



Mn-Zn Ferrite

Material characteristics

Ferrite for switching power supplies

Ferrite for high-frequency power supplies

Large size ferrite for high power

Ferrite for telecommunication

**REMINDERS FOR USING THESE PRODUCTS**

Please be sure to read this manual thoroughly before using the products.

The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.

When using the products for specific purposes, please first make confirmations in areas such as safety, reliability, and quality.

If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in this catalog, please contact us.

- | | |
|---|--|
| (1) Aerospace/aviation equipment | (9) Military equipment |
| (2) Transportation equipment (cars, electric trains, ships, etc.) | (10) Electric heating apparatus, burning equipment |
| (3) Medical equipment | (11) Disaster prevention/crime prevention equipment |
| (4) Power-generation control equipment | (12) Safety equipment |
| (5) Atomic energy-related equipment | (13) Other applications that are not considered general-purpose applications |
| (6) Seabed equipment | |
| (7) Transportation control equipment | |
| (8) Public information-processing equipment | |

When using these products in general purposes and standard use, it is recommended that protection circuits are used, devices are secured, and backup circuits are kept for increased safety.

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Mn-Zn Material list of ferrite for switching power supplies

MATERIAL CHARACTERISTICS

Material	Initial permeability μ_i	Core loss volume density (Core loss)* P _{cv} (kW/m ³) B=200mT 100kHz sine wave				Saturation magnetic flux density* B _s (mT) H=1194A/m				Remanent flux density* B _r (mT) H=1194A/m				Coercive force* H _c (A/m) H=1194A/m				Curie temperature T _c (°C)	Density* d _b (kg/m ³) ×10 ³	Electrical resistivity* ρ _v (Ω • m)
		25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C			
PC47	2500±25%	600	400	250	360	530	480	420	390	180	100	60	60	13	9	6	7	>230	4.9	4
PC90	2200±25%	680	470	320	460	540	500	450	420	170	95	60	65	13	9	6.5	7	>250	4.9	4
PC95	3300±25%	350		290	350	530	480	410	380	85	70	60	55	9.5	7.5	6.5	6	>215	4.9	6

* Typ.

Material	Initial permeability μ_i	Relative loss factor* tanδ/μi ×10 ⁻⁶	Saturation magnetic flux density* B _s (mT) H=1194A/m 25°C	Remanent flux density* B _r (mT) H=1194A/m 25°C	Coercive force* H _c (A/m) H=1194A/m 25°C	Curie temperature T _c (°C)	Density* d _b (kg/m ³) ×10 ³	Electrical resistivity* ρ _v (Ω • m)
HS72	7500±25% (2000min. at 500kHz)	30(100kHz)	410	80	6	>130	4.9	0.2
HS10	10000±25%	30(100kHz)	380	120	5	>120	4.9	0.2

* Typ.

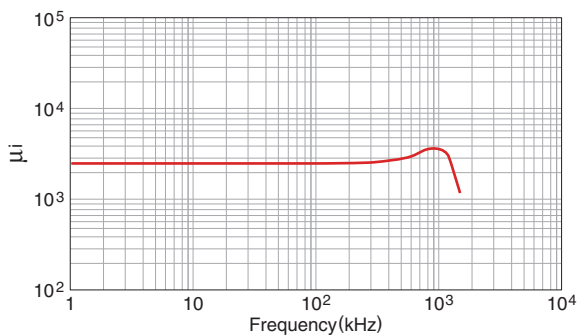
Mn-Zn Ferrite for switching power supplies **Material list of PC47**

MATERIAL CHARACTERISTICS

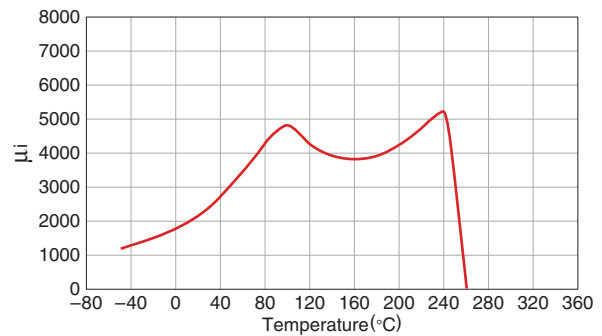
Initial permeability μ_i	Core loss volume density (Core loss)* P_{cv} (kW/m ³) B=200mT 100kHz sine wave				Saturation magnetic flux density* B_s (mT) H=1194A/m				Remanent flux density* B_r (mT) H=1194A/m				Coercive force* H_c (A/m) H=1194A/m				Curie temperature T_c (°C)	Density* ρ_b (kg/m ³) $\times 10^3$	Electrical resistivity* ρ_v ($\Omega \cdot m$)
	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C			
2500 $\pm$ 25%	600	400	250	360	530	480	420	390	180	100	60	60	13	9	6	7	>230	4.9	4

* Typ.

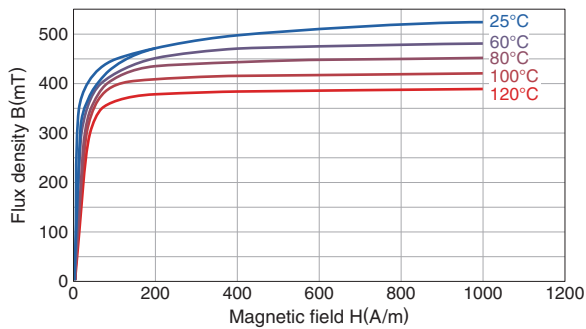
μ_i frequency characteristics (Typ.)



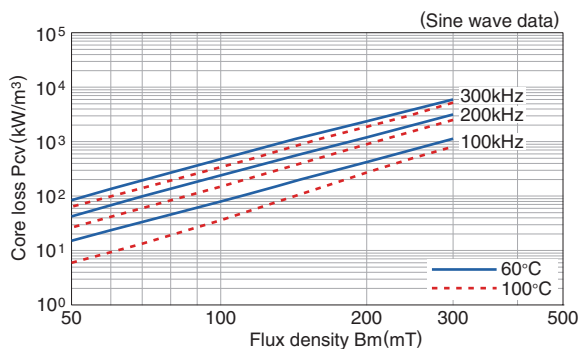
μ_i temperature characteristics (Typ.)



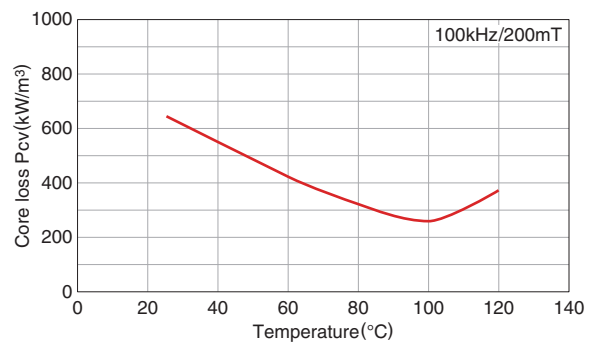
B-H temperature characteristics (Typ.)



Core loss (Typ.)



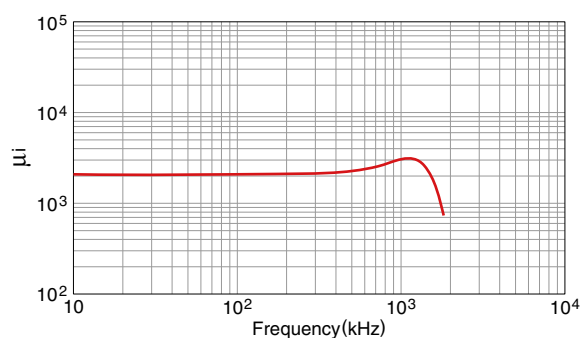
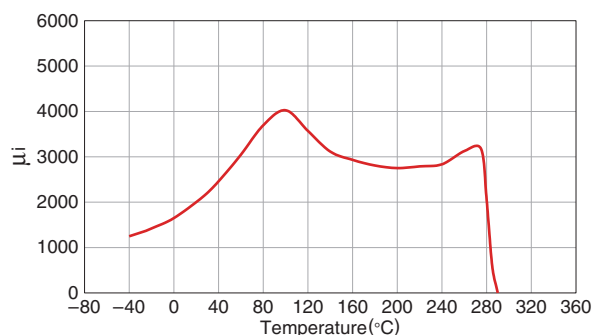
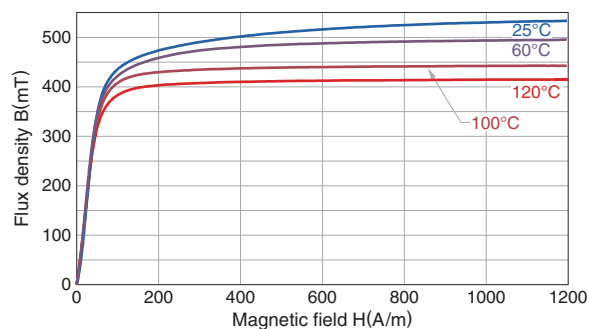
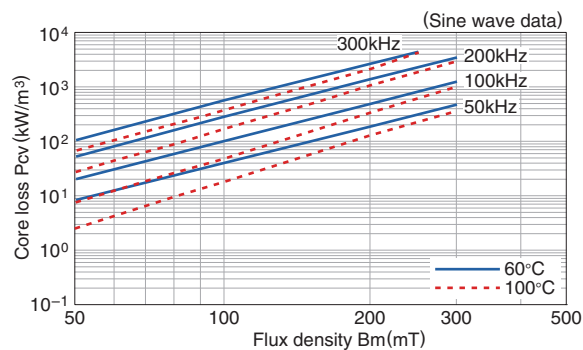
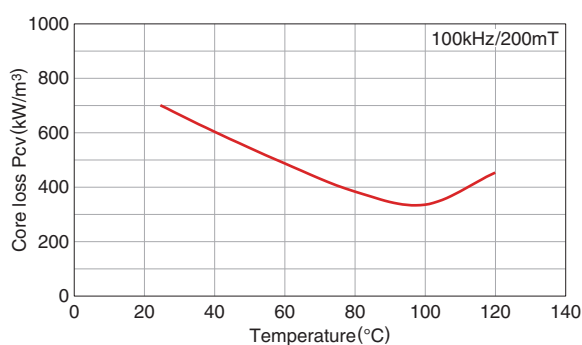
Temperature dependence of core loss (Typ.)



Mn-Zn Ferrite for switching power supplies **Material list of PC90****MATERIAL CHARACTERISTICS**

Initial permeability μ_i	Core loss volume density (Core loss)* P_{cv} (kW/m ³) B=200mT 100kHz sine wave				Saturation magnetic flux density* B_s (mT) H=1194A/m				Remanent flux density* B_r (mT) H=1194A/m				Coercive force* H_c (A/m) H=1194A/m				Curie temperature T_c (°C)	Density* ρ_b (kg/m ³) $\times 10^3$	Electrical resistivity* ρ_v ($\Omega \cdot m$)
	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C			
2200±25%	680	470	320	460	540	500	450	420	170	95	60	65	13	9	6.5	7	>250	4.9	4

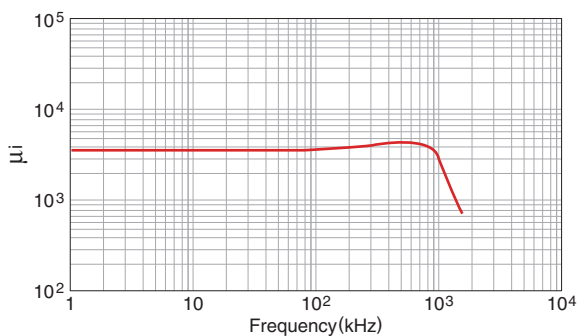
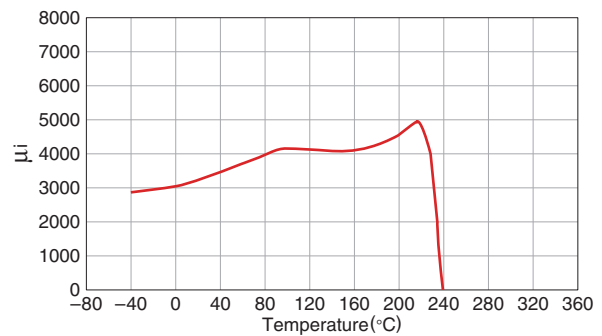
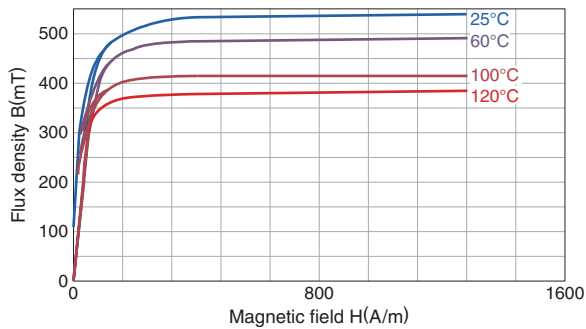
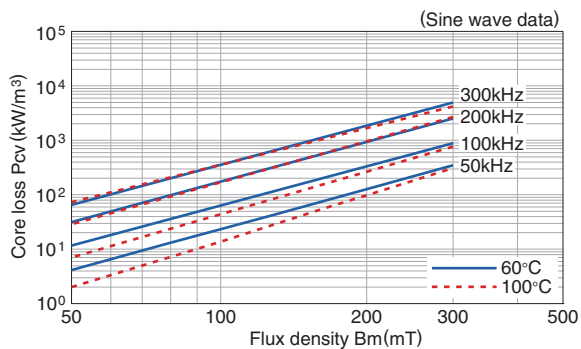
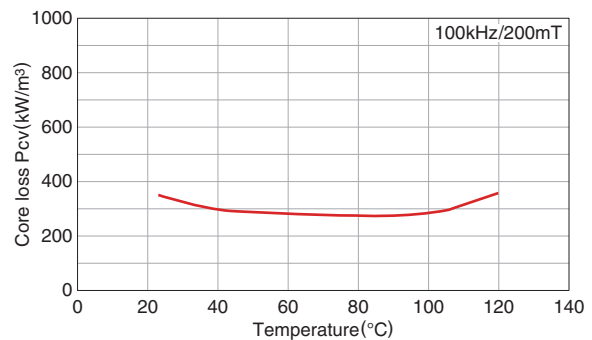
* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)****Core loss (Typ.)****Temperature dependence of core loss (Typ.)**

Mn-Zn Ferrite for switching power supplies **Material list of PC95****MATERIAL CHARACTERISTICS**

Initial permeability μ_i	Core loss volume density (Core loss)* P_{cv} (kW/m ³) B=200mT 100kHz sine wave				Saturation magnetic flux density* B_s (mT) H=1194A/m				Remanent flux density* B_r (mT) H=1194A/m				Coercive force* H_c (A/m) H=1194A/m				Curie temperature T_c (°C)	Density* ρ_b (kg/m ³) $\times 10^3$	Electrical resistivity* ρ_v ($\Omega \cdot m$)
	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C	25°C	60°C	100°C	120°C			
3300±25%	350		290	350	530	480	410	380	85	70	60	55	9.5	7.5	6.5	6	>215	4.9	6

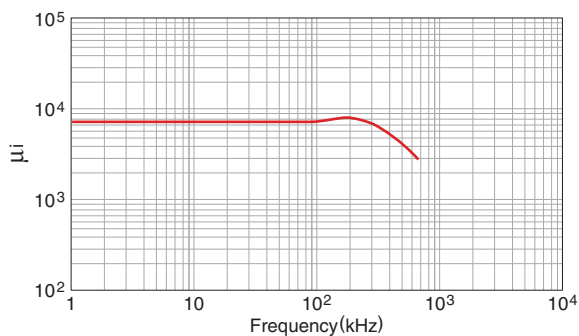
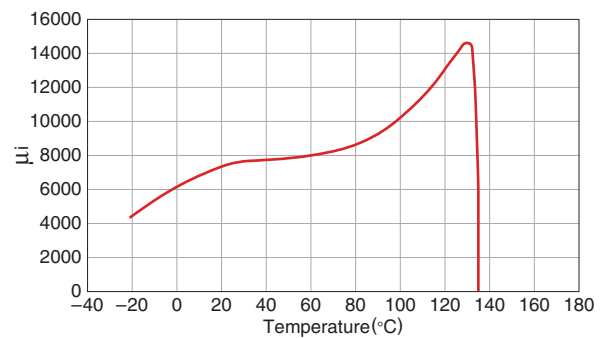
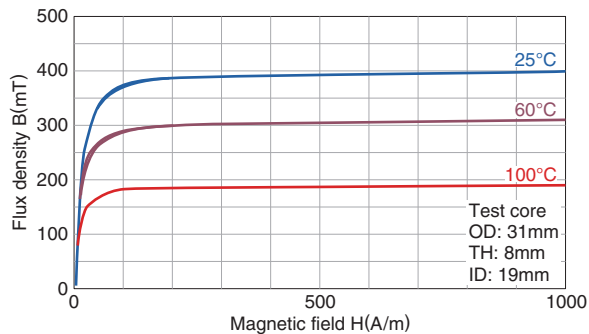
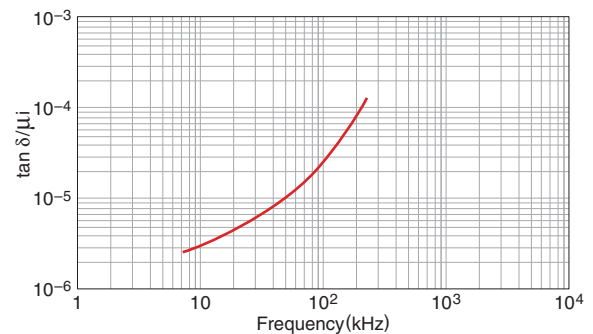
* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)****Core loss (Typ.)****Temperature dependence of core loss (Typ.)**

Mn-Zn Ferrite for switching power supplies **Material list of HS72****MATERIAL CHARACTERISTICS**

Initial permeability μ_i	Relative loss factor* $\tan\delta/\mu_i$ $\times 10^{-6}$	Saturation magnetic flux density* B_s (mT) H=1194A/m 25°C	Remanent flux density* B_r (mT) H=1194A/m 25°C	Coercive force* H_c (A/m) H=1194A/m 25°C	Curie temperature T_c (°C)	Density* d_b (kg/m ³) $\times 10^3$	Electrical resistivity* ρ_v ($\Omega \cdot m$)
7500 $\pm$ 25% (2000min. at 500kHz)	30(100kHz)	410	80	6	>130	4.9	0.2

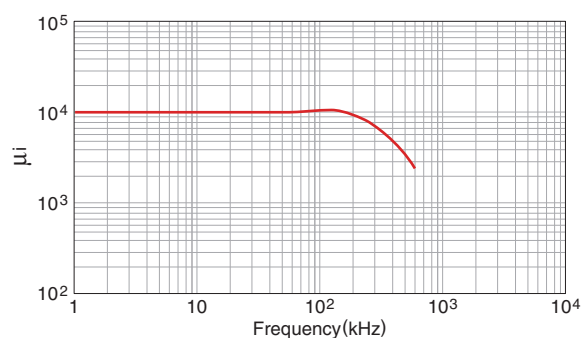
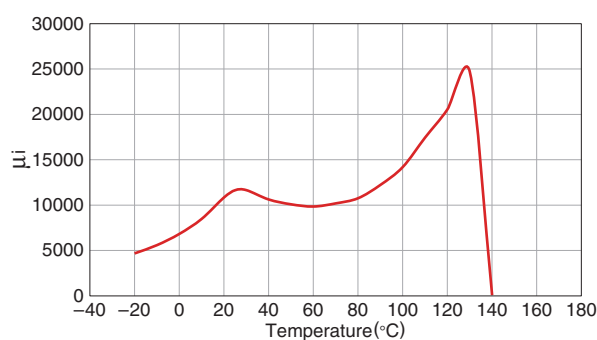
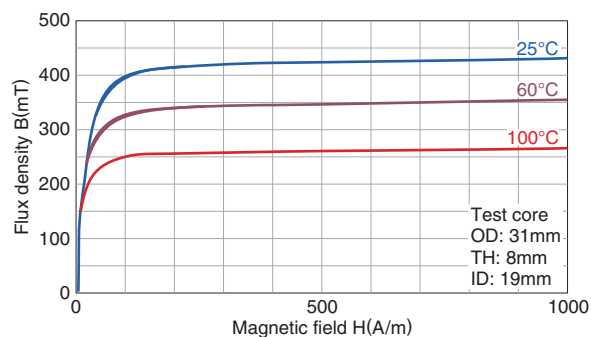
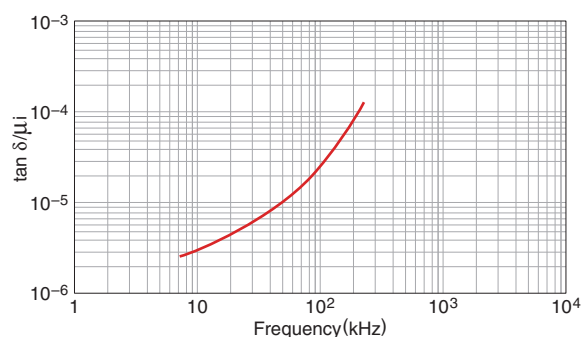
* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)** **$\tan\delta/\mu_i$ frequency characteristics (Typ.)**

Mn-Zn Ferrite for switching power supplies **Material list of HS10****MATERIAL CHARACTERISTICS**

Initial permeability μ_i	Relative loss factor* $\tan\delta/\mu_i$ $\times 10^{-6}$	Saturation magnetic flux density* B_s (mT) H=1194A/m 25°C	Remanent flux density* B_r (mT) H=1194A/m 25°C	Coercive force* H_c (A/m) H=1194A/m 25°C	Curie temperature T_c (°C)	Density* ρ_b (kg/m ³) $\times 10^3$	Electrical resistivity* ρ_v ($\Omega \cdot m$)
10000 $\pm$ 25%	30(100kHz)	380	120	5	>120	4.9	0.2

* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)** **$\tan\delta/\mu_i$ frequency characteristics (Typ.)**

Mn-Zn **Material list of ferrite for high-frequency power supplies**

■ MATERIAL CHARACTERISTICS

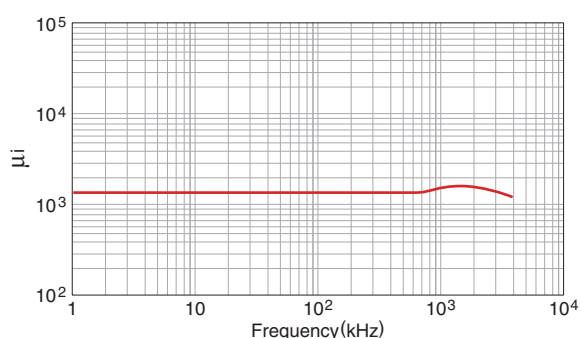
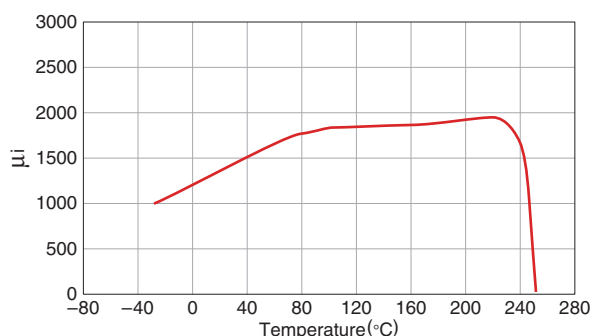
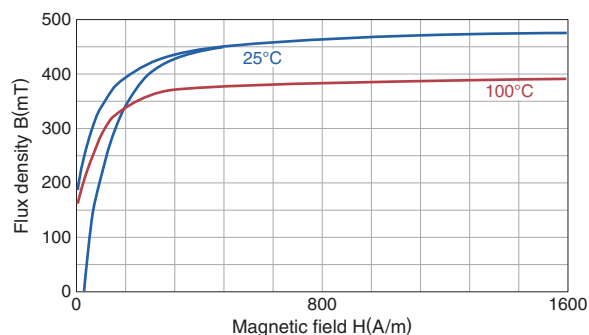
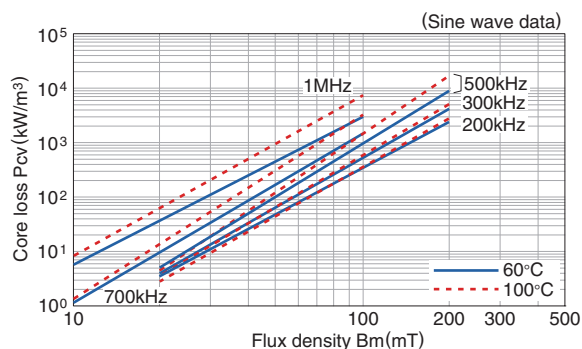
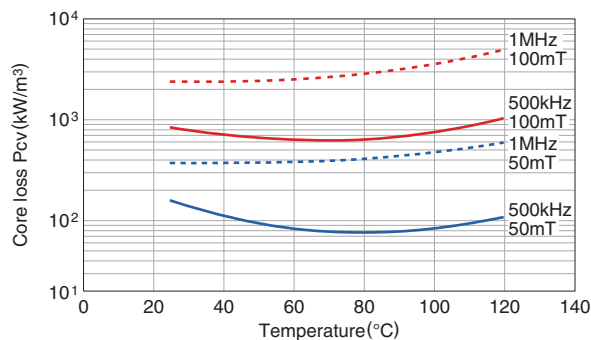
Material	Initial permeability μi	Core loss volume density (Core loss)* Pcv (kW/m³) sine wave						Saturation magnetic flux density* Bs (mT) H=1194A/m		Remanent flux density* Br (mT) H=1194A/m		Coercive force* Hc (A/m) H=1194A/m		Curie temperature Tc (°C)	Density* db (kg/m³) ×10³	Electrical resistivity* (Ω • m)
		500kHz B=50mT		1MHz B=50mT		2MHz B=30mT										
		25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C			
		25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C			
PC50	1400±25%	130	80					470	380	140	98	37	27	>240	4.8	30
PC200	800±25%			145	180	160	200	485	410	141	144	51	48	>280	4.9	22

* Typ.

Mn-Zn Ferrite for high-frequency power supplies **Material list of PC50****MATERIAL CHARACTERISTICS**

Initial permeability μ_i	Core loss volume density (Core loss)* P_{cv} (kW/m ³) sine wave 500kHz B=50mT		Saturation magnetic flux density* B_s (mT) H=1194A/m		Remanent flux density* B_r (mT) H=1194A/m		Coercive force* H_c (A/m) H=1194A/m		Curie temperature T_c (°C)	Density* ρ_b (kg/m ³) $\times 10^3$	Electrical resistivity* ($\Omega \cdot m$)
1400 $\pm$ 25%	25°C	100°C	25°C	100°C	25°C	100°C	25°C	100°C			
	130	80	470	380	140	98	37	27	>240	4.8	30

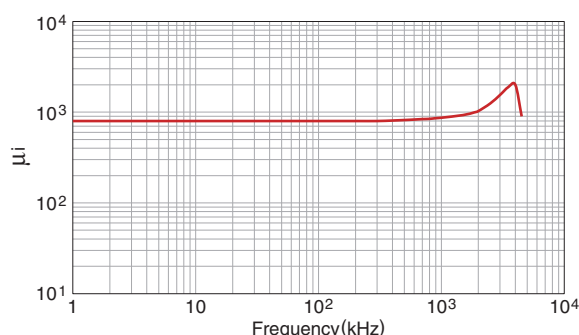
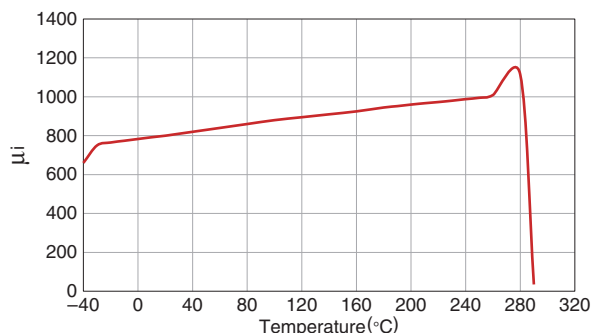
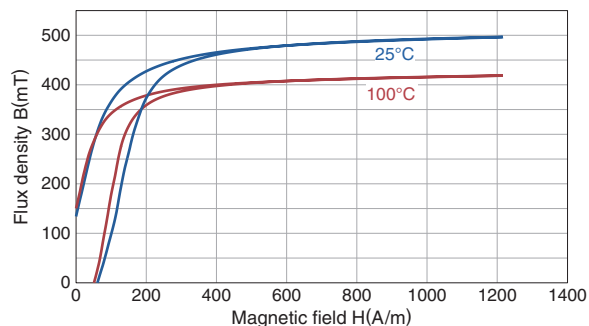
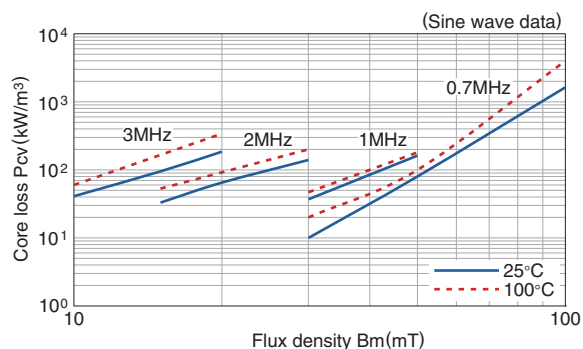
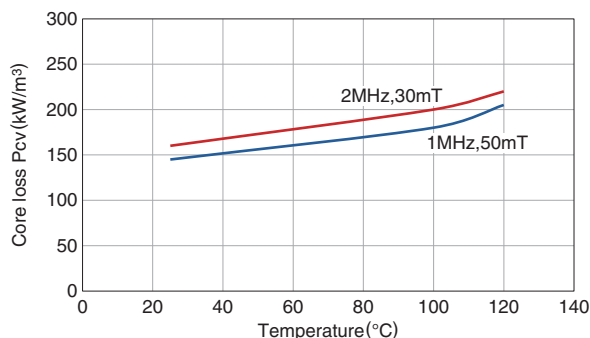
* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)****Core loss (Typ.)****Temperature dependence of core loss (Typ.)**

Mn-Zn Ferrite for high-frequency power supplies **Material list of PC200****MATERIAL CHARACTERISTICS**

Initial permeability μ_i	Core loss volume density (Core loss)* P_{cv} (kW/m ³) sine wave				Saturation magnetic flux density* B_s (mT) $H=1194\text{A/m}$		Remanent flux density* B_r (mT) $H=1194\text{A/m}$		Coercive force* H_c (A/m) $H=1194\text{A/m}$		Curie temperature T_c (°C)	Density* ρ_b (kg/m ³) $\times 10^3$	Electrical resistivity* ($\Omega \cdot \text{m}$)
	1MHz $B=50\text{mT}$		2MHz $B=30\text{mT}$		25°C	100°C	25°C	100°C	25°C	100°C			
800±25%	145	180	160	200	485	410	141	144	51	48	>280	4.9	22

* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)****Core loss (Typ.)****Temperature dependence of core loss (Typ.)**

Mn-Zn Ferrite for high-frequency power supplies **Material list of PC200**

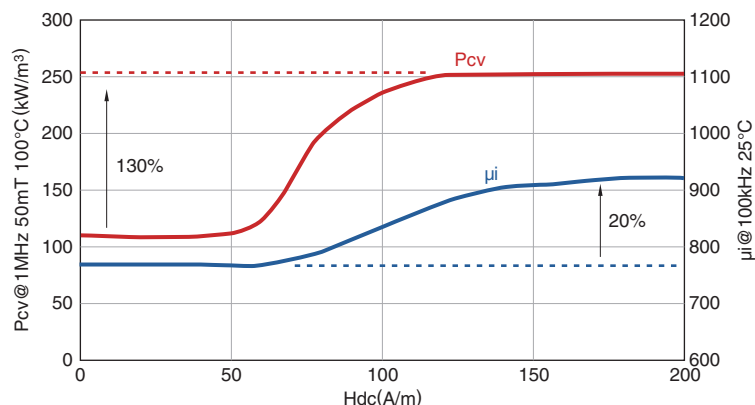
■ PRECAUTIONS FOR USE OF PC200 MATERIALS

The characteristics of the PC200 material change as follows depending on the application of a DC magnetic field such as a magnet or the magnitude of the applied magnetic field (H_{dc}) at the time of use.

The characteristics of the PC200 material are changed as follows in the reliability test.

PC200 material recommends use by a little low magnetic field of a special quality change.

□ Characteristic change due to applied magnetic field *



Characteristic change due to applied magnetic field	Change rate (Typ.)
Pcv at 1MHz, 50mT, 100°C	+130%
μi at 100kHz, 25°C	+20%

□ Reliability test results *

Characteristics change by thermal shock test	Change rate (Typ.)
Pcv at 1MHz, 50mT, 100°C	-18%
μi at 100kHz, 25°C	-7%

Test conditions: -40 ~ 125°C. 1000 cycles. Exposure time = 30 minutes

Characteristic changes due to high temperature storage tests	Change rate (Typ.)
Pcv at 1MHz, 50mT, 100°C	-32%
μi at 100kHz, 25°C	-14%

Test conditions: 125±2°C. Retention time = 2000 hours

Characteristic changes due to low temperature storage tests	Change rate (Typ.)
Pcv at 1MHz, 50mT, 100°C	±5% max.
μi at 100kHz, 25°C	±5% max.

Test conditions: -40±3°C. Retention time = 2000 hours

Characteristics change by humidity endurance tests	Change rate (Typ.)
Pcv at 1MHz, 50mT, 100°C	±5% max.
μi at 100kHz, 25°C	±5% max.

Test conditions: 60±2°C, 90-95%R.H.(Ⅲ) Retention time = 2000 hours

*Evaluated by toroidal shape Pcv: Core loss μi: Initial permeability

Mn-Zn **Material list of large size ferrite for high power**

■ MATERIAL CHARACTERISTICS

Material	Initial permeability* μ_i	Curie temperature T_c (°C)	Saturation magnetic flux density* B_s (mT) $H=1194\text{A/m}$		Remanent flux density* B_r (mT)	Coercive force* H_c (A/m)	Core loss* P_{cv} (kW/m ³) $B=200\text{mT}$			Electrical resistivity* ρ ($\Omega \cdot \text{m}$)	Approximate density* d_{app} (kg/m ³) $\times 10^3$	Thermal expansion coefficient* α (1/K) $\times 10^{-6}$	Thermal conductivity* κ (W/mK)	Specific heat* C_p (J/kg · K)	Bending strength* $\delta b3$ (N/m ²) $\times 10^7$	Young's modulus* E (N/m ²) $\times 10^{11}$	Magnetostriction* λ_s $\times 10^{-6}$
	23°C		23°C	100°C	23°C	23°C	25kHz 90°C	100kHz 100°C	100°C								
PE22	1800	>200	510	410	140	16	79	80	520	3.0	4.8	12	5	600	9	1.2	-0.6
PC40	2300	>200	500	380	125	15	64	70	420	6.5	4.8	12	5	600	9	1.2	-0.6

* Typ.

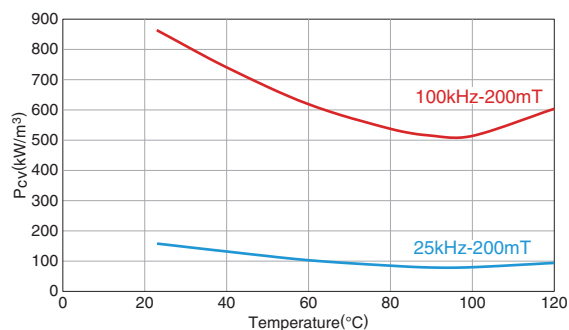
Mn-Zn Large size ferrite for high power **Material list of PE22**

■ MATERIAL CHARACTERISTICS

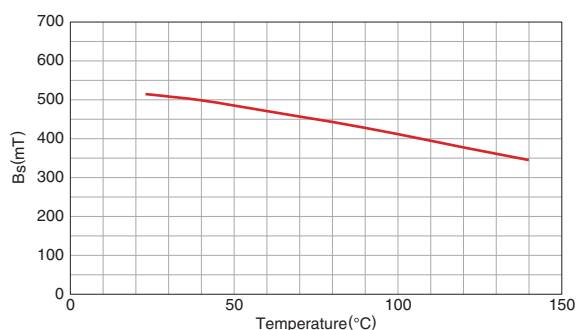
Initial permeability*	Curie temperature	Saturation magnetic flux density*		Remanent flux density*	Coercive force*	Core loss*			Electrical resistivity*	Approximate density*	Thermal expansion coefficient*	Thermal conductivity*	Specific heat*	Bending strength*	Young's modulus*	Magnetostriction*
μ_i	T_c (°C)	B_s (mT) H=1194A/m		B_r (mT)	H_c (A/m)	P_{cv} (kW/m ³) B=200mT			ρ ($\Omega \cdot m$)	d_{app} (kg/m ³) $\times 10^3$	α (1/K) $\times 10^{-6}$	κ (W/mK)	C_p (J/kg · K)	δb_3 (N/m ²) $\times 10^7$	E (N/m ²) $\times 10^{11}$	λ_s $\times 10^{-6}$
23°C		23°C	100°C	23°C	23°C	25kHz	90°C	100°C	100kHz							
1800	>200	510	410	140	16	79	80	520	3.0	4.8	12	5	600	9	1.2	-0.6

* Typ.

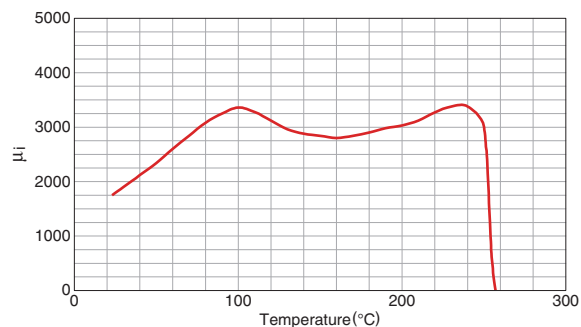
□ Core loss vs. temperature characteristics (Typ.)



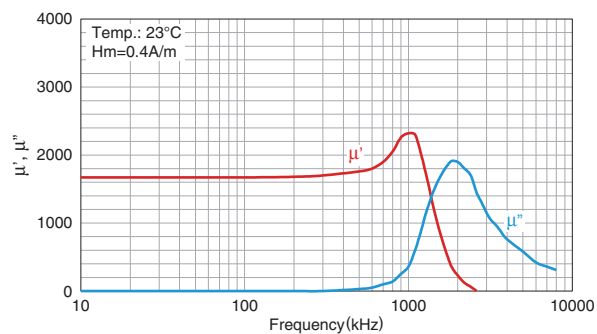
□ Saturation magnetic flux density vs. temperature characteristics (Typ.)



□ Initial magnetic permeability vs. temperature characteristics (Typ.)

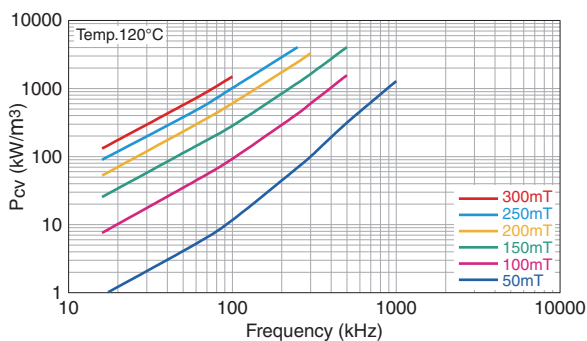
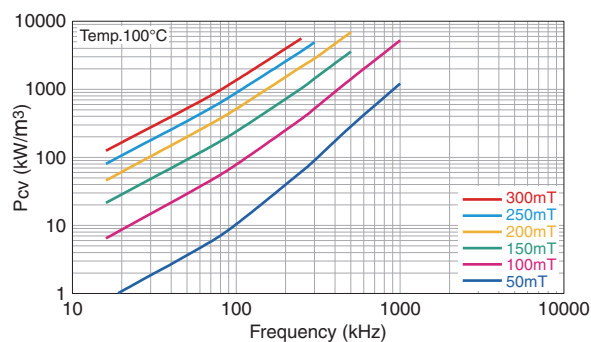
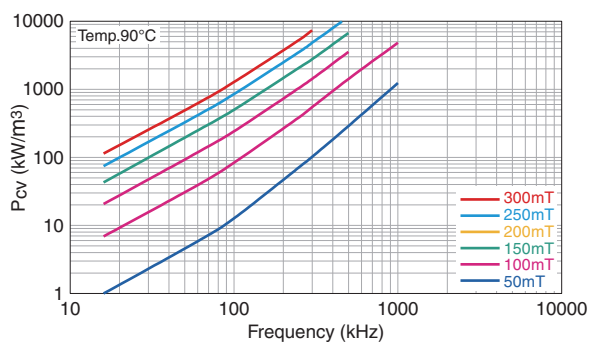
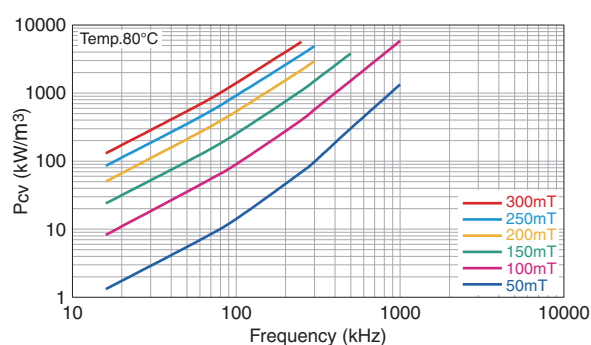
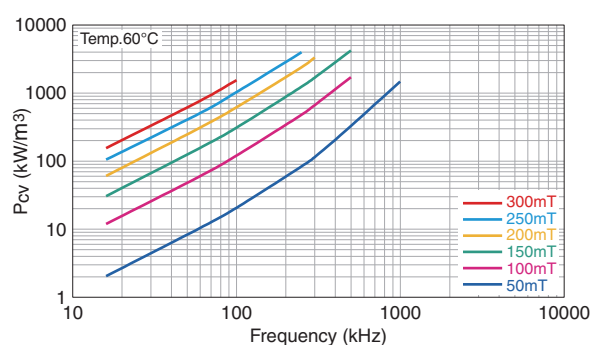
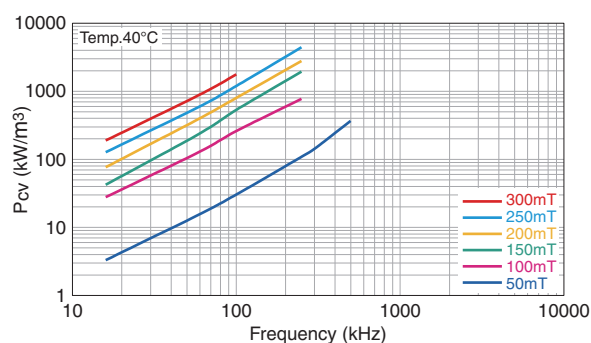
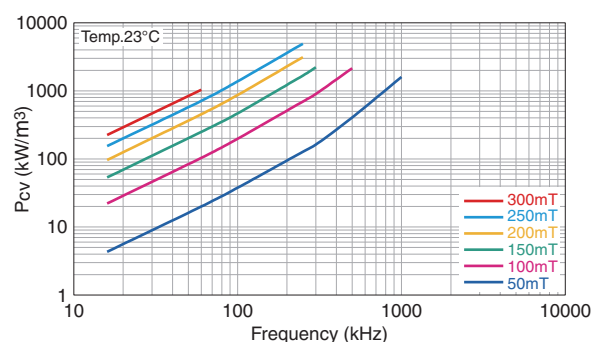


□ Magnetic permeability vs. frequency characteristics (Typ.)



Mn-Zn Large size ferrite for high power **Material list of PE22**

Core loss vs. frequency characteristics



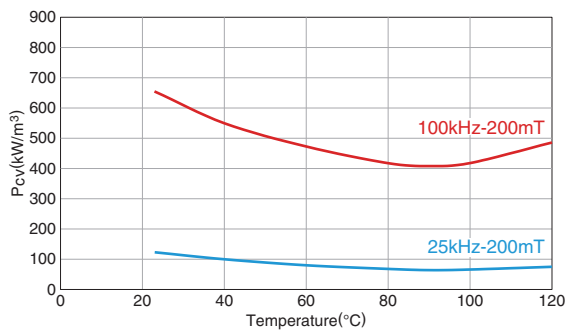
Mn-Zn Large size ferrite for high power **Material list of PC40**

■ MATERIAL CHARACTERISTICS

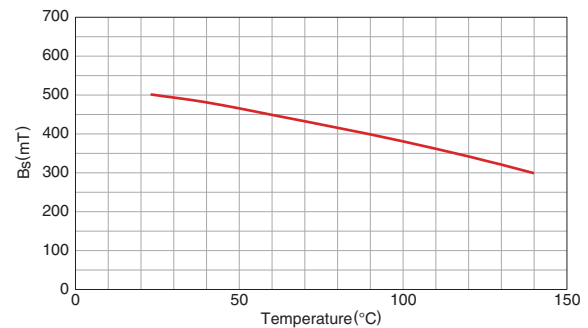
Initial permeability*	Curie temperature	Saturation magnetic flux density*		Remanent flux density*	Coercive force*	Core loss*			Electrical resistivity*	Approximate density*	Thermal expansion coefficient*	Thermal conductivity*	Specific heat*	Bending strength*	Young's modulus*	Magnetostriction*
μ_i	T_c (°C)	B_s (mT) H=1194A/m		B_r (mT)	H_c (A/m)	P_{cv} (kW/m ³) B=200mT			ρ ($\Omega \cdot m$)	d_{app} (kg/m ³) $\times 10^3$	α (1/K) $\times 10^{-6}$	κ (W/mK)	C_p (J/kg · K)	δb_3 (N/m ²) $\times 10^7$	E (N/m ²) $\times 10^{11}$	λ_s $\times 10^{-6}$
23°C		23°C	100°C	23°C	23°C	25kHz	90°C	100°C	100kHz							
2300	>200	500	380	125	15	64	70	420	6.5	4.8	12	5	600	9	1.2	-0.6

* Typ.

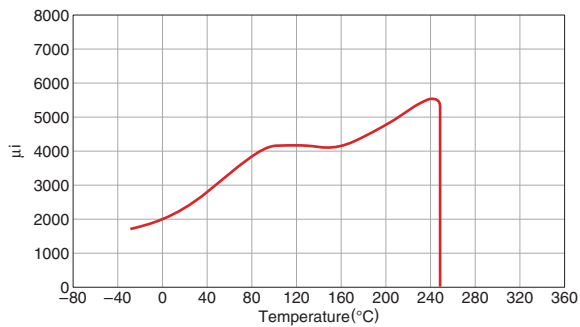
□ Core loss vs. temperature characteristics (Typ.)



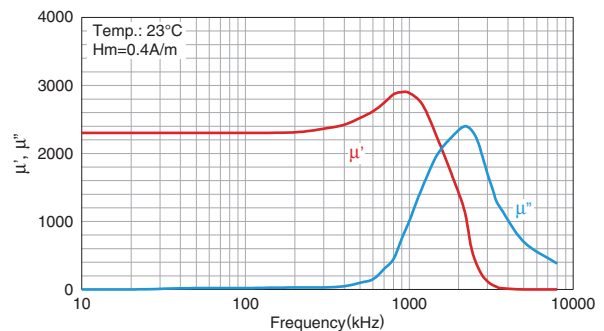
□ Saturation magnetic flux density vs. temperature characteristics (Typ.)



□ Initial magnetic permeability vs. temperature characteristics (Typ.)

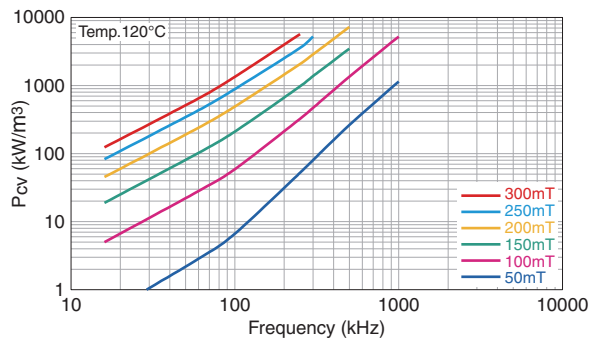
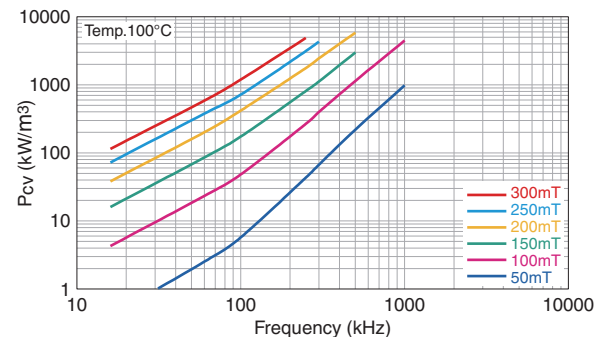
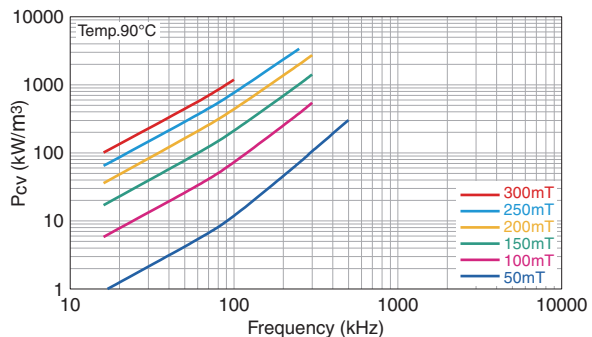
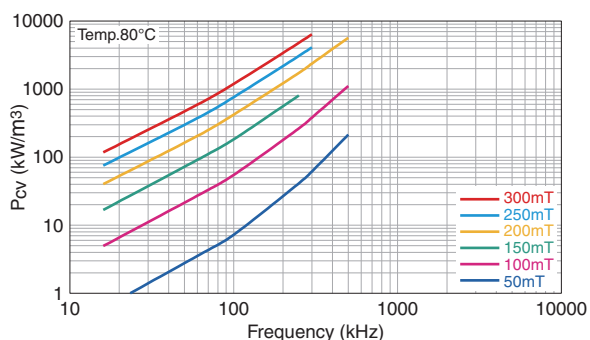
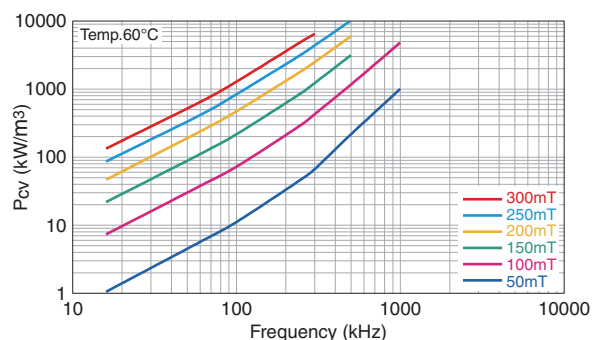
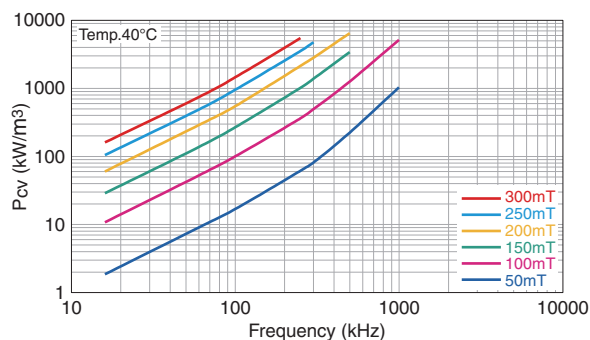
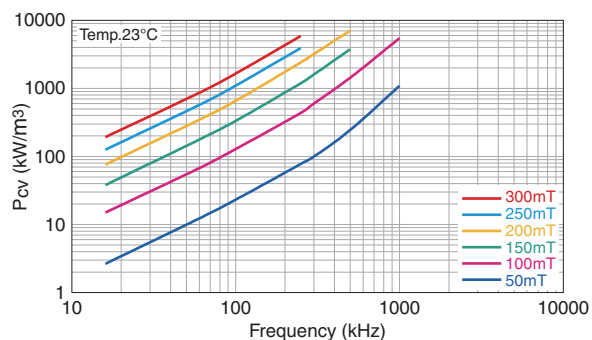


□ Magnetic permeability vs. frequency characteristics (Typ.)



Mn-Zn Large size ferrite for high power **Material list of PC40**

Core loss vs. frequency characteristics



Mn-Zn **Material list of ferrite core for telecommunication**

■ MATERIAL CHARACTERISTICS

Material	Initial permeability μ_i	Relative loss factor $\tan\delta/\mu_i$ $\times 10^{-6}$	Temperature factor of initial permeability $\alpha_{\mu i r}$ $\times 10^{-6}$ -30 to +20°C 0 to 20°C 20 to 70°C	Saturation magnetic flux density* B_s (mT) $H=1194\text{A/m}$ 25°C	Residual flux density* B_r (mT) 25°C	Coercive force* H_c (A/m) 25°C	Curie temperature T_c (°C)	Hysteresis material constant ηB $\frac{10^{-6}}{\text{mT}}$	Disaccommodation factor DF $\times 10^{-6}$	Density* d_b (kg/m ³) $\times 10^3$	Electrical resistivity* ρ_v ($\Omega \cdot \text{m}$)
H5A	3300 ^{+40%} _{-0%}	<2.5(10kHz) <10(100kHz)	-0.5 to 2.0 — -0.5 to 2.0	410	100	8.0	>130	<0.8	<3	4.8	1
H5B2	7500±25%	<6.5(10kHz)	0 to 1.8 — 0 to 1.8	420	40	5.6	>130	<1.0	<3	4.9	0.1
H5C2	10000±30%	<7.0(10kHz)	-0.5 to 1.5 — -0.5 to 1.5	400	90	7.2	>120	<1.4	<2	4.9	0.15
H5C3	15000±30%	<7.0(10kHz)	-0.5 to 1.5 — -0.5 to 1.5	360	105	4.4	>105	<0.5	<2	4.95	0.15
HP5	5000±20%	<3.5	— ±12.5% ±12.5%	400	65	7.2	>140	<0.4	<3	4.8	0.15

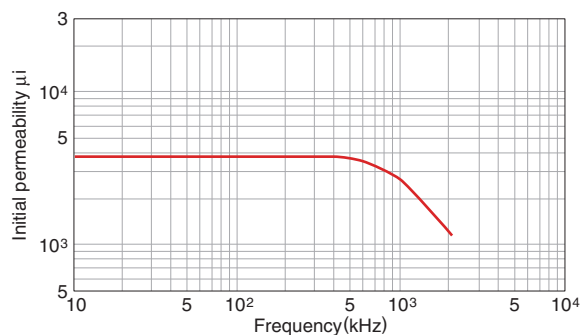
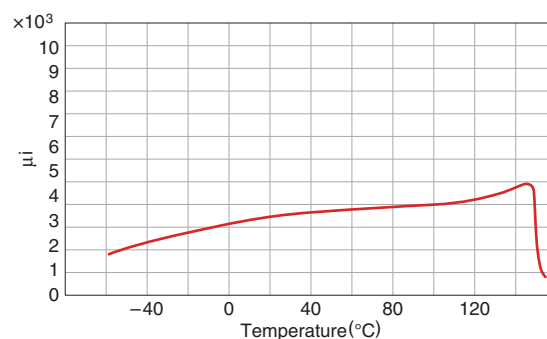
* Typ.

Mn-Zn Ferrite for telecommunication **Material list of H5A**

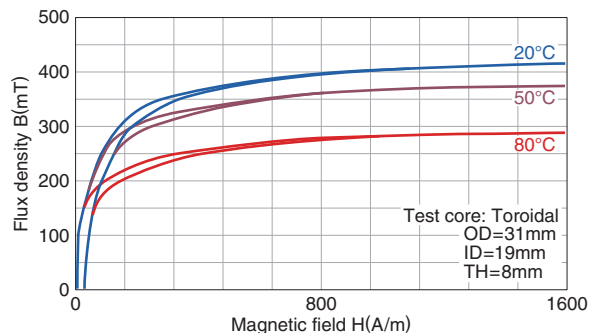
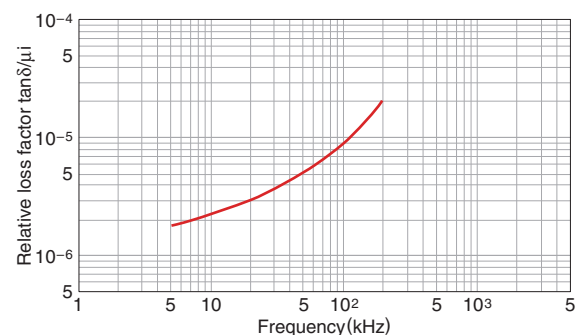
■ MATERIAL CHARACTERISTICS

Initial permeability	Relative loss factor	Temperature factor of initial permeability	Saturation magnetic flux density*	Residual flux density*	Coercive force*	Curie temperature	Hysteresis material constant	Disaccommodation factor	Density*	Electrical resistivity*
μ_i	$\tan\delta/\mu_i$ $\times 10^{-6}$	$\alpha_{\mu i r}$ $\times 10^{-6}$ -30 to +20°C 0 to 20°C 20 to 70°C	B_s (mT) H=1194A/m 25°C	B_r (mT) 25°C	H_c (A/m) 25°C	T_c (°C)	ηB $\frac{10^{-6}}{\text{mT}}$	DF $\times 10^{-6}$	db (kg/m ³) $\times 10^3$	ρ_v ($\Omega \cdot \text{m}$)
3300 ^{+40%} -0%	<2.5(10kHz) <10(100kHz)	-0.5 to 2.0 — -0.5 to 2.0	410	100	8.0	>130	<0.8	<3	4.8	1

* Typ.

□ μ_i frequency characteristics (Typ.)□ μ_i temperature characteristics (Typ.)

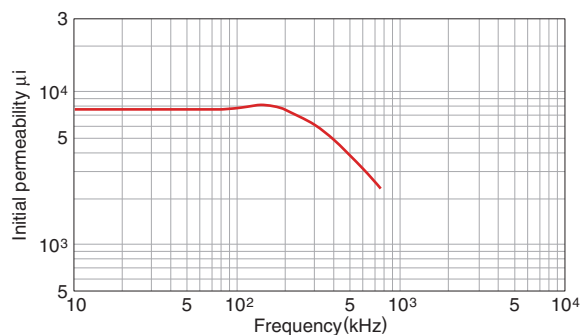
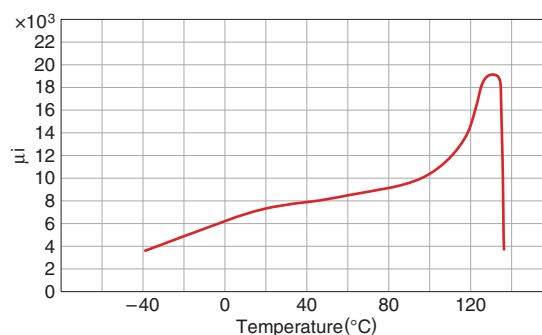
□ B-H temperature characteristics (Typ.)

□ $\tan\delta/\mu_i$ frequency characteristics (Typ.)

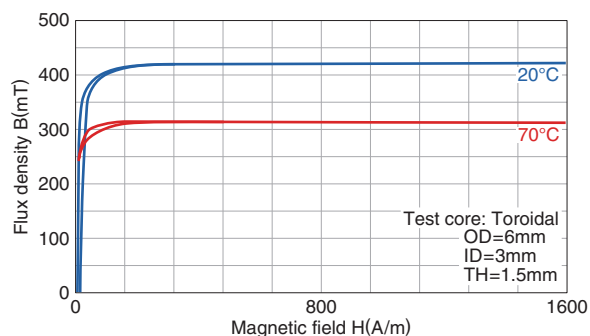
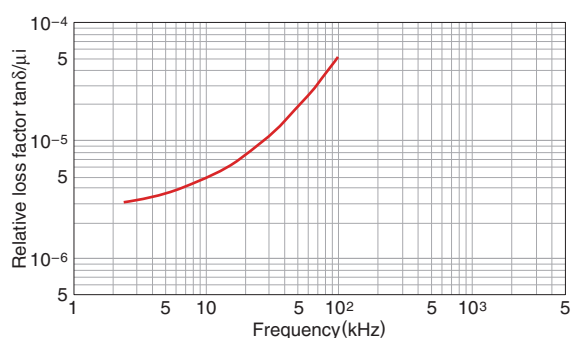
Mn-Zn Ferrite for telecommunication **Material list of H5B2****MATERIAL CHARACTERISTICS**

Initial permeability	Relative loss factor	Temperature factor of initial permeability	Saturation magnetic flux density*	Residual flux density*	Coercive force*	Curie temperature	Hysteresis material constant	Disaccommodation factor	Density*	Electrical resistivity*
μ_i	$\tan\delta/\mu_i$ $\times 10^{-6}$	$\alpha_{\mu i r}$ $\times 10^{-6}$ -30 to +20°C 0 to 20°C 20 to 70°C	B_s (mT) H=1194A/m 25°C	B_r (mT) 25°C	H_c (A/m) 25°C	T_c (°C)	ηB $\frac{10^{-6}}{\text{mT}}$	DF $\times 10^{-6}$	ρ_b (kg/m ³) $\times 10^3$	ρ_v ($\Omega \cdot \text{m}$)
7500±25%	<6.5(10kHz)	0 to 1.8 — 0 to 1.8	420	40	5.6	>130	<1.0	<3	4.9	0.1

* Typ.

□ μ_i frequency characteristics (Typ.)□ μ_i temperature characteristics (Typ.)

□ B-H temperature characteristics (Typ.)

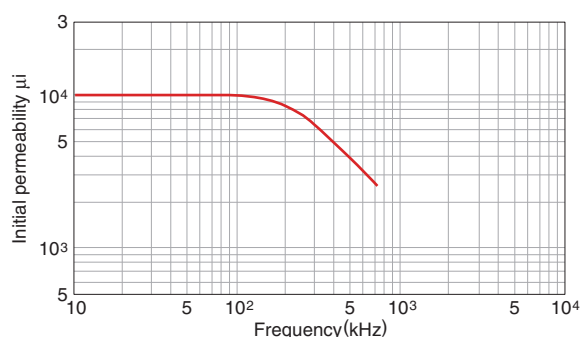
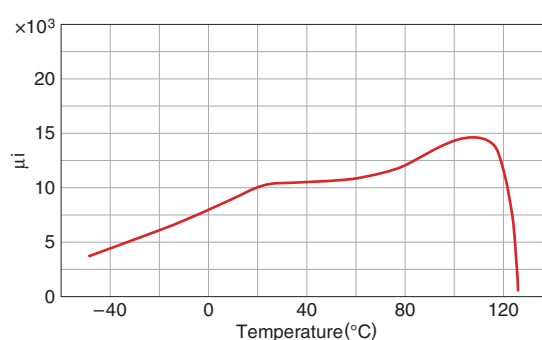
□ $\tan\delta/\mu_i$ frequency characteristics (Typ.)

Mn-Zn Ferrite for telecommunication **Material list of H5C2**

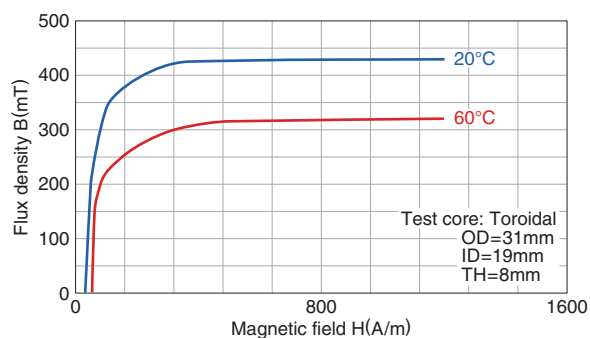
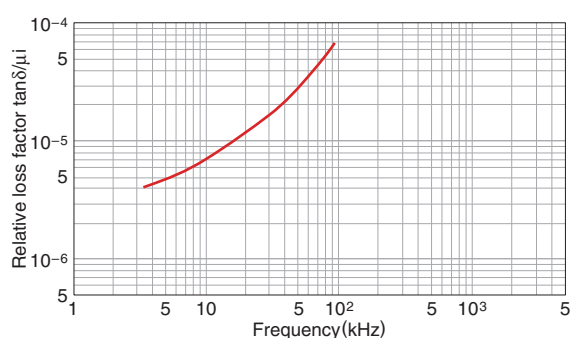
■ MATERIAL CHARACTERISTICS

Initial permeability	Relative loss factor	Temperature factor of initial permeability	Saturation magnetic flux density*	Residual flux density*	Coercive force*	Curie temperature	Hysteresis material constant	Disaccommodation factor	Density*	Electrical resistivity*
μ_i	$\tan\delta/\mu_i$ $\times 10^{-6}$	$\alpha_{\mu i r}$ $\times 10^{-6}$ -30 to +20°C 0 to 20°C 20 to 70°C	B_s (mT) H=1194A/m 25°C	B_r (mT) 25°C	H_c (A/m) 25°C	T_c (°C)	ηB $\frac{10^{-6}}{\text{mT}}$	DF $\times 10^{-6}$	db (kg/m ³) $\times 10^3$	ρ_v ($\Omega \cdot \text{m}$)
10000±30%	<7.0(10kHz)	-0.5 to 1.5 — -0.5 to 1.5	400	90	7.2	>120	<1.4	<2	4.9	0.15

* Typ.

□ μ_i frequency characteristics (Typ.)□ μ_i temperature characteristics (Typ.)

□ B-H temperature characteristics (Typ.)

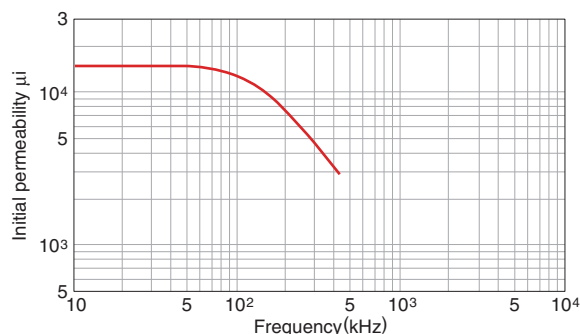
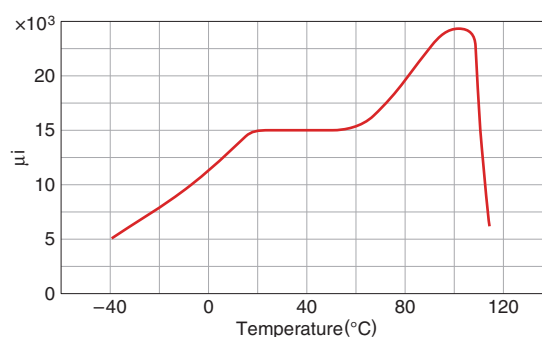
□ $\tan\delta/\mu_i$ frequency characteristics (Typ.)

Mn-Zn Ferrite for telecommunication **Material list of H5C3**

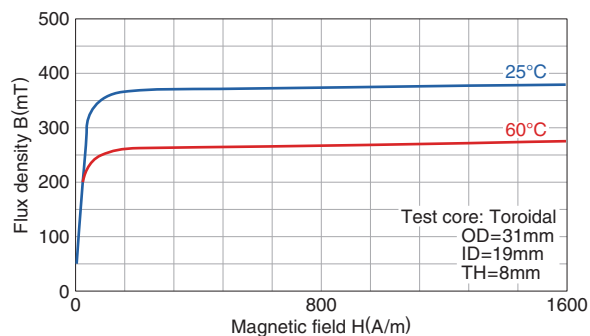
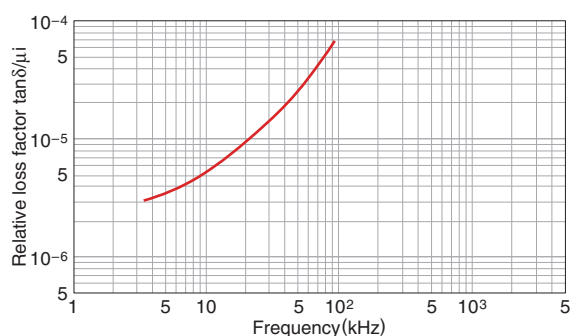
■ MATERIAL CHARACTERISTICS

Initial permeability	Relative loss factor	Temperature factor of initial permeability $\alpha_{\mu i}$	Saturation magnetic flux density*	Residual flux density*	Coercive force*	Curie temperature	Hysteresis material constant	Disaccommodation factor	Density*	Electrical resistivity*
μi	$\tan\delta/\mu i$ $\times 10^{-6}$	$\times 10^{-6}$ -30 to +20°C 0 to 20°C 20 to 70°C	B _s (mT) H=1194A/m 25°C	B _r (mT) 25°C	H _c (A/m) 25°C	T _c (°C)	ηB $\frac{10^{-6}}{\text{mT}}$	DF $\times 10^{-6}$	db (kg/m ³) $\times 10^3$	ρ_v ($\Omega \cdot \text{m}$)
15000±30%	<7.0(10kHz)	-0.5 to 1.5 — -0.5 to 1.5	360	105	4.4	>105	<0.5	<2	4.95	0.15

* Typ.

□ μi frequency characteristics (Typ.)□ μi temperature characteristics (Typ.)

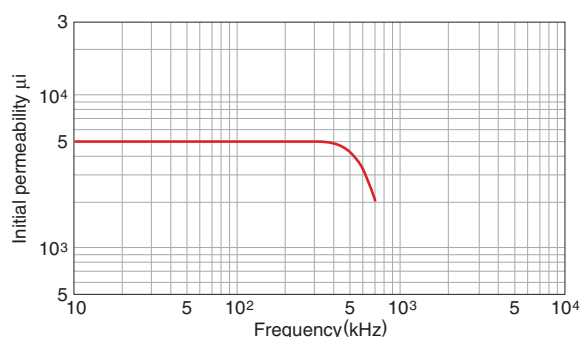
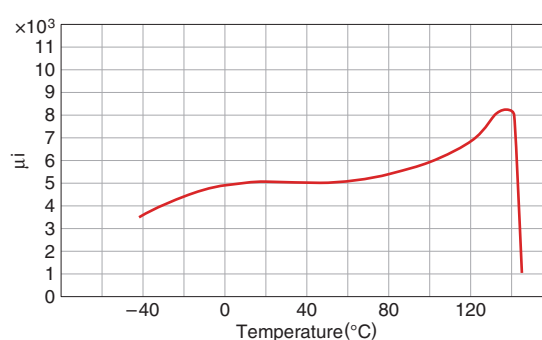
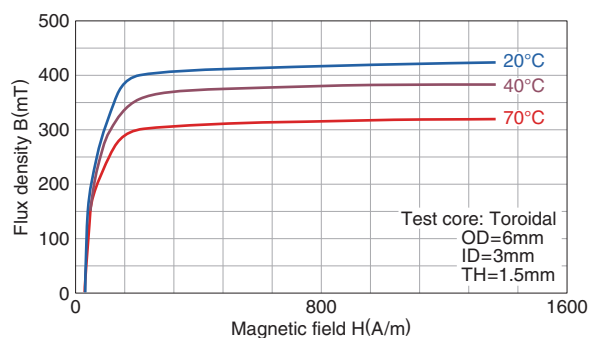
□ B-H temperature characteristics (Typ.)

□ $\tan\delta/\mu i$ frequency characteristics (Typ.)

Mn-Zn Ferrite for telecommunication **Material list of HP5****MATERIAL CHARACTERISTICS**

Initial permeability	Relative loss factor	Temperature factor of initial permeability	Saturation magnetic flux density*	Residual flux density*	Coercive force*	Curie temperature	Hysteresis material constant	Disaccommodation factor	Density*	Electrical resistivity*
μ_i	$\tan\delta/\mu_i$ $\times 10^{-6}$	$\alpha_{\mu i r}$ $\times 10^{-6}$ -30 to +20°C 0 to 20°C 20 to 70°C	B_s (mT) H=1194A/m 25°C	B_r (mT) 25°C	H_c (A/m) 25°C	T_c (°C)	ηB $\frac{10^{-6}}{\text{mT}}$	DF $\times 10^{-6}$	db (kg/m ³) $\times 10^3$	ρ_v ($\Omega \cdot \text{m}$)
5000 $\pm$ 20%	<3.5	— $\pm 12.5\%$ $\pm 12.5\%$	400	65	7.2	>140	<0.4	<3	4.8	0.15

* Typ.

 μ_i frequency characteristics (Typ.) **μ_i temperature characteristics (Typ.)****B-H temperature characteristics (Typ.)** **$\tan\delta/\mu_i$ frequency characteristics (Typ.)**