Committed to building the most1
professional manufacturer in the
nanocrystal industry

三环奥纳
SANHUANAONA

TIANJIN SANHUANAONA
Technology Co., Ltd.

2025 Company Manual

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SANHUANAONA

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Electronic sample

Committed to building the most1 professional manufacturer in the **nanocrystal industry**

TIANJIN
SANHUANAONA

Message from **Mr. An Hailu,** General Manager and founder

In the past, taking advantage of the east wind of national reform and development, we have been fortunate enough to make some achievements in nanocrystalline materials, and together with industry colleagues, we have brought Chinese nanocrystals to the world, and played our due role in building modern civilization, ensuring the safety of people's livelihood, and promoting human well-being.On this basis, we always uphold the corporate vision of “committed to building the most professional manufacturer in the nanocrystal industry”, perseverance and pioneering.

Today, at a new starting point for high-quality development, Sanhuan Ona shoulders a greater industry mission and responsibility of the times.We will always aim at our original intention, focus on our main business, work hard to govern, continuously enhance our innovation capabilities and core competitiveness, make solid progress on the road of automation, enterprise networking, digitization, intelligence, and globalization, and strive to repay users, employees, and society with better performance, and contribute to the beautiful cause of the motherland's prosperity and strength, national revitalization, and people's happiness. The strength of the three rings Ona.

Index

Company

Product

BRAND HISTORY

2004 Company establishment time

12000 Nanocrystalline strip

9000 Nanocrystalline magnetic ring

Tianjin Sanhuanaona Technology Co., Ltd. (Formerly Tianjin Ona Technology Co., LTD.) was established in December 2010, is a professional committed to amorphous nanocrystalline soft magnetic materials and downstream products research and development, design, production, sales of state-level high-tech enterprises, September 2014, Beijing Zhongke Sanhuan High-tech Co., LTD. (Stock code: 000970), the largest NdFeb listed company in China, invested as a shareholder and changed its name to Tianjin Sanhuanaona Technology Co., Ltd. The company is located in the special automobile Industrial Park, Jixian Development Zone, Tianjin, with superior geographical location and convenient transportation. The headquarters in Tianjin covers an area of 40,000 square meters and has built its own standardized plant. At present, the R & D team has 50 people and the production line has 366 people.

To continue to provide the best quality products for partners is the creed that tri-ring Ona has always adhered to, in line with the responsible attitude to employees, investors and partners, do not forget the original intention of contributing to the development of amorphous nanocrystalline soft magnetic materials, tri-ring Ona will be down to earth, forge ahead, continue to innovate, and dare to climb the new peak of amorphous nanocrystalline soft magnetic materials.

Sanhuan Ona regards product quality as the foundation of enterprise survival. The company has passed the IS09001 quality management system certification, ISO14001 environmental system certification, ISO45001 occupational health certification, and IATF16949:2016 system certification in the automotive industry. As the earliest engaged in the research and development of iron-based amorphous nanocrystalline alloy strip is one of the enterprises, the company's technical team has been adhering to the spirit of innovation, has now developed to create nanocrystals with 719/740/754/769/766/782/105 series products, such as independent and obtain a number of invention patents, utility model patents and soft.

Relying on the perfect integrated business system of research, production, sales and service, the company's products have been widely used in new energy vehicles, household appliances, computer systems, switching power supply systems, high and low voltage power distribution systems, solar power generation systems, communication networks and other fields or to provide nanocrystal soft magnetic materials customized solutions.

ORGANIZATIONAL STRUCTURE

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TIANJIN SANHUANAONA TECHNOLOGY CO., LTD.

- Research and development base
  - Technology center
    - laboratory
- Production base
  - Tianjin production base
  - Jiangsu production base
- Marketing center
  - Tianjin Marketing Center
  - Shanghai Marketing Center
  - Shenzhen Marketing Center
- Subsidiary
  - Jiangsu third ring Ona
  - Jiangsu Onamag
- Beijing Branch

DEVELOPMENT HISTORY

2004
Beijing Xindake

2010
Established AONA Company

2014
Bring in Zhongke Sanhuan, Change its name to Sanhuan AONA

2020
Invest in Jiangsu Sanhuan AONA and Jiangsu AONA Magna

2021
Shanghai Marketing Center was established

2022
Beijing branch was established

2023
Shenzhen Marketing center is established

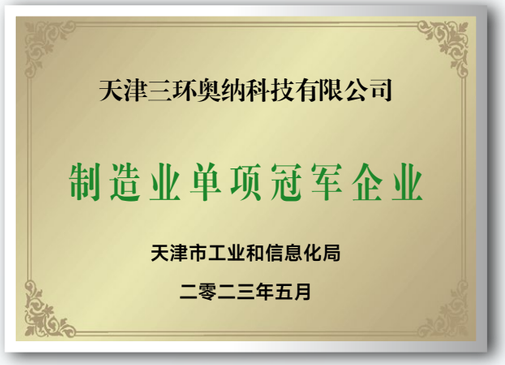
2024
Start construction of R&D and production building

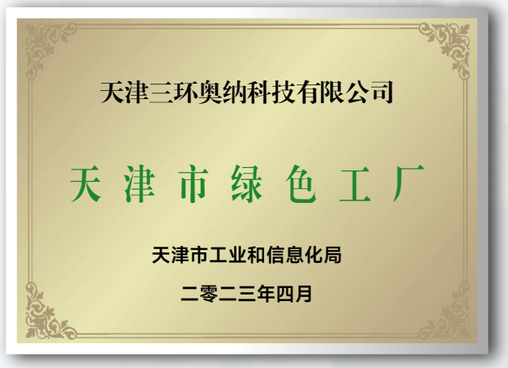
2025
Set up a French marketing center

Continuous development

Since its inception, the company has always adhered to the development concept of aggressive and innovative development, and has gradually grown steadily and achieved remarkable achievements.We know that only by continuously pursuing excellence can we be invincible in the fierce market competition.

QUALIFICATION CERTIFICATE





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Multiple honors and certifications

The company has won the honorary titles of "high-tech Enterprise", "Specialized and special new enterprise", "specialized and special and new small giant Enterprise", "Leading Enterprise", "Top Ten tax enterprises in Jizhou District", "Tianjin Killer products", "Tianjin Science and Technology enterprises", "Enterprise Technology Center", "Tianjin Green Factory", "National Green Factory" and so on. And independently applied for 34 invention patents and 40 utility model patents.

MARKET DISTRIBUTION

Overseas market

Domestic market

Exported to home and abroad

Today, our products have spread all over the world, becoming a bridge connecting China and the world.We are very proud and at the same time know that we have a great responsibility.We will continue to uphold the tenet of "quality first, customer first" to provide global consumers with more high-quality and innovative products, so that the world can feel the wisdom and power from China.

ENTERPRISE ADVANTAGE


Advanced automatic belt spraying equipment

01

Self-developed, advanced automatic belt spraying equipment, so that three-ring Ona has a reliable supply guarantee, nanocrystalline material production capacity in the industry leading position, an annual output of 9000 tons of nanocrystalline strip, nanocrystalline magnetic ring 60 million.

Excellent strip properties

02

Excellent strip characteristics, can meet high-end applications in different fields, can provide customized design products

※High permeability, high saturation magnetic induction intensity, low loss

※ Corrosion resistant

※ Low temperature resistance

※ Stress resistance

※ Anti-DC

※ 100K permeability is greater than 45,000

※ The initial permeability can be as high as 250,000

※ Mass production of nanocrystalline strip achieves 12μm

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High-quality pre-sales and after-sales service

03

With Tianjin headquarters as the core, Sanhuan Ona has a number of production bases and offices, which can quickly provide high-quality pre-sales and after-sales service to surrounding customers.

Strong R&D team

04

Sanhuan Ona has a strong R&D team. The R&D team and enterprise management take Anhailu (Graduated from the Department of Physics of Jilin University) as the core, and have been engaged in scientific research on amorphous nanocrystalline soft magnetic materials for more than 40 years.Relying on the Third Ring Road Research Institute of Zhongke, Beijing University of Science and Technology, North China Electric Power University, Tianjin Technology Center self-built R&D laboratory, with dual-frequency tester, DC hysteresis loop tester, AC hysteresis loop tester, pressure tensile tester, spectrum analyzer, three-slot hot and cold shock test chamber, transformer tester, high and low temperature experiment box, high-precision metallographic microscope, soft magnetic AC test system, salt spray experiment box and other advanced experimental equipment, in line with the automotive electronics industry quality certification (AEC-Q200) standard.Tianjin Technology Center has built its own R&D laboratory, with dual-frequency tester, DC hysteresis loop tester, AC hysteresis loop tester, pressure tensile tester, spectrum analyzer, three-slot hot and cold shock test chamber, transformer tester, high and low temperature experiment chamber, high-precision metallographic microscope, soft magnetic AC test system, salt spray experiment box and other advanced experimental equipment, in line with the automotive electronics industry quality certification (AEC-Q200) standard.

Strict product quality inspection process

05

Strict product quality inspection process, high standards and strict requirements of production testing.

The products have successively passed ISO9001, ISO14001, ISO45001, IATF16949 and many other certifications.Owns all AEC-Q200 reliability test equipment.

PRODUCTION STRENGTH

Advanced equipment

The self-developed and advanced automatic belt spraying equipment enables Sanhuan Ona to have reliable supply guarantee, and the production capacity of nanocrystalline materials is in the leading position in the industry.

Efficient production

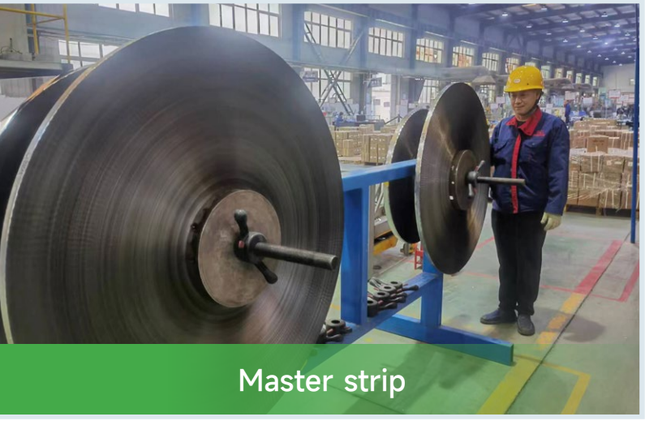
Our production line operates efficiently, and every link has been carefully designed and optimized to ensure that every link of the product from raw materials to finished products is accurate.We have an experienced and highly skilled production team. They work hard on the production line day and night, interpreting the spirit of the craftsmen with wisdom and sweat, and creating products of excellent quality.

Warehouse

Strip production unit

Automatic production line

Production line



Master strip

Strip cutting

Component potting

Laboratory

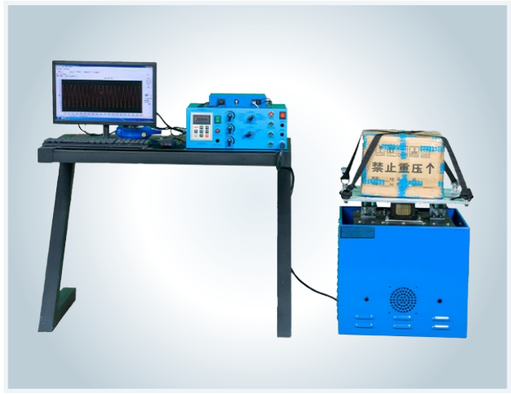
TESTING EQUIPMENT

Professional and reliable

Relying on the Third Ring Road Research Institute of Zhongke, Beijing University of Science and Technology, North China Electric Power University, Tianjin Technology Center self-built R&D laboratory, with dual-frequency tester, DC hysteresis loop tester, AC hysteresis loop tester, pressure tensile tester, spectrum analyzer, three-slot hot and cold shock test chamber, transformer tester, high and low temperature experiment box, high-precision metallographic microscope, soft magnetic AC test system, salt spray experiment box and other advanced experimental equipment, in line with the automotive electronics industry quality certification (AEC-Q200) standard.

Quality assurance-Laboratory DV test verification

- Spectrometer
- Hot and cold shock test chamber
- Winding machine
- Pressure tensioner
- Digital bridge
- Precision impedance analyzer
- Cleanliness tester



PRODUCT ADVANTAGE

After the nanocrystalline magnetic ring assembly is potted, the mass production change rate is extremely excellent under the temperature cycle of -40°C ~150°C , which can be controlled within 5%.

Product name	Size	Performance requirements
Magnetic ring	87*26*27/71*10*27/3.5	AL: ≥ 40uH @10kHz,0.3V AL: ≥ 23uH @100kHz,0.3V

Pilot project		Al: > 40uH 10KHz,0.3V	Al: > 23uH 100KHz,0.3V	Al: > 40uH 10KHz,0.3V	Al: > 23uH 100KHz,0.3V	Al: > 40uH 10KHz,0.3V	Al: > 23uH 100KHz,0.3V	Al: > 40uH 10KHz,0.3V	Al: > 23uH 100KHz,0.3V	Al: > 40uH 10KHz,0.3V	Al: > 23uH 100KHz,0.3V	Al: > 23uH 100KHz,0.3V	Al: > 23uH 100KHz,0.3V
High temperature test (150°C)	NO.	Before potting		After potting		Rate of change		Before the high temperature experiment		After the high temperature experiment (room temperature state)		Rate of change	
	1	45.6	31.6	45.0	31.2	-1.32%	-1.27%	45.0	31.2	45.2	30.8	0.44%	-1.28%
	2	43.5	29.8	43.0	29.9	-1.15%	0.34%	43.0	29.9	43.1	30.2	0.23%	1.00%

	NO.	Before potting		After potting		Rate of change		Before the low temperature experiment		After the low temperature experiment (room temperature state)		Rate of change	
Low temperature test (-40°C)	1	47.0	30.5	47.1	30.3	0.21%	-0.66%	47.1	30.3	47.1	30.3	0.00%	0.00%
	2	46.2	30.4	46.3	31.2	0.22%	2.63%	46.3	31.2	46.3	31.1	0.00%	-0.32%

The difference and scope of application between 719 strip and 782 strip

719 Stress test of product under arbitrary shape

10kHz 0.3V L=10.1μH
100kHz 0.3V L=8.4μH

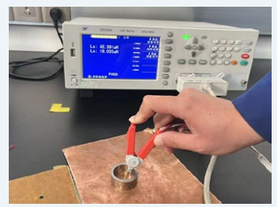
10kHz 0.3V L=10.3μH
100kHz 0.3V L=8.6μH

10kHz 0.3V L=10.2μH
100kHz 0.3V L=8.5μH

remark:

100Mz highest impedance (Z) material
Best stress stability（The average inductance remains unchanged when the deformation remains 80%)
Application direction: Cutting iron core, spraying iron core, shape variable large iron core, automobile (seismic)

782 Stress test of product under arbitrary shape



10kHz 0.3V L=42.39μH
100kHz 0.3V L=19.03μH

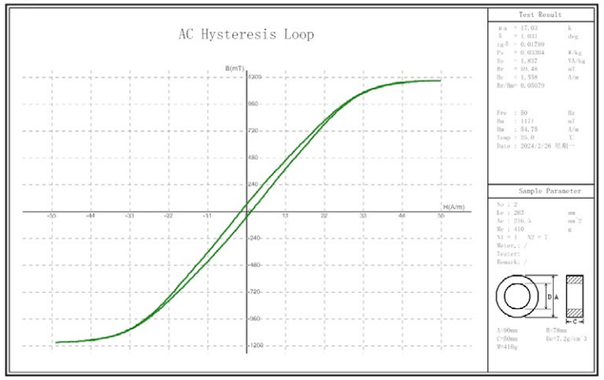
10kHz 0.3V L=41.45μH
100kHz 0.3V L=16.29μH

remark:

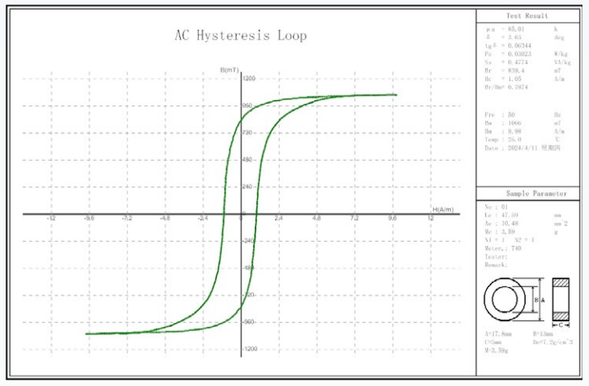
100KHz highest permeability material,
Stress stability (70% average inductance at 80% deformation)
Application direction: Annular core, 719 can not meet the case

The BH curve and full frequency curve of the commonly used strips of our company

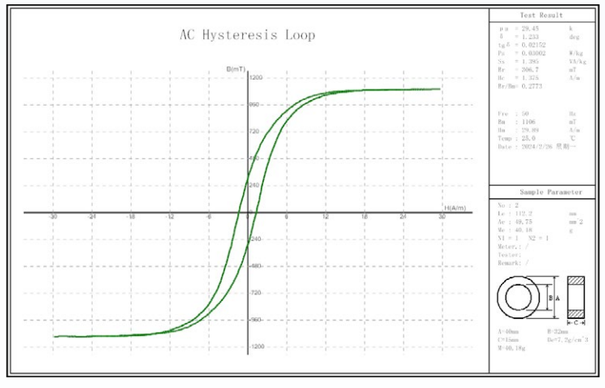
• 719 BH curve



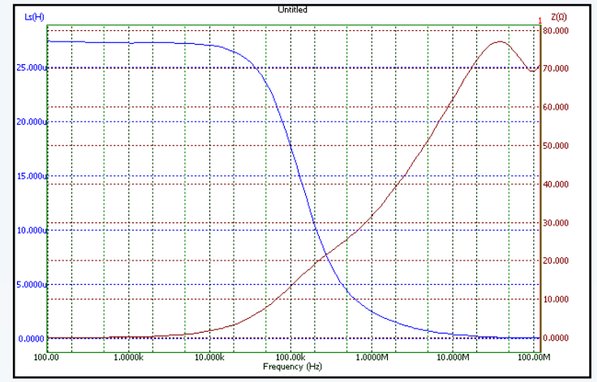
• 740 BH curve



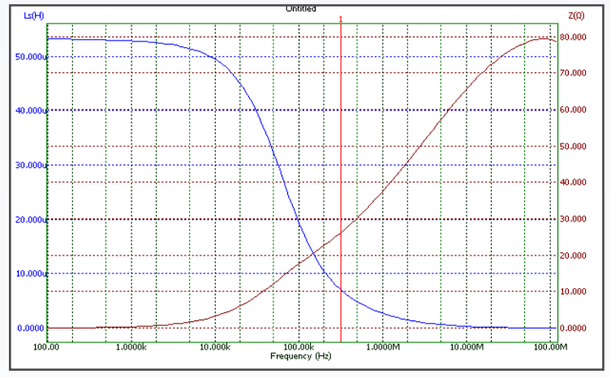
• 782 BH curve



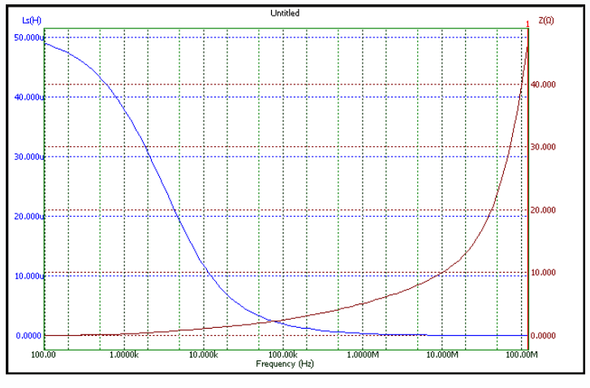
• 719 Full frequency curve



• 782 Full frequency curve



• 740 Full frequency curve



Iron-based ultrafine crystal strip

Product Introduction

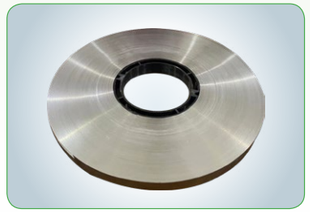
Iron-based nanocrystals are composed of Fe, Nb, Cu, Si, B, etc.When iron-based amorphous alloys containing Cu and Nb are annealed above the crystallization temperature, they will form a very fine grain structure with a grain size of only 10-20 nm. The crystalline material formed by this amorphous alloy after special crystallization and annealing is called a nanocrystalline alloy. The nanocrystalline material has excellent characteristics such as high saturation magnetic induction strength, high permeability, low coercivity, low loss and good stability, high strength toughness, wear resistance and corrosion resistance. As a nanocrystalline alloy material with the best performance and price ratio in metal soft magnetic materials, it can replace silicon steel, permalloy and Ferrite has become an ideal material for medium and high frequency transformers, transformers, and inductive components.

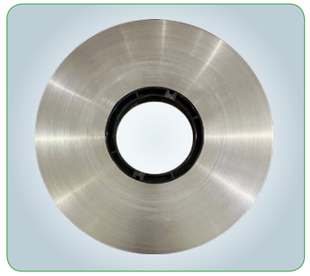
Application Area

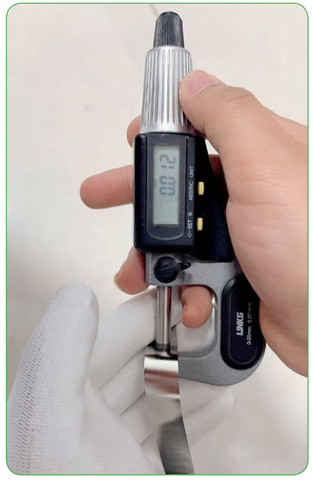
It can replace silicon steel, permalloy and ferrite as the main transformer, control transformer, filter inductor, energy storage inductor, reactor, magnetic amplifier, saturation reactor core, EMC filter common-mode inductor and differential-mode inductor core, and ISDN micro-isolation transformer core in various forms of high-frequency (20kHz-100kHz) switching power supply. At the same time, it is widely used in various types of transformer cores with different precision.

Performance Characteristics

High saturation magnetic induction intensity, high permeability, low coercivity, low loss and good stability, wear resistance, corrosion resistance, while having a low price, it has the best performance price ratio among all metal soft magnetic materials.







Physical Properties

Saturated magnetic induction intensity Bs	1.25T	Hardness	880kg/mm^2
Curie temperature	570°C	Density	7.18g/cm^3
Crystallization temperature	510 °C	Resistivity	130μΩ-cm
Saturation magnetostrictive coefficient	27×10^{-6}		

Table of comparison and difference between amorphous nanocrystalline soft magnetic materials and other soft magnetic materials

Magnetic Properties	Fe-Si Steel	Mn-Zn Ferrite	50NiPermalloy	80NiPermalloy	Cobalt-based Amorphous	Fe-based Amorphous	Fe-based Nanocrystalline
Saturation Flux Density Bs(T)	2.03	0.5	1.55	0.74	0.58	**1.56**	**1.25**
Coercivity Hc (A/m)	40	8	12	2.4	0.4	**2.4**	**1.2**
Initial Permeability μi	1500	3000	6000	40000	100000	**5000**	**80000**
Max Permeability μm	20000	6000	60000	200000	1000000	**50000**	**400000**
Electrical Resistivity (μΩ.cm)	50	5×107	30	60	140	**130**	**115**
Curie Temperature Tc(°C)	750	220	500	450	250	**399**	**570**

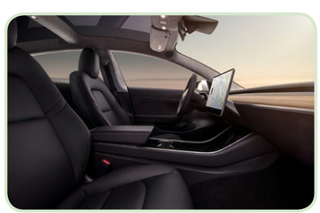
Magnetic ring & magnetic ring components for OBC, DC-DC and electric drive systems for new energy vehicles

Application Area

Magnetic cores for new energy vehicle OBC, DC-DC and electric drive systems are used as common-mode filter inductance cores for AC input and DC output in OBC, as BOOST inductance cores in DC-DC power supplies, and as common-mode filter inductance cores for DC input and AC output in electric drive systems.

Advantage

1. High power density
Nanocrystalline iron cores can achieve the highest power density while reducing product size and weight.
2. The magnetic permeability of the nanocrystalline core can be adjusted, and the magnetic permeability can be achieved: to ensure that the magnetic flux density is unsaturated under the large common-mode current of the electric drive system.
3. 12V → 48V electrification
Higher voltages have greatly changed electromagnetic compatibility requirements and will put pressure on manufacturers.
Due to the need to put on-board electromagnetic compatibility first in the application, nanocrystals have become the best solution.
4. Multiple electromagnetic compatibility methods
Use filters (for example, nanocrystalline CMC) to suppress noise from the source near the engine.Protective materials, only shielding the target.Nanocrystals also have application potential in this field.
5. 400 → 800 volts faster charging
The demand for higher voltage ultra-fast charging has increased safety requirements.Nanocrystal-based protection devices and safety devices.Will also play a key role.
6. Safe and long service life
The nanocrystalline iron core can operate reliably in the temperature range of -40°C ~ 150°C , and the nanocrystalline iron core is safer and has a longer service life.



Magnetic ring for photovoltaic and wind energy fields

Magnetic Ring For Photovoltaic Field

The nanocrystalline core can be used as a common-mode inductive core for the boost DC terminal, inverter AC terminal and auxiliary power supply terminal of photovoltaic inverters; it can also be used as a wiring harness filter core for the boost DC terminal, inverter AC terminal, DC bus and signal of photovoltaic inverters.

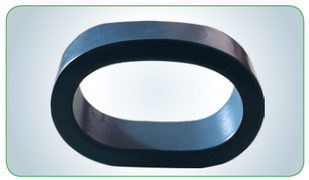
Advantage

1.Limit the internal radiation and electromagnetic energy leakage out of the control area.

2.To prevent external radiation of electromagnetic energy from entering the internal control area, the inverter adopts all-metal packaging of conductors such as aluminum or iron to achieve the effect of shielding.

Magnetic Ring For Wind Energy

Nanocrystalline magnetic rings can be used in the field of wind power to play a filtering role between the motor and the inverter, while reducing the shaft current and protecting the bearing.



Advantage

1.It is easy to install, simple to select, and effective immediately after installation.

2.Low cost, high reliability, long life and maintenance-free.

3.Effectively reduce the axial current and improve electromagnetic interference, especially in the high-frequency part.

Magnetic sheet for wireless charging

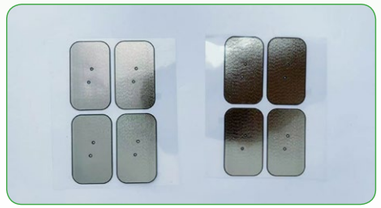
Application Area

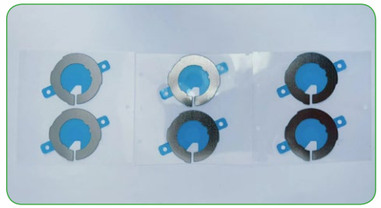
Mobile devices (smartphones, tablets, smart watches, etc.), smart home and IoT devices, car wireless charging systems.

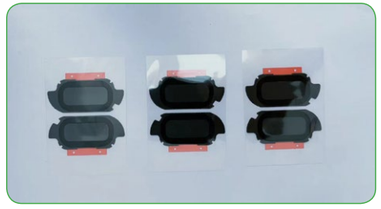
Advantage

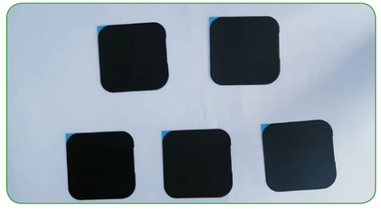
1. Convenient charging method. This method not only solves the problem of using traditional charging wire harness, but also makes the device have better waterproof performance.

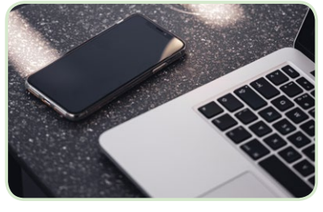
2. The charging process is stable and efficient. The magnetic conductive sheet can help optimize the magnetic field distribution, improve charging energy efficiency, and reduce heat and electromagnetic interference.

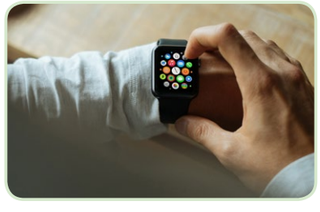












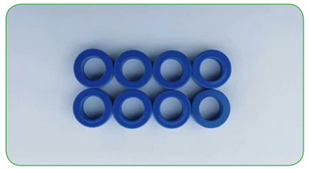
Coated Core

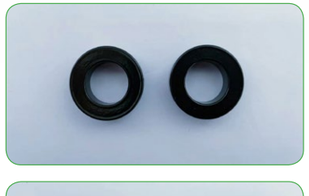
Application Area

IGBT drive transformer, current transformer, high frequency power transformer, ISPN network transformer, common mode filter, high-definition camera, signal transmission transformer, etc.

Advantage

- Small size, reduce the size of the device, reduce the amount of copper wire, and reduce the total cost of the device.
- The size can be customized, which is conducive to rapid design without mold opening.
- High insulation strength, which can adapt to the requirements of 1000V withstand voltage.
- High magnetic conductivity, and the inductance is more than 3 times higher than that of traditional ferrite.





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