Changsung Corp.

HS Series

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1. Introduction

ChangSung Corporation(CSC) lately releases new HS series of powder core which have reduced Nickel content with good DCB characteristics similar to High Flux powder cores and lower core loss compare to Sendust powder cores. We are able to offer HS series with relatively lower price than HighFlux powder core.

New HS series powder core of CSC provide equal level of high energy storage capability like High Flux powder core and good temperature stability same as all powder cores which CSC is producing at the moment.
Low magnetostriction makes HS series ideal for eliminating audible noise in applications. It offers OD size from 9.6mm to 77.7mm toroidal and 101.6mm to 165mm big toroidal core with permeability of 26**μ**, 60u, 75**μ**, 90**μ** and customer's specifications are also available.

HS series are applied to various industrial applications such as Server PC, High power desktop PC, Solar power, Automotive and UPS.

Our new HS series can be a good alternative of Amorphous Powder materials.

2.General Information

(1) General Information

HS Series

Permeability(μ)	**26, 60, 75, 90**
Coating Color	**Dark blue**
Bmax(G)	**14,000**
Curie Temp[℃]	**500**
Operating temp[℃]	**-40 to 150**
OD BF [mm]	**9.6~165**

(2) Identification

HS 270 060

- 060 : Permeability : 26μ, 60μ, 75μ, 90μ
- 270 : OD Size : 27.0mm Available Size : 9.6 ~ 165mm
- HS : HS Core

3. Material Comparison in CSC products

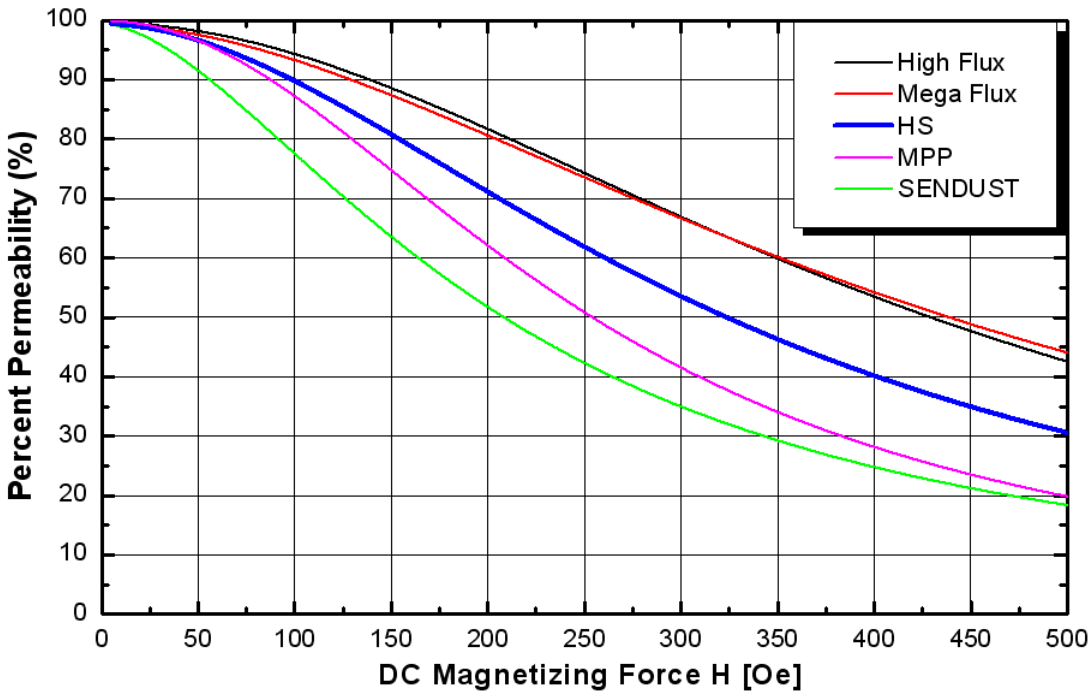
Materials	Coating Color	Perm. (μ_I)	Bs (kG)	Core Loss	DC Bias	Relative Cost	Temp. Stability	Curie Temp [℃]
HS Core	Dark Blue	26-90	14	lowest	Better	medium	Better	500
MPP	Gray	14-200	7	lowest	medium	highest	Best	450
High Flux	Khaki	26-160	15	lowest	Best	high	Best	500
Sendust	Black	26-125	10	low	good	lowest	good	500
Mega Flux	Dark Brown	26-90	16	medium	Best	low	good	700

4. DCB – 26μ

(1) Material Comparison

Material	26μ DCB%		
	@200 Oe	@300 Oe	@400 Oe
High Flux	82%	67%	53%
Mega Flux	81%	67%	54%
HS Core	71%	53%	40%
MPP	62%	41%	28%
SENDUST	52%	35%	24%

(2) DCB Graph

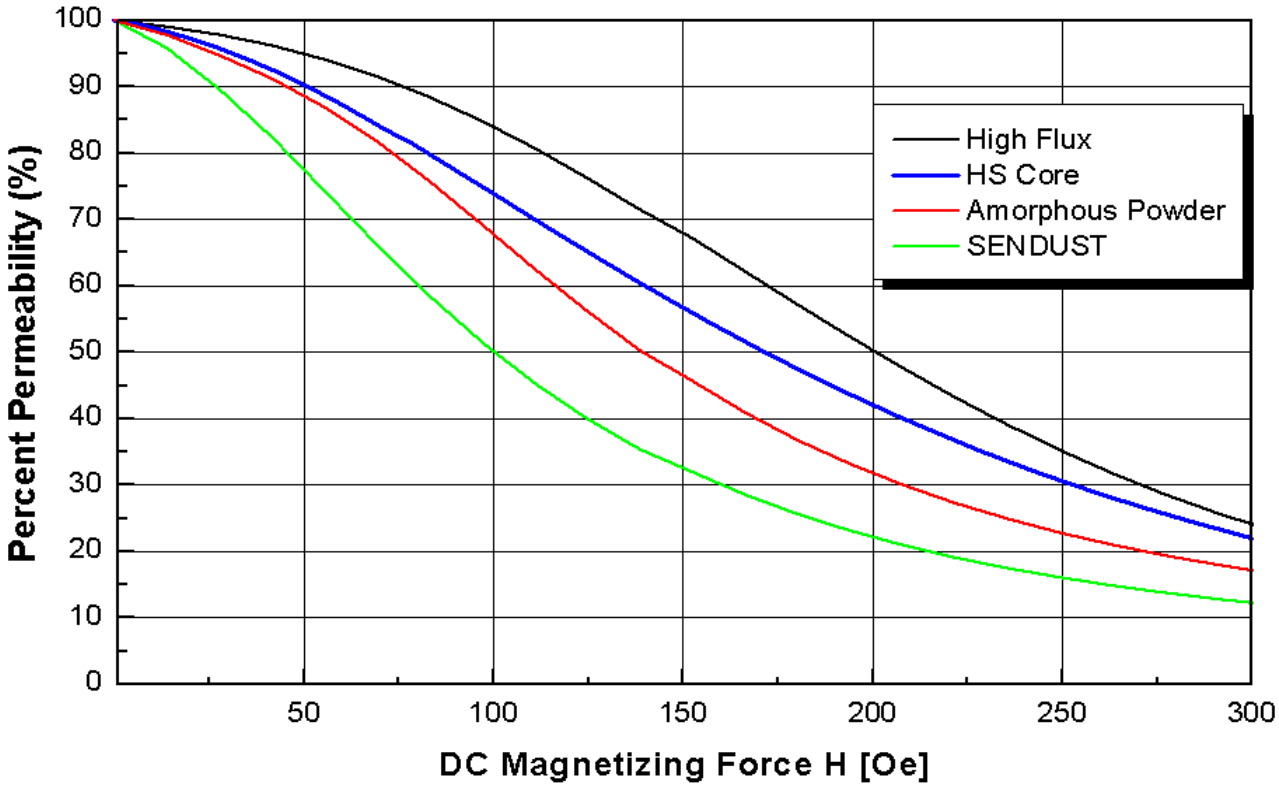


4. DCB – 60μ

(1) Material Comparison

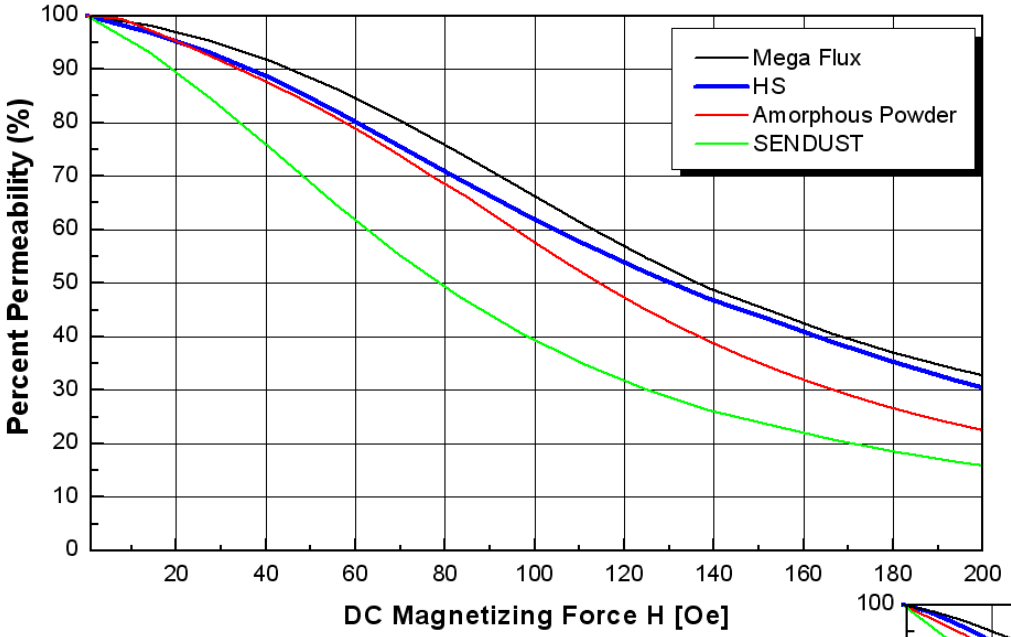
Material	60μ DCB%		
	@100 Oe	@150 Oe	@200 Oe
High Flux	83%	68%	50%
HS Core	72%	56%	41%
Amorphous Powder	68%	47%	32%
SENDUST	50%	32%	22%

(2) DCB Graph

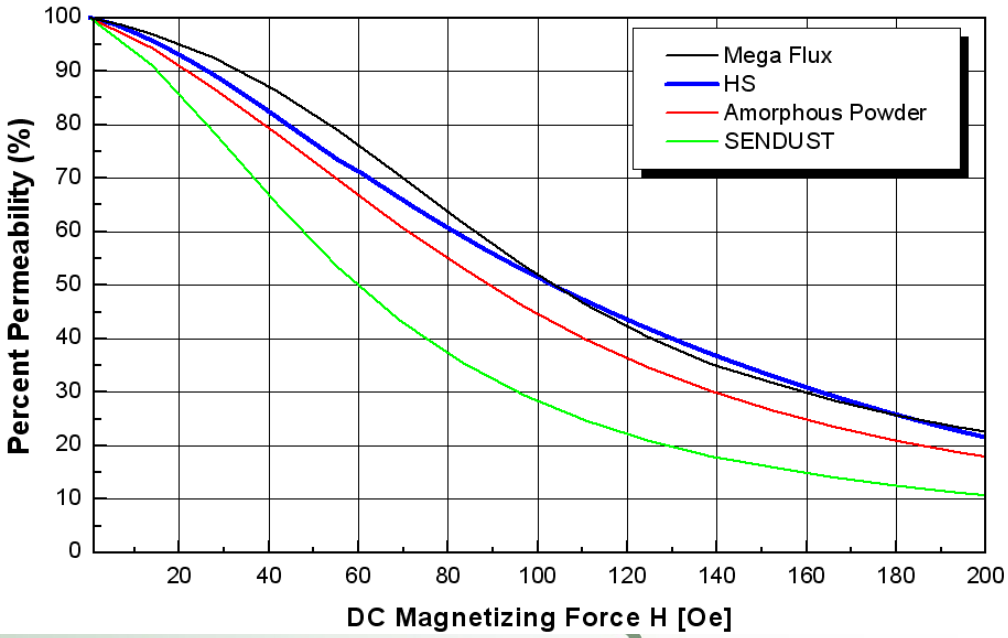


4. DCB – 75, 90μ

(1) 75μ



(2) 90μ

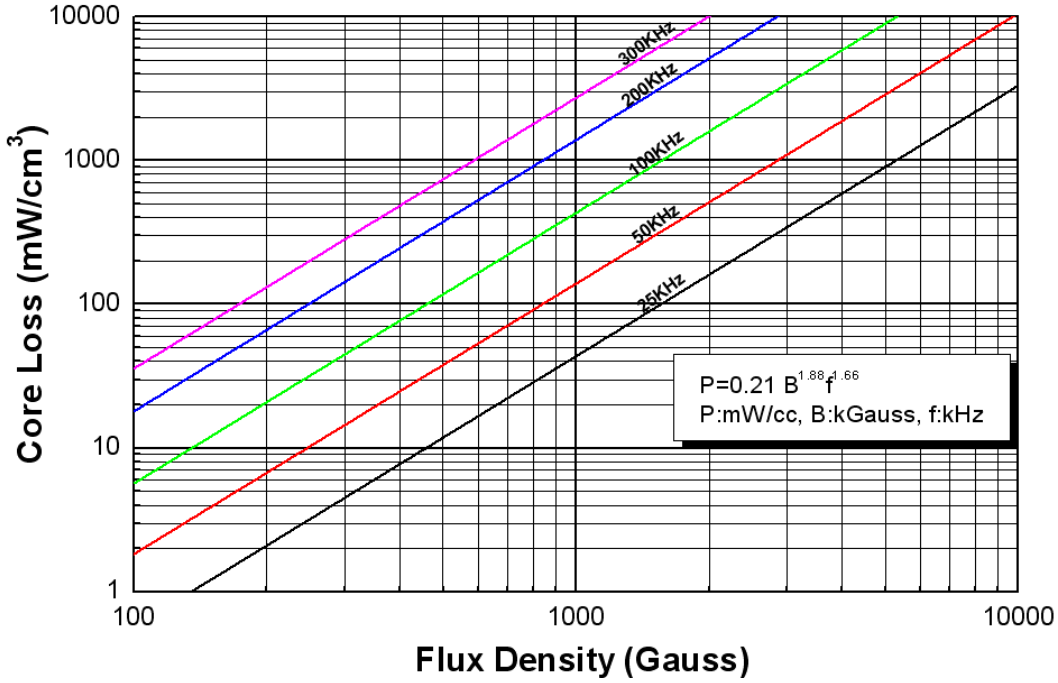


5. Core loss -26μ

Unit : [mW/cc]

Material	26μ Core Loss		
	Core Loss Equation (P:mW/cc, B:kGauss, f:kHz)	@50kHz,500G	@50kHz,1,000G
HS Core	$P=0.21B^{1.88}f^{1.66}$	38	139
MPP	$P=0.29B^{2.23}f^{1.63}$	36	168
High Flux	$P=1.76B^{2.27}f^{1.30}$	60	290
SENDUST	$P=1.37B^{2.10}f^{1.35}$	62	268
Amorphous Powder	$P=4.33B^{2.30}f^{1.21}$	100	492

(2) Core Loss Graph

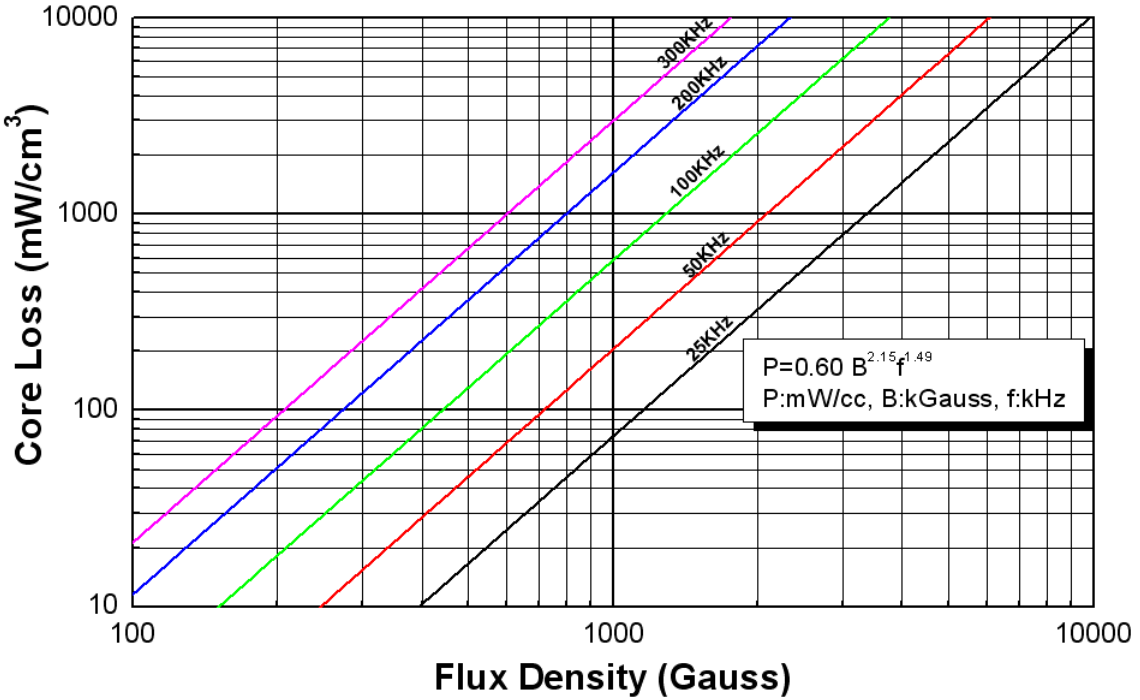


5. Core loss -60μ

Unit : [mW/cc]

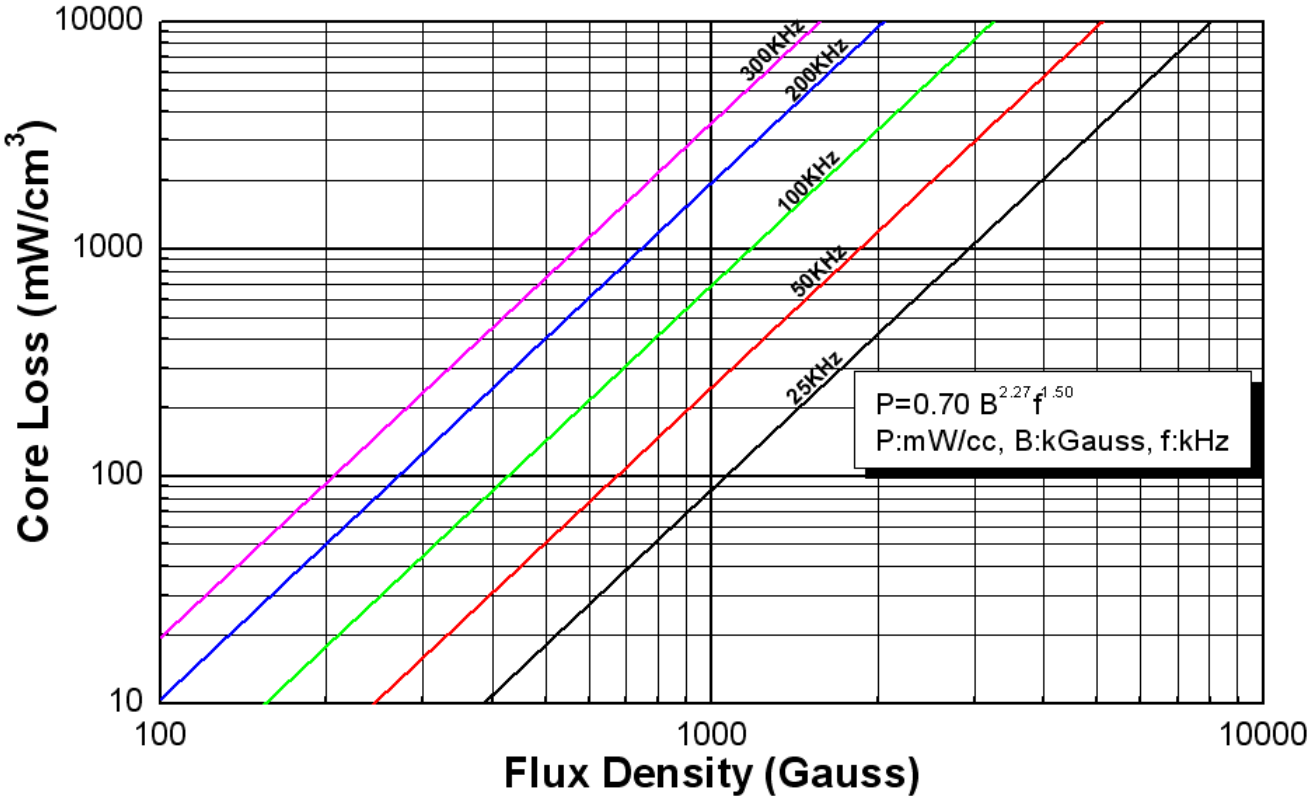
Material	60μ Core Loss		
	Core Loss Equation (P:mW/cc, B:kGauss, f:kHz)	@50kHz,500G	@50kHz,1,000G
HS Core	$P=0.60B^{2.15}f^{1.49}$	46	206
MPP	$P=0.29B^{2.23}f^{1.63}$	36	168
High Flux	$P=1.05B^{2.18}f^{1.32}$	40	182
SENDUST	$P=1.17B^{2.26}f^{1.40}$	58	279
Amorphous Powder	$P=3.89B^{2.57}f^{1.11}$	50	299

(2) Core Loss Graph



5. Core loss -75, 90μ

(1) Core Loss Graph



6. Part List – Toroidal Core

P/N	Before Finish Dimensions			After Finish Dimensions			Path length (㎝)	Cross Section Area (㎠)	AL value (nH/n^2)±8%			
	OD(mm) MAX	ID(mm) MIN	HT(mm) MAX	OD(mm) MAX	ID(mm) MIN	HT(mm) MAX			026u	060u	075u	090u
HS096	9.65	4.78	3.18	10.29	4.27	3.81	2.18	0.0752	11	25	32	38
HS097	9.65	4.78	3.96	10.29	4.27	4.57	2.18	0.0945	14	32	40	48
HS102	10.16	5.08	3.96	10.80	4.57	4.57	2.38	0.1000	14	32	40	48
HS112	11.18	6.35	3.96	11.90	5.89	4.72	2.69	0.0906	11	26	32	38
HS127	12.70	7.62	4.75	13.46	6.99	5.51	3.12	0.114	12	27	34	40
HS166	16.51	10.16	6.35	17.4	9.53	7.11	4.11	0.192	15	35	43	52
HS172	17.27	9.65	6.35	18.03	9.02	7.11	4.14	0.232	19	43	53	64
HS203	20.32	12.7	6.35	21.1	12.07	7.11	5.09	0.226	14	32	41	49
HS229	22.86	13.97	7.62	23.62	13.39	8.38	5.67	0.331	19	43	54	65
HS234	23.57	14.4	8.89	24.3	13.77	9.7	5.88	0.388	22	51	63	76
HS270	26.92	14.73	11.18	27.7	14.1	11.99	6.35	0.654	32	75	94	113
HS330	33.02	19.94	10.67	33.83	19.3	11.61	8.15	0.672	28	61	76	91
HS343	34.29	23.37	8.89	35.2	22.6	9.83	8.95	0.454	16	38	47	57
HS358	35.81	22.35	10.46	36.7	21.5	11.28	8.98	0.678	24	56	70	84
HS400	39.88	24.13	14.48	40.7	23.3	15.37	9.84	1.072	35	81	101	121
HS467	46.74	24.13	18.03	47.6	23.3	18.92	10.74	1.99	59	135	169	202
HS468	46.74	28.7	15.24	47.6	27.9	16.13	11.63	1.34	37	86	107	128
HS508	50.8	31.75	13.46	51.7	30.9	14.35	12.73	1.25	32	73	91	109
HS571	57.15	26.39	15.24	58	25.6	16.1	12.5	2.29	60	138	172	206
HS572	57.15	35.56	13.97	58	34.7	14.86	14.3	1.444	33	75	94	112
HS610	62	32.6	25	63.1	31.37	26.27	14.37	3.675	83	192	240	288
HS740	74.1	45.3	35	75.2	44.07	36.27	18.38	5.04	89	206	257	309
HS777	77.8	49.23	12.7	78.9	48	13.97	20	1.77	30	68	85	102
HS778	77.8	49.23	15.9	78.9	48	17.02	20	2.27	37	85	107	128

6. Part List – Big Toroidal Core

P/N	Before Finish Dimensions			After Finish Dimensions			Path length (㎝)	Cross Section Area (㎠)	AL value (nH/n^2)±8%		
	OD(mm) MAX	ID(mm) MIN	HT(mm) MAX	OD(mm) MAX	ID(mm) MIN	HT(mm) MAX			019u	026u	060u
HS1013	101.6	57.2	13.6	103.1	55.7	14.9	24.27	2.972	29	40	92
HS1016	101.6	57.2	16.5	103.1	55.7	17.8	24.27	3.522	35	48	112
HS1027	101.6	57.2	27.2	103.1	55.7	28.5	24.27	5.944	58	80	184
HS1033	101.6	57.2	33.0	103.1	55.7	34.3	24.27	7.044	70	96	224
HS1320	132.5	78.6	20.3	134.2	77.0	21.7	32.42	5.347	39	54	124
HS1325	132.5	78.6	25.4	134.2	77.0	26.8	32.42	6.710	49	68	156
HS1333	132.5	78.6	33.0	134.2	77.0	34.4	32.42	8.717	64	88	202
HS1340	132.5	78.6	40.6	134.2	77.0	42.0	32.42	10.694	79	108	248
HS1625	165.0	88.9	25.4	167.2	86.9	27.3	38.65	9.460	58	80	184

Thank You !