Magnetic Cores Made of Amorphous Alloys

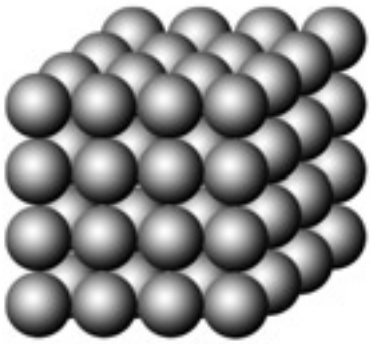
Amorphous alloys are produced by rapid solidification technology of molten metal at cooling rates of about a million degrees centigrade per second. During this step the metal is rapidly quenched as a ribbon with liquid-like internal structure.

The good soft magnetic properties of amorphous alloys principally arise from the homogeneous and isotropic amorphous structure. As amorphous alloys have evolved into useful applications, more development have followed.

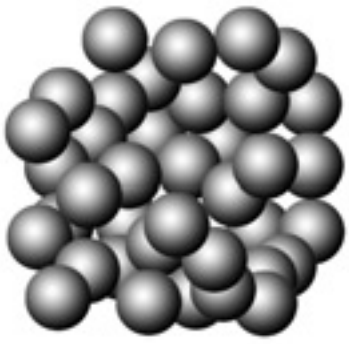
The main constituents for electromagnetic applications are Fe - and Co - based amorphous alloys. More recently, the nanocrystalline materials are also used in all the electronic areas. Various magnetic properties such as permeability, coercive force field, rectangular ratio and so on could be obtained by suitable heat treatment according to application area.

General Information of Amorphous Alloy

❯❯ Atomic Structure



Crystalline Structure



Amorphous Structure

❯❯ Characteristics

- Technology of rapid solidification process
- Excellent magnetic property
- Strip thickness of 15μm to 25μm
- High electrical resistivity
- Low core loss at high frequency

❯❯ Features

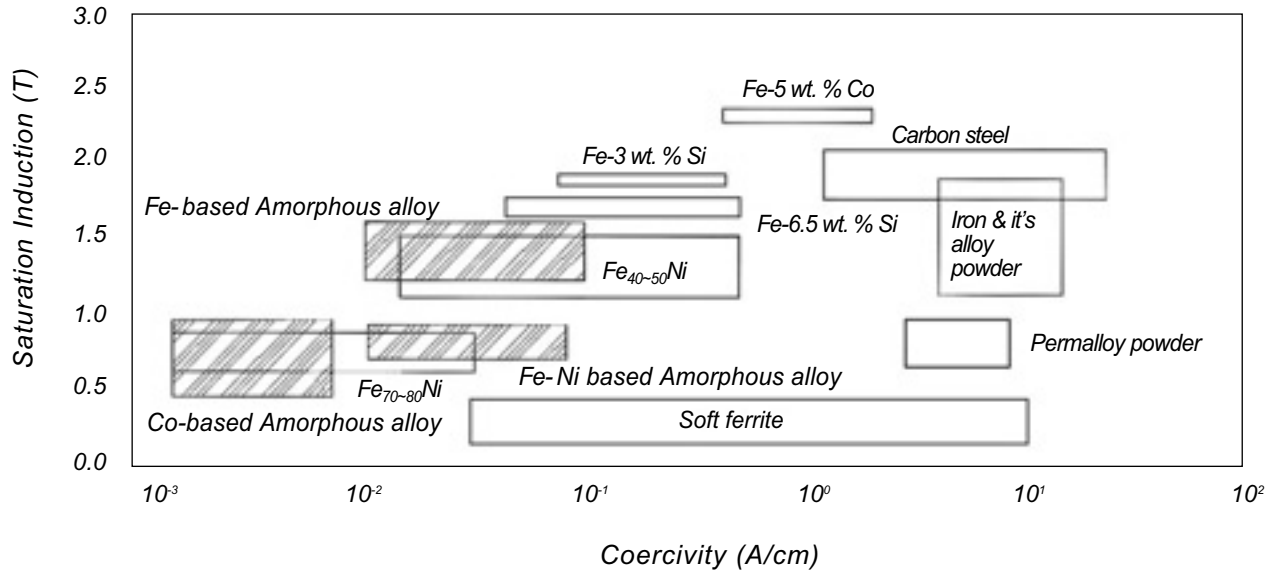
- Miniaturization of electronic equipment
- Excellent high frequency characteristics
- Spike current reduction
- Noise suppression
- Energy saving

❯❯ Major Applications

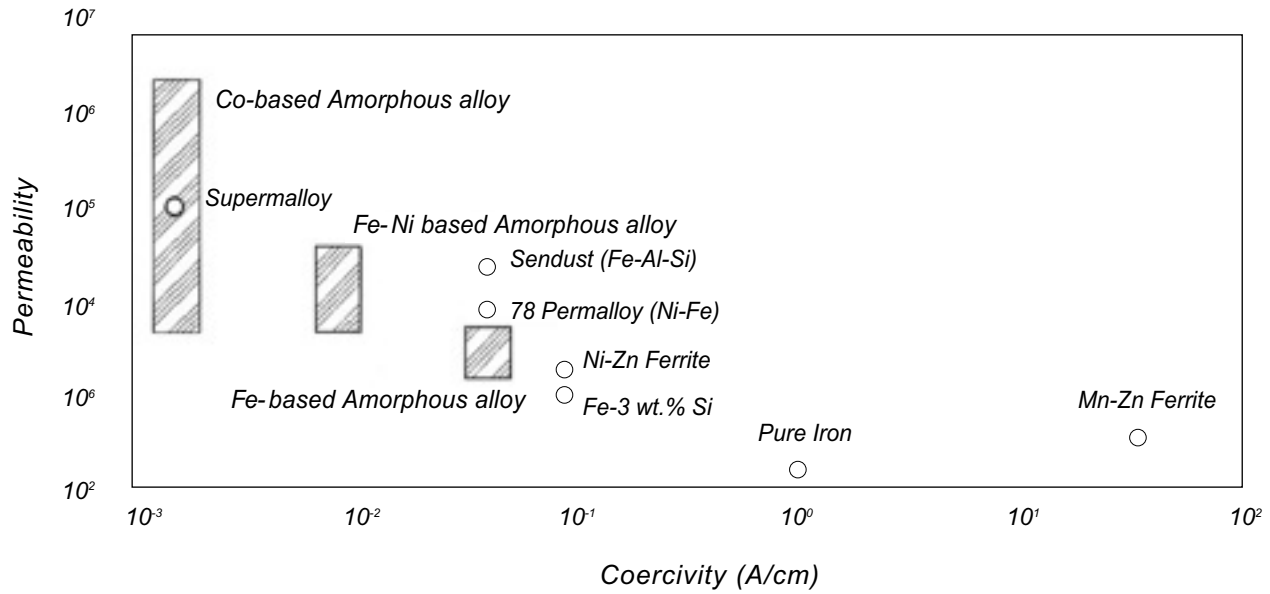
- DC/DC converter
- AC/DC converter
- Switch-mode power supply
- High frequency transformer
- Input noise reduction in automotive application of car audio
- Pulse transformer for telecommunication, xDSL, ADSL, VDSL
- Boost choke for power factor correction
- Current/voltage sensing
- Differential mode choke for inverter
- Common mode noise reduction choke
- Magnetic head
- Choke for temperature controlling circuit of automobile
- Flux-gate sensor for navigation system
- Magnetic tag for library, market
- Magnetic sensor for over-temperature in household transformer

Typical Properties of Soft Magnetic Alloys

❯❯ Saturation Induction vs. Coercivity

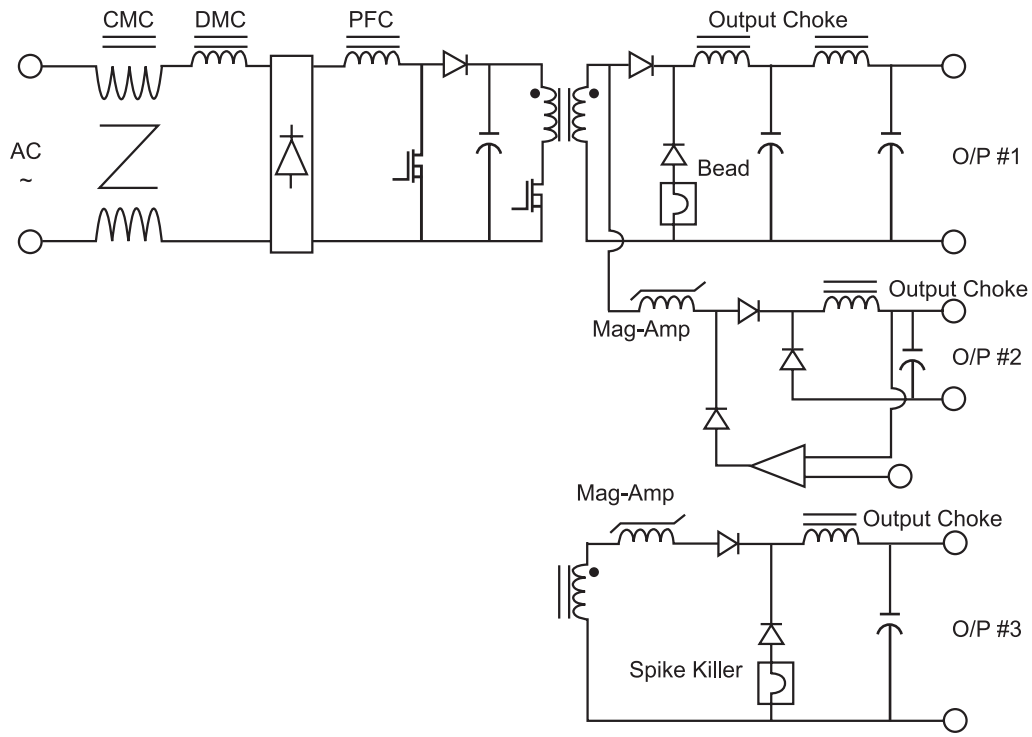


❯❯ Permeability vs. Coercivity



Typical Application Circuit for SMPS

❯❯ *Typical SMPS Circuit Diagram*



❯❯ *Major Power Supply Applications*

Application	Material	Series Part Code
Common Mode Choke	*Nano, Co-based Amorphous Alloy*	*AMF, AMFN series*
Differential-Mode Choke	*Fe-based Amorphous Alloy*	*AMC, APH, AMCU series*
PFC Boost Choke	*Fe-based Amorphous Alloy*	*AMCU, APH, AMC series*
Mag-Amp	*Co-based Amorphous Alloy*	*AMSA series*
Mag-Amp	*Nano-based Amorphous Alloy*	*AMSN series*
Output Choke	*Fe-based Amorphous Alloy*	*APH, AMC, AMCU series*
Bead	*Co-based Amorphous Alloy*	*AMB series*
Spike Killer	*Co-based Amorphous Alloy*	*AMK series*

Product Summary

❯❯ Description

Mag-Amp technique is one of simple, the most reliable and cost-effective post regulation ways of providing control on the secondary side of the auxiliary outputs in multiple-output switch-mode power supplies. Therefore, Mag-Amp cores are now the industry standard for implementing high precision and high efficiency independent of outputs in switch-mode power supplies of server, telecomm and personal computer applications.

Adapting AMSA Mag-Amp gives following attractive benefits.

1. Shorten Design Time with Reduced Total Cost

Simple circuit construction with fewer component for the control circuit is achieved.

2. High Reliability

Mag-Amp can withstand instantaneous surges in current or voltage and protect output diode from voltage and current spike in circuit.

3. High Precision and Low Noise

The output voltage kept in tightly from no load to full load conditions and noise from output diode is suppressed by high inductance of Mag-Amp in series connection with diode.

It's differ from semiconductor regulation(eg.MOS-FET) which adds switching noise in regulating circuit.

❯❯ Feature

- *High squareness (~98%)*
- *Low coercive force field*
- *Low temperature rise*
- *High efficiency*
- *Low reset current requirement*
- *UL94V-0 compliant*

❯❯ Application

- *Magnetic Amplifiers for Switched mode power supplies.(PC,Server, OA)*
- *Magnetic Amplifiers for DC to DC Converter*
- *Power supplies for network products such as Hubs, etc.*
- *Adapter for notebook/laptop*
- *Oscillating transformer*
- *Other kinds of saturable reactors*

Standard Core Dimensions & Specifications

Part No.#	Finished Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (mm^2)	V_{eff} [4] (mm^3)	W_a [5] (mm^2)	ΦW_a [6] (μWb-mm^2)	Φ [7] (μWb)
	OD	ID	HT						
AMSA-09S-L	10.7	5.5	6.3	25.0	3.5	88	24	97	4.1
AMSA-10-S-L	11.9	5.8	6.3	27.0	4.7	129	26	145	5.5
AMSA-10B-L	11.2	5.7	5.7	25.9	6.0	157	26	176	6.9
AMSA-11A-L	14.0	6.6	4.8	29.9	3.7	113	34	147	4.3
AMSA-11S-L	14.0	6.6	6.3	29.9	5.6	196	34	257	6.6
AMSA-12A-L	14.0	6.6	4.8	31.0	4.7	147	34	185	5.4
AMSA-12S-L	14.0	6.6	6.3	31.0	7.0	221	34	277	8.1
AMSA-13B-L	14.7	7.8	4.6	34.8	4.1	144	48	235	4.8
AMSA-14S-L	15.9	6.8	6.5	34.3	10.0	350	36	421	11.6
AMSA-15A-L	16.7	10.5	6.3	42.2	5.3	223	87	528	6.1
AMSA-15S-L	16.9	8.6	6.5	38.7	9.1	355	58	624	10.5
AMSA-16B-L	17.8	11.0	5.1	44.7	4.0	179	95	445	4.6
AMSA-16D-L	17.8	8.3	8.1	39.3	12.6	504	54	801	14.8
AMSA-16A-L	17.8	8.3	8.1	40.1	14.4	588	54	904	16.7
AMSA-18S-L	19.8	10.4	6.4	46.5	10.5	496	85	1036	12.2
AMSA-18D-L	20.0	8.7	12.0	45.7	21.1	973	59	1451	24.4
AMSA-19B-L	21.2	11.0	5.1	49.4	8.1	407	95	910	9.4
AMSA-19A-L	21.6	11.0	7.9	49.8	15.9	805	95	1758	18.5
AMSA-20A-L	22.5	10.4	10.1	50.1	23.4	1195	85	2302	27.1
AMSA-21S-L	22.8	12.4	6.3	54.2	12.3	675	121	1727	14.3
AMSA-25A-L	27.7	17.3	12.9	70.4	19.5	1378	235	5312	22.6
AMSA-25S-L	28.4	13.8	12.2	63.4	35.1	2261	150	5912	40.7

Notes :

1) The finished core dimensions shows a nominal ones. Please consult sales department for tolerance.

2) Nominal values of magnetic path length.

3) Nominal values of cross-section area.

4) Nominal values of volume.

5) Nominal values of window area.

6) Nominal handling power factor.

7) The typical total flux with its tolerance of ± 15%. All values are measured at 100kHz, 80 A/m, RT(~25℃).
For the detailed total flux specification limits, please contact sales and marketing department.
The squareness, Br/Bm(%). of all above listing part numbers is greater than 96% at 100kHz, 80A/m and 25℃ for L-type.

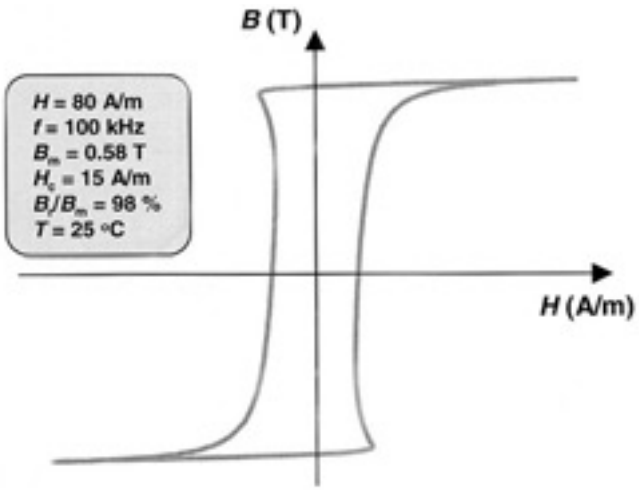
*** The coercive force field, Hc (A/m), of all above listing part number is lower than 18A/m at 100kHz, 80A/m and 25℃.*

**** If customer need the exact information's on each part number, please inquire of AMOSENSE sales department.*

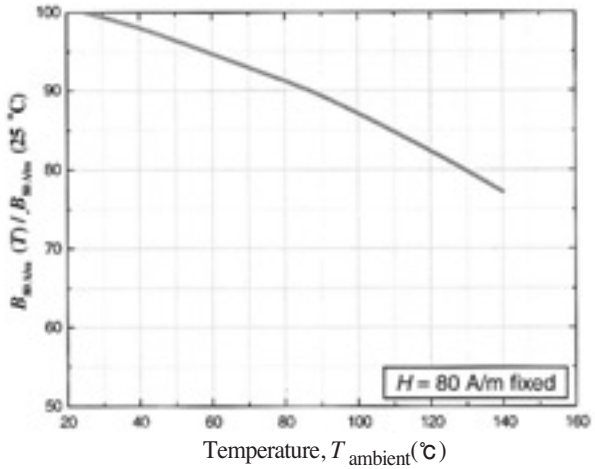
 # For a special request, AMOSENSE can be provide special Mag-Amp cores with higher permeability.

Typical Magnetic Characteristics

❯❯ Typical B-H loop shape @ 100KHz



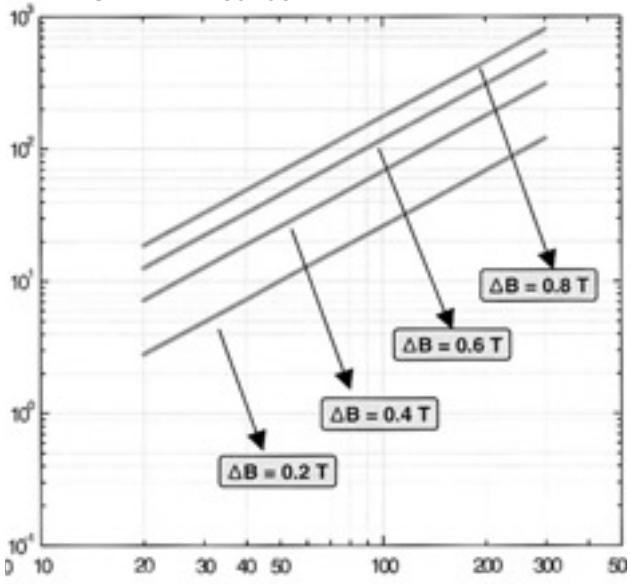
❯❯ Temperature dependency of $B_T(T)$



** At higher temperatures a lower total flux density swing, Φ(T) = 2B(T) A, has to be considered by designer in SMPS design.*

❯❯ Typical magnetic reversal losses of AMSA Series Mag-Amp cores, P_c (f, △ B)

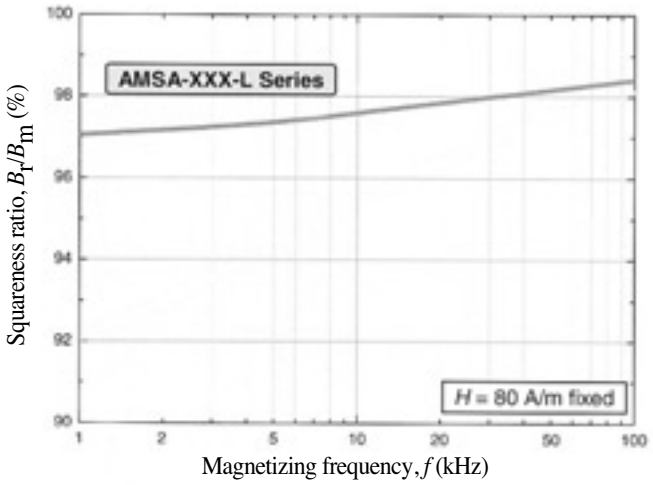
AMSA-XXX-L series

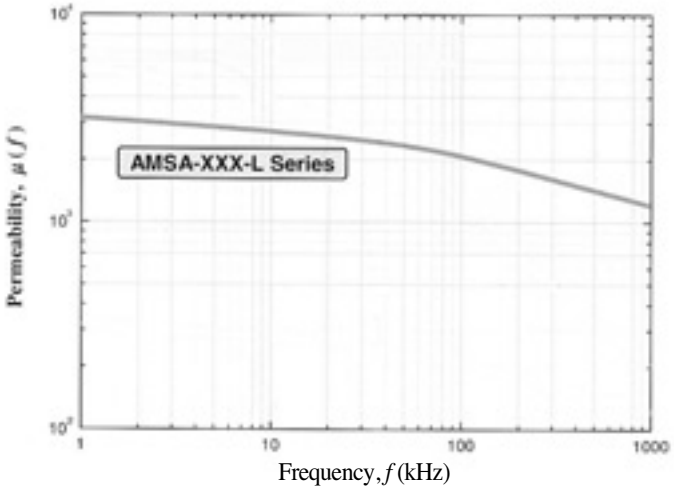


** The core losses measured by sinusoidal waveforms in bipolar swing between +B to - B.*

Typical Magnetic Characteristics

❯❯ Typical frequency dependency of squareness ratio and permeability

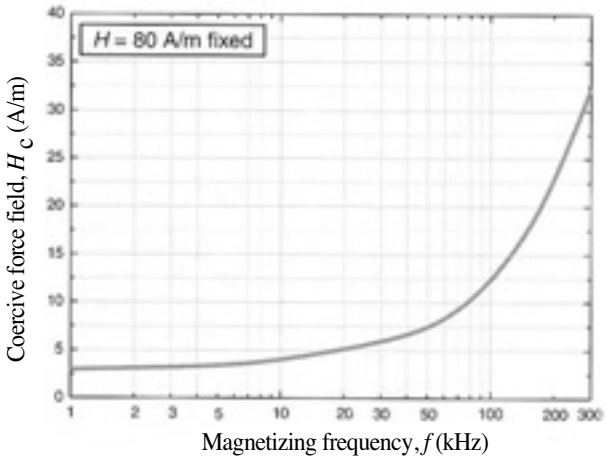




* *The squareness of AMSA-XXX-L series Mag-Amp with magnetizing frequency shows a nearly constant between lower and higher frequency ranges. AMSA-XXX-L series is suitable for a high stability SMPS when the load changes dynamically in parallel connected PSU system.*

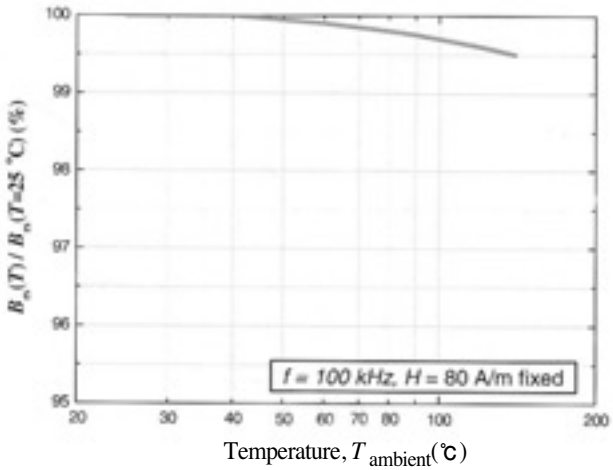
* *The permeability of AMSA-XXX-L series Mag-Amp shows a quite different characteristics with frequency. Before install AMSA series Mag-Amp in SMPS, it have to be considered the corner frequency and stability of feedback circuit in the PSU system.*

❯❯ Typical frequency dependency of Hc



* *The coercive force field have still low value even at 300 kHz. It might be provide a higher Mag-Amp gain from PSU feedback-controlled swiching element to the output.*

❯❯ Typical temp. dependency of Br/Bm



* *The squreness ratio with ambient temperature are negligible in most cases up to 100℃. In normal case, it may not affect the output voltage regulation if the ambient temperature goes up to 100℃ except on if the PSU system has a temperature protection function in switching element.*

Product Summary

❯❯ Description

AMSN series nanocrystalline Mag-Amp cores are now available by AMOSENSE's innovated technology. The nanocrystalline Mag-Amp cores are manufactured with a new class of iron-based nanocrystalline soft magnetic alloys, FeCuNbSiB.

Since the nanocrystalline materials have a relatively high electrical resistivity of about 120μΩ - cm and a ribbon thickness of about 18 ~ 24 μm the eddy current losses are relatively low up to frequencies of about 100 kHz. As an applications in switch-mode power supply, the high saturation magnetic induction of 1.2 T and thermal stability would give it a distinct advantage over many existing materials.

And with its very high squareness is an another choice for switch-mode power supply engineers to design Mag-Amp circuits for secondary output voltage regulation which are highly cost-effective in general purpose power supplies.

Adapting AMSN Mag-Amp gives following attractive benefits.

1. Cut Down the Cost

Smaller in component size with the help of large saturation magnetic induction gives cost effective circuit design.

2. High Temperature Operating

Higher Curie temperature of material enables operating up to 120℃.

3. High Precision Regulation

High squareness and relatively low coercive force enable precision regulation.

❯❯ Feature

- *High saturation flux density of 1.2 T*
- *Smaller component size*
- *Extended operating temperature range up to 120℃*

❯❯ Application

- *Magnetic Amplifiers for switched mode power supplies*
- *Power supplies for personal computer*
- *Open-frame switched-mode power supplies*
- *Precise output voltage control such as 3.3 V, 5 V and 12 V in SMPS*
- *Other kinds of saturable reactor*

Standard Core Dimensions & Specifications

Part No.	Finished Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (mm^2)	V_{eff} [4] (mm^3)	W_a [5] (mm^2)	ΦW_a [6] (μWb-mm^2)	Φ [7] (μWb)
	OD	ID	HT						
AMSN-10B-L	11.2	5.7	5.7	26.1	5.6	148	26	344	13.5
AMSN-11S-L	14.0	6.6	6.3	29.6	5.3	157	34	431	12.6
AMSN-13B-L	14.7	7.8	4.6	34.8	4.1	144	49	485	9.9
AMSN-15S-L	16.9	8.6	6.5	38.7	8.8	345	59	1254	21.1
AMSN-18S-L	19.8	10.4	6.4	45.7	9.5	438	85	1928	22.7

Notes :

1) The finished core dimensions shows a nominal ones. Please consult sales department for tolerance.
2) Nominal values of magnetic path length.
3) Nominal values of cross-section area.
4) Nominal values of volume.
5) Nominal values of window area.
6) Nominal Handling power factor.
7)Total flux with its tolerances of ±15 %. All values are measured at 100 kHz, 80 A/m, RT (~ 25℃).

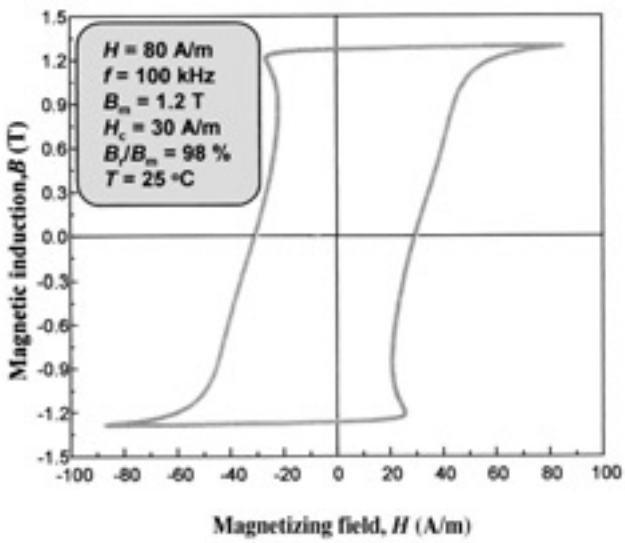
* The squareness, Br/Bm (%), of all above listing part numbers is greater than 96 % at 100 kHz, 80 A/m and 25℃.

** The coercive force field, Hc (A/m), of all above listing part numbers is lower than 36 A/m at 100 kHz, 80 A/m and 25℃.

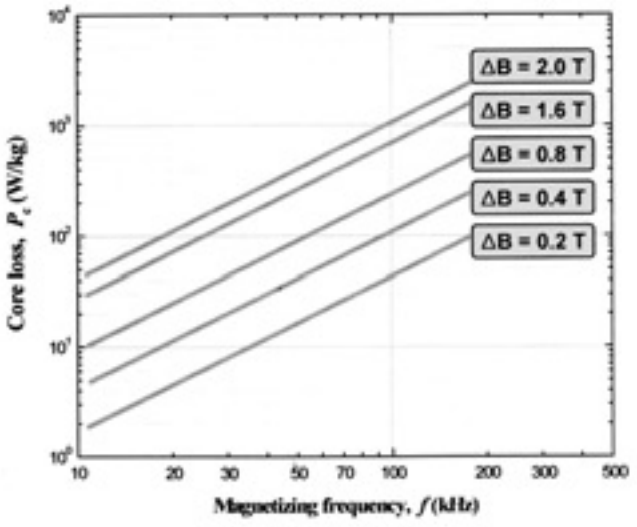
*** If customer need the exact information's on each part number, please inquire of AMOSENSE sales department.

Typical Magnetic Characteristics

⟩⟩ Typical B-H loop shape @ 100KHz



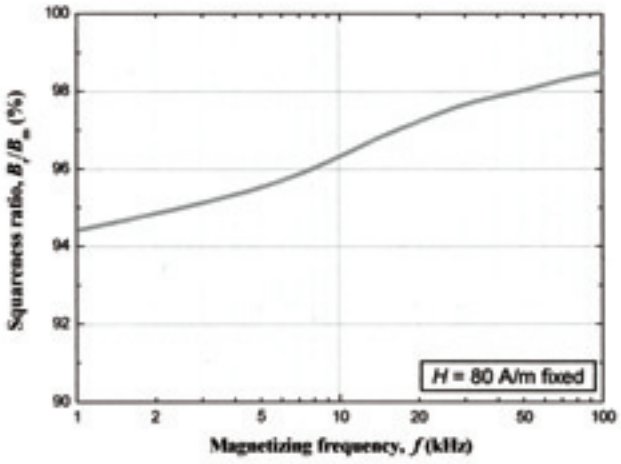
⟩⟩ Typical losses, P_c (f, Δ B)



* The core losses measured by sinusoidal waveforms in bipolar swing between +B to -B.

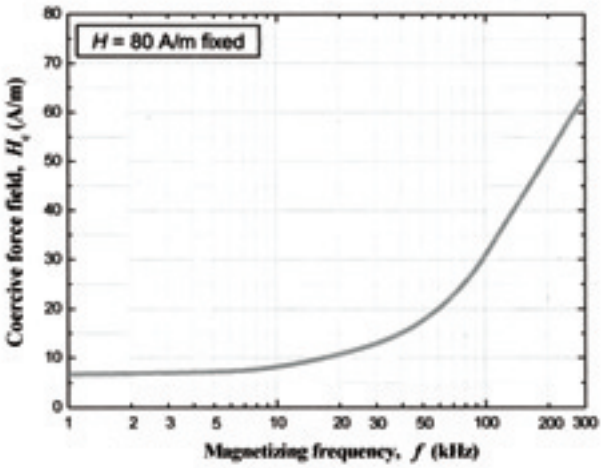
Typical Magnetic Characteristics

❯❯ Typical freq. dependency of B_r/B_m

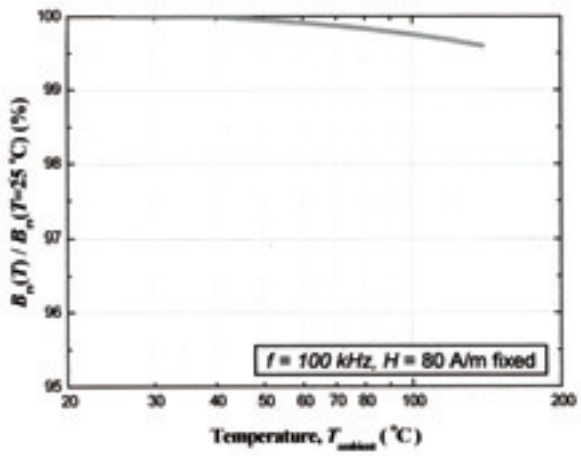


* The squareness of nanocrystalline AMSN-XXX-L series Mag-Amp with magnetizing frequency shows very high over all frequency ranges.

❯❯ Typical frequency. dependency of H_c

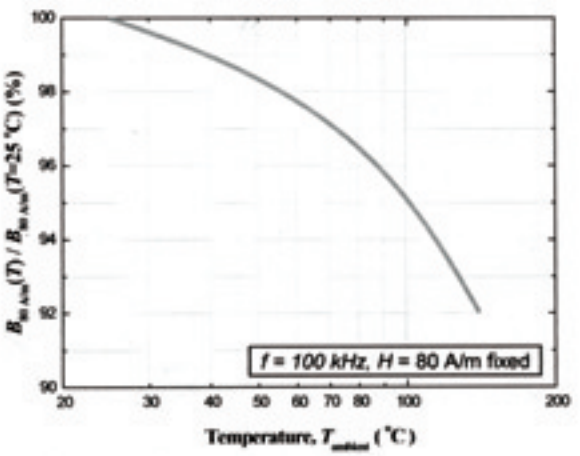


❯❯ Typical temp. dependency of B_r/B_m



* The squareness ratio with ambient temperature are negligible in most cases up to 120℃.

❯❯ Typical temp. dependency of B_m



* High T_c offers a lower decreasing the maximum induction with temperature.

AMOS

Common Mode Chokes

Product Summary

❯❯ Description

AMF Series magnetic cores of high permeability are now available that is made of Co-based amorphous alloys. Furthermore, recently AMOSENSE launched new AMFN Series common mode choke cores which is made of nanocrystalline alloy.

Recently, electromagnetic inference(EMI) considerations are increasingly important as electronic devices become part of our daily lives. This has rapidly increased the required performanceces for electromagnetic compatibility(EMC) components such as common mode chokes coils, which provide protection against incoming and outgoing high frequency noise. They also protect electronc devices against high voltage pulse noise generated by spark discharge, etc. These types of noise are created whenever there are rapid transitions in voltage and/or current waveforms. In switching power supplies, the waveforms are periodic, but it's waveforms are non-periodic in case of data line for telecommunication. The application area of common chokes covers all products from telecommunication product for signal transmitting to switch-mode power supplies, frequency converters, and UPS units.

Common mode chokes are mainly used to provide attenuation of asymmetrical conducted inferences. Their design is determined by the specifications of the corresponding international standards and the specific inference suppression problem.

AMF and AMFN Series common mode chokes shows a higher insertion attenuation, that is insertion damping, overall the wide-range of frequency. The typical permeability of AMF and AMFN Series common mode choke is 80,000. To satisfy these requirements, AMOSENSE will be provide a higher level of common mode chokes with AMF and AMFN Series flat loop cores.

❯❯ Feature

- *High permeability*
- *Reduce in size*
- *Reduce the winding turns*
- *Low DC resistance*
- *Low core loss*
- *Low power consumption*
- *High impedence overall the wide-range of frequency*
- *Meet the EN500081 and EN500082 standards*
- *Getting a sutable insertion loss in wide-range of frequency*
- *Low profile(1~5mm height)*

❯❯ Application

- *EMI common mode filtering*
- *Telecommunications and data communications interface transformers*
- *High accuracy current transformers*
- *High accuracy pulse transformers*
- *Ground fault protection devices*

Standard Core Dimensions & Specifications

❯❯ AMF Series Co-based Common Mode Choke

Part No.	Finished Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (mm^2)	V_{eff} [4] (mm^3)	SA[5] (cm^2)	A_L [6] (μH)
	OD	ID	HT					
AMF-15A-T	16.7	10.5	6.3	42.2	7.0	297.7	6.36	9.4
AMF-12S-T	14.0	6.6	6.3	31.0	7.0	220.5	4.08	17.1
AMF-18S-T	19.8	10.4	6.4	46.5	10.5	496.2	7.07	17.1
AMF-25A-T	27.7	17.3	12.9	70.4	19.5	1378.4	17.67	20.9
AMF-19A-T	21.6	11.0	7.9	49.7	15.7	790.5	9.43	24.1
AMF-10S-T	11.3	5.3	5.6	25.5	6.1	159.2	3.24	26.0
AMF-16A-T	17.8	8.3	8.1	40.1	10.5	430.1	6.13	26.4
AMF-20A-T	22.5	10.4	10.1	50.1	23.4	1194.6	12.00	35.2
AMF-32S-T	33.7	19.4	11.9	82.0	41.0	3402.7	25.34	37.7

❯❯ AMFN Series Nanocrystalline Common Mode Choke

Part No.	Finished Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (mm^2)	V_{eff} [4] (mm^3)	SA[5] (cm^2)	A_L [7] (μH)
	OD	ID	HT					
AMFN-16A-TH	17.8	8.3	8.1	40.8	14.4	588	6.13	41.4*)
AMFN-20A-TH	22.5	10.4	10.1	50.1	23.4	1195	12.00	57.0**)
AMFN-24A-TH	27.7	17.3	12.9	70.6	20.0	1414	17.67	22.5*)
AMFN-25A-TH	27.7	17.3	12.9	70.6	20.0	1414	17.67	28.4*)
AMFN-32S-TH	33.7	19.4	11.9	82.0	42.0	3490	25.3	66.0***)

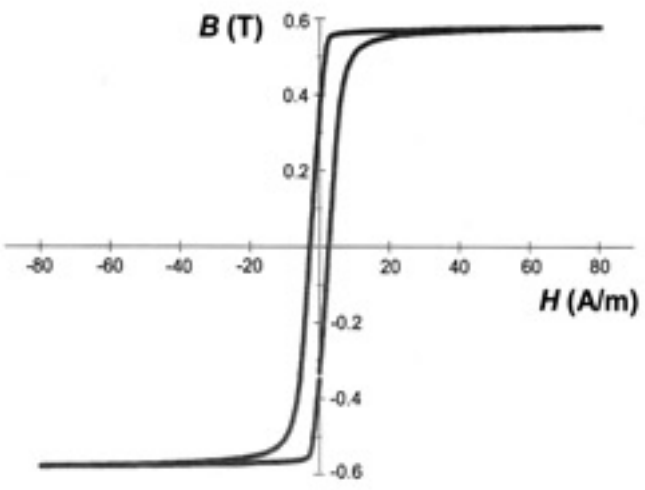
Notes :

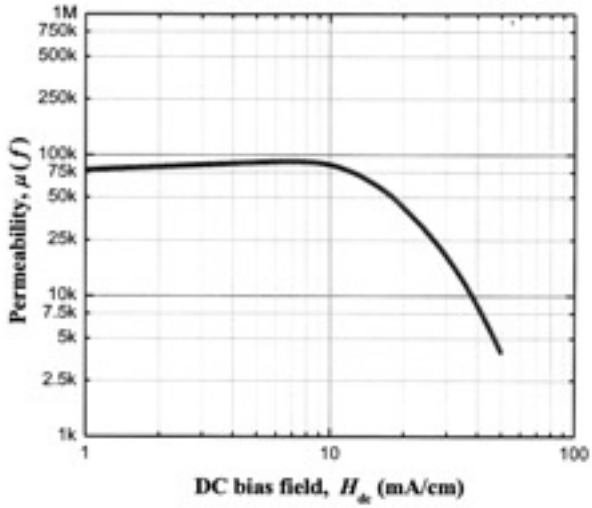
1) The finished core dimensions shows a typical ones. Tolerance is ± 0.2 mm.
2) Nominal values of magnetic path length.
3) Nominal values of cross-section area.
4) Nominal values of volume.
5) Nominal value of surface area.
6) Minimum value. Initial nominal inductance at 10 kHz, 0.1 V_{osc} @ RT.
7) Typical value. Tolerance is *) -25~+45 % , **) -25~+40 % , ***) -/+ 30 % . Initial nominal inductance at 10 kHz, 0.1 V_{osc} @ RT.

Typical Magnetic Characteristics of AMF Series

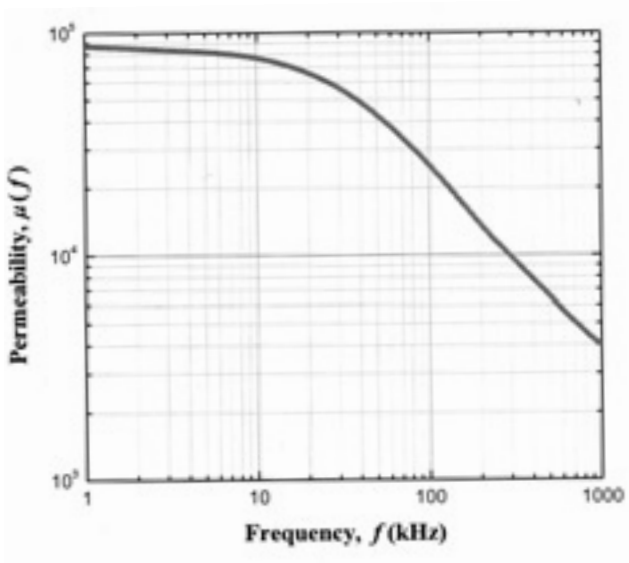
❯❯ *Typical Frequency & DC Current Dipendency of Common Mode Chokes*

Typical B-H loop and it's incremental permeability with DC bias at 10KHz

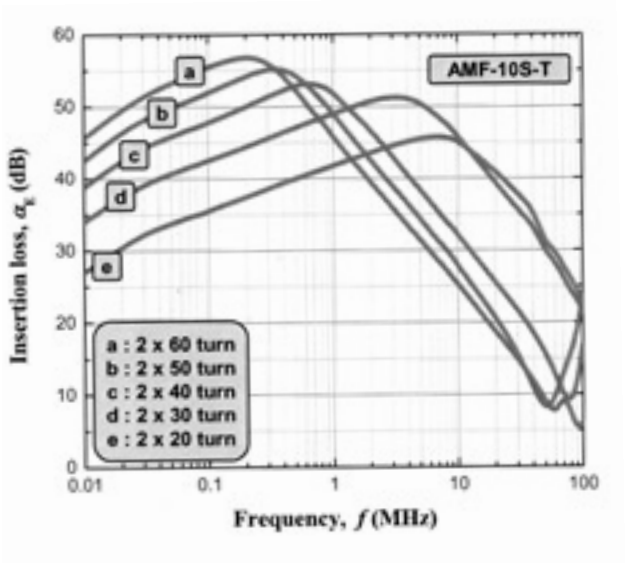




Typical frequency properties



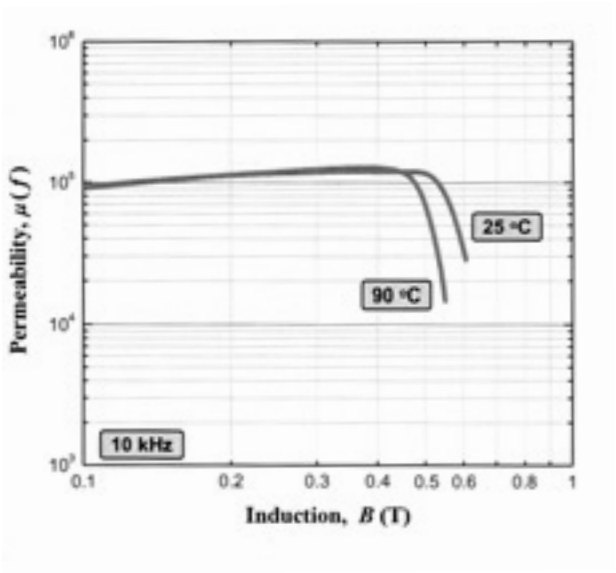
Insertion damping curve



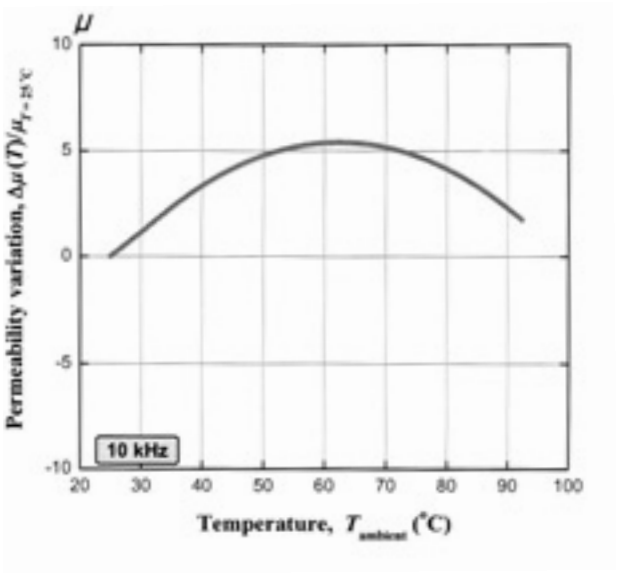
* All characteristics as shown above are measured at room temperature, ~25℃

Typical Magnetic Characteristics of AMF Series

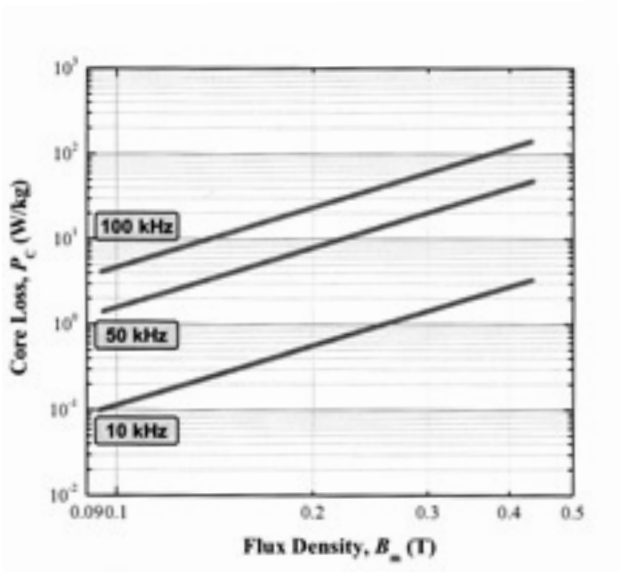
Typical μ_{peak} with flux density



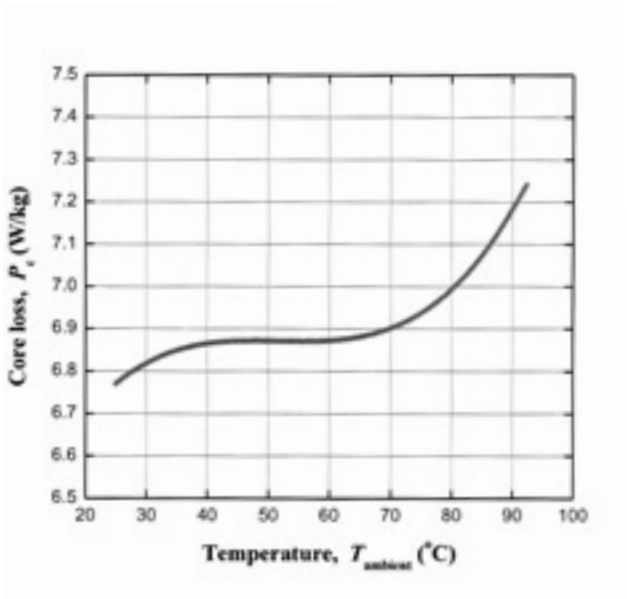
Typical temperature properties of μ



Typical core loss $P_c(f)$



Typical $P_c(T)$

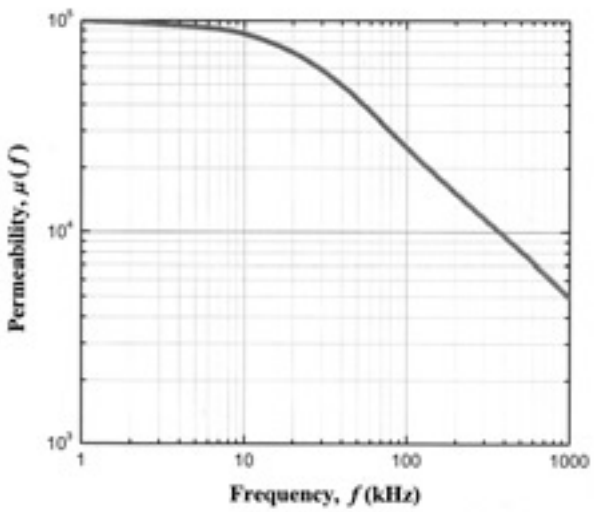


* All characteristics as shown above are measured at room temperature, ~25℃

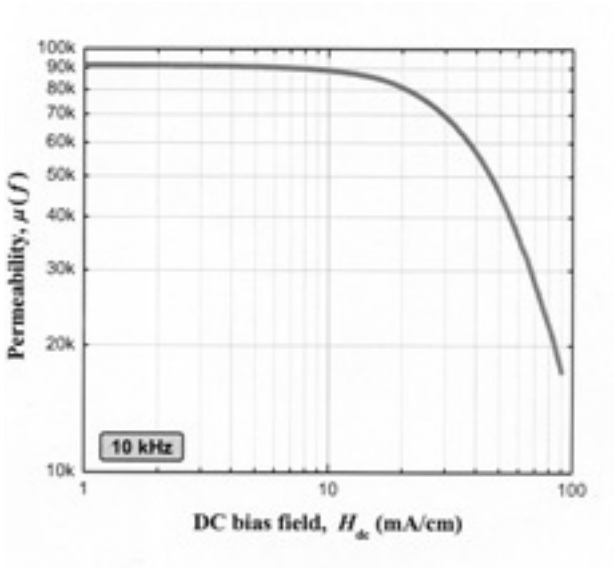
Typical Magnetic Characteristics of AMFN Series

❯❯ *Typical Frequency & DC Current Dipendency of Common Mode Chokes*

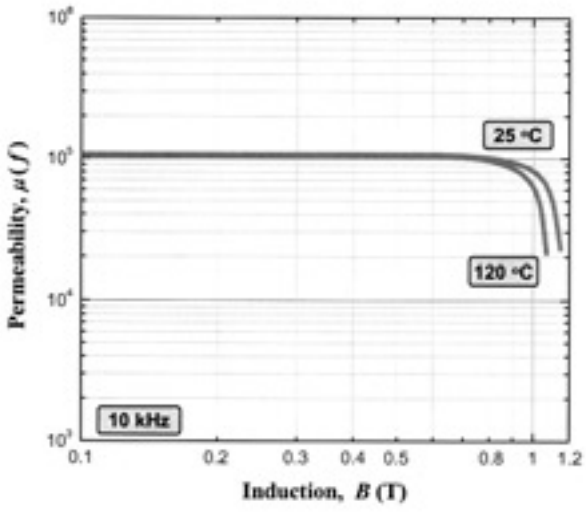
Typical frequency properties



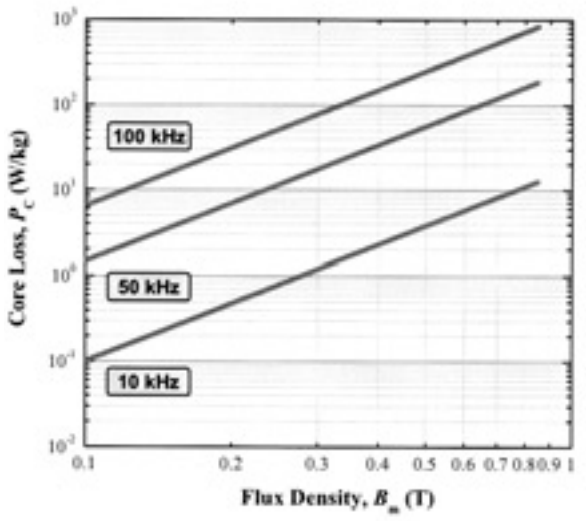
Typical incremental permeability



Typical μ_{peak} with flux density



Typical core loss $P_c(f)$



* All characteristics as shown above are measured at room temperature, ~25℃

Product Summary

❯❯ Description

AMCA 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 AMCA series chokes are manufactured with thin gauge iron-based amorphous alloy. This thin gauge ribbon offers a better frequency characteristics up to 1 MHz than conventional materials like EI type silicon steel. Overall the audible frequency ranges, the inductance shows a nearly constant. This type of iron-based amorphous alloys offer several properties and/or property combinations that are not paralleled 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 from the system.

AMOSENSE new launched AMCA 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 AMCA series noise suppression chokes 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 low alternator speed*
- *Lower inductance at medium/high alternator speed*
- *Optimized S/N ratio in all power ranges*
- *Superior frequency characteristics than EI choke*
- *Offer a good solutions for high frequency harmonic noises*
- *Higher impulse attenuation properties*
- *Lower 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*

Standard Core Dimensions & Specifications

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

Notes :

1) The finished core dimentions 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 of 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, 1V_{OSC} and room temperature.

**AMCA-16C-N have a tolerance of +39% and -25% of its typical A_L value.*

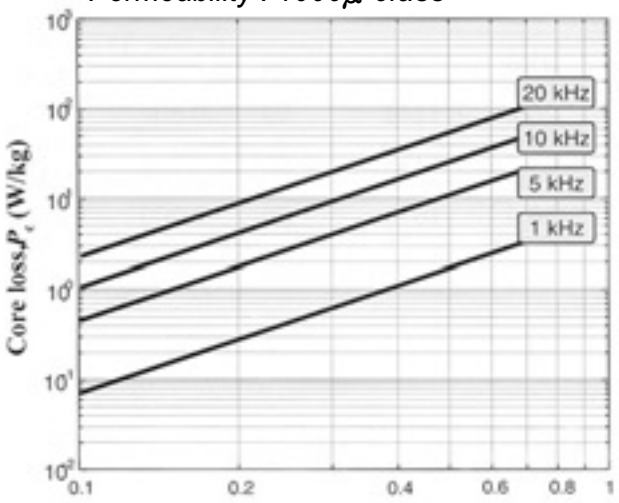
***AMCA-18A-N have a tolerance of +30% and -20% of its typical A_L value.*

****AMCA-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.

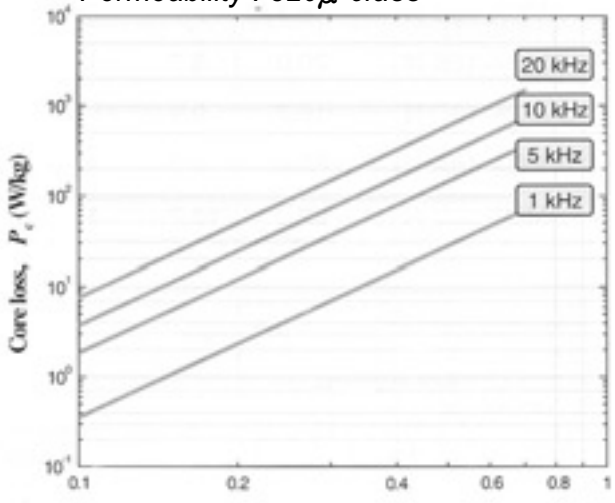
Typical Hysteresis Loss with Permeability, P_C (f, μ)

Permeability : 1000μ class



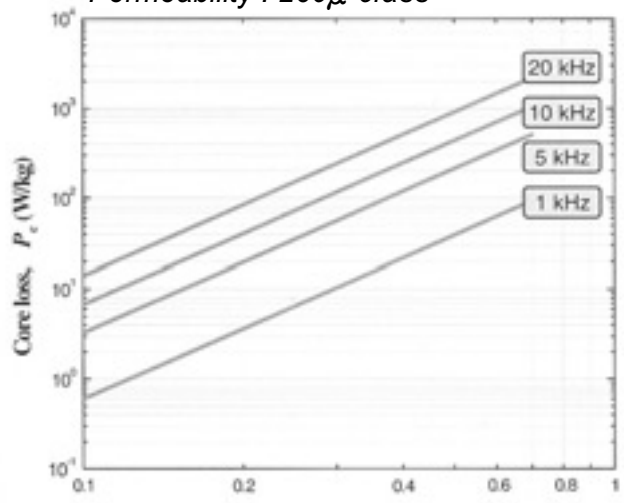
Magnetic flux density swing, *B* (T)

Permeability : 320μ class



Magnetic flux density swing, *B* (T)

Permeability : 260μ class



Magnetic flux density swing, *B* (T)

Notes :

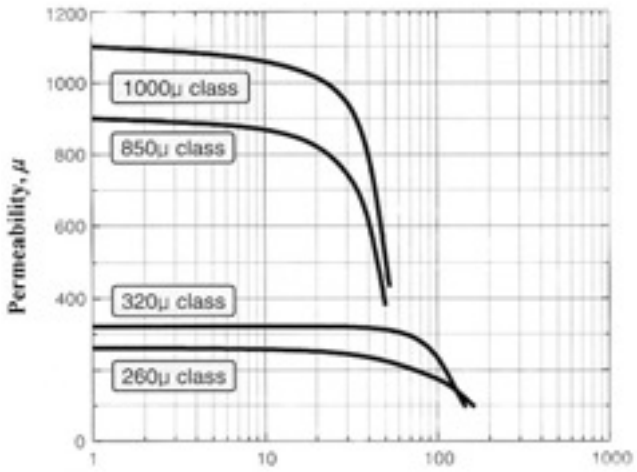
** Hysteresis losses are measured at room temperature, 25℃ ± 3℃.*

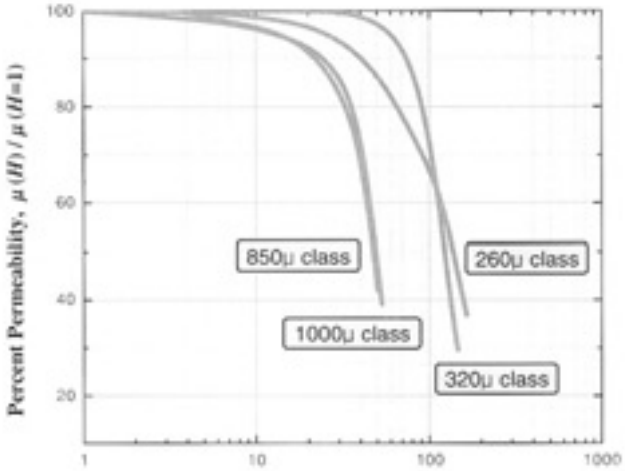
*** These curves were determined from AC magnetizing frequency with sinusoidal wavefroms.*

**** 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.*

Typical Magnetic & Electric Characteristics

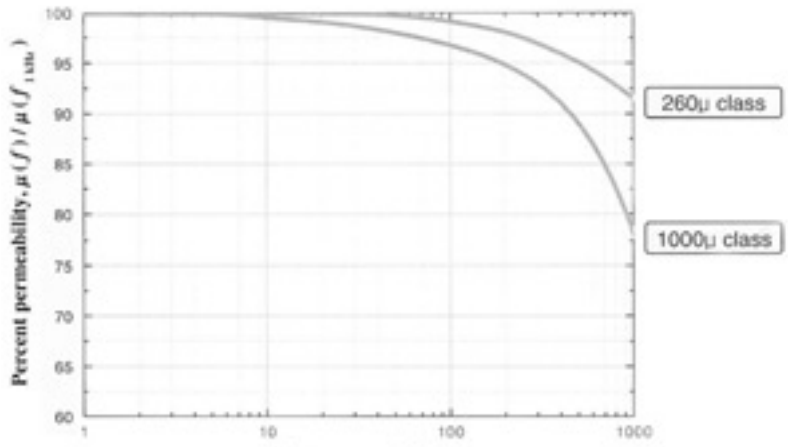
❯❯ *Typical DC Bias characteristics of AMCA series choke with permeability*





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

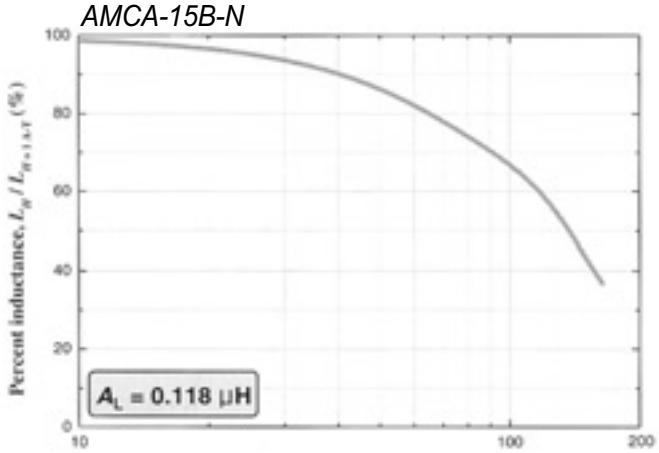
❯❯ *Typical percent permeability of 260μ & 1000μ class choke cores with frequency*



** The roll-off of percent permeability of 260u/1100u classes at 1MHz are around 10/20% of its 1kHz value, respectively.*

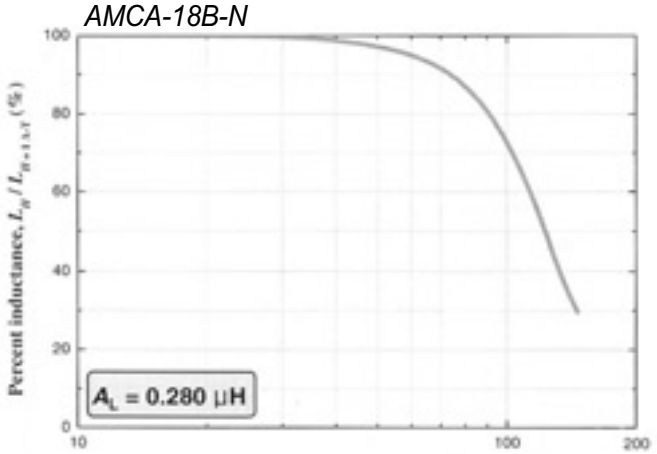
Typical DC bias Characteristics of AMCA series @ 1kHz

AMCA-15B-N



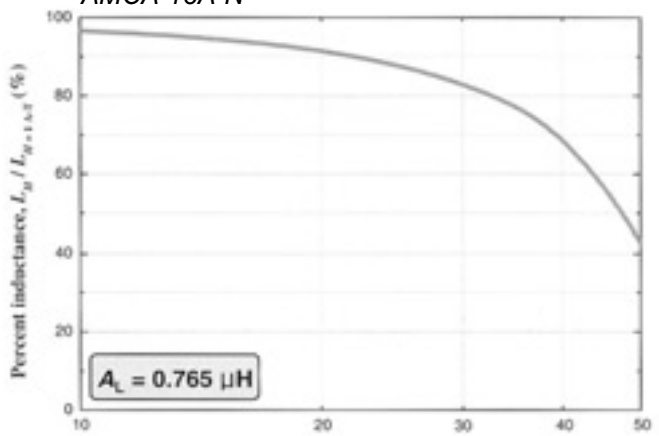
Magnetizing force, H [Ampere-Turns]

AMCA-18B-N



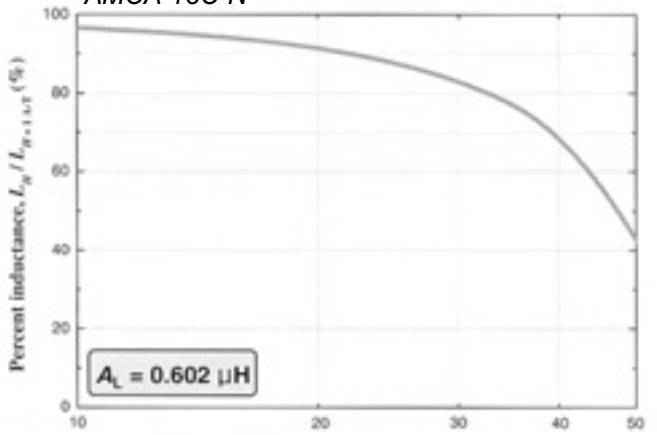
Magnetizing force, H [Ampere-Turns]

AMCA-18A-N



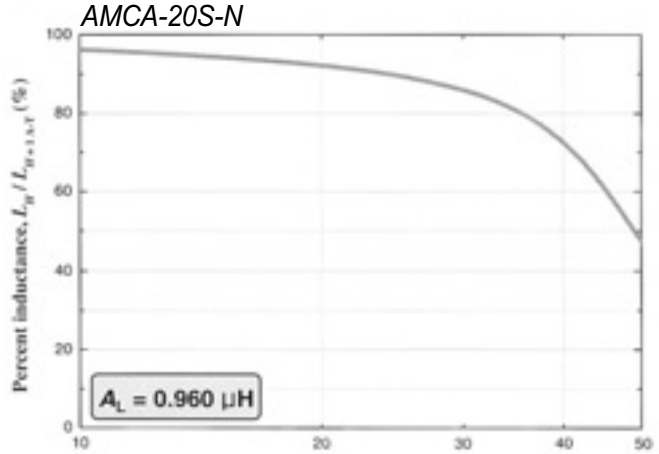
Magnetizing force, H [Ampere-Turns]

AMCA-18C-N



Magnetizing force, H [Ampere-Turns]

AMCA-20S-N



Magnetizing force, H [Ampere-Turns]

PFC & Output Choke Cores

Product Summary

❯❯ Description

AMC 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 sendust. 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 AMC series choke core product range, AMOSENSE offer the real performance leader. Our expertise in iron-based amorphous choke core manufacturing system has enabled us to significantly reduce magnetic losses and more higher DC bias characteristics to a level never before achieved ones. Furthermore, now it is 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 1.56 T*
- *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 telecommunication power supply rectifiers*
- *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*

Standard Core Dimensions & Specifications

❯❯ Dimension & Normalized inductance, A_L, of AMC Series Choke Cores

Part No.	Finished Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (cm^2)	V_{eff} [4] (cm^3)	W_a [5] (mm^2)	A_L [6] (μH)	μ [7]
	OD	ID	HT						
AMC-12A-N	13.9	6.5	4.8	31.0	0.05	0.2	33.2	0.066	300
AMC-12S-N	14.2	6.4	6.5	31.0	0.08	0.3	32.2	0.092	270
AMC-15S-N	16.9	8.6	6.5	38.7	0.10	0.4	58.0	0.092	270
AMC-18S-N	19.6	10.4	6.3	46.5	0.12	0.6	84.9	0.089	270
AMC-22S-N	24.9	10.3	12.5	53.7	0.41	2.2	83.3	0.232	245
AMC-26S-N	28.4	13.8	12.2	64.7	0.45	3.0	150.0	0.214	245
AMC-32S-N	33.7	19.4	11.9	82.0	0.47	3.9	296.0	0.147	200
AMC-37S-N	39.4	20.8	12.1	92.5	0.63	5.9	340.0	0.188	220
AMC-39S-N	40.7	23.4	15.3	99.0	0.78	7.8	430.0	0.200	200
AMC-46A-N	49.8	22.8	23.4	112.0	1.71	19.6	408.3	0.345	180
AMC-46S-N	49.8	22.8	28.3	112.0	2.14	24.5	408.3	0.432	180

Notes :

1) The finished core dimensions shows a typical ones. Tolerance is ±0.2mm

2) Nominal values of magnetic path length. 3) Nominal values of cross-section area.

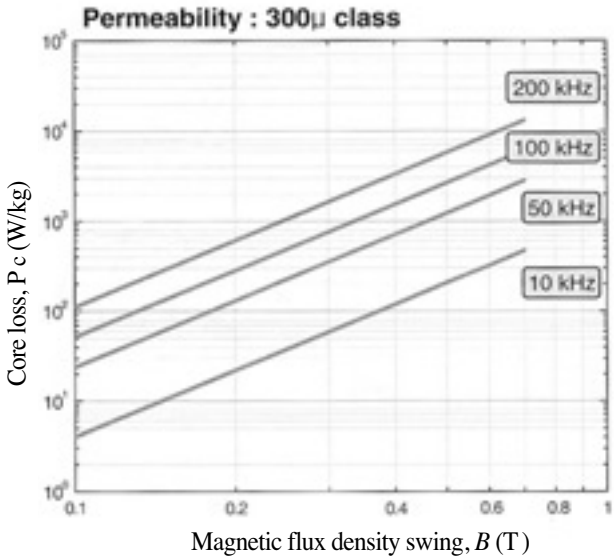
4) Nominal values of volume. 5) Nominal values of window area.

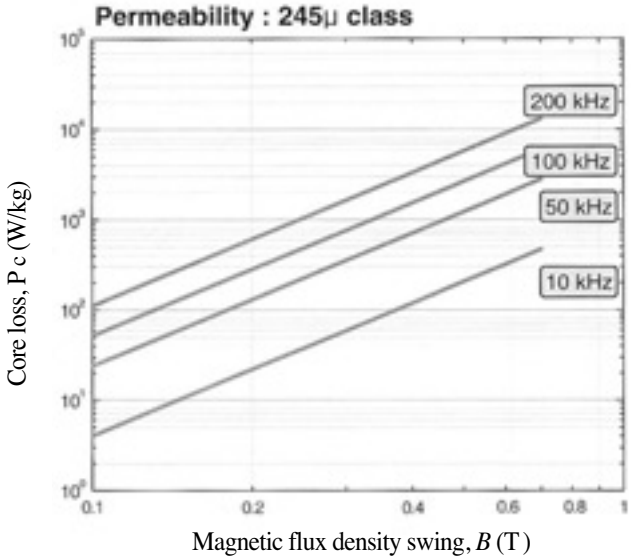
6) A_L value with its tolerances of ±20%. All A_L values are measured at 100kHz with the oscillation voltage of 1 Vosc.

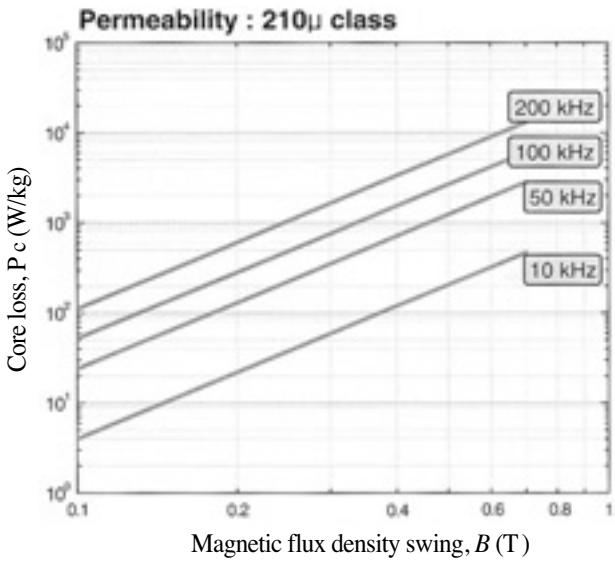
7) Typical permeability of each part number. The permeability can change to improve the characteristics without notice.

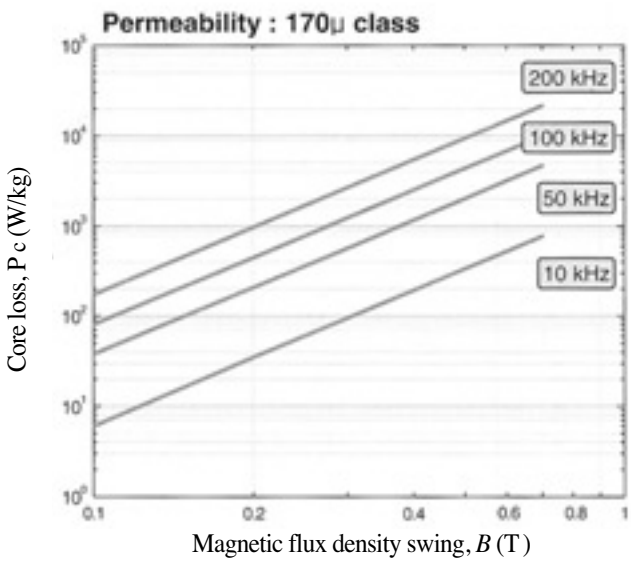
Typical Magnetic Characteristics

❯❯ *Typical hysteresis losses with permeability, $P_C(f,\mu)$*









Notes :

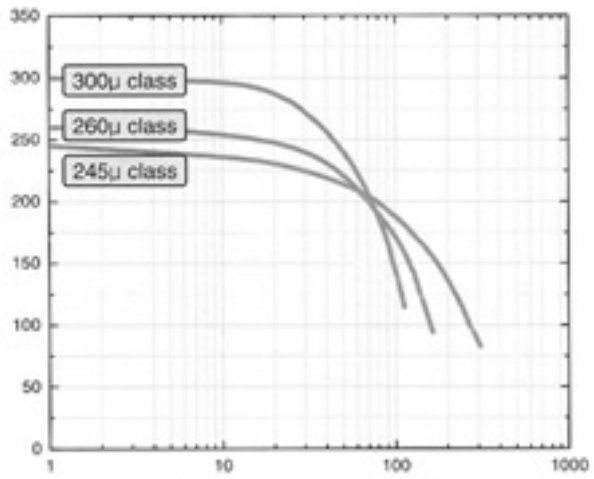
** Hysteresis losses are measured at room temperature, 25℃ ± 3℃.*

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

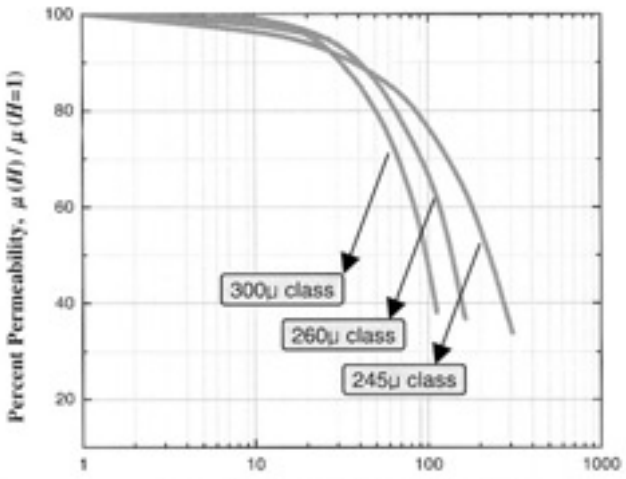
**** Products generally do not fully comply with material characteristics : deviations may occur due to shape and size factor even if the core has the same class of permeability.*

Typical Magnetic Characteristics

❯❯ *Typical DC Bias characteristics of AMC series choke with permeability*



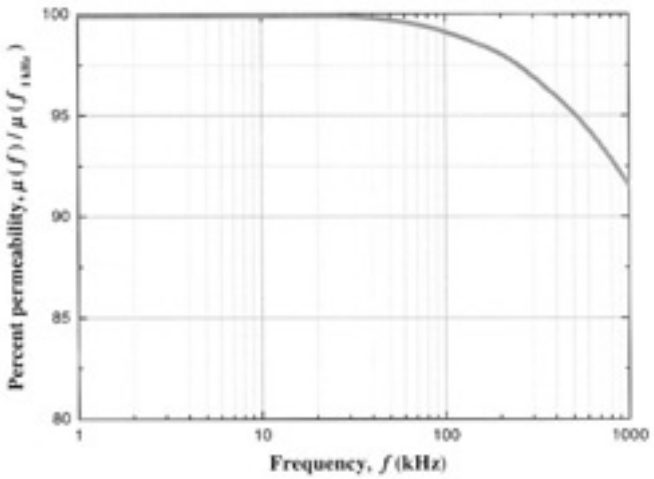
Magnetizing force, *H* (Ampere-Turns)



Magnetizing force, *H* (Ampere-Turns)

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

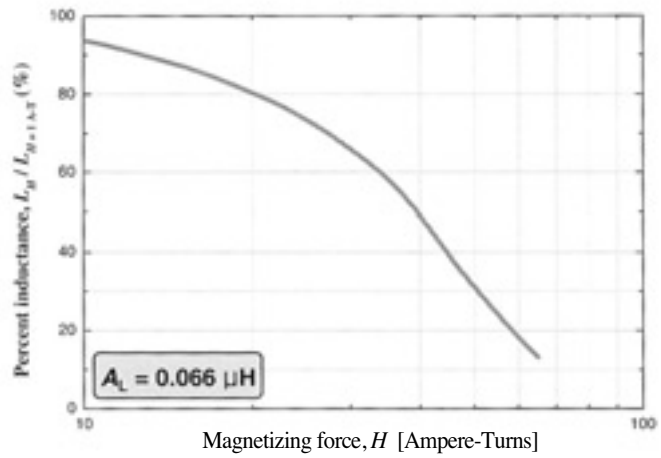
❯❯ *Typical Percent permeability with frequency*



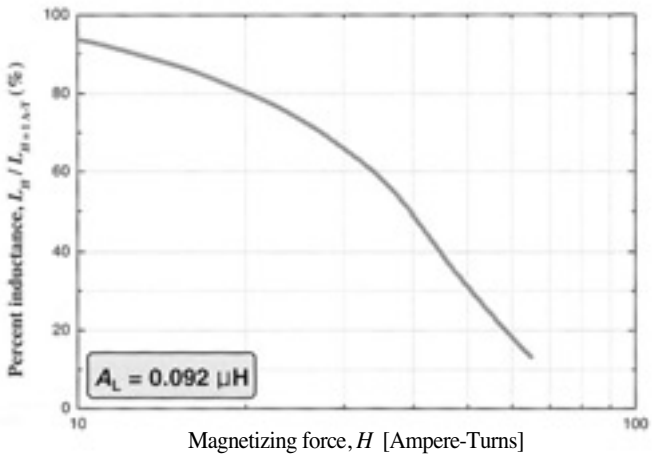
** The roll-off of percent permeability at 1MHz is within 10% of its 1kHz value.*

Typical DC Bias Characteristics of AMC Series @ 100 kHz

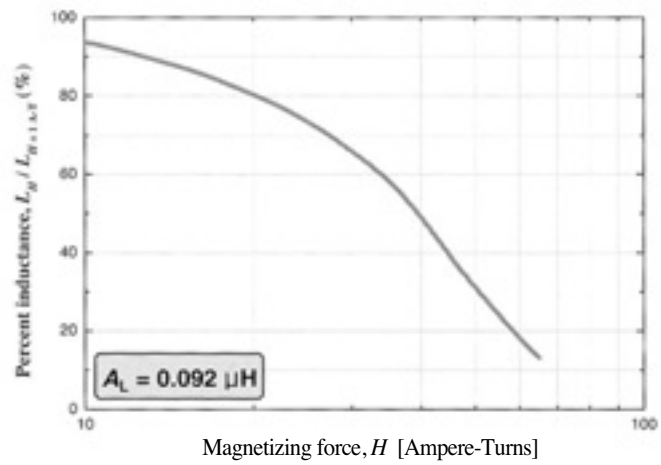
AMC-12A-N



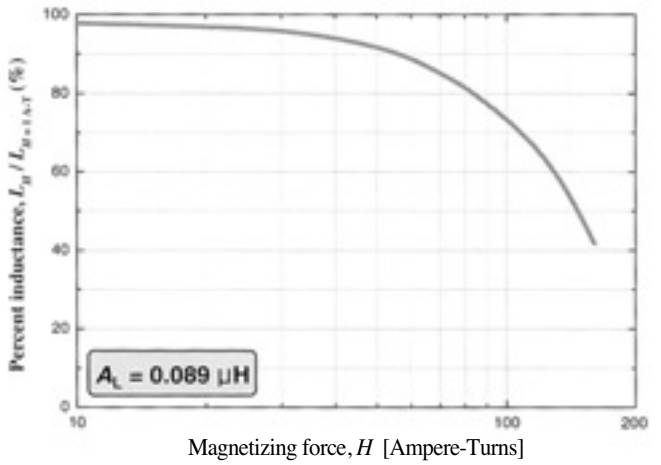
AMC-12S-N



AMC-15S-N

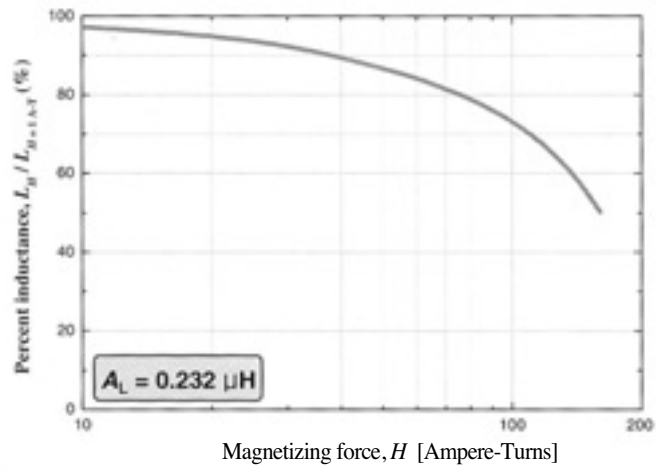


AMC-18S-N

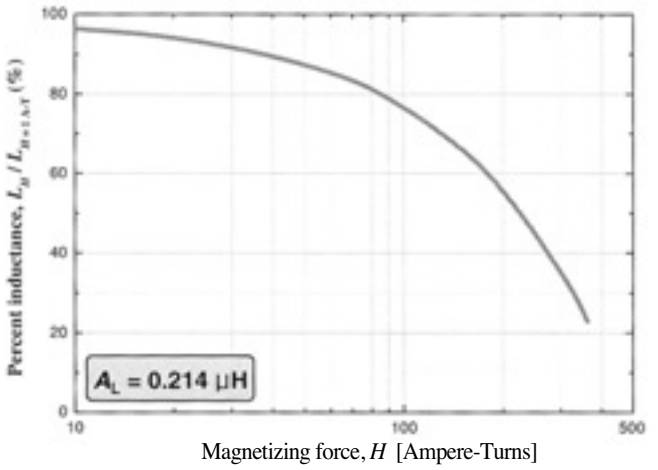


Typical DC Bias Characteristics of AMC Series @ 100 kHz

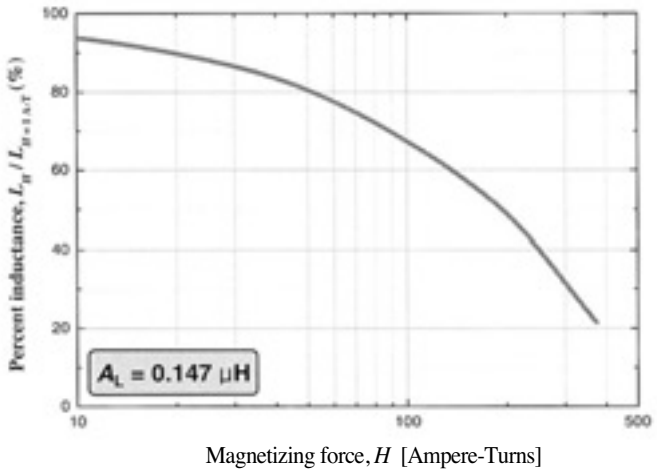
AMC-22S-N



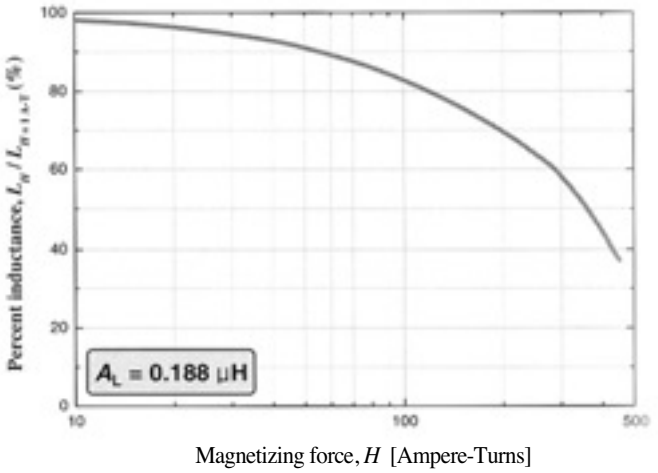
AMC-26S-N



AMC-32S-N

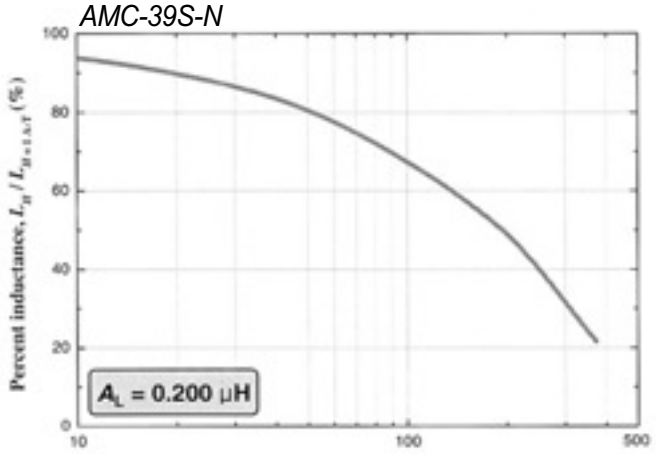


AMC-37S-N



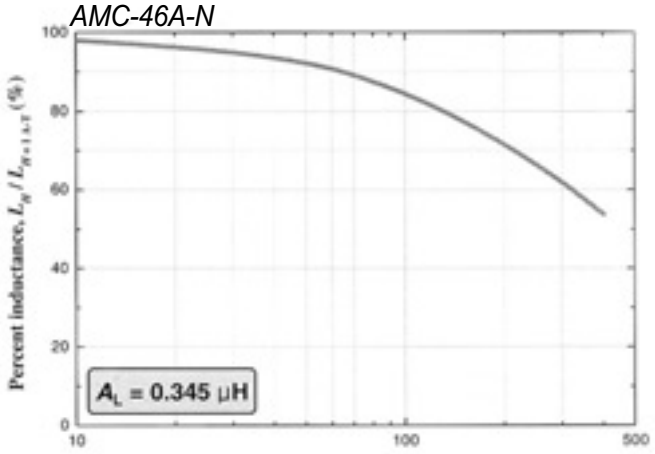
Typical DC Bias Characteristics of AMCH Series @ 100 kHz

AMC-39S-N



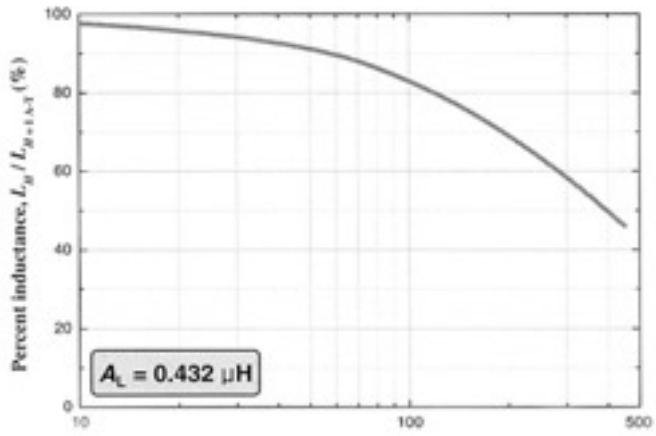
Magnetizing force, H [Ampere-Turns]

AMC-46A-N



Magnetizing force, H [Ampere-Turns]

AMC-46S-N



Magnetizing force, H [Ampere-Turns]

AMOS

Cut-cores for High Power Applications

Product Summary

❯❯ Description

AMCU Series Cut cores are the ideal solutions for implementing energy storage chokes in several types of SMPS topologies even in high frequency ranges and high power ranges.

Significant component size reduction and/or increased power throughput is achieved using AMCU Series Amorphous Cut cores. AMCU Series Amorphous Cut cores made by iron based thin amorphous ribbon with high saturation level of 1.5 T. With this high saturation level, AMCU Series Amorphous Cut cores enable up to 50 % reduction in volume for typical applications compared more conventional materials like ferrite, sendust, iron powder and silicon steel. The thin ribbon reduces the unwanted eddy current losses at high frequencies. AMOSENSE new technology on Cut core manufacturing ensures lower magnetic reversal losses than ever before.

AMCU Series amorphous Cut cores are being used in a growing number of high frequency power applications.

AMOSENSE will offer a fully designed solutions and a customer oriented solutions with a free design service whenever you need it.

❯❯ Feature

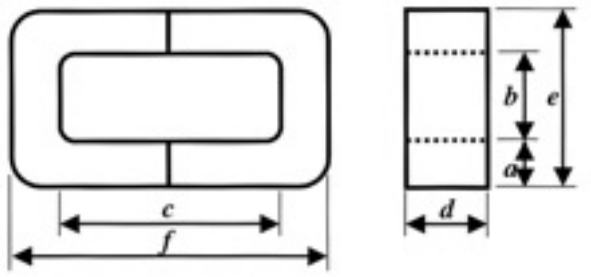
- *Low eddy current losses*
- *Low hysteresis losses*
- *High efficiency*
- *Low temperature rise*
- *High saturation flux density $B_{saturation}$ = 1.56 T*
- *Smaller component size*
- *High power throughput*
- *More comprehensive range of component sizes than before*
- *UL94-V0 compliant*
- *UL Temp class F compliant*

❯❯ Application

- *PFC chokes for power supplies*
- *Output chokes for power supplies*
- *PFC choke for UPS system*
- *Harmonic choke for UPS system*
- *PFC choke for welding SMPS*
- *PFC choke for home appliance & industrial air conditioning*
- *Inverter choke for high power supplies*
- *PFC and output choke for distributed power front end*
- *Solar light power supplies*
- *X-ray power supplies*
- *Choke for induction furnaces*
- *Chokes for weight/efficiency sensitive applications in high speed rail car power supplies*
- *Choke for induction furnaces*

Standard Core Dimensions & Specifications

Cut-cores for High Power Applications

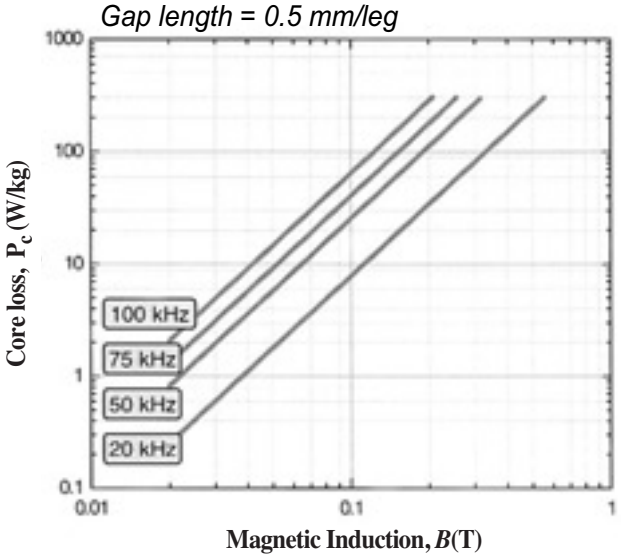


Part Number	a	b	c	d	e	f	Mass (g)	L_m (cm)	A_C (cm^2)	V_e (cm^3)	W_A (cm^2)	$W_A A_c$ (cm^4)
AMCU-4	9	10	33	15	29	51	95	11.5	1.0	13.20	3.4	3.5
AMCU-6.3	10	11	33	20	31	53	150	132	1.6	20.86	3.6	5.8
AMCU-8	11	13	30	20	35	52	170	159	1.8	23.64	3.9	7.0
AMCU-10	11	13	40	20	35	62	200	129	1.8	27.82	5.2	9.4
AMCU-16A	11	13	40	25	35	62	250	110	2.3	34.77	5.2	12.0
AMCU-16B	11	13	50	25	35	72	280	131	2.3	38.94	6.5	15.0
AMCU-20	11	13	50	30	35	72	340	134	2.7	47.29	6.5	17.6
AMCU-25	13	15	56	25	41	82	380	159	2.7	52.85	8.4	22.7
AMCU-32	13	15	56	30	41	82	460	154	3.2	63.89	8.4	26.9
AMCU-40	13	15	56	35	41	82	530	174	3.7	73.71	8.4	31.1
AMCU-50	16	20	70	25	52	102	590	174	3.3	82.06	14.0	46.2
AMCU-63	16	20	70	30	52	102	710	200	3.9	98.75	14.0	54.6
AMCU-80	16	20	70	40	52	102	950	253	5.2	132.13	14.0	72.8
AMCU-100	16	20	70	45	52	102	1060	303	5.9	147.43	14.0	82.6
AMCU-125	19	25	83	35	63	121	1170	303	5.4	162.73	20.8	112.1
AMCU-160	19	25	83	40	63	121	1330	303	6.5	184.98	20.8	135.2
AMCU-200	19	25	83	50	63	121	1670	303	7.8	232.27	20.8	162.2
AMCU-250	19	25	90	60	63	128	2100	303	9.3	292.07	22.5	209.3
AMCU-320	22	35	85	50	79	129	2170	303	9.0	301.81	29.8	267.8
AMCU-500	25	40	85	55	90	135	2900	303	11.3	403.34	34.0	384.2
AMCU-630	25	40	85	70	90	135	3670	303	14.3	510.43	34.0	486.2
AMCU-800A	25	40	85	85	90	135	4450	303	17.4	618.92	34.0	591.6
AMCU-800B	30	40	95	85	100	155	5930	303	21.0	824.76	38.0	798.0
AMCU-1000	33	40	105	85	106	171	7060	303	23.0	981.92	42.0	966.0

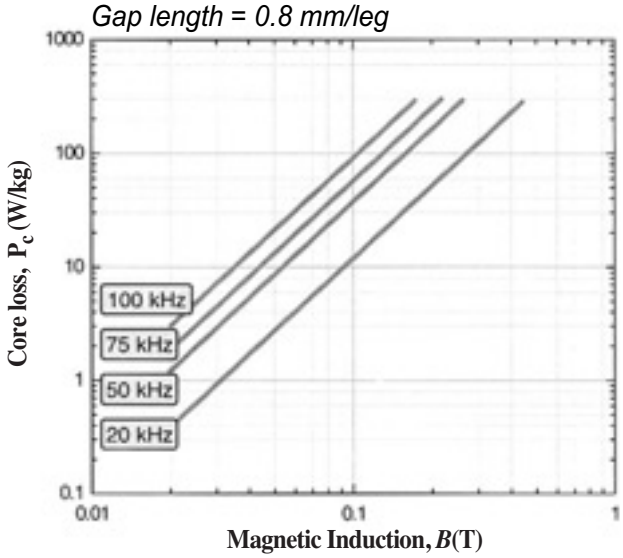
** All mechanical dimensions shows a norminal ones. Please consult sales department for tolerances.*

Typical Hysteresis Loss with Gap Size, $P_c(f,\mu)$

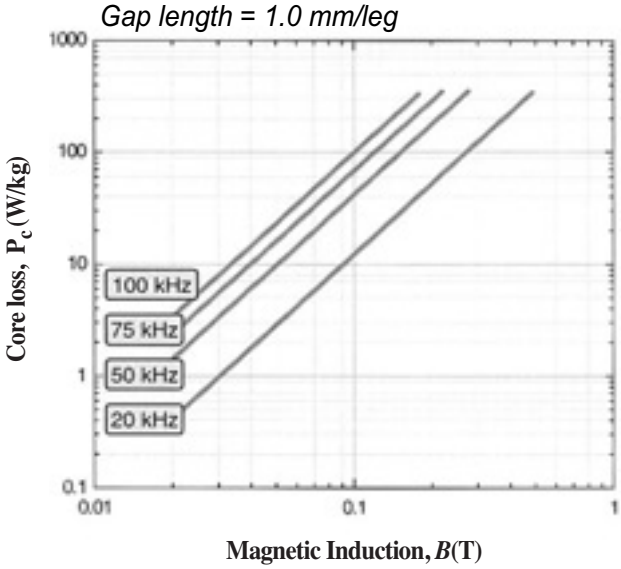
Gap length = 0.5 mm/leg



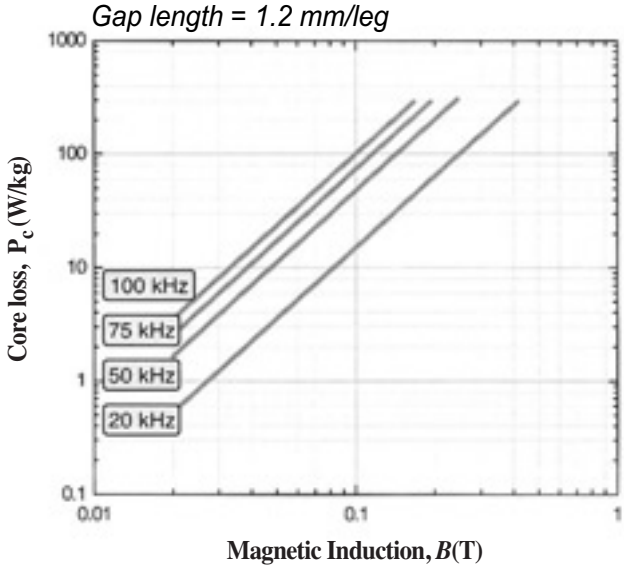
Gap length = 0.8 mm/leg



Gap length = 1.0 mm/leg

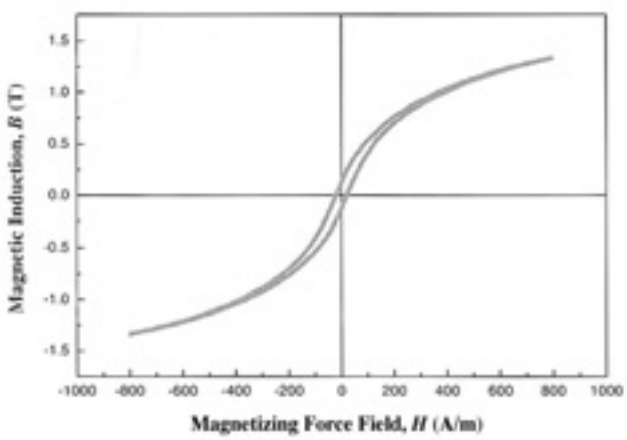


Gap length = 1.2 mm/leg

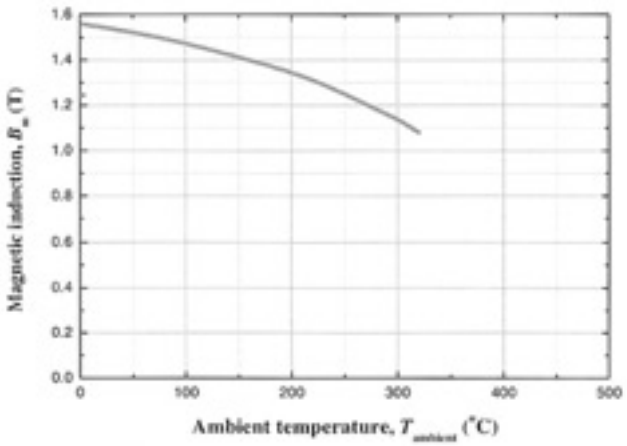


** Hysteresis losses are measured at room temperature, 25℃ ± 3℃.*

❯❯ Typical hysteresis loop shape

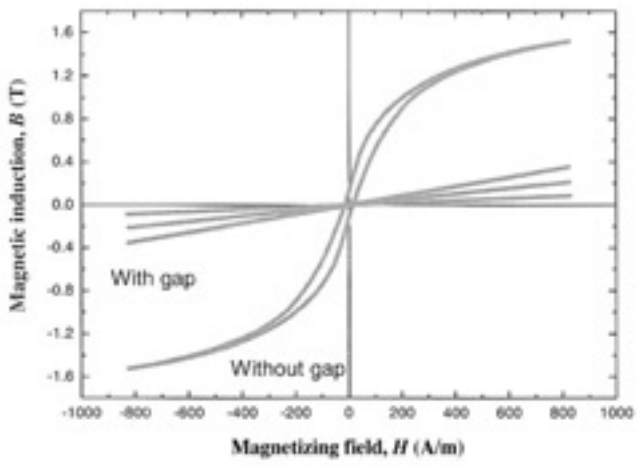


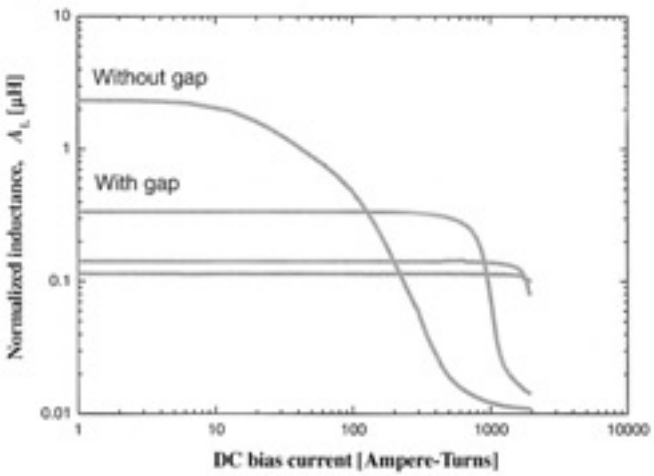
❯❯ Temperature behavior of B_m (T)



** Without gap after cutting.*

❯❯ Typical hysteresis loop and it's corresponding DC Bias characteristics with gap

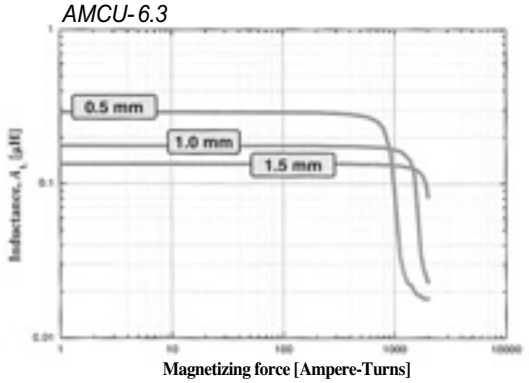




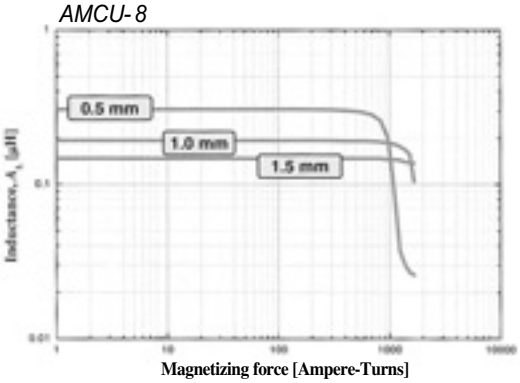
** These comparison shows a typical relations between B-H loop shapes and superimposed inductance behavior with gap.*
*** The DC bias properties depends on cross-section area, magnetic path length and wound structures of each Cut-cores.*

Typical DC Bias Characteristics with Gap Size @ 10 kHz

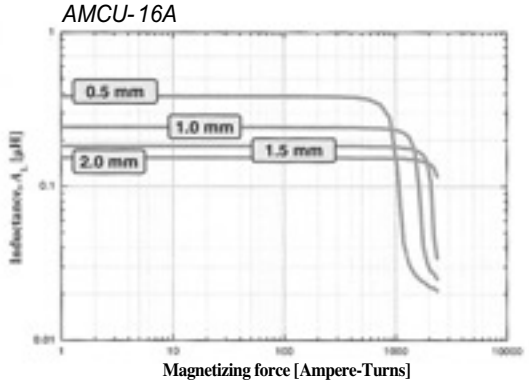
AMCU-6.3



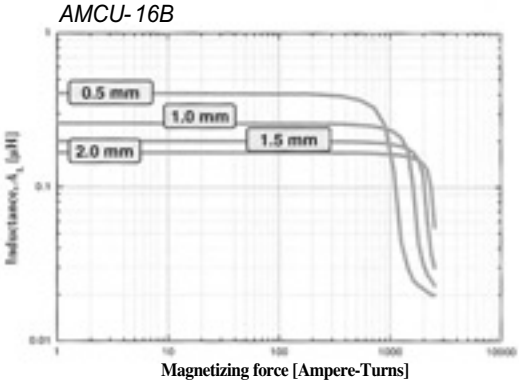
AMCU-8



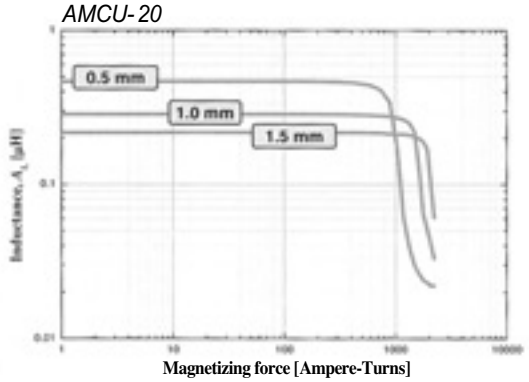
AMCU-16A



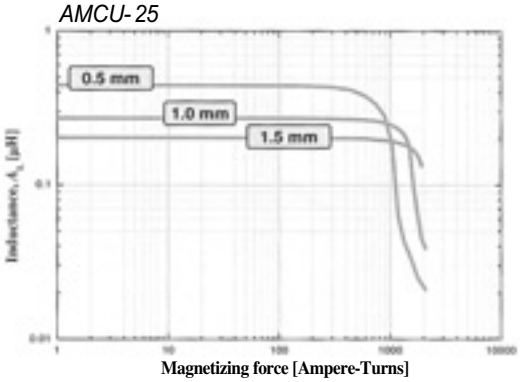
AMCU-16B



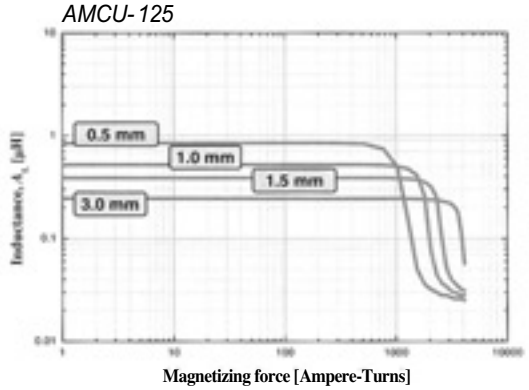
AMCU-20



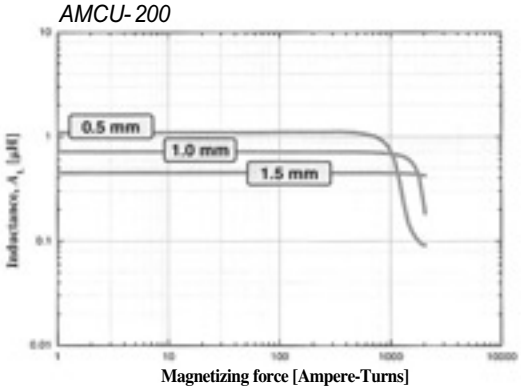
AMCU-25



AMCU-125



AMCU-200



** Gap size (mm) : total air gap size with both air gaps.*

Low Profile Chokes

Product Summary

❯❯ Description

C series low-profile 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 permalloy.

AMOSENSE 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 wiht high saturation flux density of around 1.5 T.

AMOSENSE 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. AMOSENSE 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, AMOSENSE 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 core loss*
- *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*
- *Multiple output SMPS for DC/DC converter module*
- *Pulse frequency modulation (PFM) integrated circuit below 10 W class*
- *Pulse width modulation (PWM) integrated circuit above 10 W class*
- *Battery charger*
- *Miniature type of automobile circuit applications*

Standard Core Dimensions & Specifications

❯❯ C Series Low Profile Choke

Part No. #	Finished Core (mm) 1)			L_{eff} 2) (mm)	A_{eff} 3) (mm^2)	V_{eff} 4) (mm^3)	W_a 5) (mm^2)	A_L 6) (μH)	μ 7)
	OD	ID	HT						
C0510	4.7	1.9	1.3	10.0	0.85	8.8	2.8	0.026	245
C0620	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	32.0	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 length. 3) Nominal values of cross-section area.

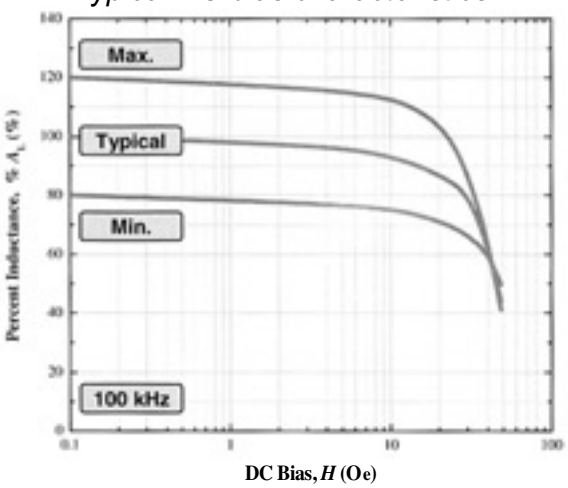
4) Nominal values of volume. 5) Nominal values of window area.

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.

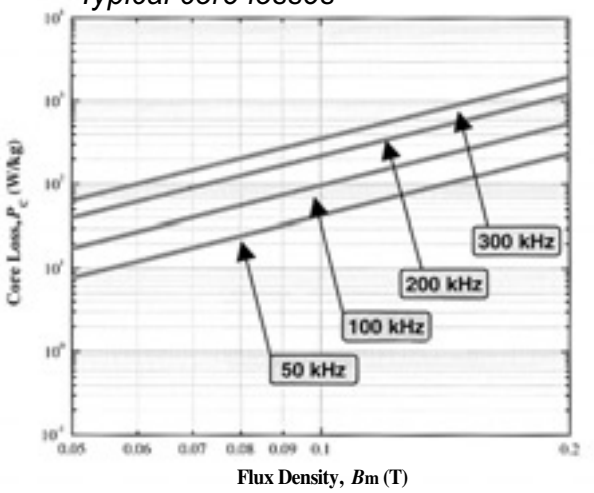
7) Typical permeability.

Typical Magnetic Characteristics

Typical DC bias characteristics

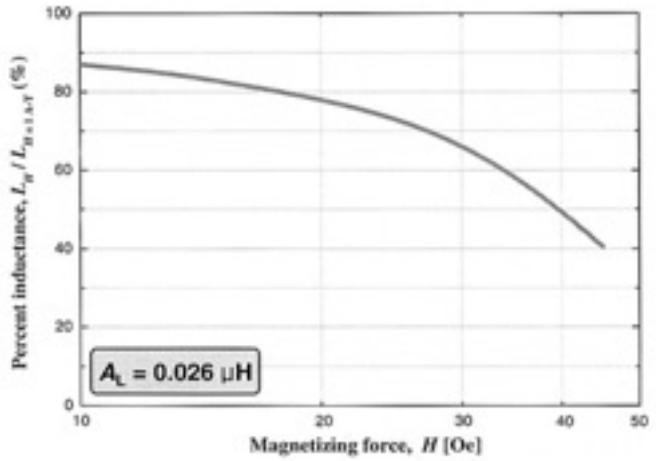


Typical core losses

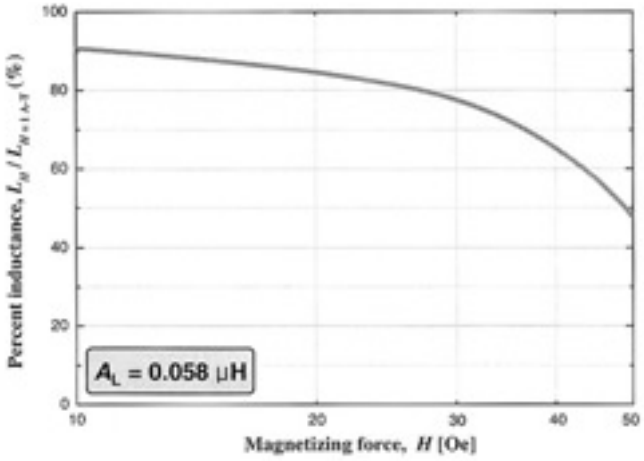


Typical DC bias Characteristics @ 100 kHz

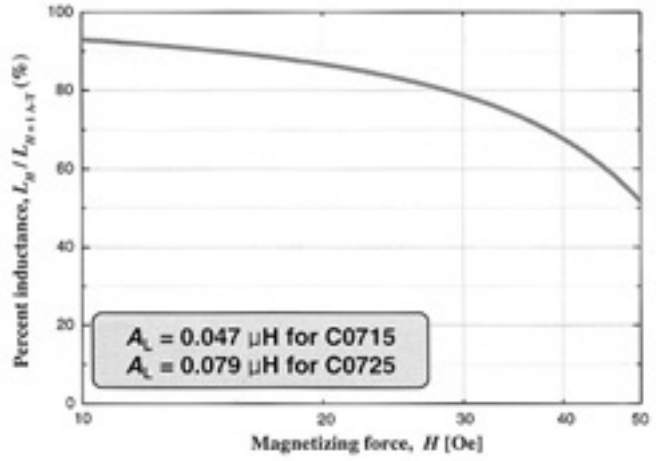
C0510



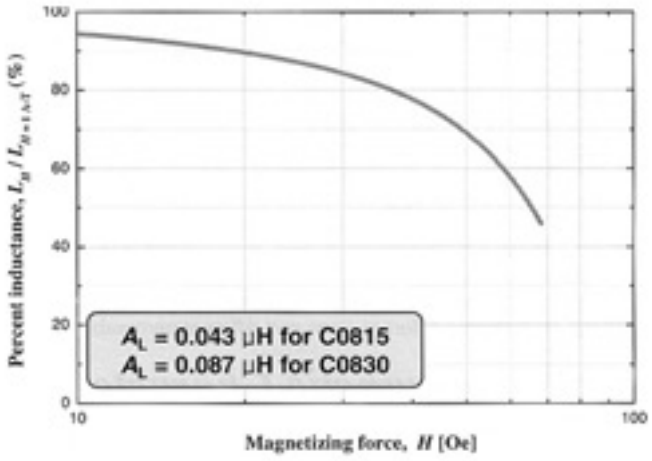
C0620



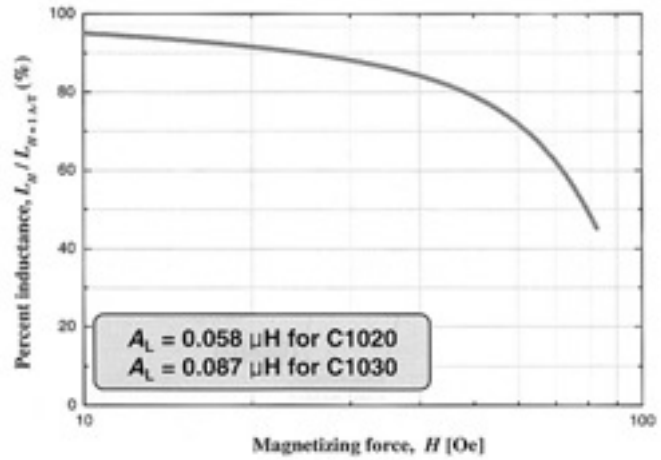
C0715 & C0725



C0815 & C0830



C1020 & C1030



** All characteristics as shown above are measured at room temperature, ~25℃.*

AMOS

Semiconductor Noise Protection Choke

Product Summary

❯❯ Description

AMB/AMK series are now available to reduce the spike noise in switch-mode power supplies such as personal/industrial PSU, UPS, Telecomm/Network SMPS. This type of noise caused by rapid changes in current and/or voltage.

In continuous mode converters, the output rectifiers have forward current flowing through them just prior to an instant voltage reversal across their terminals. This causes a sizeable spike of reverse current to flow through the diode. This spike usually flows through the power switch at its turn-on transition due to the reverse recovery of the output rectifier and/or catch diode. This added switching loss can be much more than the conduction loss of the power switch if the input voltage of the supply is high. One method to reduce this phenomenon is to add a AMB/AMK series Bead/Spike Killer cores in series with the output rectifier or the catch diode.

AMB/AMK series semiconductor noise suppression cores are a choke whose core exhibits a very square hysteresis curve, so called Z-shape B-H loop, as exhibited by Co-based amorphous alloy. Chokes made with this core material have very high permeability and quickly enter saturation, but do pass through a period of linear inductance behavior.

To use the AMB series cores, it is just to slip a suitable AMB series core to the leads of diode or MOSFET. AMK series spike killer is often used as a single turn or with very few turns of wound only. AMB/AMK series semiconductor noise suppression choke can offer an easiest way to install and effective solution to act against the source of spike noise in PWM switch-mode power supplies.

❯❯ Feature

- *Low loss which improve the efficiency of a switch-mode power supplies*
- *High inductance when the current crosses zero*
- *Very low saturated inductance*
- *Reduction of ripple noise and ringing*
- *Simplifies design of noise suppression circuit*

❯❯ Application

- *Softening the reverse recovery phenomena in noise suppression*
- *Protection diode from being broken by spike voltage*
- *Ringing suppression in switch-mode power supplies*
- *Limit semiconductor rectifier reverse recovery current in continuous mode converter*
- *Motor controller circuit used for MOSFET and /or bipolar transistor, BJT*
- *Ringing protection in MOSFET*
- *Time delay function for MOSFET gate trigger*
- *Bettery charger for switch-mode power supplies*
- *AC adapter for switch-mode power supplies*
- *Spike noise protection for MOSFET bridge circuit*
- *Battery charger for switch-mode power supplies*
- *AC adapter for switch-mode power supplies*

❯❯ AMB Series Bead

Part No.	Finished Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (mm^2)	$2\Phi_m$ [4] (μWb)	A_L [5] (μH)	Insulating cover
	OD	ID	HT					
AMB-03A-N	4.0	1.6	4.5	7.7	1.20	0.9	3.0	blue class resin
AMB-03S-N	4.0	1.6	6.0	7.7	1.80	1.3	5.0	
AMB-04S-N	5.0	1.6	6.0	9.1	3.60	2.7	9.0	
AMB-04B-N	5.0	1.6	7.5	9.1	4.80	3.6	12.0	
AMB-045A-N	6.5	2.4	6.0	13.3	0.6	0.6	0.86	

Notes :
1) The finished core dimensions shows a limiting ones.
2) Nominal values of magnetic path length.
3) Nominal values of cross-section area.
4) Minimum value at 50kHz, 80 A/m, RT(~25℃).
5) Normalized inductance, Minimum value at kHz with the oscillation voltage of 1V, RT(~25℃)
6) Minimum value at 50kHz with the oscillating voltage of 1V, 1turn, RT(~25℃).

❯❯ AMK Series Spike Killer

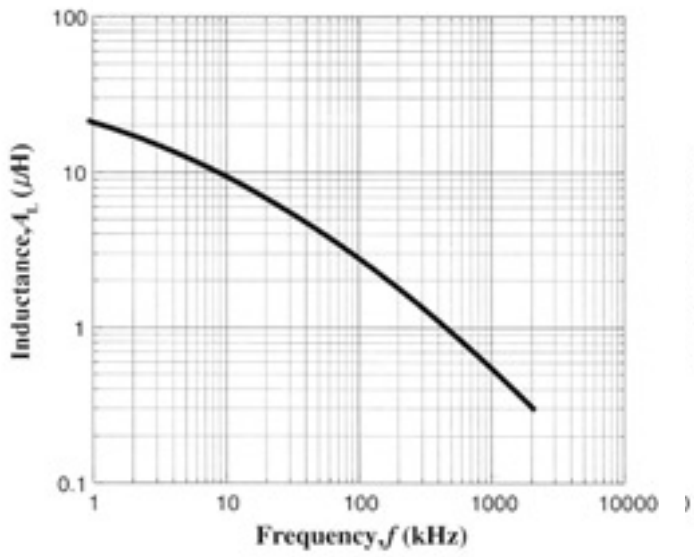
Part Number	Finishd Core (mm)[1]			L_{eff} [2] (mm)	A_{eff} [3] (mm^2)	V_{eff} [4] (mm^3)	W_a [5] (mm^2)	A_L [6] (μH)	$2\Phi_m$ [7] (μWb)
	OD	ID	HT						
AMK-09S-N	10.7	5.5	6.3	25.0	3.5	88	24	1.8	3.9
AMK-10S-N	11.9	5.8	6.3	27.0	4.7	129	26	2.2	5.3
AMK-12A-N	14.0	6.6	4.8	31.0	4.7	147	34	1.9	5.2
AMK-12S-N	14.0	6.6	6.3	31.0	7.0	221	34	2.8	7.9
AMK-14S-N	15.9	6.8	6.5	34.3	10.0	350	36	3.7	11.2
AMK-15A-N	16.7	10.5	6.3	42.2	5.3	223	87	1.6	5.9
AMK-15S-N	16.9	8.6	6.5	38.7	8.8	345	59	2.8	9.8
AMK-18S-N	19.8	10.4	6.4	46.5	10.5	496	85	2.8	11.8
AMK-21S-N	22.8	12.4	6.3	54.2	12.3	675	121	2.8	13.8

Notes :
1) The finished core dimensions shows a nominal ones. Please consult sales department for tolerance.
2) Nominal values of magnetic path length.
3) Nominal values of cross-section area.
4) Nominal values of volume.
5) Nominal values of window area.
6) Normalized inductance, Minimum value at kHz with the oscillation voltage of 1V, RT(~25℃)
7) Total flux with its tolerances of ±15%. All values are measured at 50kHz, 80 A/m, RT(~25℃)

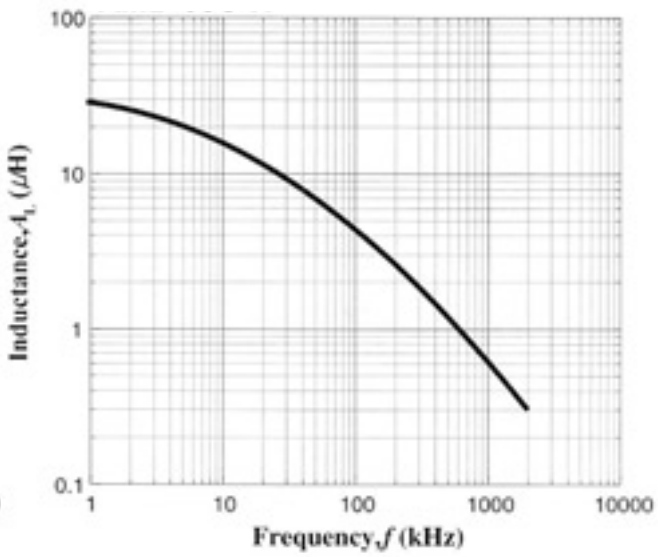
Typical Magnetic Characteristics

❯❯ *Typical frequency dependency of inductance, $A_L(f)$*

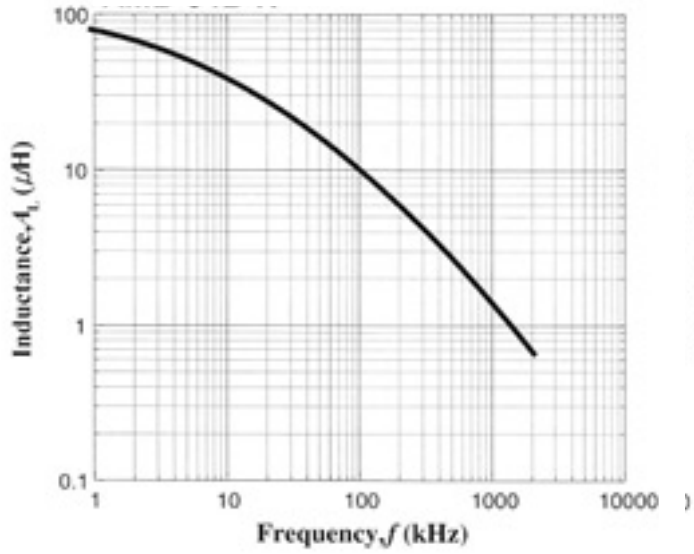
AMB-03A-N



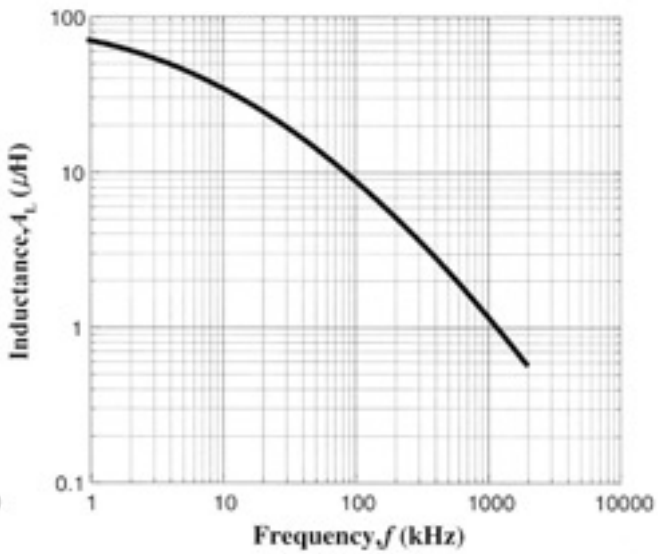
AMB-03S-N



AMB-04B-N



AMB-04S-N

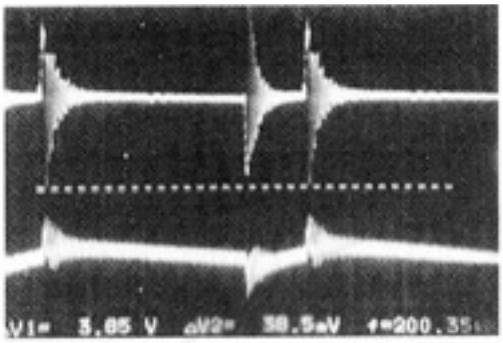


** The frequency characteristics are measured using 1turn at room temperature, ~25℃.*

Typical Noise Suppression Effect using AMB/AMK series

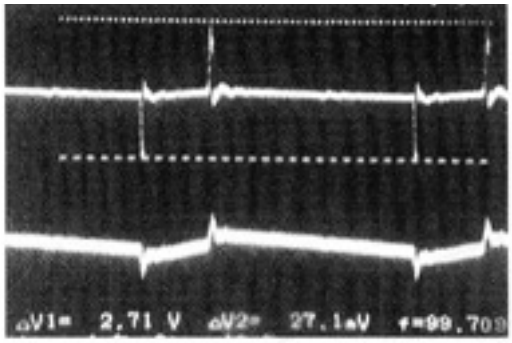
❯❯ *Output voltage and its current waveforms in output terminal*

Without AMB/AMK



* voltage : 1 V/div; current : 0.2 A/div

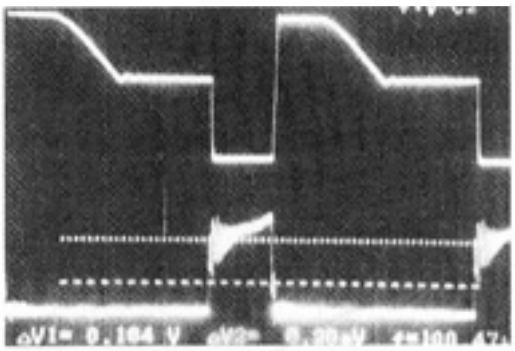
With AMB/AMK



* voltage : 1 V/div; current : 0.2 A/div

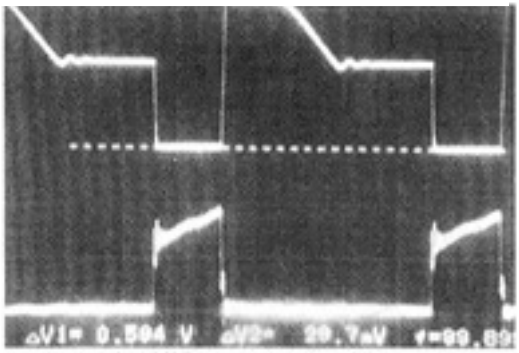
❯❯ *FET/MOSFET clamped voltage and its current waveforms*

Without AMB/AMK



* voltage : 200 V/div; current : 0.5 A/div

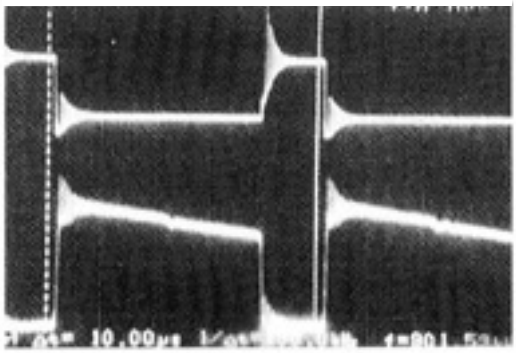
With AMB/AMK



* voltage : 200 V/div; current : 0.5 A/div

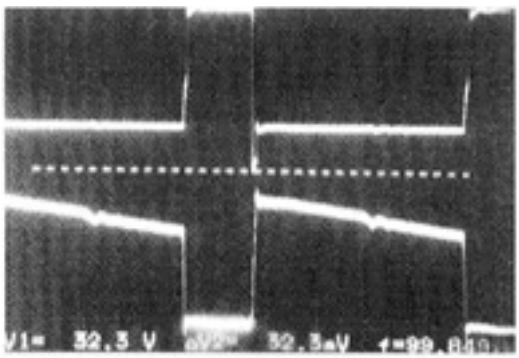
❯❯ *Voltage and its current waveforms in rectifying diode and catch diode*

Without AMB/AMK



* voltage : 20 V/div; current : 5 A/div

With AMB/AMK



* voltage : 10 V/div; current : 5 A/div

AMOS Inductive Components for Telecommunication

Product Summary

❯❯ Description

AMP series magnetic cores of high permeability with and/or without dc superimposed capability are suitable for several types of pulse transformer in modern telecommunication equipments such as integrated service digital network (ISDN), local area network (LAN), all types of digital subscribe lines (xDSL), modem and etc.

Pulse transformer for digital communication and data line choke for signal conditioning are made of high permeability with/without dc capacity. These pulse transformers electrically isolate the network circuit from the terminal equipment. The miniature structure is now necessary for the pulse transformer. Normally Mn-Zn ferrite has been used as the magnetic core material for pulse transformers. Because of their low impedance resulting from low permeability, the reduction in size of the pulse transformer is difficult to achieve. If and increase in impedance is achieved by increasing in number of turns of wound, the frequency characteristics of the impedance become inferior, by a decrease in resonance frequency with increasing interline capacitance. Thus, it is very difficult to satisfy the recommendation such as ITU-T 1.430 standards which comes from the international telecommunication union (ITU).

AMOSENSE have been ready to supply a possible way in a smaller size of pulse transformer using our own high quality amorphous alloys. Many types of amorphous alloys with tailored magnetic qualities have been developed with graded magnetic properties for all common ISDN interfaces such as S_{2M}, S_o, U_{po}, U_{ko} as well as xDSL technologies and data line chokes.

❯❯ Feature

- *High permeability with dc superimposed capacity*
- *Reduce in size*
- *High impedance overall the wide-range of frequency*
- *Meet the ITU-T 1.430 standards*
- *High permeability without dc superimposed capacity*
- *Getting a suitable insertion loss in wide-range of frequency*
- *Meet the insulation requirements according to IEC 950, EN 60950, BS 601*
- *Low core loss*
- *Lower the power consumption in telecommunication equipment*

❯❯ Application

- *S_o-interface*
  - *Link between the network termination (NT) and subscriber terminals (TE)*
  - *Link between the private branch exchange (PBX) and subscriber termonals (TE)*
- *U_{PO}/U_{KO}-interface*
  - *Link between a local central office and the network termination (NT1)*
- *S_{2M}-interface*
  - *Link between a local central office and the private branch exchange (PBX)*

❯❯ AMP Series Telecommunication Products

Part No.	Finishd Core (mm)[1]			I_{eff} [2] (mm)	A_{eff} [3] (mm^2)	A_{LO} [4] (μH)	A_{LV} [5] (μH)	Remark [6]
	OD	ID	HT					
AMP-10S-32	11.1	5.1	5.8	25.5	6.1	26.0[a]	-	S_{2M}
AMP-10B-30	11.1	5.3	7.6	25.5	8.2	20.7[a]	14.1[b]	S_o(1mA), 4kV
AMP-10S-18	11.1	5.1	5.8	25.5	6.1	18.4[a]	12.4[c]	S_o(3mA)
AMP-06A-12*	6.8	3.0	4.1	15.0	3.8	9.8[a]	6.9[d]	S_o(4mA)
AMP-10S-14	11.1	5.1	5.8	25.5	6.1	8.9[a]	6.1[e]	S_o(5mA)
AMP-07A-08*	7.5	3.0	4.2	15.9	5.2	-	0.6[f]	U_{po}, DSL
AMP-10S-03	11.1	5.1	5.8	25.5	6.1	-	0.315-0.385[g]	U_{ko}(4B3T), DSL

Note 1 :
1) The finished core dimensions shows a limiting ones.
2) Nominal values of magnetic path length.
3) Nominal values of cross-section area.
4) Minimum value. Initial nominal inductance.
5) Minimum value under the dc bias current.
6) Typical application area.

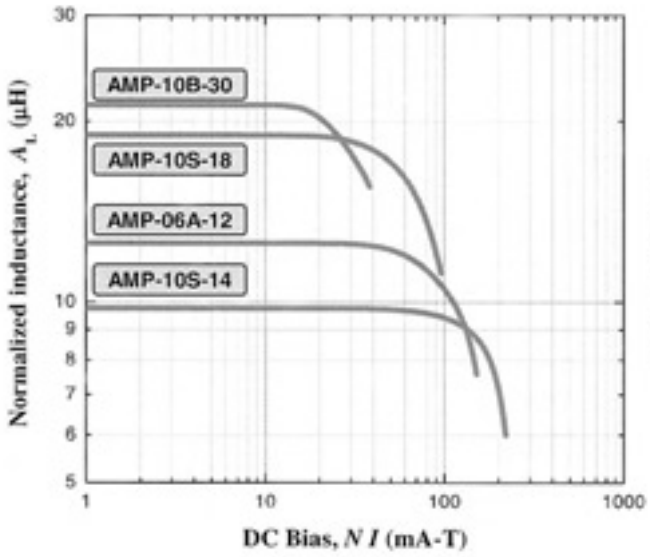
Note 2 : Measurement conditions :
a) 10kHz
b) 20kHz, I_{dc} x N = 19mA
c) 20kHz, I_{dc} x N = 66mA
d) 20kHz, I_{dc} x N = 120mA
e) 20kHz, I_{dc} x N = 145mA
f) 10kHz, I_{dc} x N = 4500mA
g) 10kHz, I_{dc} x N = 10.2A

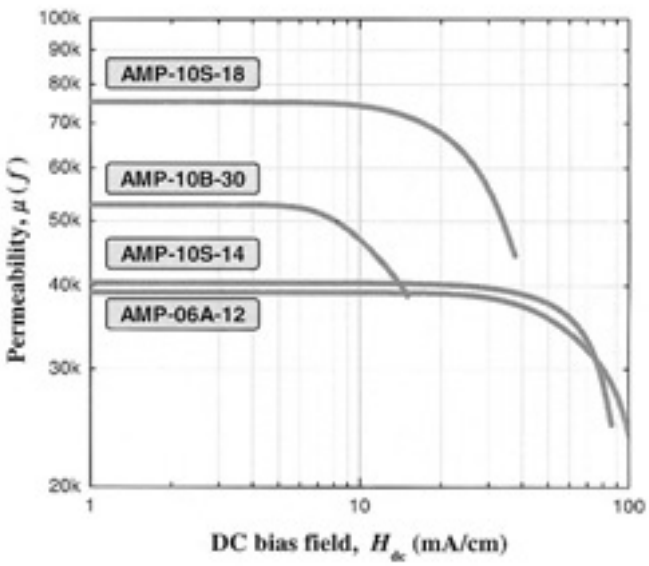
Note 3 :
** Parylene coated product on encapsulated with aluminum case. The other products are produced with plastic ones.*

Typical Magnetic Characteristics

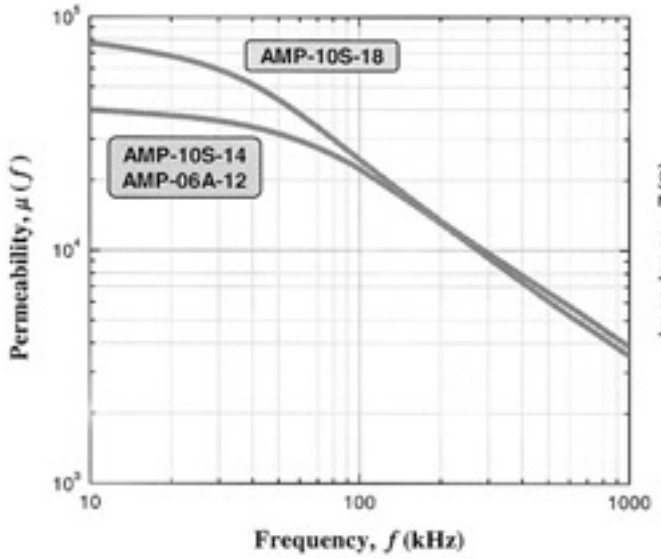
❯❯ *Typical frequency & DC current dependency for S_0-interface pulse transformer*

Typical DC bias current properties at 10 kHz

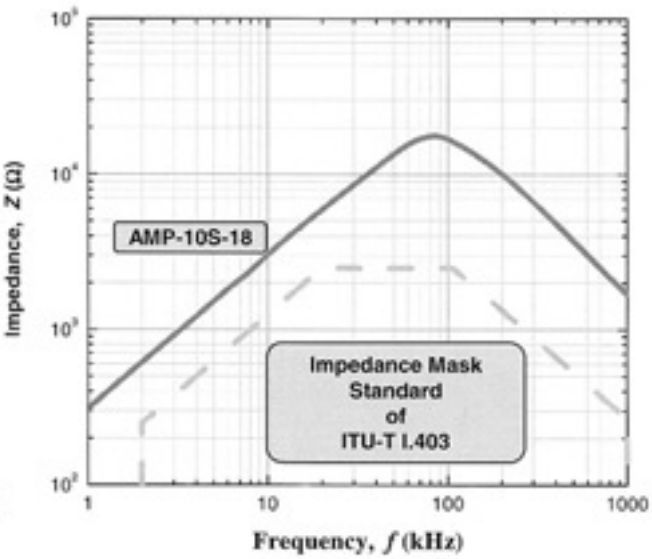




Typical frequency properties



Typical impedance properties

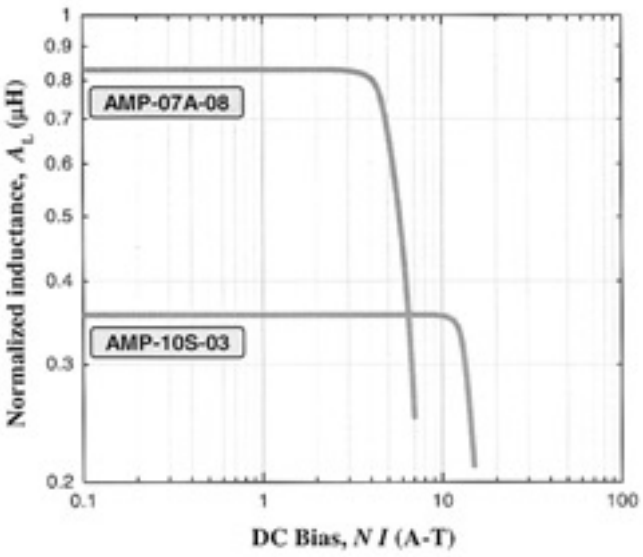


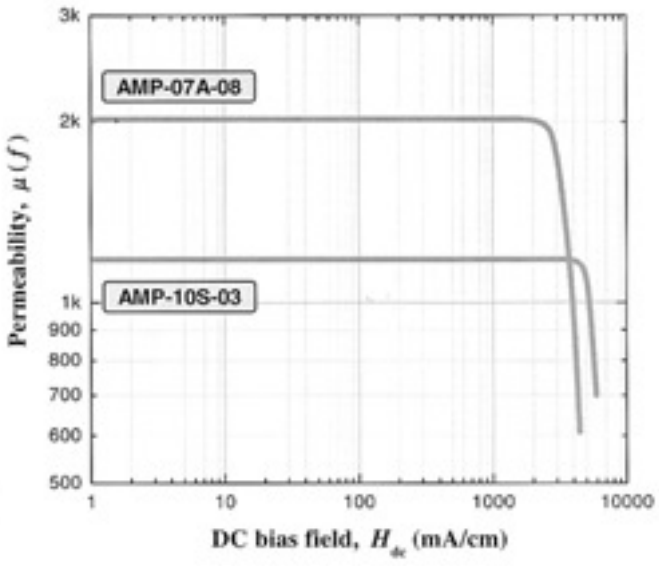
** All characteristics as shown above are measured at room temperature, ~25℃.*

Typical Magnetic Characteristics

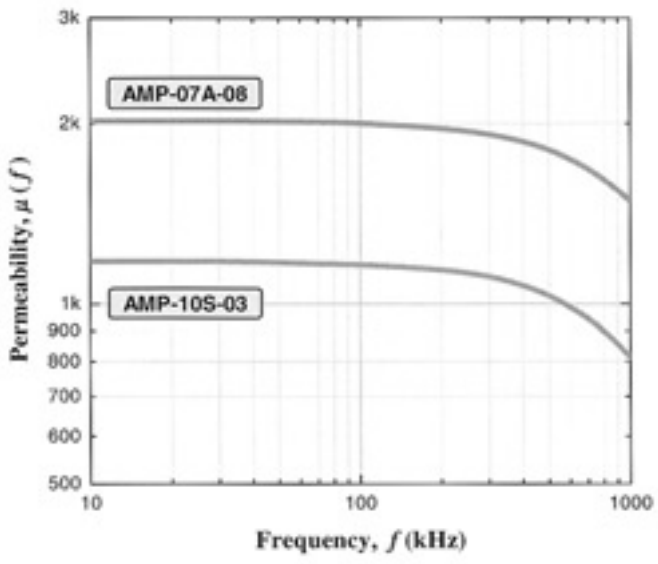
❯❯ *Typical frequency & DC current dependency for U-interface pulse transformer*

Typical DC bias current properties at 20 kHz

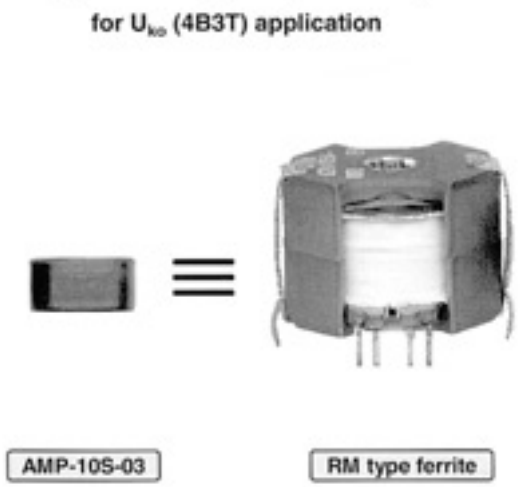




Typical frequency properties



Typical shapes (arb. unit)



** All characteristics as shown above are measured at room temperature, ~25℃.*