1. Inital permeability, μ_i

The initial permeability μ_i is the limit value at the initial magnetization curve's origin

Point and is given by the following formula:

$$\mu_i = \frac{1}{\mu_0} \lim_{H \to 0} \frac{B}{H}$$

Where

μ_0 :Permeability of vacuum $(4\pi \times 10^{-7}\ H/m)$

H: Magnetic field strength (A/m)

B: Magnetic flux density (T)

2. Effective permeability, μ_e

This is usually defined as the permeability of a core forming a closed circuit where leakage flux is negligibly small.

$$\mu_e = \frac{L}{\mu_0 \cdot N^2} \cdot \frac{L_e}{A_e}$$

Where

L: self-inductance of core with coil (H)

N: number of turns

Le: effective magnetic path length (m)

A_e :effective cross-sectional area (m^2)

3. Saturation magnetic flux density, Bs(T)

The magnetic flux density at a magnetic field where H is up
value .(Fig.1)

4. Residual magnetic flux density, Br(T)

The value of flux density retained by the core
when the magnetic field is reduced from the state
of the effective saturation magnetic flux density to zero.(Fig.

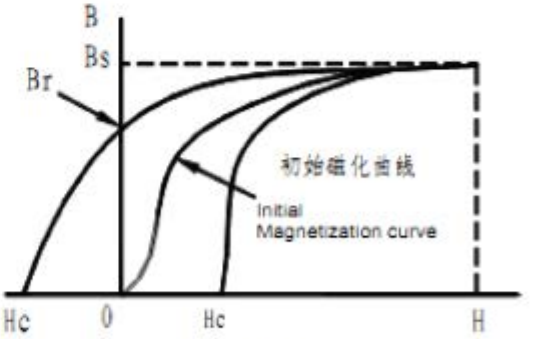


图1 Fig. 1

5. Coercivity, Hc(A/m)

The value If magnetic field strength where by the flux density becomes zero under the intensification, in the opposite direction, of the magnetic field.(Fig.1)

6. Loss factor, tanδ

This is the sum of the hysteresis loss factor eddy current loss factor and residual loss factor.

$\tan\delta = \tan\delta_h + \tan\delta_e + \tan\delta_r$

Where

$\tan\delta_h$: the hysteresis loss factor

$\tan\delta_e$: the eddy current loss factor

$\tan\delta_r$: the residual loss factor

7. Relative loss factor, tanδ/μ

This is the ratio If loss factor to permeability

tanδ/ μ_i （for materials）

tanδ/ μ_e （for cores with gaps in the magnetic circuit）

8. Quality factor, Q

This is the reciprocal of the loss factor and is give by
Q=1/tanδ

9.Temperatue coefficient, α_μ （1/K）

This is the fractional difference of permeability per 1K in a temperature range of from T_1 to T_2.

$$\alpha_\mu = \frac{\mu_2 - \mu_1}{\mu_1} \cdot \frac{1}{T_2 - T_1} \quad (T2>T1)$$

Where

μ_1 : permeability at temperature T_1

μ_2 : permeability at temperature T_2

10. Relative temperature coefficient, $\alpha_{\mu\alpha}$ (1/k)

This is the temperature coefficient per unit permeability and is given by the following equation：

$$\alpha_{\mu\alpha} = \frac{\mu_2 - \mu_1}{\mu_2^{\,2}} \cdot \frac{1}{T_2 - T_1} \quad (T2>T1)$$

11. Curie temperature, Tc(℃)

It is the critical temperature level at which the ferromagnetic state of the material changes to paramagnetic state.(Fig.2)

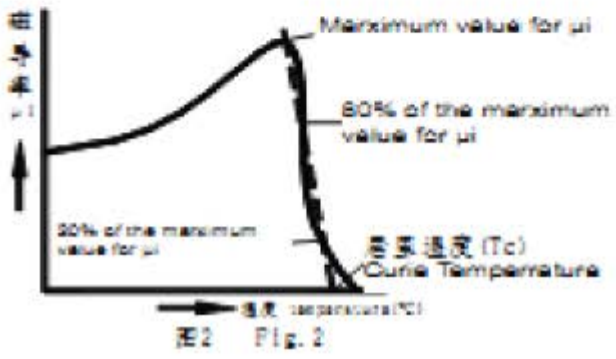


图2 Fig. 2

12. Disaccommodation factor,

This is the factor representing the variation of permeability through time after a complete demagnetization

of the core at a constant temperature ture.

$$D_F = \frac{\mu_1 - \mu_2}{\log \frac{T_2}{T_1}} \cdot \frac{1}{\mu_1^2} \quad (T2>T1)$$

Where

μ_1: permeability t_1 minutes after complete demagnetization.

μ_2: permeability t_2 minutes after complete demagnetization.

13. Electrical resistivity, ρ (Ω/m)

This is the electrical resistance per unit length and cross-sectional area of magnetic core.

14. Density, d (Kg/m^3)

This is the weight per unit volume of a magnetic core as expressed below:

d=W/ V

Where

W: weight of magnetic body (Kg)

V: volume of magnetic body (m^3)

15. Power Pc (kW/m^3、W/kg)

Power loss denotes the loss by an electrical transformer, such as a switching supply, under a magnetization condition featuring a high frequency and large amplitude. Operating magnetic flux density is given by the following equation:

$$B_m = \frac{E}{4.44fNA_e}$$

Where

E: voltage effective value applied to coil (V)

B_m:peak value of magnetic flux density (T)

f: frequency (Hz)

N: number of coil turs

A_e:effective cross-sectional area (m^2)

16. Inductance factor A_L (nH/N^2)

This is the inductance per turn of the coil wound around the ferrite cores with definite shape and dimension.

$A_L = L/N^2$

Where

L: inductance of the coil with ferrite core (H)

N: turns the coil

Power Ferrite material Characteristics

特性 Characteristics			单位 Unit	TY40	TY44	TY95
初始磁导率 μi (10kHz) Initial permeability		25℃ H<0.4A/m		2300 ±25%	2400 ±25%	3200 ±25%
饱和磁通密度Bs Saturation magnetic flux density (H=1194A/m)		25℃	mT	510	510	510
		100℃	mT	390	390	390
剩磁Br Remanence		25℃	mT	100	110	50
		100℃	mT	55	60	55
矫顽力Hc Coercivity		25℃	A/m	14	13	8
		100℃	A/m	9	6.5	9
功率损耗 Pcv Core Loss	100kHz 200mT 正弦波	25℃	kW/m^3	650	600	450
		60℃	kW/m^3	/	/	350
		100℃	kW/m^3	410	300	380
		120℃	kW/m^3	500	400	430
电阻率 ρ Electrical resistivity			Ω・m	6.5	6.5	
居里温度Tc Curie temperature			℃	≥220	≥215	≥220
密度d Density			kg/m^3	4.8×10^3	4.8×10^3	4.8×10^3

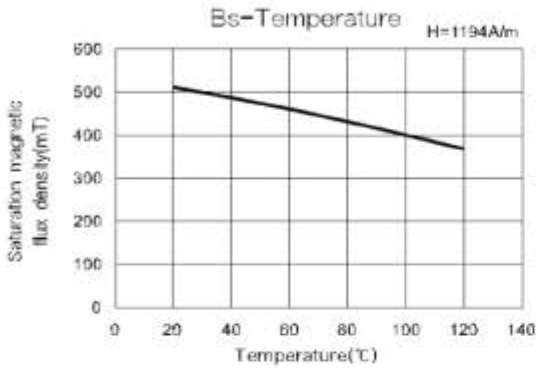
注：各表格所列无公差和范围要求的值均为典型值，不包括客户的特殊要求；有特殊要求时，应在订货合同或协议中给予明确。

Remark:The value of material's characteristics，which have no other requirement on the tolerance，are typical value. Please contact our company for more characteristics in your order or agreement.

材料/Material: TY40

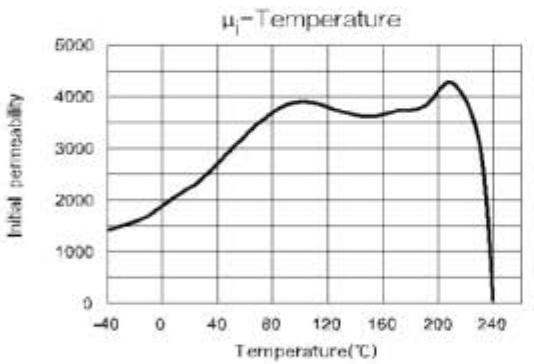
特点/Features:

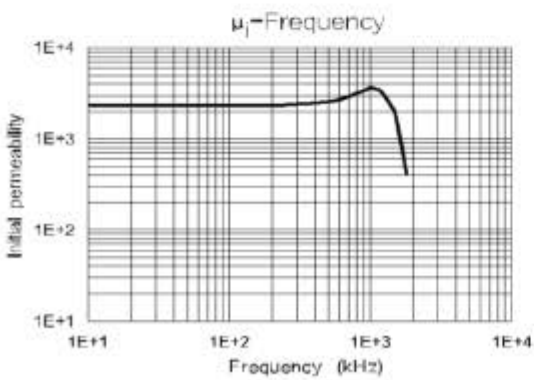
1.主要应用于中频段(小于200kHz)/Mostly Used at Middle Frequency (Less than 200kHz)
2. 低磁芯损耗,高饱和磁感应强度/Low Core Loss and High Saturation Flux Density
3. 损耗最低的温度点约在90℃/The Temperature Point of the Lowest Core Loss is 90℃

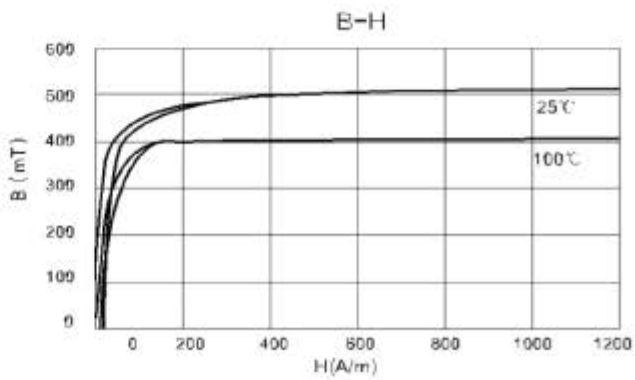


Initial permeability	μ_i	25℃	2300±25%
Saturation magnetic flux density	Bs(mT) 1194A/m	25℃	510
		100℃	390
Remanence	Br(mT)	25℃	100
		100℃	55
Coercivity	Hc(A/m)	25℃	14
		100℃	9
Core loss	Pcv(kW/m³) 100kHz 200mT	25℃	650
		100℃	410
		120℃	500
Curie temperature	Tc(℃)		≥220
Electrial resistivity	ρ(Ω·m)		6.5
Density	d(kg/m³)		4.8×10³

Test core:Toroid(mm)
OD：25
ID：15
H：7.5

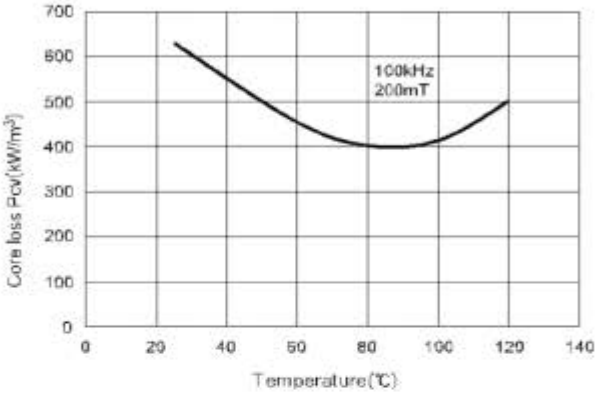




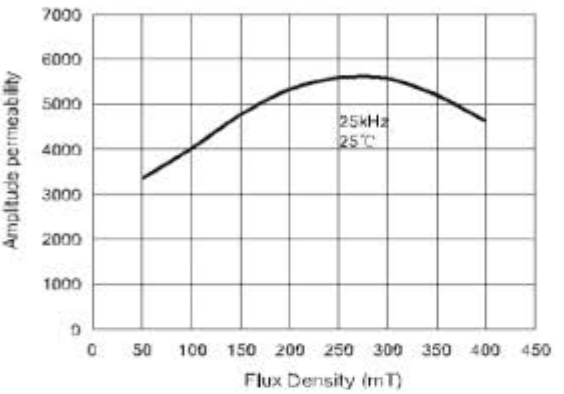


材料/Material: TY40

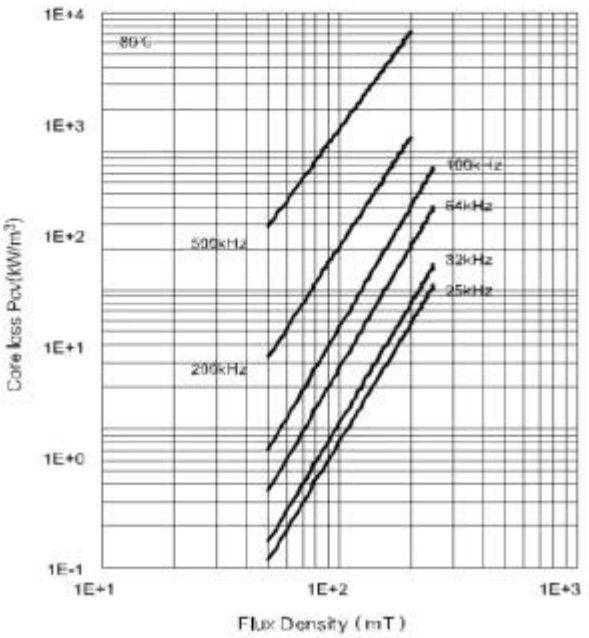
Pcv-Temperature



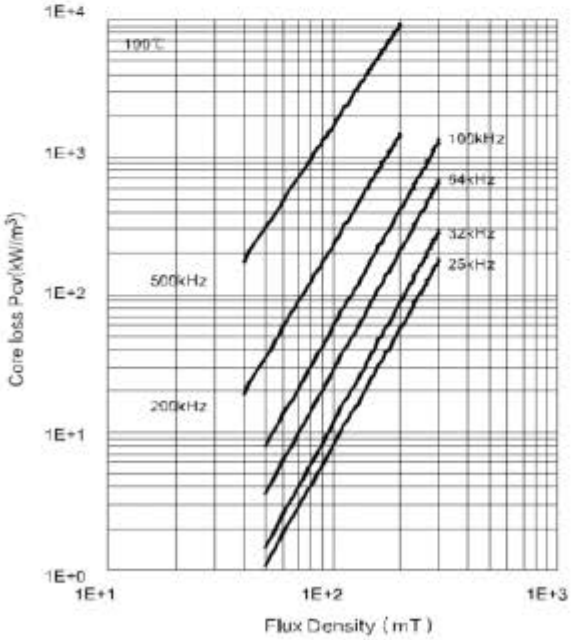
μ_a-Bm



Pcv-Bm



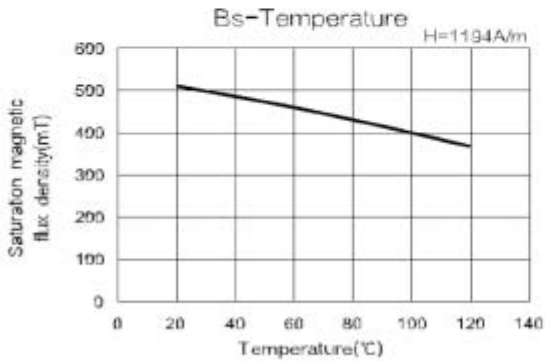
Pcv-Bm



材料/Material: TY44

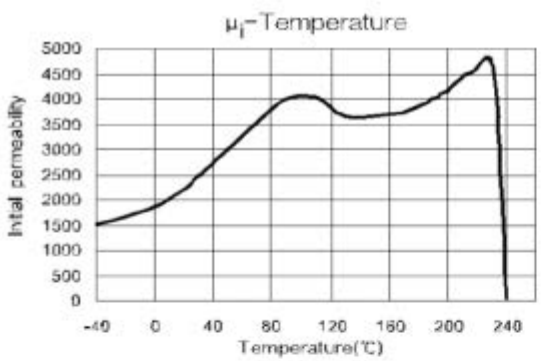
特点/Features:

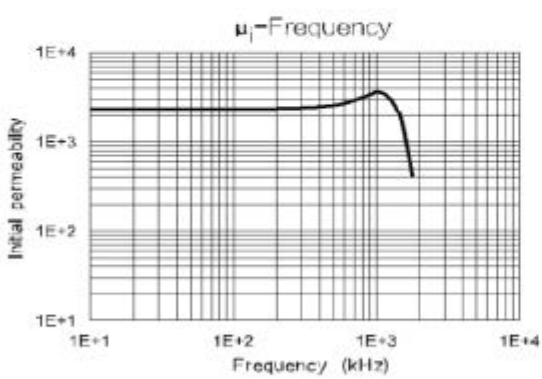
1. 主要应用于中频段(小于300kHz)/Mostly Used at Middle Frequency (Less than 300kHz)
2. 低磁芯损耗,高饱和磁感应强度/Low Core Loss and High Saturation Flux Density
3. 损耗最低的温度点约在90℃/The Temperature Point of the Lowest Core Loss is 90℃

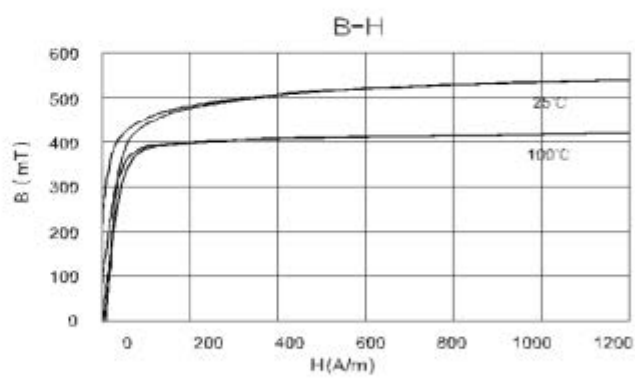


Initial permeability	μ_i	25℃	2400±25%
Saturation magnetic flux density	Bs(mT) 1194A/m	25℃	510
		100℃	390
Remanence	Br(mT)	25℃	110
		100℃	60
Coercivity	Hc(A/m)	25℃	13
		100℃	6.5
Core loss	Pcv(kW/m³) 100kHz 200mT	25℃	600
		100℃	300
		120℃	400
Curie temperature	Tc(℃)		≥215
Electrial resistivity	ρ(Ω·m)		6.5
Density	d(kg/m³)		4.8×10^3

Test core:Toroid(mm)
OD：25
ID：15
H：7.5



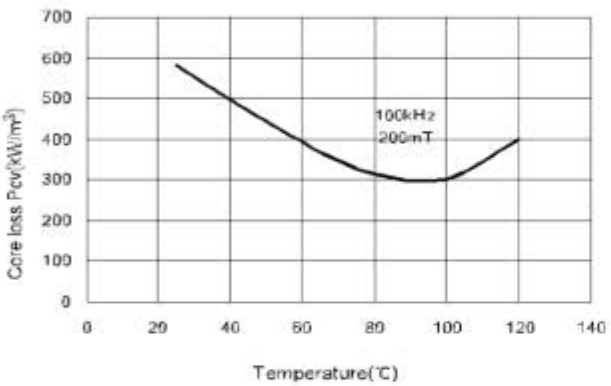




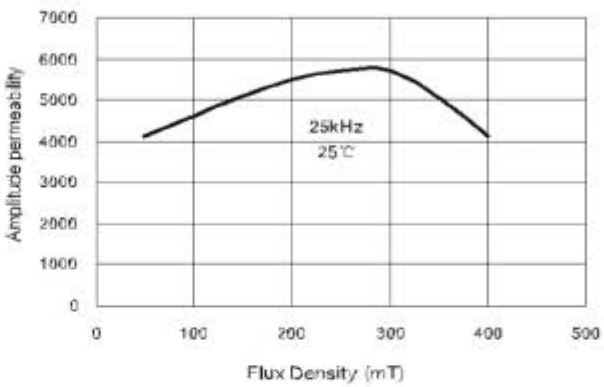
Material Characteristic Sheet & Figures

材料/Material: TY44

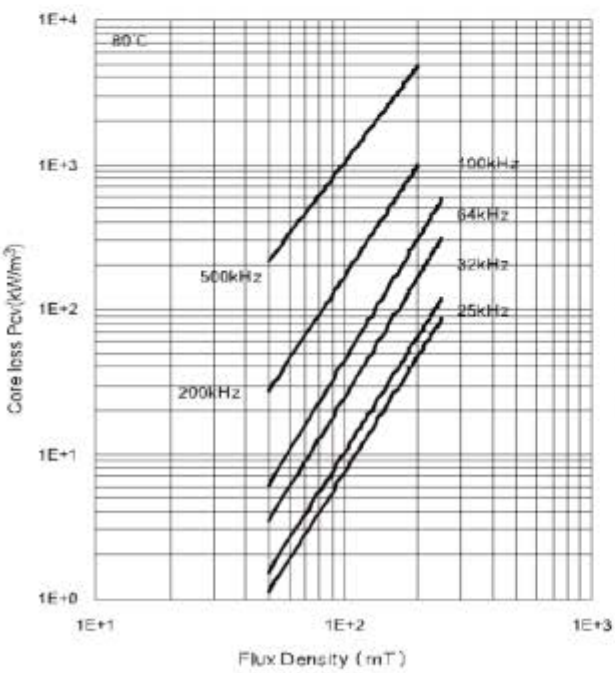
Pcv-Temperature



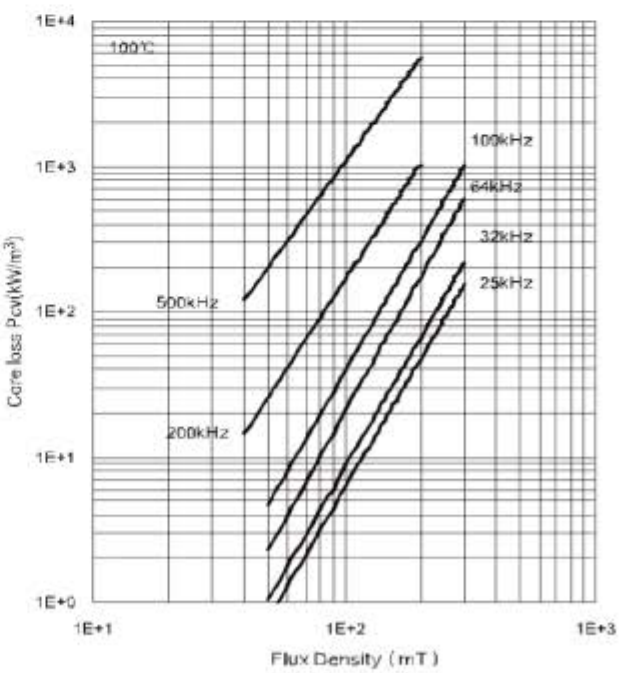
μ_a-Bm



Pcv-Bm



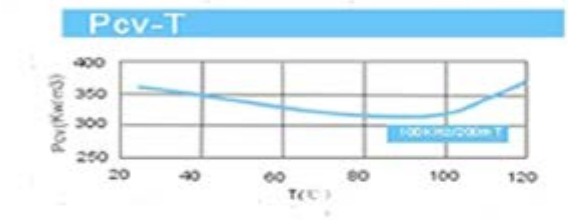
Pcv-Bm

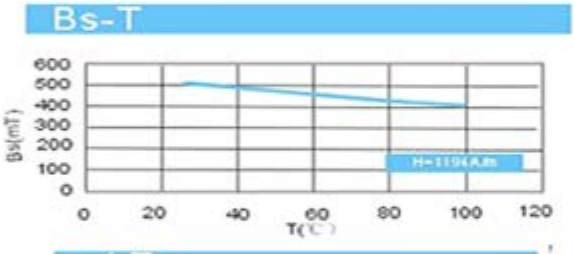


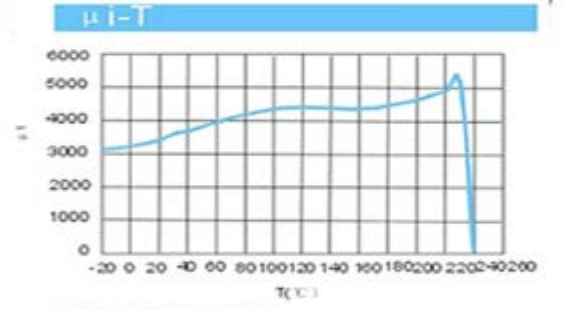
材料/Material: TY95

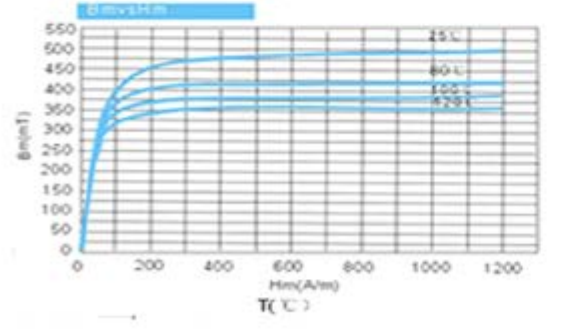
特点/Features:

1.高饱和磁感应强度过/High Saturation Flux Density
2.较高的初始磁导率/High Initial Permeability
3.低磁芯损耗/Low Core Loss



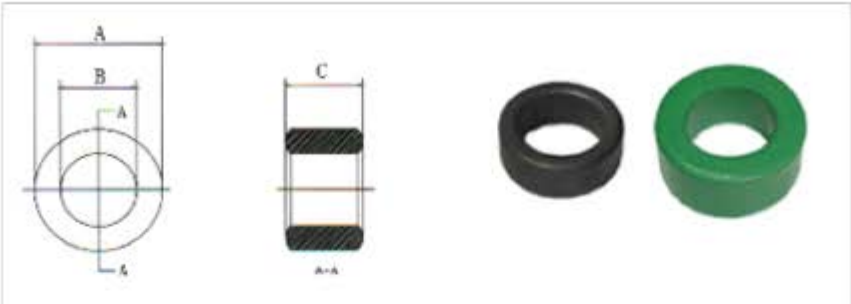






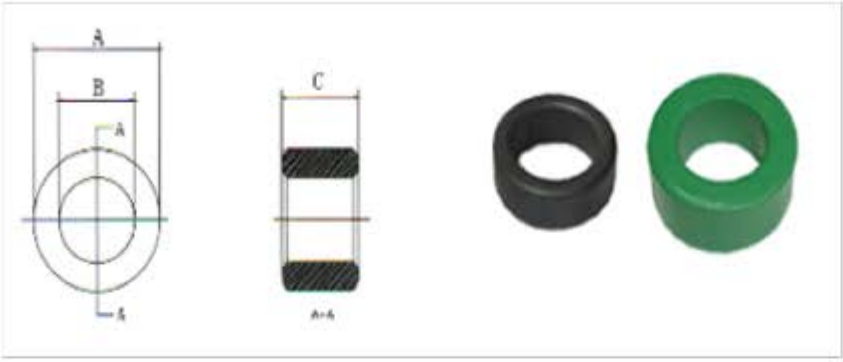
初始磁导率	μ_i	25℃	3200±25%
饱和磁通密度	Bs(mT) 1194/m	25℃ 100℃	510 390
剩磁	Br(mT)	25℃ 100℃	50 55
矫顽力	Hc(A/m)	25℃ 100℃	8 9
功率耗损	Pcv(KW/m³) 100KHz 200mT	25℃	450
		60℃	350
		80℃	380
		100℃	430
电阻率	ρ(Ω·m)		-
居里温度	Tc(℃)		≥220
密度	d(Kg/m³)		4.8×10^3

Test core:Toroid(mm)
OD:30
ID:19
H:9

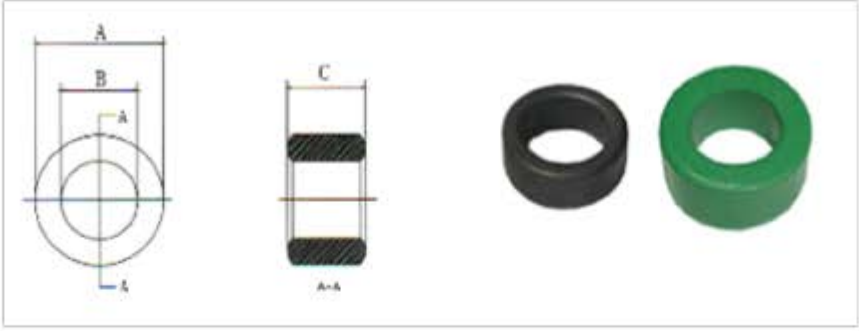


型号 Type	A	B	C	Wt(g/prs)	PC40	TY-5K	TY-7K	TY-10K
T6*3*3	6.0±0.3	3.0±0.3	3.0±0.3	0.3	950	2300	3100	4200
T6*4*3	6.3±0.3	3.8±0.3	2.5±0.3	0.3	580	1400	1900	2500
T7*4*4	7.0±0.3	4.0±0.3	4.0±0.3	0.5	1000	2500	3400	4500
T7*4*2	7.0±0.3	4.3±0.3	2.2±0.3	0.3	490	1200	1600	2100
T8*4*4	8.0±0.3	4.0±0.3	4.0±0.3	0.8	1300	3100	4200	5600
T8*5*3	8.0±0.3	5.0±0.3	3.0±0.3	0.5	650	1600	2100	2800
T9*5*4	9.0±0.3	5.0±0.3	4.0±0.3	0.9	1100	2600	3500	4700
T10*5*19	9.5±0.3	5.1±0.3	19.05±0.4	4.7	5500	13000	17700	23700
T10*5*5	9.53±0.3	4.75±0.3	4.78±0.3	1.2	1500	3700	5000	6700
T10*5*3	10.0±0.3	5.0±0.3	3.0±0.3	0.9	950	2300	3100	4100
T10*5*5	10.0±0.3	5.0±0.3	5.0±0.3	1.4	1600	3800	5200	6900
T10*6*3	10.0±0.3	6.0±0.3	3.0±0.3	0.7	700	1700	2300	3100
T10*6*4	10.0±0.3	6.0±0.3	3.5±0.3	0.9	820	1900	2700	3700
T10*6*4	10.0±0.3	6.0±0.3	4.0±0.3	1	940	2200	3100	4100
T11*7*3	10.99±0.3	6.83±0.3	2.97±0.3	0.8	650	1500	2100	2800
T11*7*7	11.12±0.3	7.11±0.3	7.09±0.3	2	1460	3500	4700	6300
T12*6*4	12.0±0.4	6.0±0.4	4.0±0.3	1.7	1280	3000	4100	5500
T13*7*5	12.7±0.4	7.14±0.4	4.78±0.3	2	1270	3000	4100	5500
T13*7*6	12.7±0.4	7.14±0.4	6.35±0.3	2.7	1700	4000	5500	7300
T13*8*5	12.7±0.4	7.8±0.4	5.0±0.3	1.9	1100	2700	3600	4800
T13*8*6	12.7±0.4	7.9±0.4	6.35±0.3	2.4	1400	3300	4500	6000
T13*8*7	12.7±0.4	7.9±0.4	7.0±0.3	2.6	1500	3600	5000	6600
T13*7*4	12.85±0.4	7.35±0.4	4.0±0.3	1.7	1000	2400	3300	4500
T13*7*5	13.0±0.4	7.0±0.4	5.0±0.3	2.3	1400	3400	4600	6200
T13*7*4	13.21±0.4	7.37±0.4	3.96±0.3	1.8	1000	2500	3400	4600

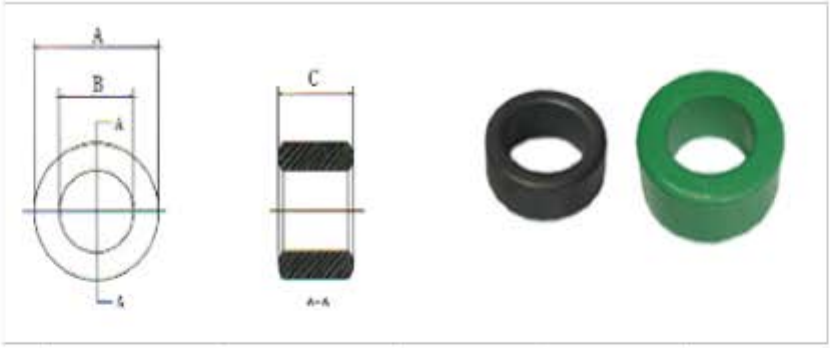
型号 Type	A	B	C	Wt(g/prs)	PC40	TY-5K	TY-7K	TY-10K
T13*9*5	13.3±0.4	8.5±0.4	5.0±0.3	1.8	1000	2400	3300	4500
T14*7*7	14.0±0.4	7.0±0.4	7.0±0.3	3.9	2200	5300	7200	9700
T14*8*4	14.0±0.4	8.0±0.4	4.0±0.3	2	1000	2400	3300	4500
T14*8*7	14.0±0.4	8.0±0.4	7.0±0.3	3.5	1800	4300	5800	7800
T14*8*9	14.0±0.4	8.0±0.4	9.0±0.3	4.5	2300	5500	7500	10050
T14*8*12	14.0±0.4	8.4±0.4	12.0±0.4	5.7	2800	6700	9200	12200
T14*9*5	14.0±0.4	9.0±0.4	5.0±0.3	2.2	1000	2400	3300	4400
T14*6*14	14.27±0.4	6.35±0.25	13.46±0.3	8.4	5000	12000	16000	21700
T14*7*29	14.3±0.4	7.25±0.25	28.6±0.60	16.6	8400	20000	27300	36500
T16*10*5	15.8±0.4	9.5±0.4	5.0±0.3	3.1	1100	2800	3800	5100
T16*10*9	16.1±0.4	9.55±0.25	9.45±0.3	6.1	2300	5400	7400	9900
T16*10*7	16.0±0.4	10.0±0.4	7.0±0.3	4.2	1500	3600	4900	6500
T16*12*8	16.0±0.4	12.0±0.4	8.0±0.3	3.4	1000	2500	3400	4600
T16*9*5	16.0±0.4	9.0±0.4	5.0±0.3	3.3	1300	3100	4300	5700
T16*9*8	16.0±0.4	9.0±0.4	8.0±0.3	5.3	2100	5000	6900	9200
T16*10*6	16.0±0.4	9.6±0.4	6.3±0.3	3.9	1400	3500	4800	6400
T16*10*8	16.0±0.4	9.6±0.4	8.0±0.3	5	1900	4500	6100	8100
T17*11*8	16.64±0.4	11.3±0.4	8.05±0.3	4.5	1400	3400	4600	6200
T17*4*19	17.0±0.4	4.2±0.15	18.95±0.4	19.6	12100	29100	39700	52900
T18*12*7	17.5±0.4	11.5±0.4	7.0±0.3	4.7	1300	3200	4400	5800
T18*10*10	18.0±0.4	10.0±0.4	10.0±0.3	8.5	2700	6400	8800	11700
T18*10*5	18.0±0.4	10.0±0.4	5.0±0.3	4.3	1300	3200	4400	5800
T18*10*7	18.0±0.4	10.0±0.4	7.0±0.3	6	1890	4520	6170	8200
T18*10*8	18.0±0.4	10.0±0.4	8.0±0.3	6.8	2200	5200	7000	9400
T18*12*6	18.0±0.4	12.0±0.4	6.0±0.3	4.1	1100	2700	3600	4800



型号 Type	A	B	C	Wt(g/prs)	PC40	TY-5K	TY-7K	TY-10K
T19*13*11	19.0±0.4	13.0±0.4	11.0±0.3	8.1	1900	4600	6200	8300
T20*10*10	20.0±0.5	10.0±0.5	10.0±0.3	11.4	3200	7900	10400	13800
T20*11*10	20.0±0.5	11.0±0.5	10.0±0.3	10.6	2750	6580	8970	11960
T20*12*10	20.0±0.5	12.0±0.5	10.0±0.3	9.8	2300	5600	7600	10200
T20*12*8	20.0±0.5	12.0±0.5	8.0±0.3	7.8	1800	4500	6100	8100
T22*10*10	22.0±0.6	10.0±0.6	10.0±0.3	14.6	3600	8600	11800	15700
T22*11*12	22.0±0.6	11.0±0.6	11.5±0.4	15.9	3600	8700	11900	15900
T22*14*6	22.0±0.6	14.0±0.6	6.0±0.3	6.6	1200	3000	4100	5400
T22*14*7	22.0±0.6	14.0±0.6	6.5±0.3	7.1	1300	3200	4400	5900
T22*14*8	22.0±0.6	14.0±0.6	8.0±0.3	8.8	1600	4000	5400	7200
T22*14*10	22.0±0.6	14.0±0.6	10.0±0.3	11	2000	4900	6700	9000
T22*14*12.5	22.0±0.5	14.0±0.4	12.7±0.3	8.7	1800	3600	5040	7230
T22*14*13	22.0±0.6	14.0±0.6	13.0±0.3	14.3	2700	6400	8800	11700
T25*15*8	25.0±0.5	15.0±0.5	8.0±0.3	13.5	2000	4000	5600	8000
T25*15*10	25.0±0.6	15.0±0.6	10.0±0.3	15.3	2400	5600	7600	10200
T25*15*11	25.0±0.6	15.0±0.6	11.0±0.3	16.8	2580	6180	8400	11240
T25*15*12	25.0±0.6	15.0±0.6	12.0±0.3	18.3	2800	6700	9200	12300
T25*15*13	25.0±0.6	15.0±0.6	13.0±0.3	19.8	3100	7300	9900	13200
T25*15*15	25.0±0.6	15.0±0.6	15.0±0.3	22.9	3500	8400	11500	15300
T25*15*4	25.0±0.6	15.0±0.6	4.0±0.3	6.1	940	2300	3100	4100
T25*15*5	25.0±0.6	15.0±0.6	5.0±0.3	7.6	1170	2800	3800	5100
T25*15*6	25.0±0.6	15.0±0.6	6.0±0.3	9.1	1400	3400	4600	6100
T25*15*8	25.0±0.6	15.0±0.6	8.0±0.3	12.2	1900	4500	6100	8200
T25*16*6	25.4±0.6	15.5±0.6	6.35±0.3	9.8	1400	3500	4700	6200
T26*13*29	25.91±0.6	12.83±0.6	28.58±0.6	55.2	9200	22000	30100	40100



型号 Type	A	B	C	Wt(g/prs)	PC40	TY-5K	TY-7K	TY-10K
T26*15*15	26.0±0.6	14.5±0.6	15.0±0.3	23.7	4000	9600	13100	17500
T27*11*8	27.0±0.6	11.0±0.6	8.0±0.3	18.5	3300	7900	10800	14300
T28*14*14	28.0±0.6	14.0±0.6	14.0±0.3	31.4	4500	10600	14500	19400
T28*16*13	28.0±0.6	16.0±0.6	13.0±0.3	26.2	3400	8000	10900	14500
T28*14*13	28.4±0.6	13.6±0.6	12.5±0.3	29.6	4200	9900	13500	18000
T29*19*14	29.0±0.6	19.0±0.6	13.8±0.3	25.2	2700	6400	8700	11700
T29*19*15	29.0±0.6	19.0±0.6	15.2±0.3	27.8	3000	7100	9600	12800
T31*19*8	31.0±0.6	18.0±0.4	8.0±0.2	20	2170	4340	6076	8680
T31*19*13	31.0±0.6	19.0±0.6	12.5±0.3	28.6	2800	6700	9200	12200
T31*19*13	31.0±0.6	19.0±0.6	13.0±0.3	29.7	2900	7000	9600	12700
T31*19*15	31.0±0.6	19.0±0.6	15.0±0.3	34.3	3400	8100	11000	14600
T31*20*15	31.0±0.6	20.0±0.6	15.0±0.3	32.1	3000	7200	9800	13100
T35*21*6.5	35.0±0.6	21.0±0.5	6.5±0.3	19.2	1600	3300	4600	6600
T36*23*6.5	36.0±0.7	23.0±0.6	6.5±0.3	19	1460	2920	4090	5840
T36*23*13	36.0±0.6	23.0±0.6	13.0±0.3	38	2700	6400	8700	11600
T36*23*15	36.0±0.6	23.0±0.6	15.0±0.3	43.8	3100	7400	10100	13400
T37*22*15	37.0±0.7	22.0±0.7	15.0±0.3	50.6	3600	8600	11700	15600
T38*19*13	38.0±0.7	19.0±0.7	13.0±0.3	56.6	4100	9900	13500	18000
T38*22*15	38.0±0.7	22.0±0.7	15.0±0.3	54.9	3800	9000	12300	16400
T38*19*22	38.0±0.8	19.0±0.5	22±0.6	89	7600	15200	21800	30400
T38*19*25.4	38.0±0.8	19.0±0.5	25.4±0.6	104	8700	17540	24560	35100
T38*25*15	38.1±0.7	25.4±0.7	15.0±0.3	46.8	2900	6900	9400	12600
T40*24*16	40.0±1.0	24.0±0.7	16.0±0.5	61	4080	8160	11200	16300
T40*5.4*1	40±0.76	5.4±0.25	1.0±0.1	6	920	2200	3000	4000
T42*26*18	42.0±0.7	26.0±0.7	17.75±0.5	73.6	3900	9300	12800	17000



型号 Type	A	B	C	Wt(g/prs)	PC40	TY-5K	TY-7K	TY-10K
T45*25*8	45.0±1.2	25.0±0.7	8.0±0.3	42	2160	2600	6050	8640
T47*27*15	47.0±0.7	27.0±0.7	15.0±0.3	84.6	3800	9100	12500	16600
T48*30*8	48.0±1.2	30.0±0.6	8.0±0.4	42	1870	3740	5230	7480
T48*30*15	48.0±1.2	30.0±0.6	15.0±0.4	80	3500	7000	9870	14100
T49*34*16	49.1±0.7	33.8±0.7	15.9±0.35	76.8	2700	6500	8900	11900
T50*25*20	50.0±0.8	25.0±0.8	20.0±0.5	143	6400	15200	20800	27700
T50*27*18	50.0±1.2	27.0±0.6	18.0±0.4	120	5500	11000	15000	22000
T50*30*20	50.0±0.8	30.0±0.8	20.0±0.5	121.9	4700	11200	15300	20400
T50*35*20	50.0±0.8	35.0±0.8	20.0±0.5	97.1	3300	7800	10700	14200
T56*32*18	56.0±1.6	32.0±0.8	18.0±0.6	143	5040	11000	14100	20100
T58.5*40*18	58.5±1.6	40.0±0.8	18.0±0.6	123	3400	6800	9000	13000
T60*30*20	60.0±1.8	30.0±1.0	20.0±0.8	206	6930	13860	19400	27730
T60*36*20	60.0±1.8	36.0±1.0	20.0±0.8	174	5600	11200	14300	22400
T63*38*20	63.0±2.0	38.0±1.0	20.0±0.6	240	5040	10080	14100	20160
T63*38*25	63.0±2.0	38.0±1.0	25.0±0.6	300	6300	12640	17690	25300
T68*44*20	68.0±1.5	44.0±1.0	20.0±0.4	205	4350	8700	12200	17400
T74*39*13	73.65±1	38.85±0.7	12.7±0.35	159.5	3400	8100		
T80*50*20	80.0±2.5	50.0±1.5	20.0±0.8	293	4700	9400	13200	18800
T90*60*30	90.0±1.5	60.0±1.5	30.0±1.5	339	6000	12000	17000	24000
T100*55*20	100.0±3.0	55.0±1.5	20.0±0.4	525	5970	11940	16716	23900
T124*60*20	124.0±4.0	60.0±2.5	20.0±1.5	890	7260	14520	20320	26430
T124*60*40	124.0±4.0	60.0±2.5	40.0±1.5	1780	14520	20940	40660	41880
T152*68*20	152.0±4.0	68.0±2.5	19.0±1.5	1394	8000	16000	22000	32000
T152*104*19	152.0±4.0	104.0±2.5	19.0±1.5	880	3600	7000	10000	14000