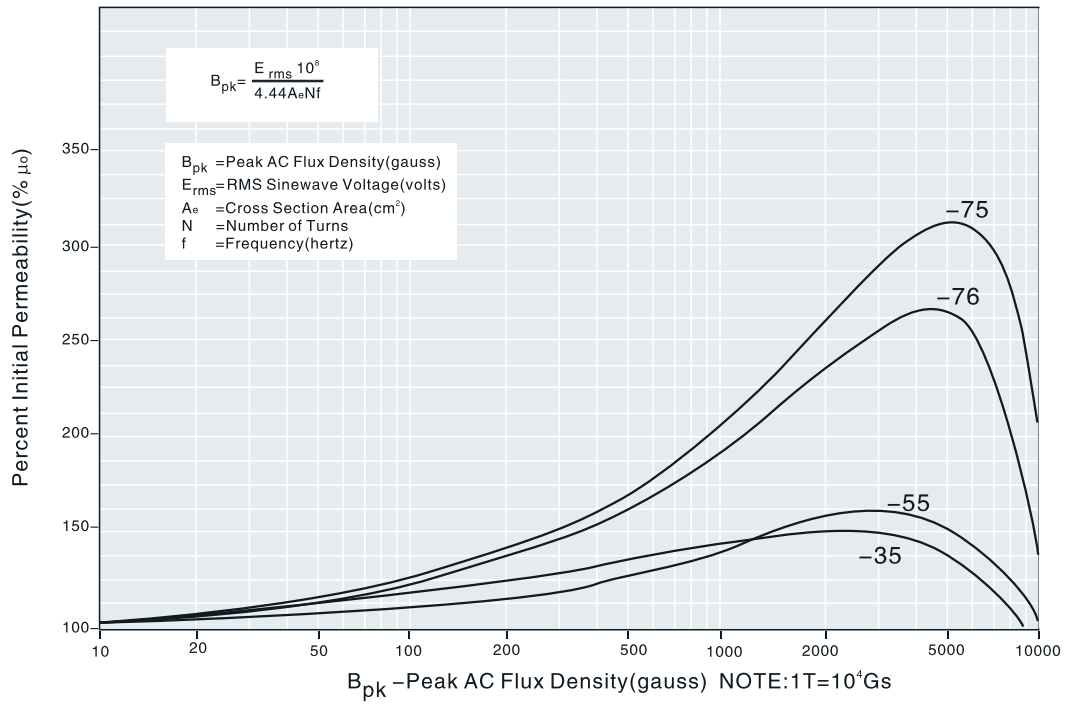
磁导率初值与DC磁化力关系曲线

Initial Permeability(μ_o) vs DC Magnetizing Force

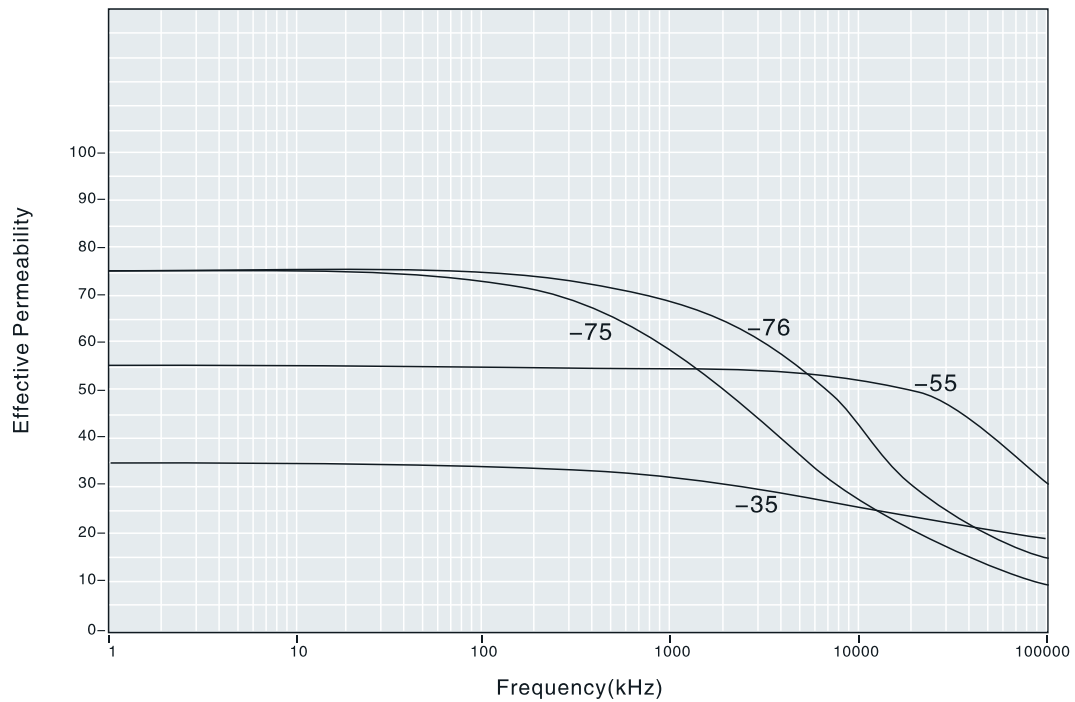
磁导率初值百分率与DC磁化力关系曲线

Percent Initial Permeability(% μ_o) vs DC Magnetizing Force

磁导率初值百分率与AC通量密度峰值关系曲线
Percent Initial Permeability(% μ_0) vs Peak AC Flux Density

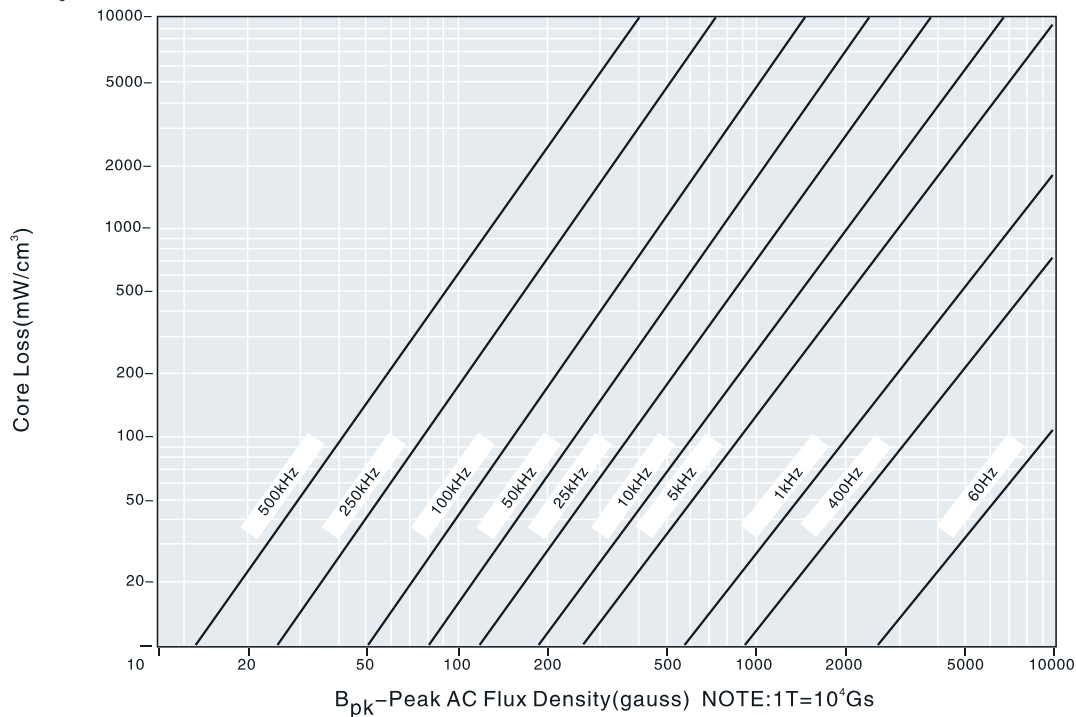


有效磁导率与频率关系曲线
Effective Permeability vs Frequency



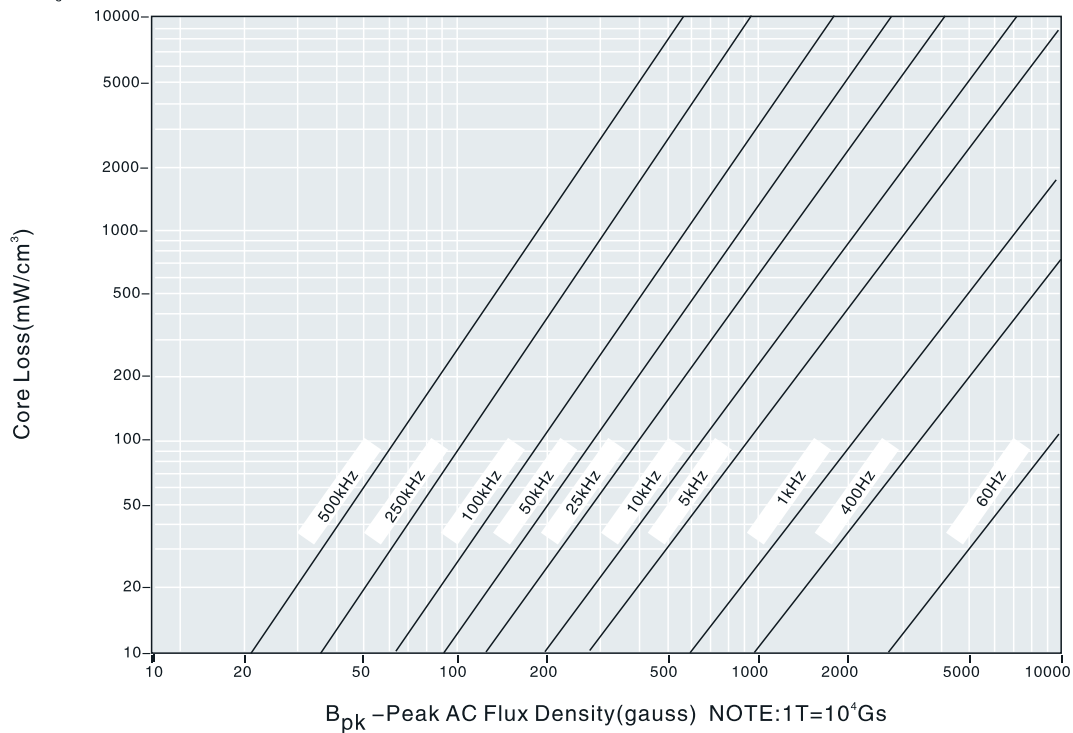
-75材磁芯损耗与AC峰值磁通密度关系曲线

-75Material $\mu_e=75$ Core Loss vs Peak AC Flux Density

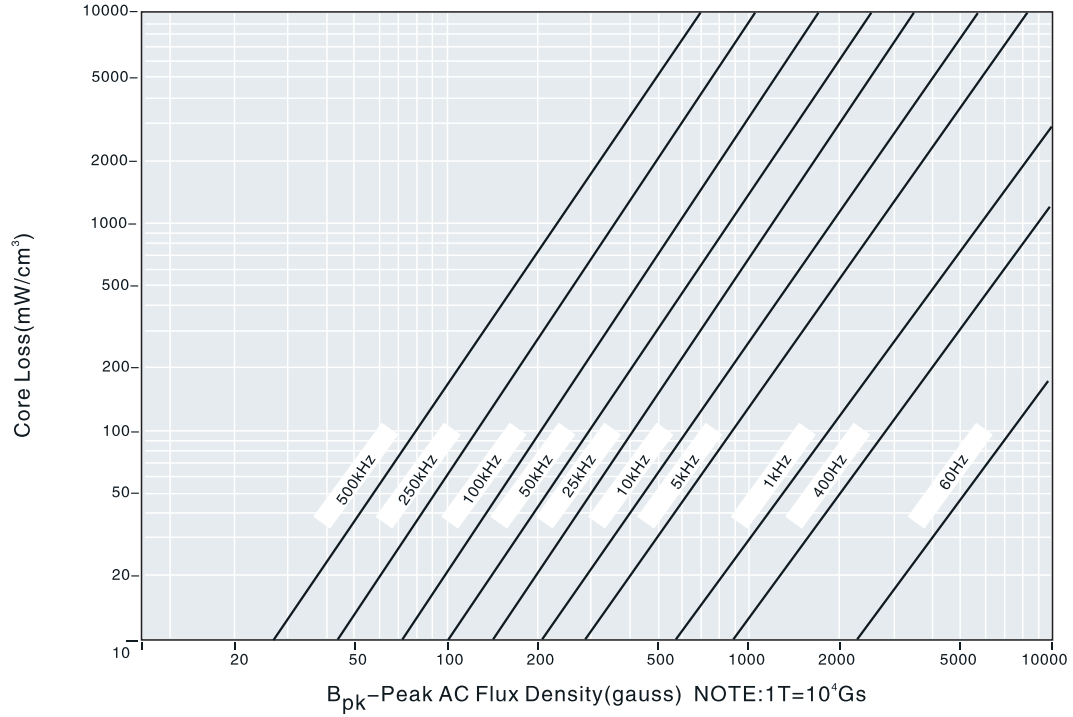


-76材磁芯损耗与AC峰值磁通密度关系曲线

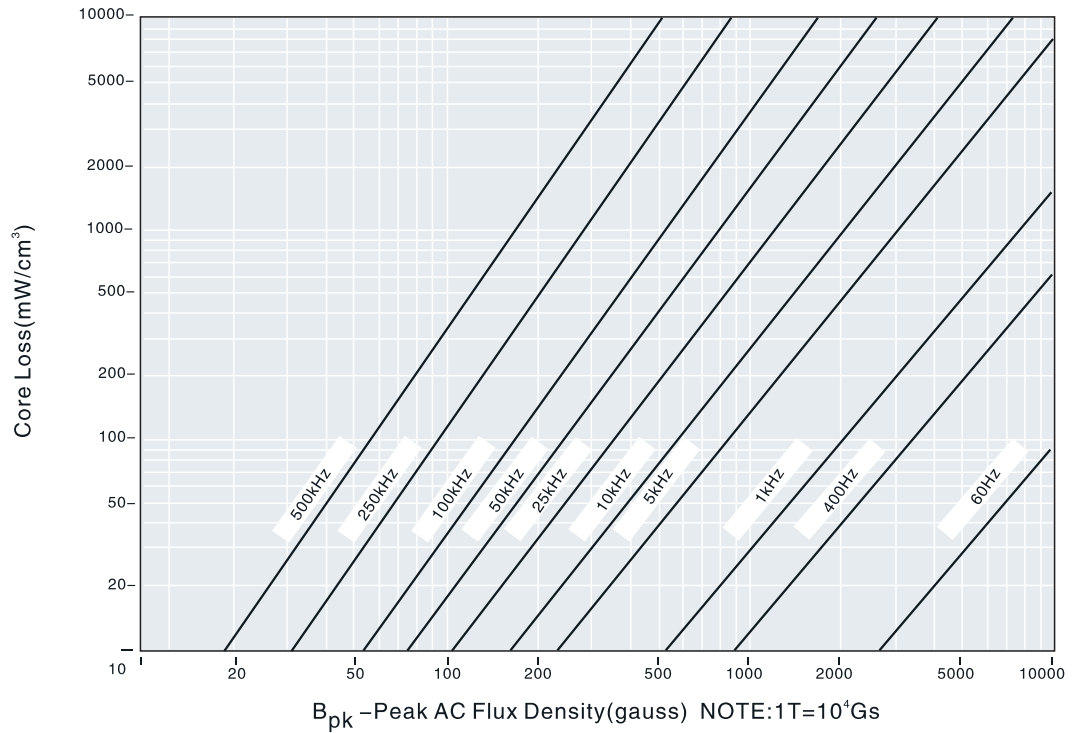
-76Material $\mu_e=75$ Core Loss vs Peak AC Flux Density



-55材磁芯损耗与AC峰值磁通密度关系曲线
-55Material $\mu_e=55$ Core Loss vs Peak AC Flux Density



-35材磁芯损耗与AC峰值磁通密度关系曲线
-35Material $\mu_e=35$ Core Loss vs Peak AC Flux Density





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