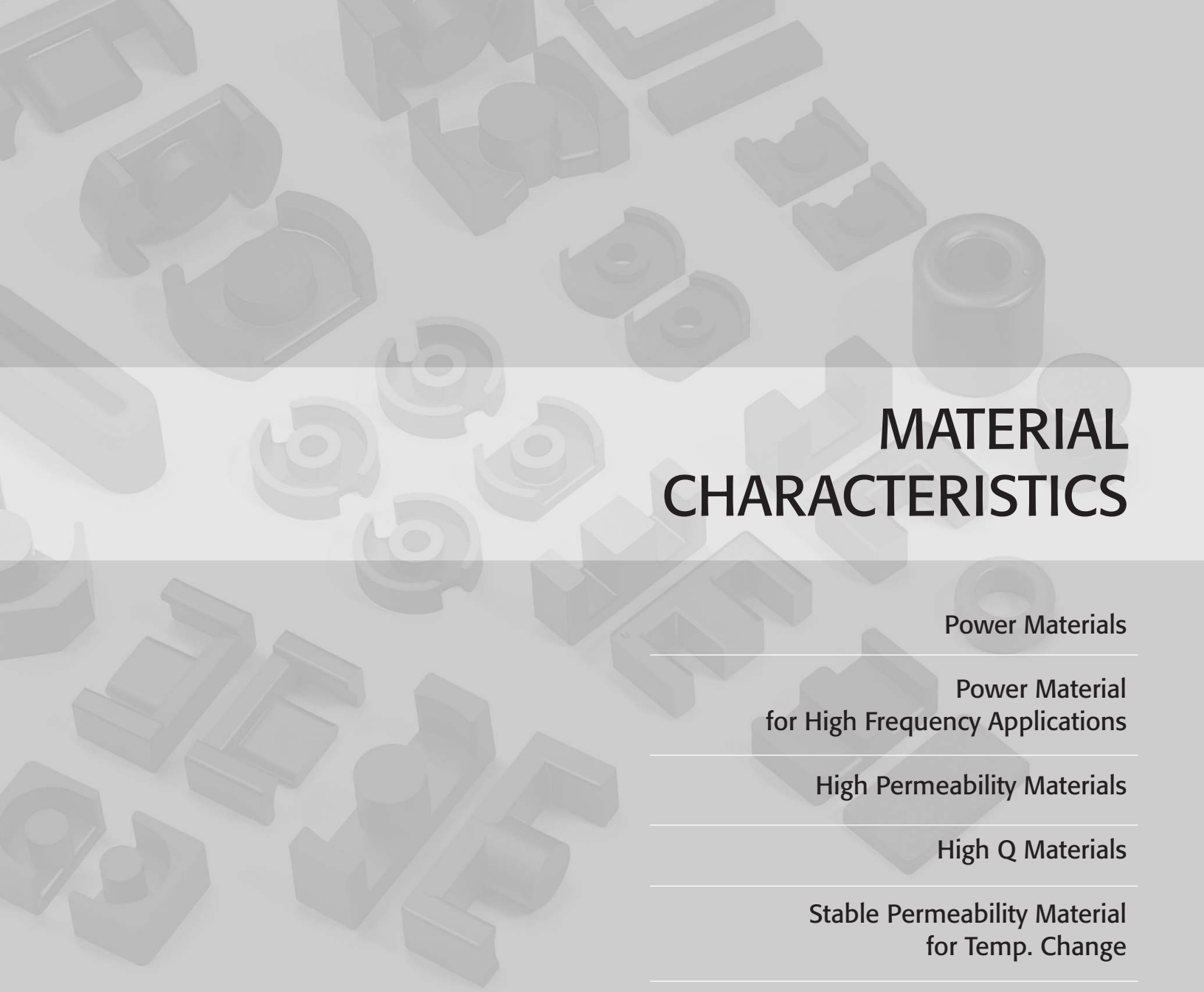


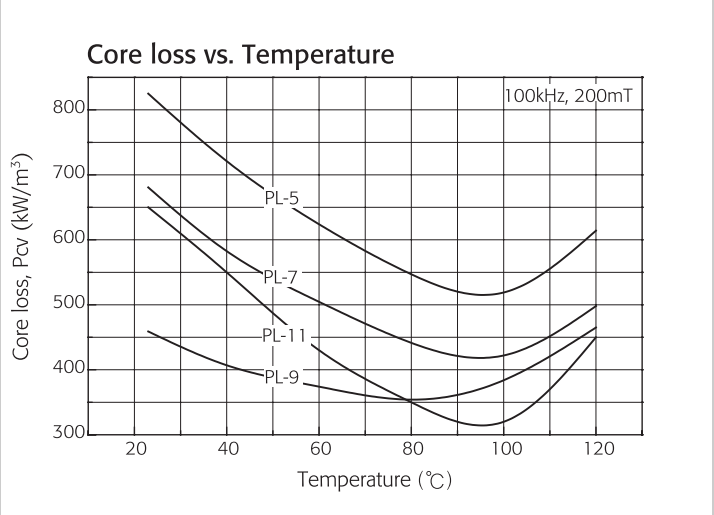
MATERIAL CHARACTERISTICS

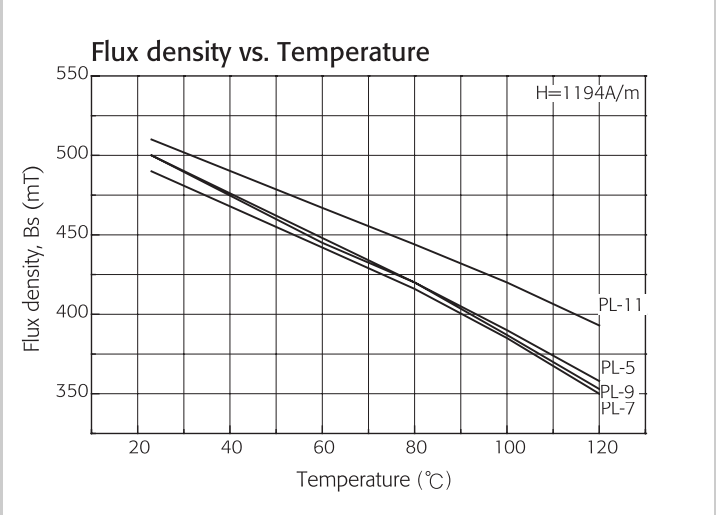
MATERIAL CHARACTERISTICS

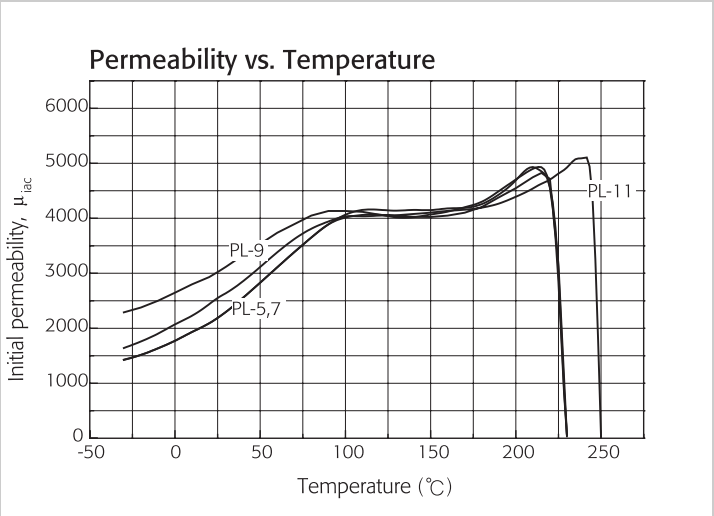
Power Materials

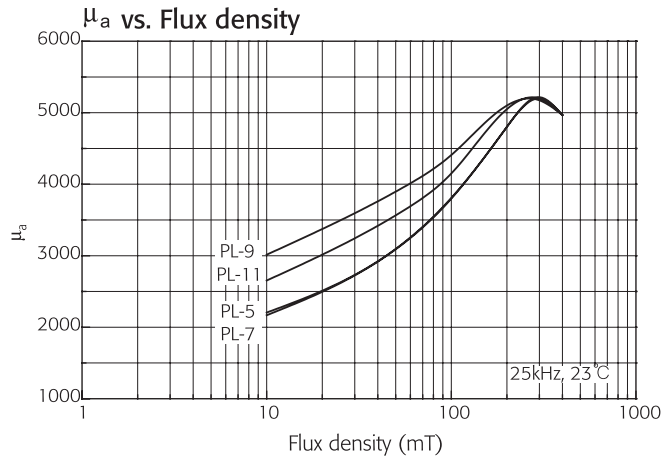
Materials				PL-5	PL-7	PL-9	PL-11
Initial permeability	μ_{iac}			2400±25%	2400±25%	3000±25%	2500±25%
Core loss (100kHz, 200mT)	Pcv	kW/m^3	23℃	800	650	450	650
			80℃	550	450	350	350
			100℃	500	410	390	320
Saturation flux density (1194A/m)	Bs	mT	23℃	500	490	500	510
			100℃	390	380	380	420
Remanence	Br	mT	23℃	180	150	150	130
Coercivity	Hc	A/m	23℃	15	12	10	10
Curie temperature	Tc	℃		＞220	＞220	＞220	＞220
Density	d	kg/m^3		4.85×10^3	4.85×10^3	4.85×10^3	4.85×10^3
Resistivity	ρ	Ω·m		6	5	7	5

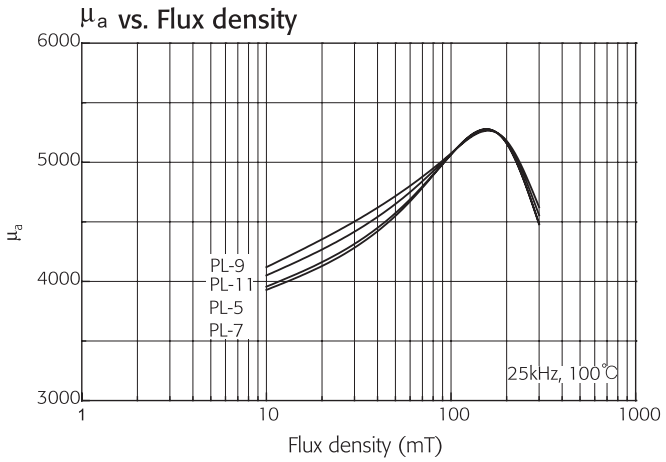
Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.

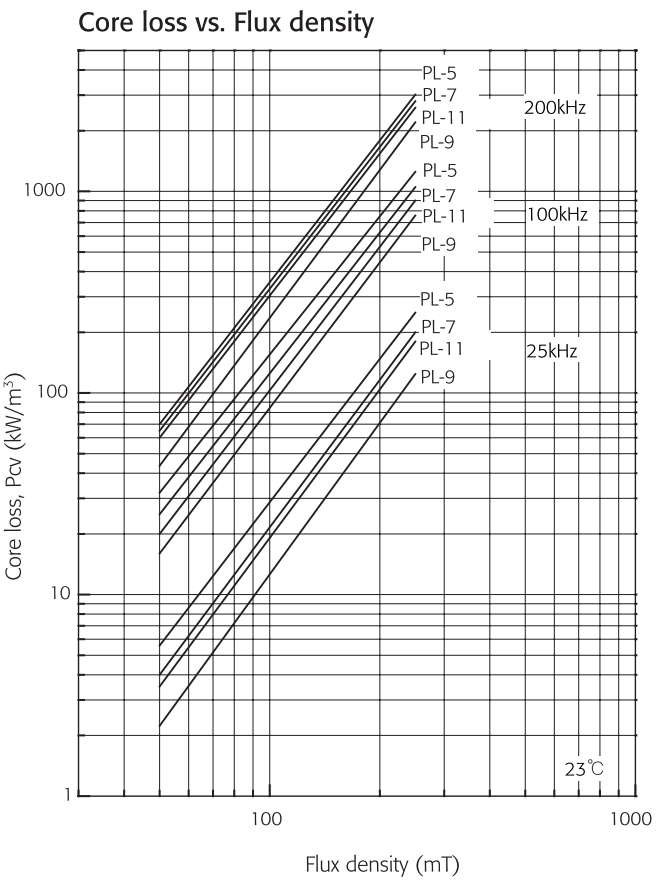


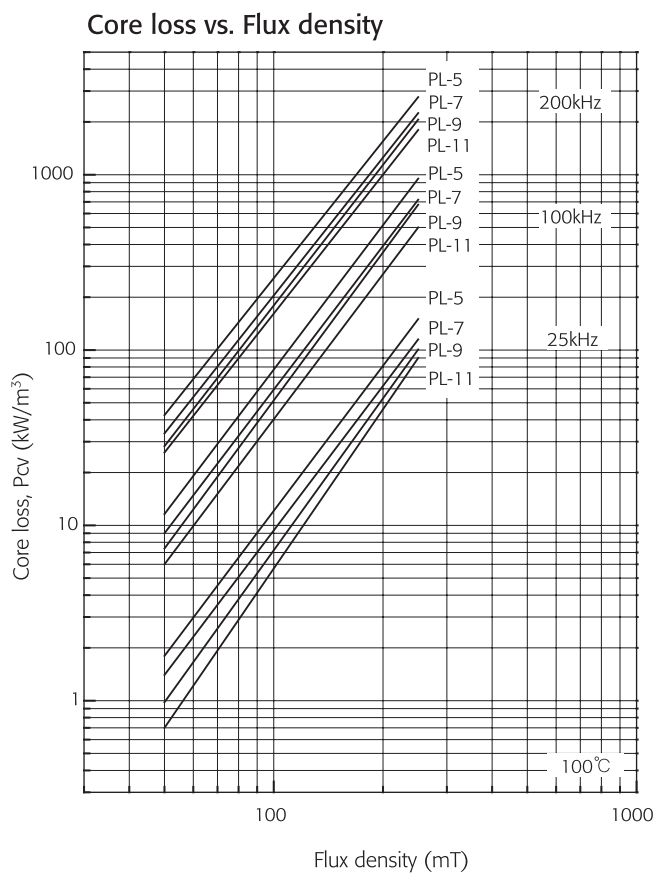





μa vs. Flux density
6000
5000
4000
3000
2000
1000
μa
PL-9
PL-11
PL-5
PL-7
25kHz, 23℃
1
10
100
1000
Flux density (mT)


μa vs. Flux density
6000
5000
4000
3000
μa
PL-9
PL-11
PL-5
PL-7
25kHz, 100℃
1
10
100
1000
Flux density (mT)


Core loss vs. Flux density
PL-5
PL-7
PL-11
PL-9
200kHz
PL-5
PL-7
PL-11
PL-9
100kHz
PL-5
PL-7
PL-11
PL-9
25kHz
1000
100
10
1
Core loss, Pcv (kW/m³)
23℃
100
1000
Flux density (mT)

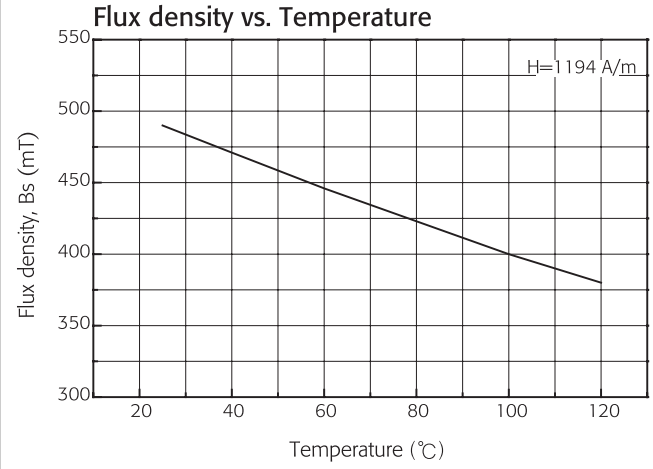

Core loss vs. Flux density
PL-5
PL-7
PL-9
PL-11
200kHz
PL-5
PL-7
PL-9
PL-11
100kHz
PL-5
PL-7
PL-9
PL-11
25kHz
1000
100
10
1
Core loss, Pcv (kW/m³)
100℃
100
1000
Flux density (mT)

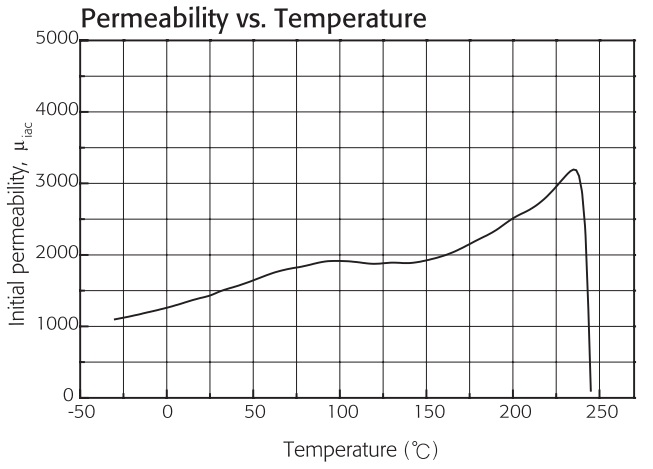
MATERIAL CHARACTERISTICS

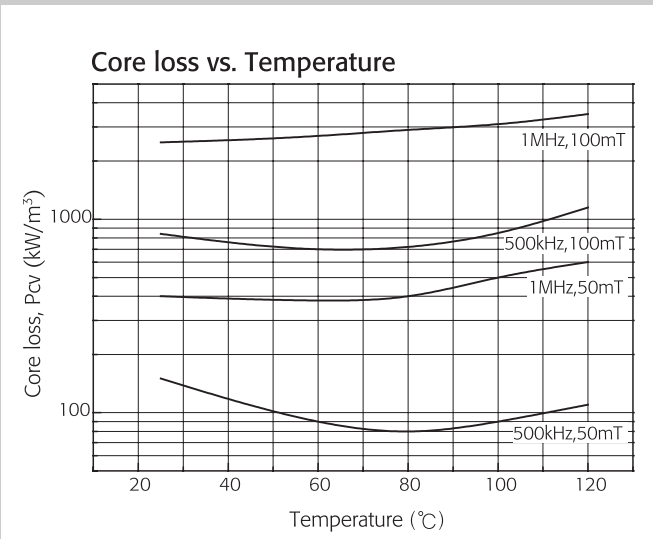
Power Material for High Frequency Applications

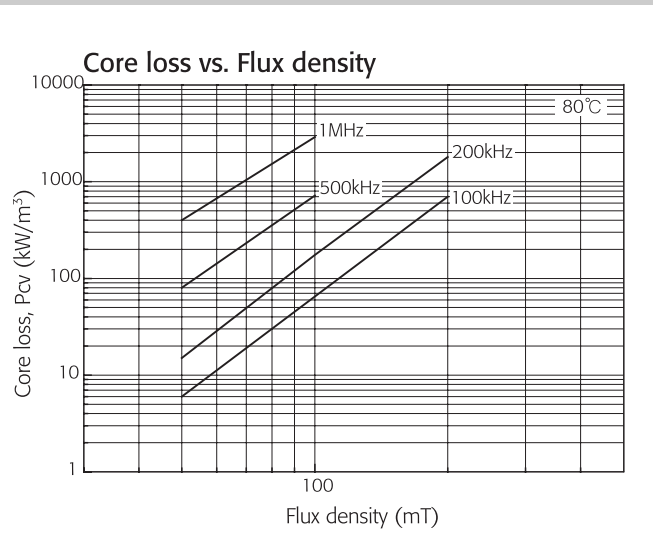
Material			PL-F1	
Initial permeability	μ_{iac}		1400±25%	
Core loss	Pcv	kW/m³	500kHz, 50mT, 80℃	80
			1MHz, 50mT, 60℃	380
Saturation flux density (1194A/m)	Bs	mT	23℃	490
			100℃	400
Remanence	Br	mT		100
Coercivity	Hc	A/m		12
Curie temperature	Tc	℃		> 240
Density	d	kg/m³		4.70×10^3
Resistivity	ρ	Ω·m		7

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.





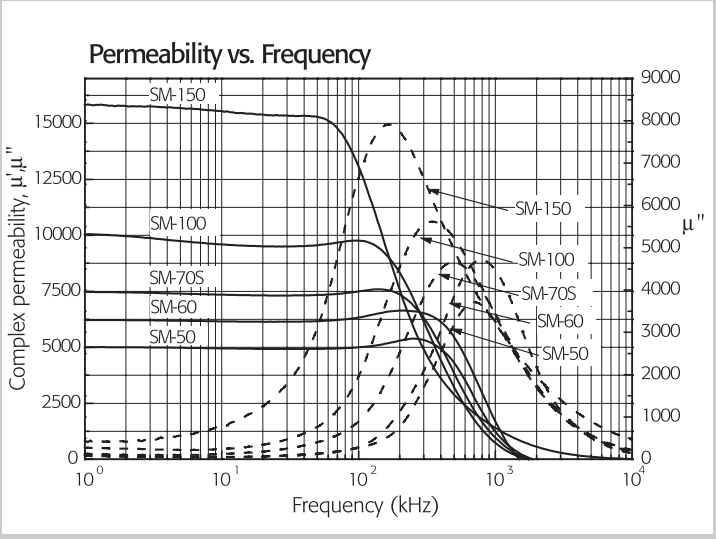


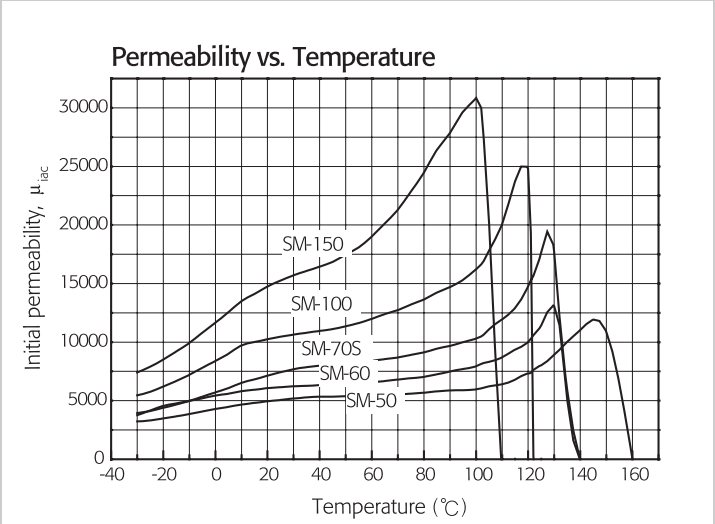


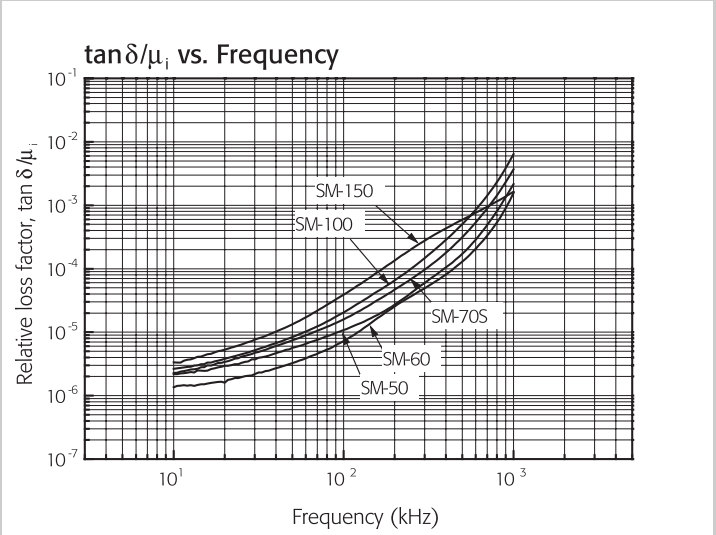
High Permeability Materials

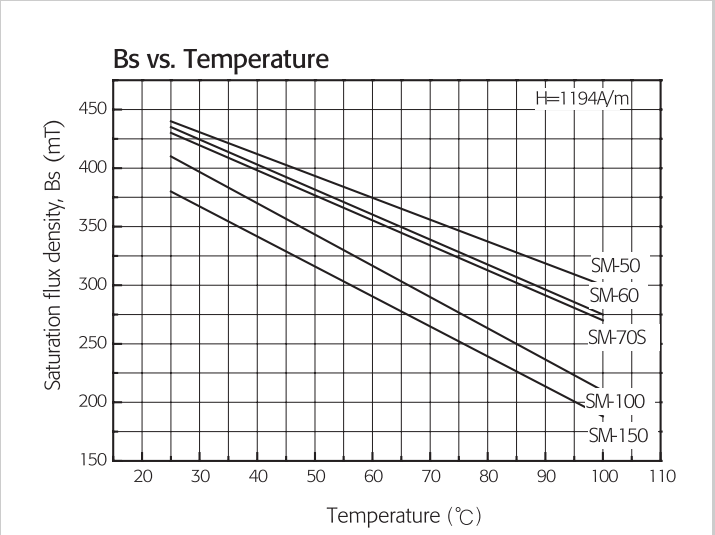
Materials			SM-50	SM-60	SM-70S	SM-100	SM-150
Initial permeability	μ_{iac}		5000±25%	6000±25%	7500±25%	10000±30%	15000±30%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	< 10(f:100kHz)	< 10(f:100kHz)	< 20(f:100kHz)	< 3(f:10kHz)	< 5(f:10kHz)
Saturation flux density (1194A/m)	Bs	mT	440	430	430	410	360
Remanence	Br	mT	110	100	100	90	90
Coercivity	Hc	A/m	10	6	6	5	4.5
Relative temp. factor (20~60℃)	$\alpha\mu r$	$\times 10^{-6}$/℃	-0.15~1.0	-0.1~1.0	-0.1~1.0	-0.15~2.0	-0.5~2.0
Curie temperature	Tc	℃	> 150	> 130	> 130	> 120	> 100
Density	d	kg/m^3	4.85×10^3	4.90×10^3	4.90×10^3	4.90×10^3	4.90×10^3
Resistivity	ρ	$\Omega\cdot m$	1	1	0.3	0.2	0.15

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.







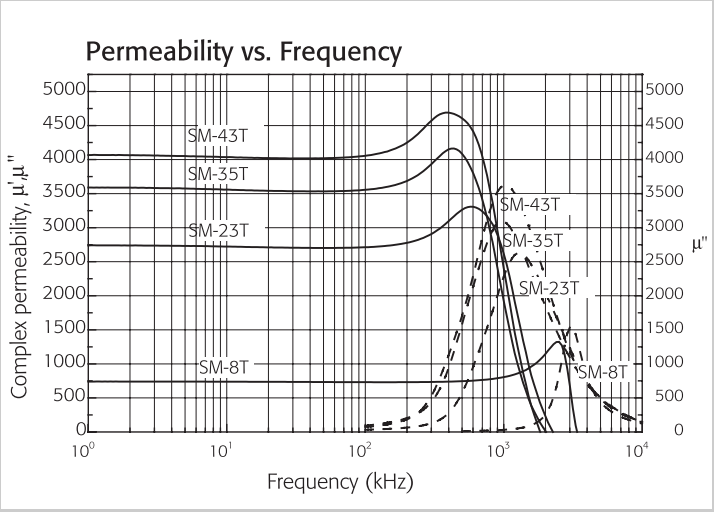


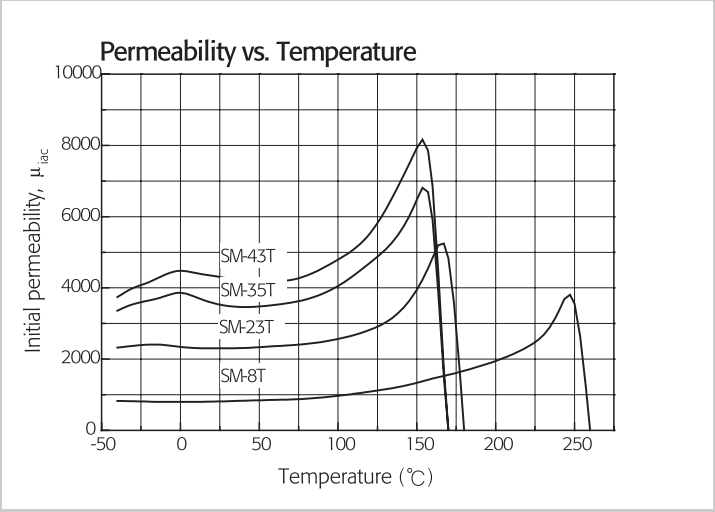
MATERIAL CHARACTERISTICS

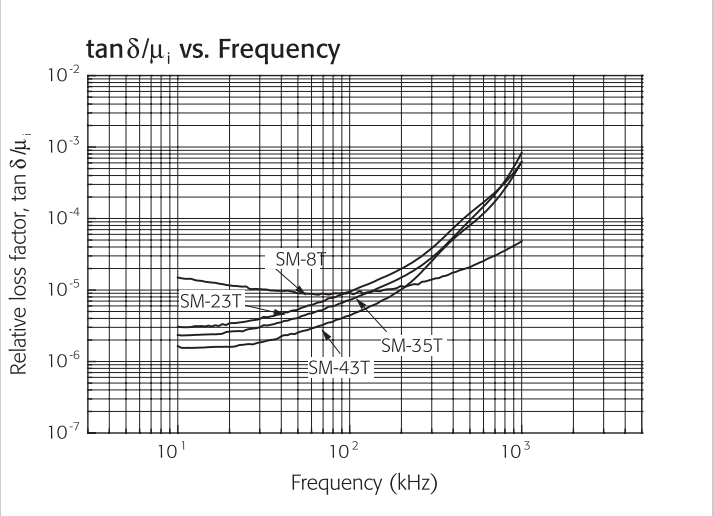
High Q Materials

Materials				SM-8T	SM-23T	SM-35T	SM-43T
Initial permeability	μ_{iac}			800±20%	2300±25%	3500±25%	4300±25%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$		< 25(f:500kHz)	< 3(f:100kHz)	< 5(f:100kHz)	< 5(f:100kHz)
Saturation flux density (1194A/m)	Bs	mT		480	460	450	450
Remanence	Br	mT		270	100	100	100
Coercivity	Hc	A/m		40	10	10	10
Relative temp. factor	$\alpha\mu r$	$\times 10^{-6}$/℃	-30~20℃	-0.5~0.5	-0.5~0.5	-0.5~0.5	-0.5~0.5
			0~20℃		-0.5~0.5		0~1.0
			20~70℃	1.0~2.0	0~1.0	0~1.0	0~1.0
Curie temperature	Tc	℃		> 250	> 170	> 160	> 160
Density	d	kg/m^3		4.70×10^3	4.80×10^3	4.80×10^3	4.80×10^3
Resistivity	ρ	Ω·m		3	10	5	5

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.



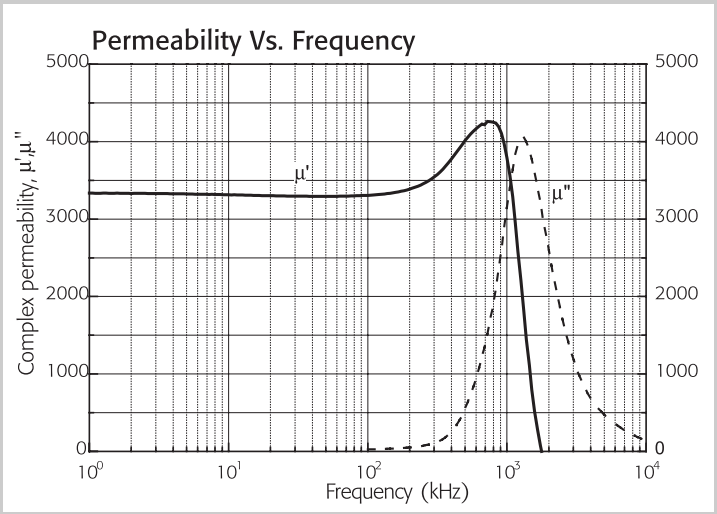


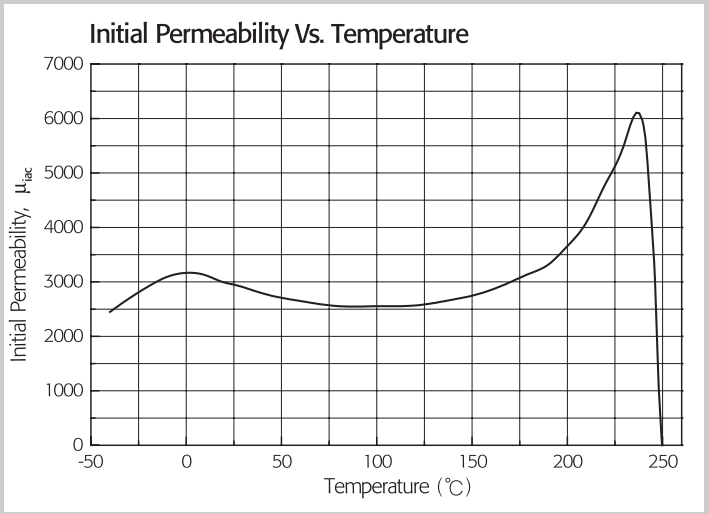


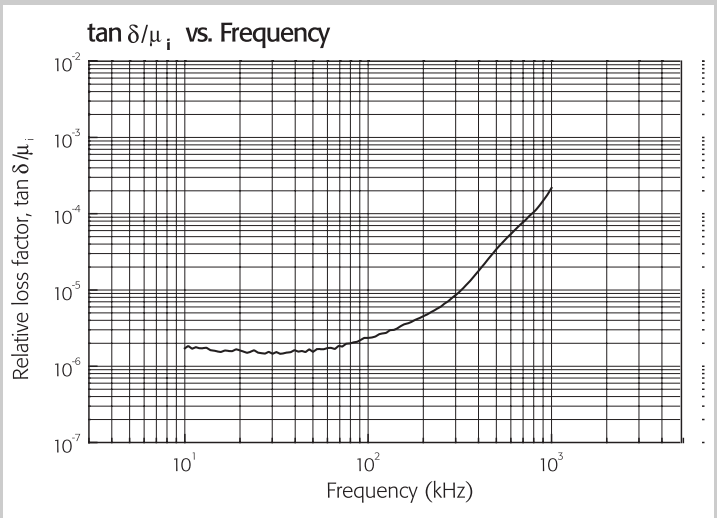
Stable Permeability Material for Temp. Change

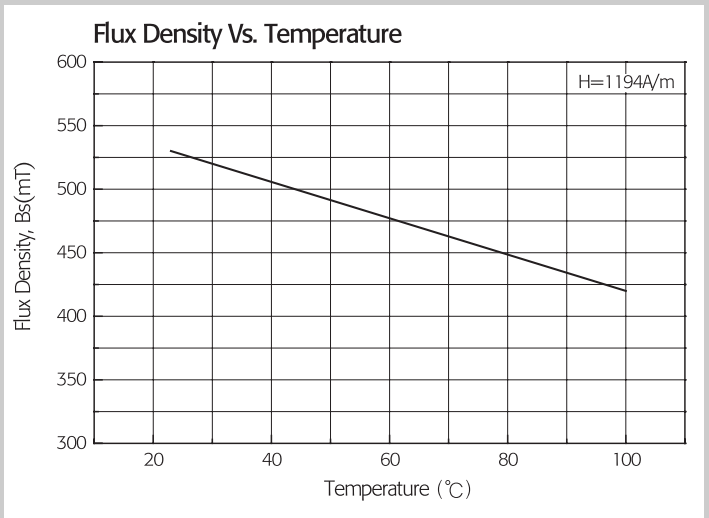
Material				ST-30B
Initial Permeability	μ_{iac}			3000±25%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	f:100kHz	< 3.0
Saturation flux density (1194A/m)	Bs	mT	23℃	530
			100℃	420
Remanence	Br	mT		100
Coercivity	Hc	A/m	23℃	12
Core loss(100kHz, 200mT)	Pcv	KW/m^3	40℃	380
			60℃	500
			-20~20℃	650
Relative temp. factor	$\alpha\mu r$	$\times 10^{-6}$/℃	20~60℃	-1.0~1.0
			60~100℃	-1.0~1.0
				-1.0~1.0
Curie temperature	Tc	℃		> 240
Density	d	kg/m^3		4.80×10^3
Resistivity	ρ	$\Omega\cdot$m		5

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.









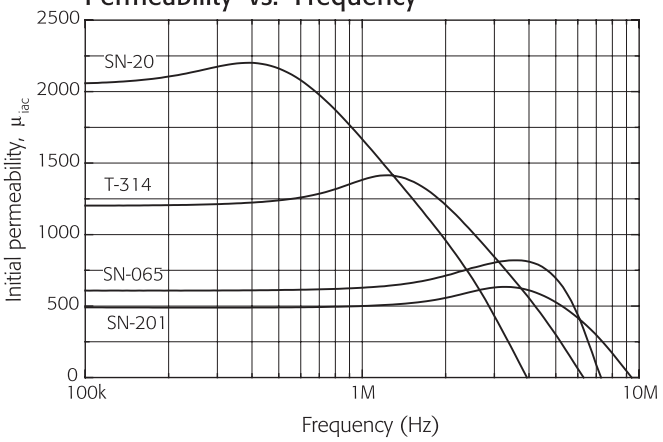
MATERIAL CHARACTERISTICS

Ni-Zn Materials for EMI-suppressor

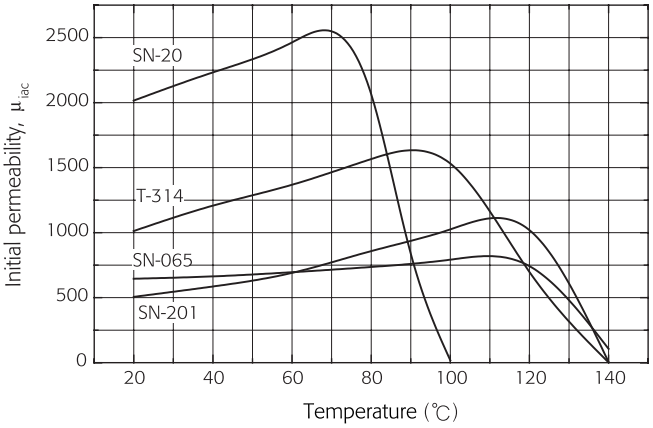
Materials			SN-20	T-314	SN-065	SN-201
Initial permeability	μ_{iac}		2000±20%	1000±20%	650±20%	500±20%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	25 (0.1MHz)	30(0.1MHz)	30(0.7MHz)	30(0.8MHz)
Saturation flux density (1194A/m)	Bs	mT	260	280	300	230
Remanence	Br	mT	100	100	160	140
Coercivity	Hc	A/m	12	24	24	40
Relative temp. factor (20℃~60℃)	$\alpha\mu r$	$\times 10^{-6}$/℃	3~5	4~6	5~10	15
Curie Temperature	Tc	℃	>100	>120	>150	>130
Density	δ	kg/m^3	5.0×10^3	5.0×10^3	5.0×10^3	4.8×10^3
Resistivity	ρ	MΩ·m	>1.0	>1.0	>10	>10

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.

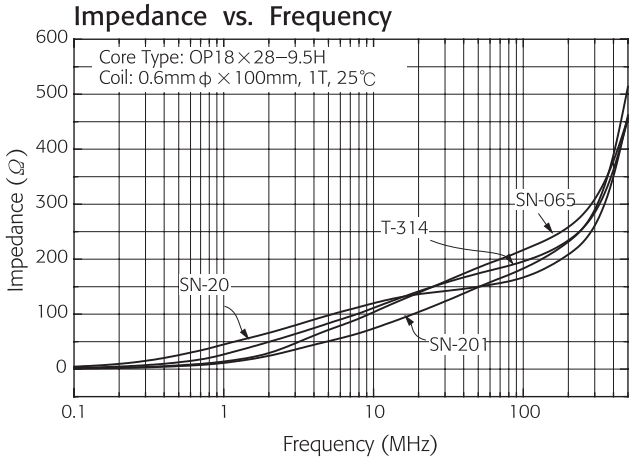
Permeability vs. Frequency



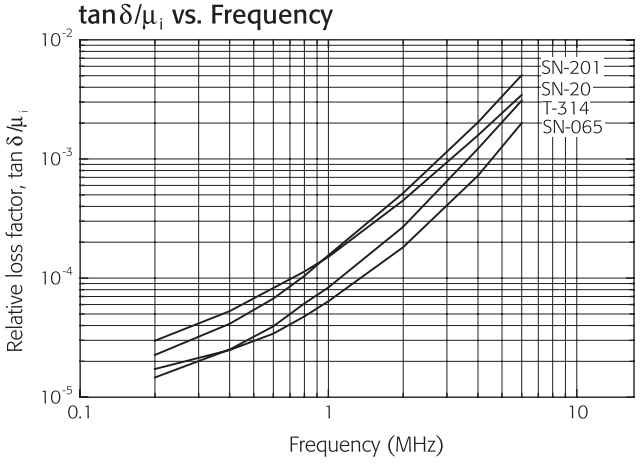
Permeability vs. Temperature



Impedance vs. Frequency



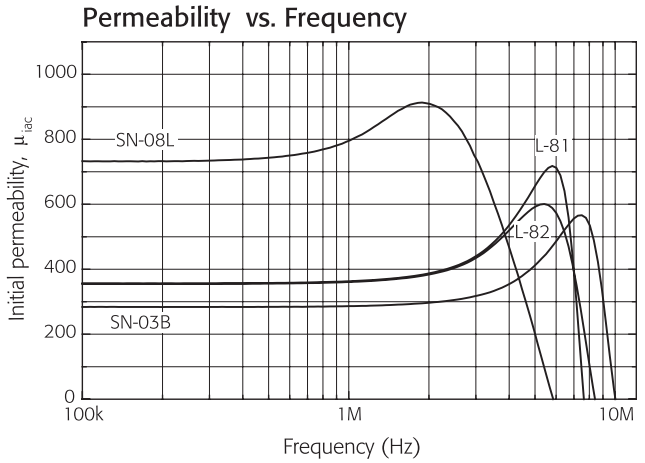
tanδ/μi vs. Frequency

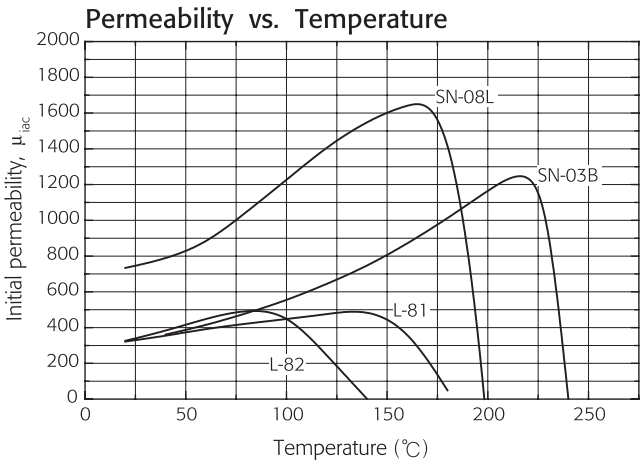


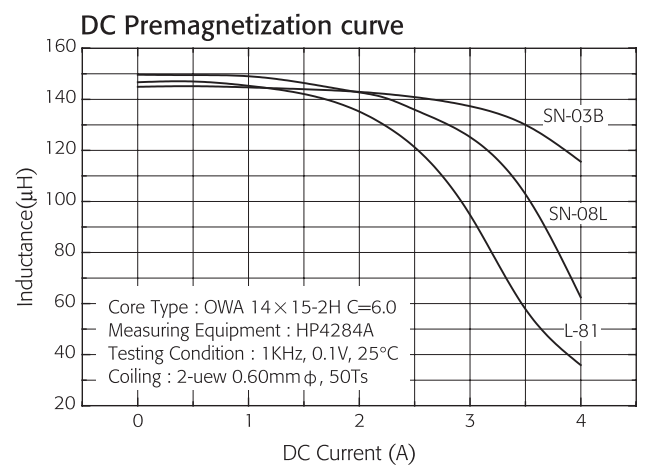
Ni-Zn Materials for Linearity & Choke coil(1)

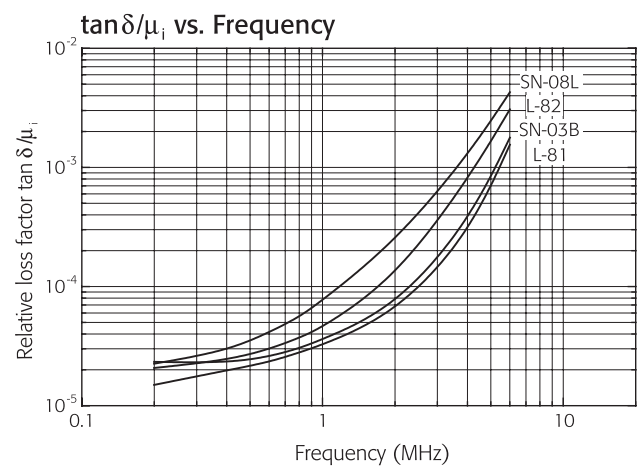
Materials			SN-08L	SN-03B	L-81	L-82
Initial permeability	μ_{iac}		800±20%	350±20%	350±25%	350±25%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	20 (0.1MHz)	20 (0.1MHz)	25 (1.0MHz)	30 (0.8MHz)
Saturation flux density (1194A/m)	Bs	mT	380	400	330	220
Remanence	Br	mT	300	300	80	130
Coercivity	Hc	A/m	20	40	48	64
Relative temp. factor (20℃~60℃)	$\alpha\mu r$	$\times 10^{-6}$/℃	5~10	20	5~10	15
Curie Temperature	Tc	℃	>200	>230	>170	>120
Density	δ	kg/m^3	5.0×10^3	5.0×10^3	5.0×10^3	4.8×10^3
Resistivity	ρ	M$\Omega\cdot$m	>2.0	>2.0	>2.0	>10

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.









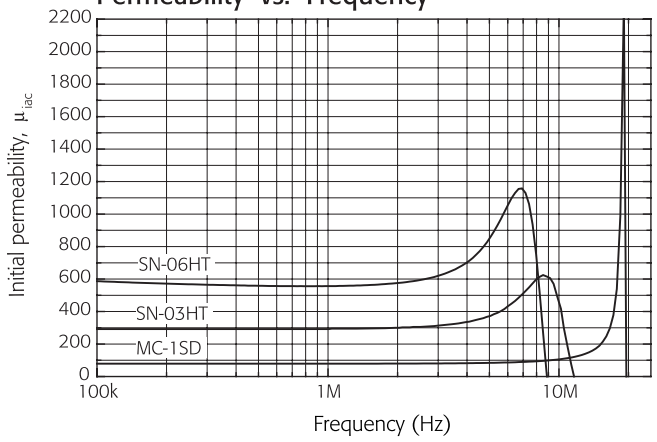
MATERIAL CHARACTERISTICS

Ni-Zn Materials for Linearity & Choke coil(2)

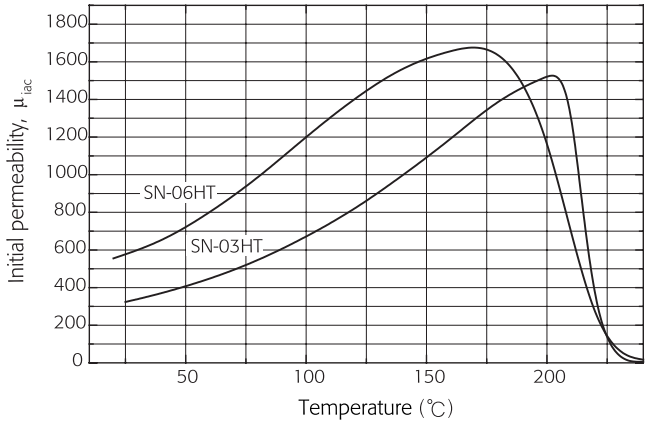
Materials			SN-06HT	SN-03HT	MC-1SD
Initial permeability	μ_{iac}		600±25%	280±20%	70±25%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	30(0.1MHz)	20(0.9MHz)	30(10MHz)
Saturation flux density(1194A/m)	Bs	mT	360	360	260(2400A/m)
Remanence	Br	mT	220	280	160
Coercivity	Hc	A/m	36	48	150
Relative temp. factor(20℃~60℃)	$\alpha\mu r$	$\times 10^{-6}$/℃	5~10	5~10	70~90
Curie Temperature	Tc	℃	>220	>220	>400
Density	δ	kg/m^3	5.0×10^3	5.0×10^3	4.7×10^3
Resistivity	ρ	MΩ·m	>2.0	>2.0	>200

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.

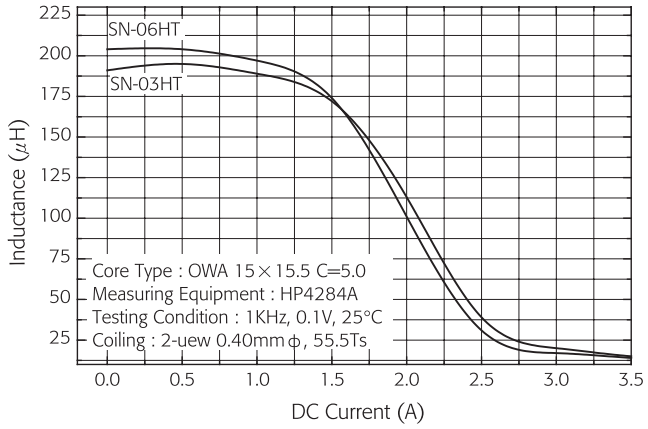
Permeability vs. Frequency



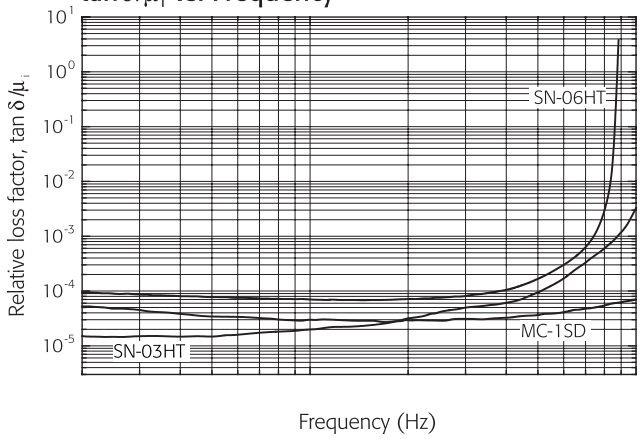
Permeability vs. Temperature



DC Premagnetization Curve



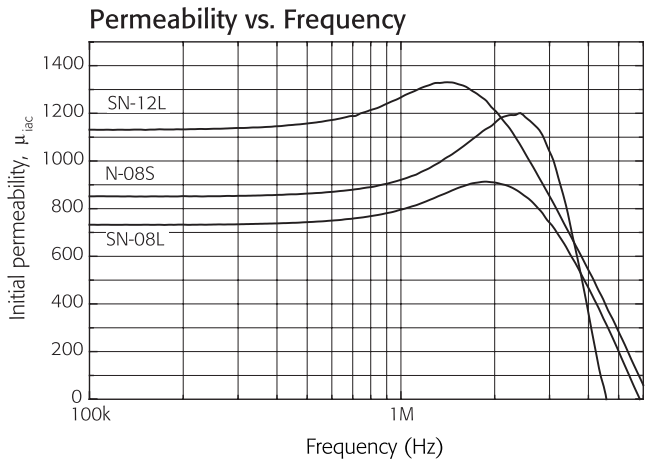
tanδ/μi vs. Frequency

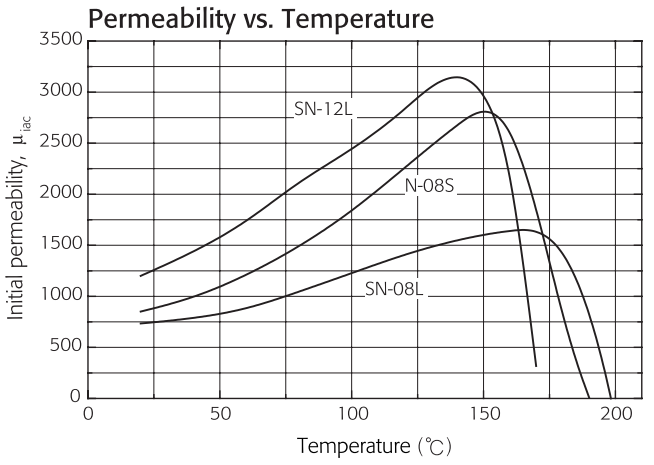


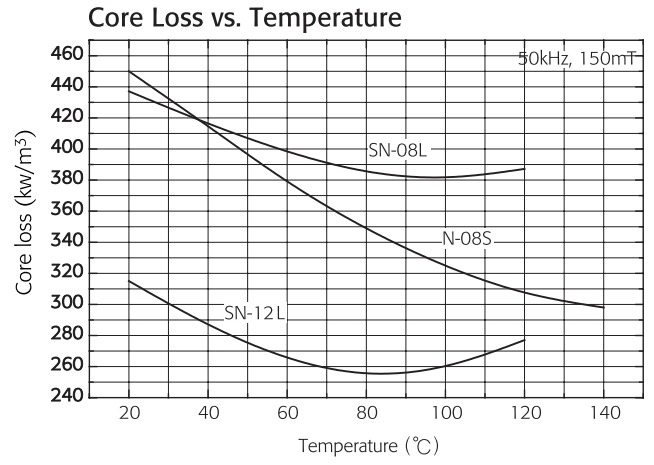
Ni-Zn Materials for Low Loss

Materials			SN-12L	SN-08L	N-08S
Initial permeability	μ_{iac}		1200±20%	800±20%	800±20%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	10(0.1MHz)	20(0.1MHz)	20(0.1MHz)
Saturation flux density(1194A/m)	Bs	mT	350	380	360
Remanence	Br	mT	230	300	260
Coercivity	Hc	A/m	12	20	22
Relative temp. factor(20℃~60℃)	$\alpha\mu r$	$\times 10^{-6}$/℃	5~10	5~10	12
Curie Temperature	Tc	℃	>140	>200	>190
Density	δ	kg/m^3	5.0×10^3	5.0×10^3	5.0×10^3
Resistivity	ρ	MΩ·m	>2.0	>2.0	>10

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.







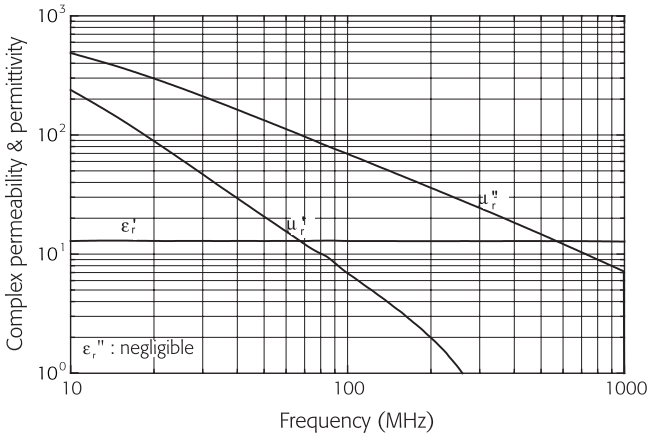
MATERIAL CHARACTERISTICS

Ni-Zn Materials for Ferrite Absorber

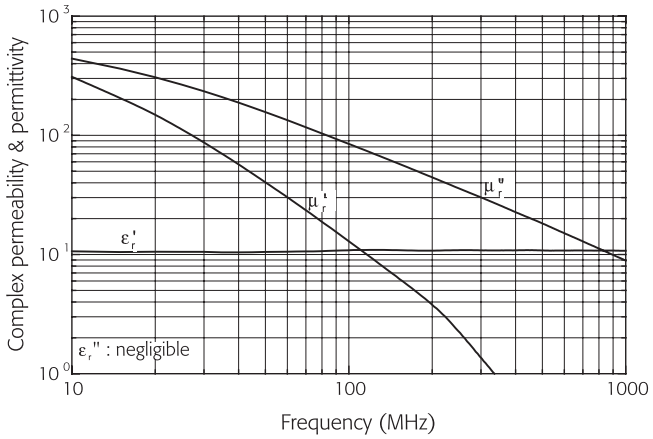
Materials			SN-20	SN-16A	SN-01A
Initial permeability	μ_{iac}		2000±20%	1600±20%	100±20%
Relative loss factor	$\tan\delta / \mu_{iac}$	$\times 10^{-6}$	25(0.1MHz)	25(0.1MHz)	52(1.0MHz)
Saturation flux density(1194A/m)	Bs	mT	260	350	380
Remanence	Br	mT	100	120	300
Coercivity	Hc	A/m	12	15	120
Relative temp. factor(20℃~60℃)	$\alpha\mu r$	$\times 10^{-6}$/℃	3~5	5~10	5~10
Curie Temperature	Tc	℃	>100	>120	>300
Density	δ	kg/m^3	5.0×10^3	5.0×10^3	5.0×10^3
Resistivity	ρ	MΩ·m	>1.0	>1.0	>5.0

Note: 1) Typical values
2) The values were obtained with toroidal cores(30×8-20H) at room temperature unless indicated otherwise.

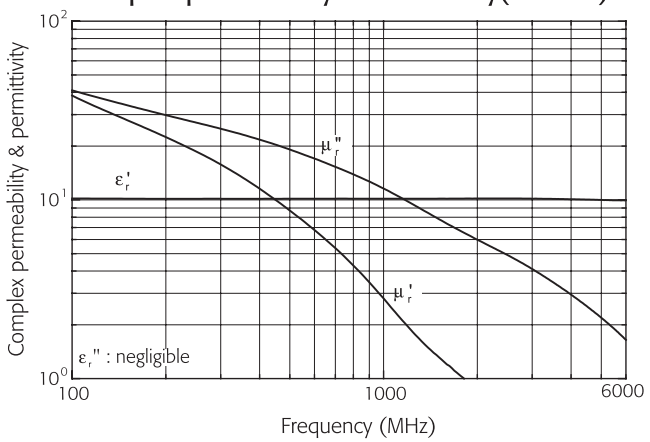
Complex permeability & Permittivity(SN-20)



Complex permeability & Permittivity(SN-16A)



Complex permeability & Permittivity(SN-01A)



Performance characterististics
(Normal incidence reflection loss)