CAR AUDIO / NAVIGATION CHOKES

PRODUCT SUMMARY

Description

NC series amorphous choke cores are the ideal solutions for implementing noise suppression chokes that is generating from alternator, engine and ignition in car audio and car navigation systems. The NC series choke are manufactured with thin gauge iron–based amorphous alloy. This thin gauge ribbon offers a better frequency characteristics up to 1MHz than conventional materials like EI type silicon steel. Overall the audible frequency ranges, the inductance show a nearly constant. This type of iron–based amorphous alloys offer several properties and / or property combinations that are not parallel by other competing material such as silicon steel.

The geometrical shape of toroid offers a lowest spatial magnetic leakage flux densities around the choke core. Therefore, it can be easily mounted on car audio and / or car navigation circuit boards since these type of amorphous chokes are available in pin–type configurations. When the audio system is under the state of low output power and low sound density, the inductance of the choke is too low, the signal–to–noise ratio goes small. In this case it can be easily hear the unwanted sound noise form the system.

SHINHOM new launched NC series chokes shows high inductances even at high DC biasing current. So, it can be offer a good design solutions to eliminate the alternator noise in car audio and car navigation systems. Significant component size reduction is achieved using NC series noise suppression choke for automobile audio / navigation systems.

Feature

- Toroidal shape without gap, therefore it have a lowest magnetic leakage flux density.
- Designable smaller / lighter component size /weight than EI choke core
- Designable in pin–type SMD components
- Higher inductance at medium / high alternator speed
- Optimized S/N ratio in all power ranges
- Superior frequency characteristics than EI choke
- Offer a good solution for high frequency harmonic noises
- Higher impulse attenuation properties
- Low DC resistance
- UL94–V0 compliant & UL746–B compliant

Application

- Noise preventive use for alternator superposed to automobile mounting equipment such as car audio / navigation system
- LC filter choke for reduction of engine noise
- Normal mode choke for anti–EMI measurement
- Radio power system
- Smoothing chokes for switch–mode power supplies
- Impulse noise preventive use in DC power line of automobile
- Impulse noise preventive use in general purpose power supplies

CAR AUDIO/NAVIGATION CHOKES

STANDARD CORE DIMENSIONS & SPECIFICATIONS

Part No.	Finished Core(mm) ①			L_{eff} ②	A_{eff} ③	V_{eff} ④	W_a ⑤	A_L ⑥	μ ⑦
	OD	ID	HT	(mm)	(mm^2)	(mm^3)	(mm^2)	(μH)	
NC–11S–N	12.4	5.5	6.7	27.8	8.5	240	24	0.142	370
NC–12S–N	14.0	6.6	6.3	31.0	8.1	255	34	0.092	300
NC–15B–N	16.7	7.7	6.6	36.9	13.5	509	47	0.118	260
NC–16C–N＊	17.2	6.8	4.2	36.3	10.2	385	36	0.250	740
NC–18B–N	20.0	8.7	12.0	44.7	31.5	1435	59	0.280	320
NC–18C–N	19.7	9.4	9.5	44.7	25.2	1148	69	0.602	850
NC–18A–N＊＊	20.0	8.7	12.0	44.7	31.5	1435	59	0.785	890
NC–19B–N＊＊＊	20.8	8.3	6.6	44.1	16.6	892	54	0.340	630
NC–20S–N	22.0	10.7	11.8	49.2	36.0	1810	90	0.960	1050

Notes:

1) The finished core dimensions shows a nominal ones. Tolerance is ±0.2mm.
2) Nominal values of magnetic path length.
3) Nominal values of cross–section area.
4) Nominal values volume.
5) Nominal values of window area.
6) Typical value. Tolerance is ±25% of its initial A_L value of each. Initial nominal inductance at 1kHz, 1Vose and room temperature.

＊NC–16C–N have a tolerance of ±39% and –25% of its typical A_L value.

＊＊NC–18A–N have a tolerance of +30% and –20% of its typical A_L value.

＊＊＊NC–19B–N have a tolerance of +35% and –20% of its typical A_L value.

7) Typical permeability of each part number. The permeability can change to improve the characteristics without notice.

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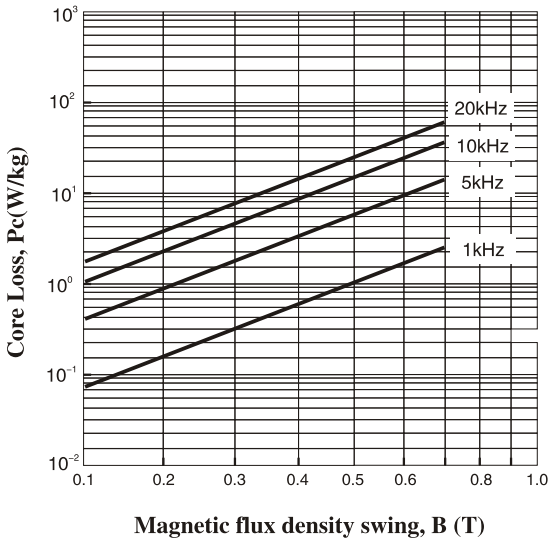
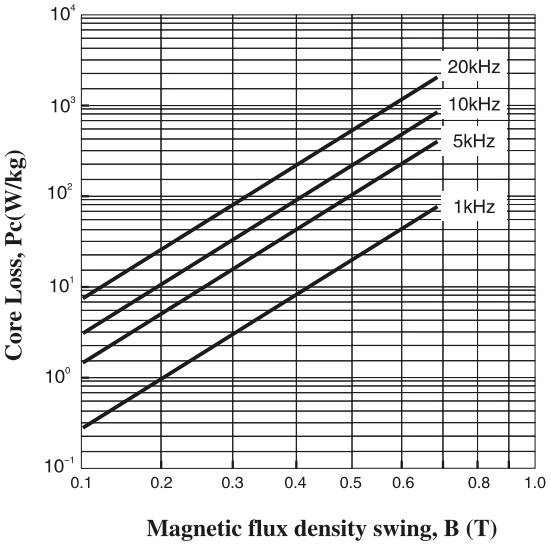
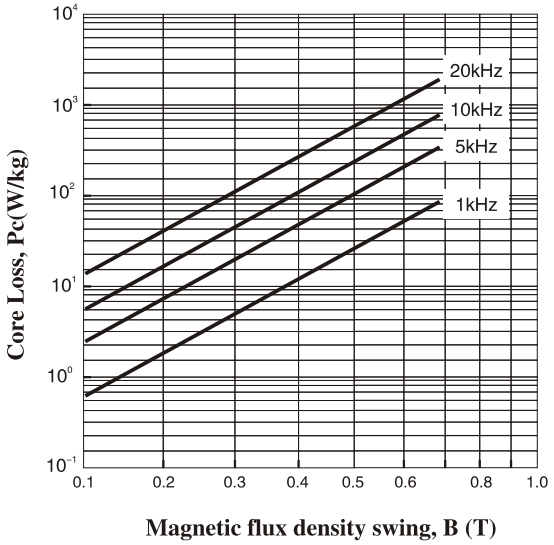
CAR AUDIO / NAVIGATION CHOKES

TYPICAL HYSTERESIS LOSS WITH PERMEABILITY, Pc(f, μ)







Notes:

＊Hysteresis losses are measured at room temperature, 25℃ ± 3℃.

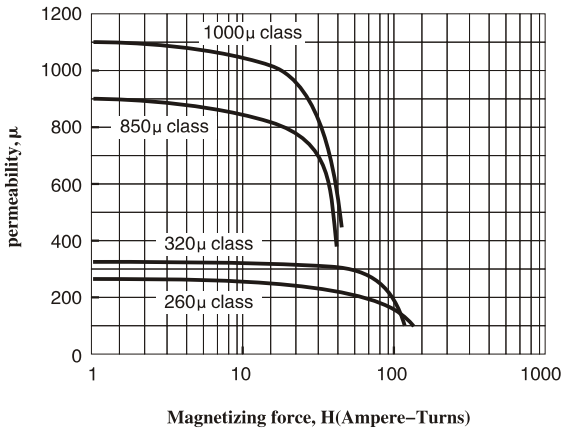
＊＊These curves were determined from AC magnetizing frequency with sinusoidal wavefroms.

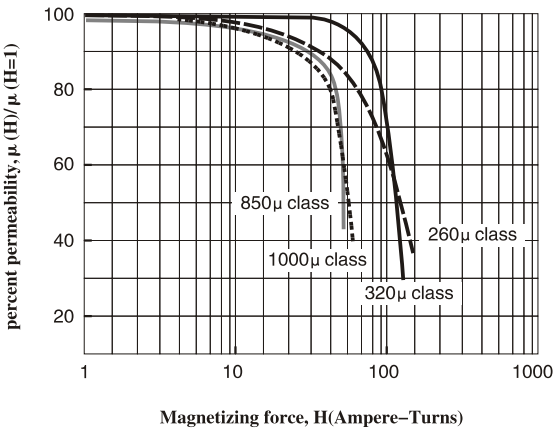
＊＊＊Products generally do not fully comply with material characteristics: deviations may occur due to shape and size factor even if the core has the same class of permeability.

CAR AUDIO/NAVIGATION CHOKES

TYPICAL MAGNETIC & ELECTRIC CHARACTERISTICS

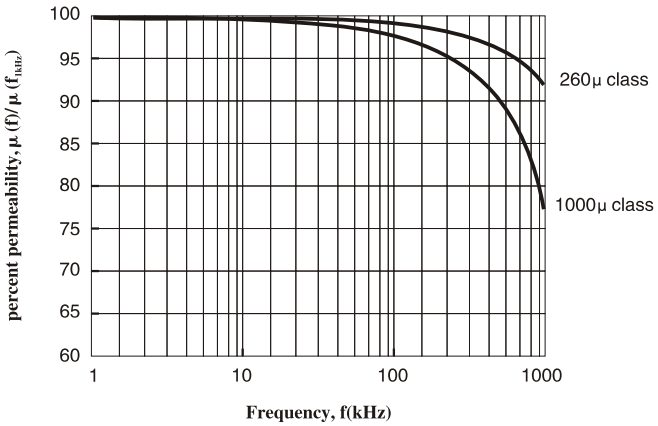
Typical DC Bias characteristics of NC series choke with permeability





The deviations of DC bias characteristics, even if the permeability has the same, might be occur due to shape and size factor.

Typical percent permeability of 260 μ & 1000 μ class choke cores with frequency



The roll–off of percent permeability of 260 μ /1100 μ classes at 1MHz are around 10 / 20 of its 1kHz value, respectively.

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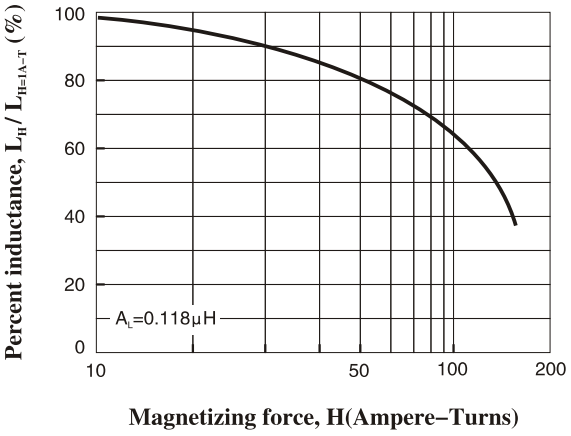
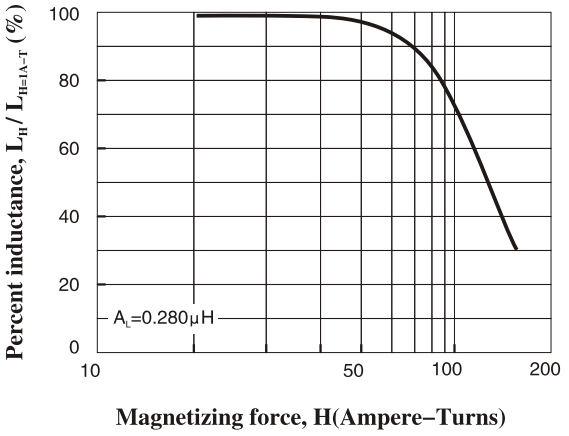
CAR AUDIO / NAVIGATION CHOKES

TYPICAL DC BIAS CHARACTERISTICS OF NC SERIES@1kHz

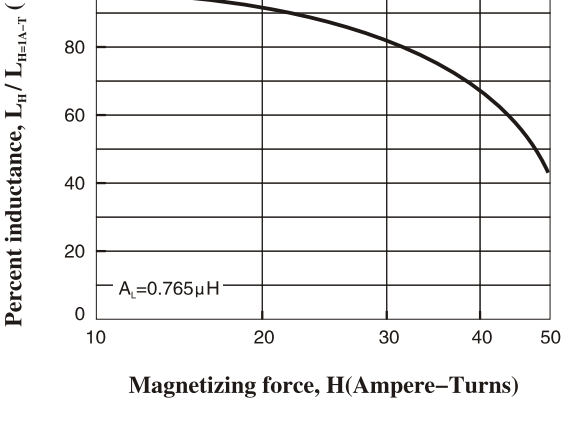
NC–15B–N



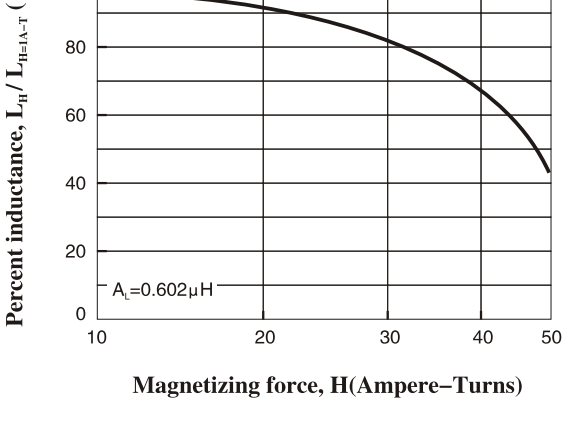
NC–18B–N



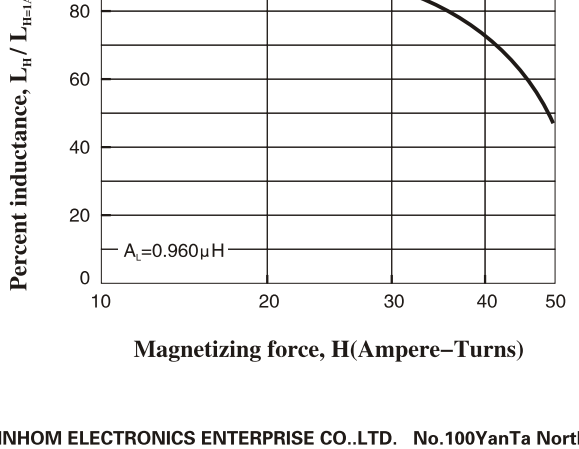
NC–18A–N



NC–18C–N



NC–20S–N



LOW PROFILE CHOKES

PRODUCT SUMMARY

Description

C series low–power inductor chokes are the ideal solutions for implementing miniature DC/DC converter for mobile products such as PDA, mobile phone, notebook computer and adapter, etc. Furthermore, it offers a good solutions in Automobile electronic applications.

C–series made of iron–based amorphous alloys offer a better DC bias properties with lower winding turns that are not paralleled by other competing materials such as ferrites, iron–powder, sendust and permeability.

SHINHOM launched a new class of low–profile choke series with easy winding and more strengthened in mechanical during wound. The C–series made by iron based amorphous alloys with high saturation flux density of around 1.5T.

SHINHOM new revised economical up–to–date technologies on low–profile C–series manufacturing are based on our precise and years of experience in production technology. SHINHOM are pioneering new levels of performance by offering engineers new acceptable low–profile power line choke cores and low–profile noise filtering applications with excellent quality levels than ever before.

Based on customers requirement, SHINHOM can satisfy by good design solutions through our value added technical and manufacturing services.

Feature

- Low–profile SMD and THD type is available
- Miniature
- Magnetic shield type
- Good EMI performances
- Suitable for high density mounting
- Low power consumption
- High withstanding voltage
- High mechanical strength
- Easy to wound

Application

- DC/DC converters in PDA system
- AC/DC converters in adapter for mobile products
- DC/DC converters in mobile phone
- Output inductors for smaller size of DC/DC converter
- DC/DC converters for mobile CPU operation
- Single output SMPS for DC/DC converter module
- Pulse frequency modulation (PFM) integrated circuit below 10W class
- Pulse width modulation (PWM) integrated circuit above 10W class
- Battery charger
- Miniature type of automobile circuit applications

LOW PROFILE CHOKE

STANDARD CORE DIMENSIONS & SPECIFICATIONS

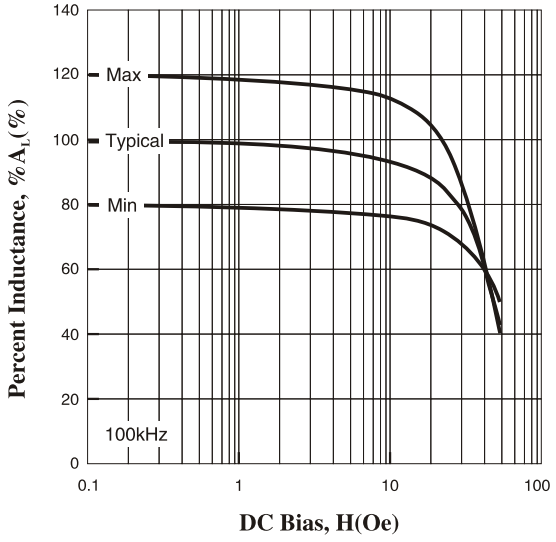
C series Low Profile Choke

Part No.	Finished Core(mm) ①			L_{eff} ②	A_{eff} ③	V_{eff} ④	W_a ⑤	A_L ⑥	μ ⑦
	OD	ID	HT	(mm)	(mm^2)	(mm^3)	(mm^2)	(μH)	
C0501	4.7	1.9	1.3	10.0	0.85	8.8	2.8	0.026	245
C0602	6.3	2.7	2.3	13.6	2.55	36.0	5.7	0.058	245
C0715	6.7	2.7	1.7	14.1	2.17	320	5.7	0.047	245
C0725	6.8	2.6	2.9	14.1	3.61	53.3	5.3	0.079	245
C0815	8.4	3.7	1.8	18.1	2.55	48.1	10.8	0.043	245
C0830	8.4	3.6	3.4	18.1	5.10	96.1	10.2	0.087	245
C1020	10.4	4.6	2.3	22.7	4.25	100.1	16.6	0.058	245
C1030	10.4	4.6	3.2	22.7	6.38	150.2	16.6	0.087	245

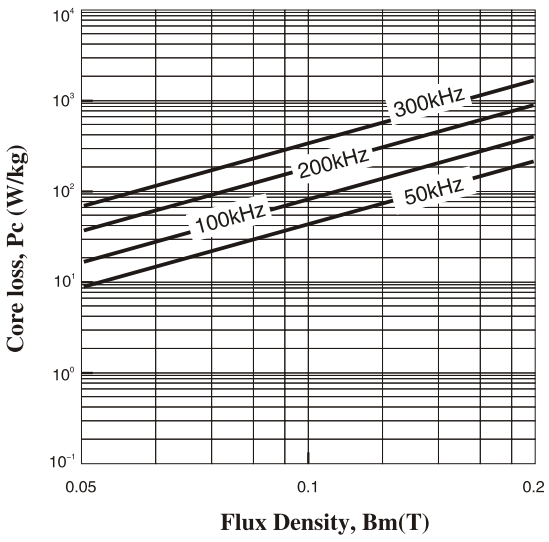
Notes:
1) The finished core dimensions shows a typical ones. Tolerance of the dimensions will be less than 0.2mm.
2) Nominal values of magnetic path lenth.
3) Nominal values of cross–section area.
4) Nominal values of volume.
5) Nominal values of window area.
6) Typical values. Tolerance is ±20% of its initial A_L values of each. Initial nominal inductance at 100kHz, 0.1V_{osc} and room temperature.
7) Typical permeability.

TYPICAL MAGNETIC CHARACTERISTICS

Typical DC bias characteristics



Typical core losses



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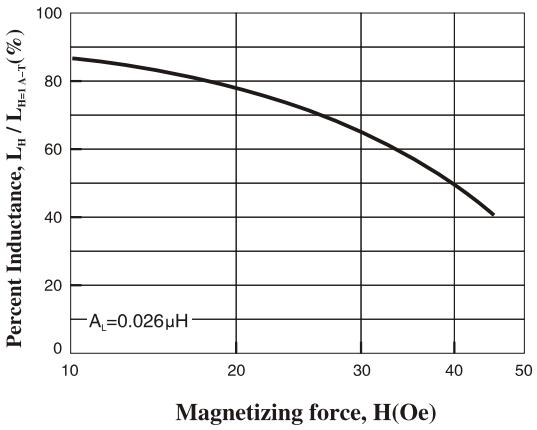
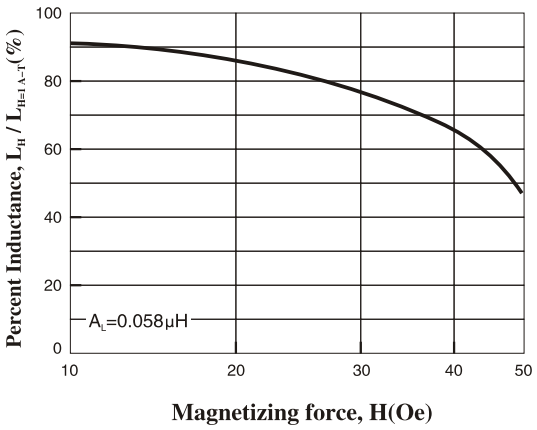
LOW PROFILE CHOKE

TYPICAL DC BIAS CHARACTERISTICS @100kHz

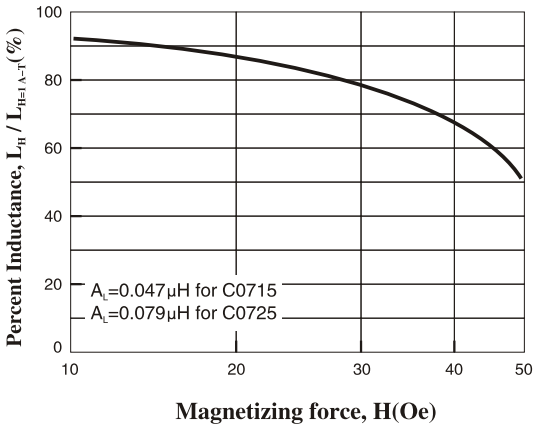
C0510



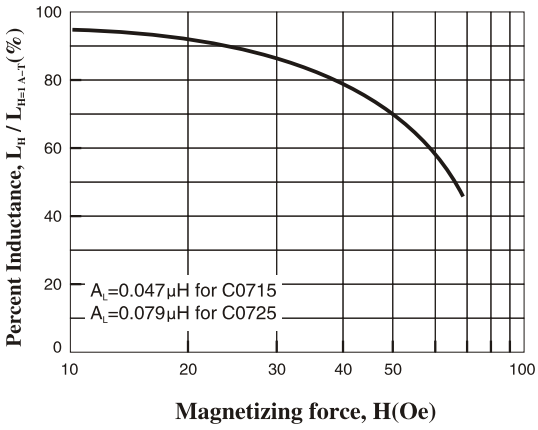
C0620



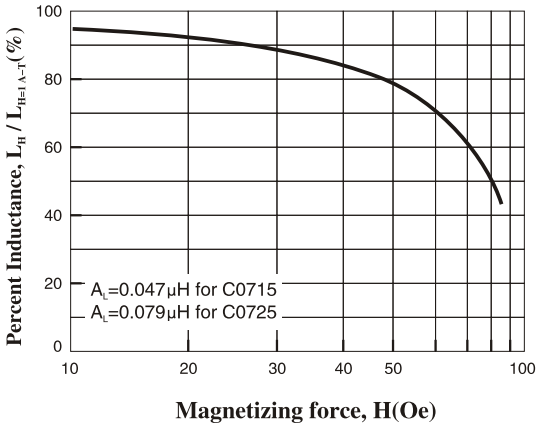
C0715 & C0725



C0815 & C0830



C1020 & C1030



PFC & OUTPUT CHOKE CORES

PRODUCT SUMMARY

Description

NC series amorphous choke cores are made of thin iron–based amorphous alloy. This type of iron–based amorphous alloys offer several properties that are not paralleled by other competing materials such as ferrites, iron–powder, sendust and permalloys.

The iron–based amorphous alloy shows a high permeability, a high saturation induction, low losses and high curie temperature distinct from the operating one.

However, past days, most engineers in switch–mode power supply design could not use the iron–based amorphous choke cores because of following two critical reasons: one is rather expensive and the other is higher temperature rise when compared superpermalloy and sendusts. Since the above mentioned reasons, iron–based amorphous choke cores have been used in switch–mode power supply for the special purpose for the last few decades.

Now, with the introduction of our new GO–100 series choke core product range, SHINHOM offer the real performance leader. Our expertise in iron–based amorphous choke core manufacturing system has enabled us to significantly reduce achieved ones. Furthermore, now it is a available to use amorphous choke cores in switch–mode power supply with a competitive price than other industry standard power cores like sendust.

Feature

- High saturation flux density of 1.56T.
- Significant size reduction
- Extended bias characteristics can store more higher energy capacity
- Lower hysteresis losses
- Higher efficiency
- Fewer winding turns result in lower copper losses
- UL94–V0 compliant

Application

- Smoothing chokes for power supplies
- Multiple–winding coupled chokes for cross–regulation in switch–mode power supplies
- PFC chokes for general purpose industrial power supplies
- Output chokes for general purpose industrial power supplies
- PFC chokes for telecommunication power supply rectifiers
- DC / DC converter chokes
- PFC chokes for networking equipment power supplies
- Output chokes for general purpose industrial power supplies
- Differential input chokes
- Flyback transformers

PFC & OUTPUT CHOKE CORES

STANDARD CORE DIMENSIONS & SPECIFICATIONS

Dimension & Normalized inductance, A_L, of GO–50, GO–100 series choke cores

GO–50 series

Part No.	Core Dimensions(mm)			Case Dimensions(mm)①			L_{eff} ②	A_{eff} ③	V_{eff} ④	A_L ⑤	DCB⑥	μ_e⑦
	OD	ID	HT	OD	ID	HT	(cm)	(cm^2)	(cm^3)	(μH)	(AT)	
GO50–2008	20.0	12.0	8.0	22.5	09.7	11.0	5.02	0.24	1.2048	0.11	180	180
GO50–2610	26.0	16.0	10.0	30.2	14.3	13.5	6.59	0.38	2.5042	0.13	240	180
GO50–3210	32.0	20.0	10.0	34.5	17.5	13.5	8.16	0.45	3.6720	0.14	300	200
GO50–4010	40.0	25.0	10.0	45.0	23.0	13.5	10.21	0.56	5.7176	0.13	360	190
GO50–4013	40.0	25.0	12.5	45.0	23.0	16.0	10.21	0.70	7.1470	0.15	360	175
GO50–4015	40.0	25.0	15.0	45.0	23.0	19.0	10.21	0.84	8.5764	0.20	360	195
GO50–5015	50.0	32.0	15.0	55.0	29.0	18.0	12.87	1.01	12.9987	0.20	460	200
GO50–5920	59.0	40.0	20.0	63.5	37.0	24.0	15.54	1.43	22.2222	0.22	600	190

GO–100 series

Part No.	Core Dimensions(mm)			Case Dimensions(mm)①			L_{eff} ②	A_{eff} ③	V_{eff} ④	A_L ⑤	DCB⑥	μ_e⑦
	OD	ID	HT	OD	ID	HT	(cm)	(cm^2)	(cm^3)	(μH)	(AT)	
GO100–2610	26.0	16.0	10.0	30.2	14.3	13.5	6.59	0.38	2.5042	0.060	620	80
GO100–3210	32.0	20.0	10.0	34.5	17.5	13.5	8.16	0.45	3.6720	0.070	650	100
GO100–3710	37.0	20.0	18.0	39.0	18.0	19.7	8.95	1.15	10.2925	0.095	700	60
GO100–4012	40.0	25.0	12.5	45.0	23.0	16.0	10.21	0.74	7.5554	0.080	800	90
GO100–4015	40.0	25.0	15.0	45.0	23.0	19.0	10.21	0.84	8.5764	0.095	810	92
GO100–5015	50.0	32.0	15.0	55.0	29.0	18.0	12.87	1.01	14.1570	0.090	1030	90
GO100–5920	59.0	40.0	20.0	63.5	37.0	24.0	15.54	1.43	22.2222	0.100	1250	90
GO100–6420	64.0	40.0	20.0	69.0	37.0	24.0	16.33	1.43	23.3519	0.120	1300	110
GO100–10020	100.0	60.0	20.0	103.0	57.0	24.0	25.12	1.43	35.9216	0.140	2000	200

Notes:

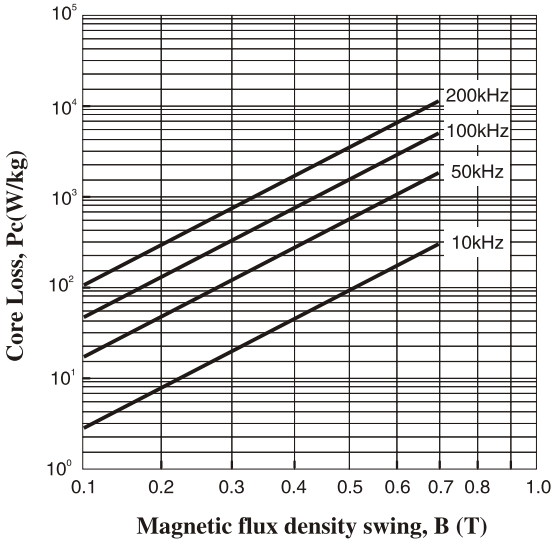
1) The finished core dimensions shows a typical ones. Tolerance is ± 0.2mm.
2) Normal values of magnetic path length.
3) Normal values of cross–section area.
4) Normal values of volume.
5) A_L value with its tolerances of ± 20%. All A_L values are measured at 100kHz with the oscillation voltage of 1Vosc.
6) DCB value: rated I_{DC}(A) × N(turns) at A_L value down low 80%.
7) Typical permeability(μ_e) of each part number. The permeability can change to improve the characteristic without notice.

PFC & OUTPUT CHOKE CORES

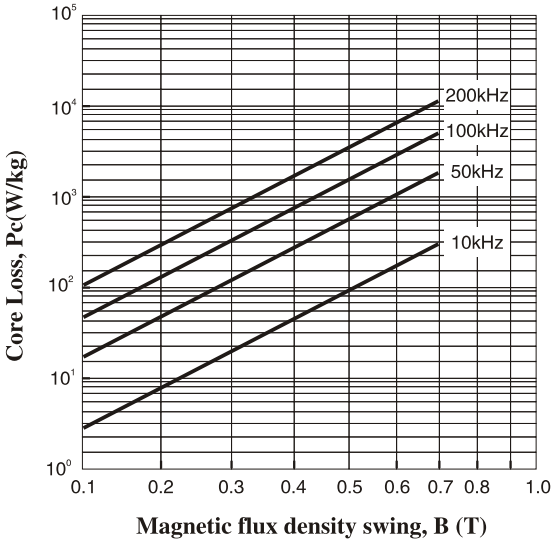
TYPICAL MAGNETIC CHARACTERISTICS

Typical hysteresis losses with permeability, Pc(f, μ)

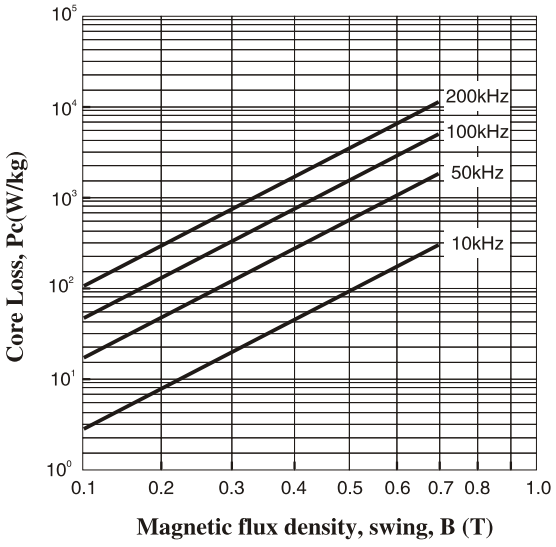
Permeability: 300 μ class



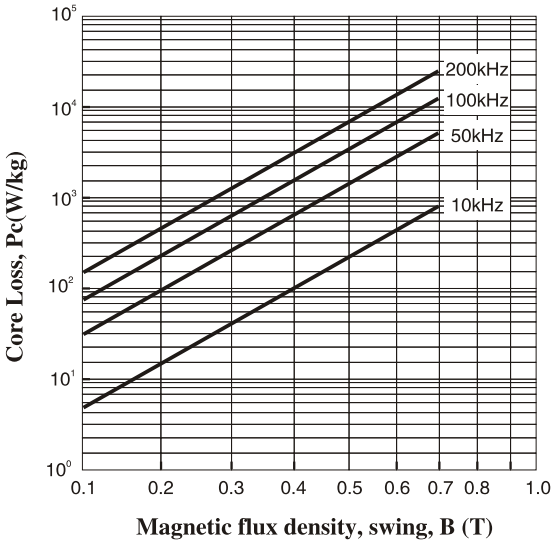
Permeability: 245 μ class



Permeability: 200 μ class



Permeability: 180 μ class



Notes:

＊Hysteresis losses are measured at room temperature, 25℃ ± 3℃.

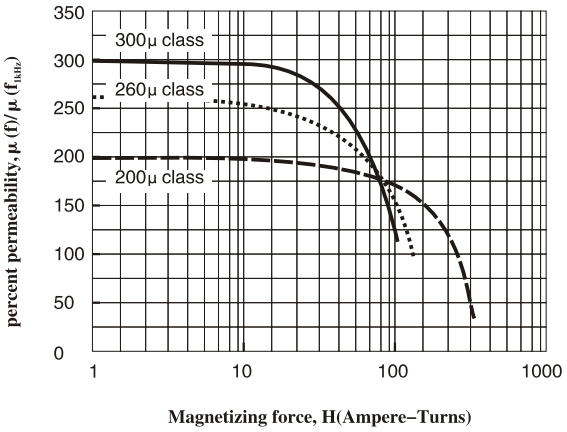
＊＊These curves were determined from AC magnetizing frequency: use the half the actual flux swing in AC to determine core loss for unidirectional application in SMPS.

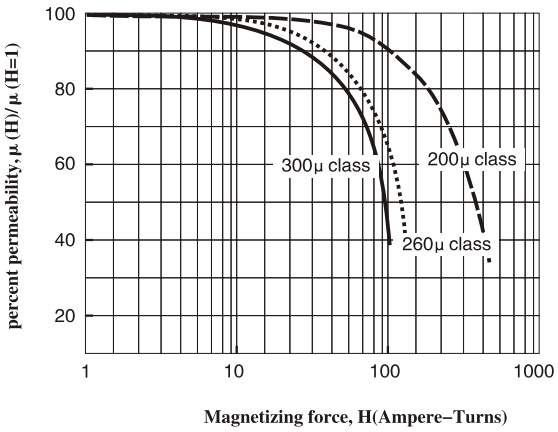
＊＊＊Products generally do not fully comply with material characteristics: deviations may occur due to shape and size factor even if the core has the same class of permeability.

PFC & OUTPUT CHOKE CORES

TYPICAL MAGNETIC CHARACTERISTICS

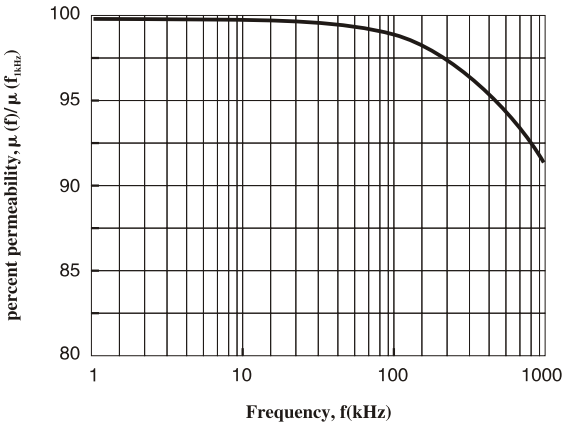
Typical DC Bias characteristics of GO–100 series choke with permeability





＊The deviations of DC bias characteristics, even if the permeability has same, might be occur due to shape and size factor.

Typical percent permeability with frequency



＊The roll–off percent permeability at 1MHz is within 10% of its 1kHz value.