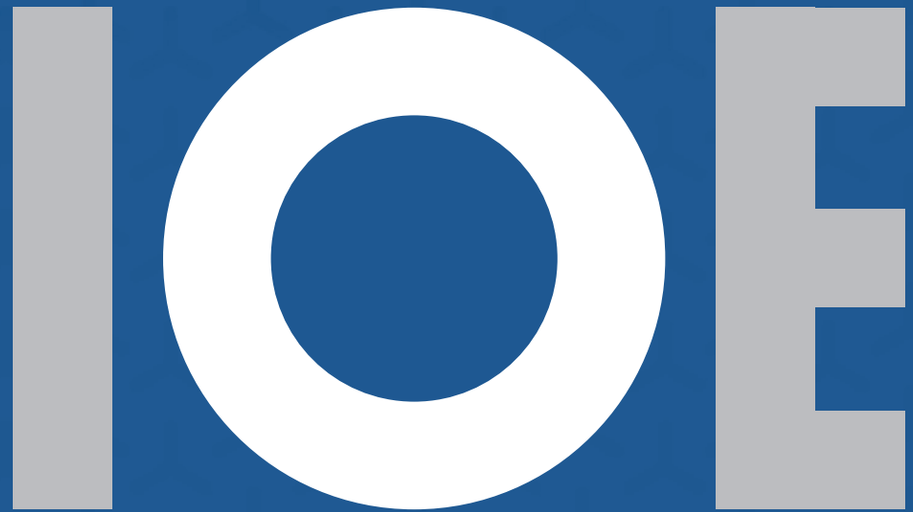
dongbuem.com

Revolution of
the electronics industry based on,
Magnetic Powder & Core

DONGBU ELECTRONIC MATERIALS

东部电子材料有限公司


IOE

Since 1996, Dongbu has operated a powder production factory
and a core product factory in Ansan, Korea.
We produce the magnetic core products of Moly Permalloy Powder(MPP),
High Flux(HF), Ultra Flux(UF), Sendust and Power Flux(PF).
There are made of metal alloy powders consisting of Ni, Fe, Al, Mo and Si etc.
We have special type cores such as EE, UU, Block, EQ and ER cores, as well as toroidal cores.
Also these cores have the soft magnetic properties such as the various permeability, low noise, soft flux saturation.
These cores are used for PFC, Noise Filter, and the renewable energy market
such as OBC and HDC for electric vehicle(EV) and the inverters for the photovoltaic(PV).
As you know, these cores show the best performance at high frequency and high applied current.
It is our constant mission to try to meet customers' needs in terms of quality, cost and delivery.

Introduction

自1996年以来，东部在韩国安山营运粉末产品与铁心产品工厂。
主要产品线是MPP，HF，UF，SDT和大功率磁通(PF)等各种磁性粉末和鐵芯。
其磁芯产品为由镍，铁，铝，钼和硅等的物质来构成的合金粉末来制成。
磁性磁環產品以外還在生產特殊形狀的磁芯，诸如EE，UU，Block，EQ和ER等各種形狀，
此已經具有软磁铁芯的特性，具体特性如多样的磁导率，低噪音，软磁通饱和等，
由此比较适合用於于PFC，Noise Filter以及可再生能源，电动车(EV)的OBC和HDC以及光伏逆变器(PV)等用途。
如您所知，我们产品在高频率和高电流应用上显示最佳性能。
東部公司座右铭就是以稳定品质，竞争成本和随时交期为主服务客户 。

HISTORY OF OUR COMPANY

1996. 06	Start the MPC business (from Dongbu Steel) 启动MPC业务（从东部制钢）
1999. 06	Change company name to 'Dongbu Fine Chemicals' 变更公司名称为"东部精蜜化学"
2000. 02	Plant expansion in Ansan, Korea(Powder & Core building) 在韩国京畿道安山市(Ansan City, Kyeonggi-province)工厂扩建（粉末及磁芯大楼）
2004. 12	Development of powder core for motors (with KERI) 研制用于马达的磁粉芯 （具有KERI）
2005. 06	Introduction of supersized press(1,000 ton) 导入超大型成形机（1,000吨）
2006. 12	Construction of ERP System 建设ERP系统
2008. 11	Development of Ultra Flux (World's first) 开发Ultra Flux（世界第一）
2009. 12	Achieve innovative quality (World's class) 实现革新的品质（世界级）
2010. 11	Change company name to 'Dongbu CNI' 变更公司名称为"东部CNI"
2011. 10	Completion of equipment investment for Solar/EV/UPS. Produce big-sized cores & special shape cores 设备投资完成; 太阳能/EV/UPS. 生产大尺寸和特殊形状的磁芯
2012. 05	Development of the large-sized reactor with powder cores for PV inverters(100 kW) 开发大型电抗器，光伏逆变器磁粉芯（100千瓦）
2013. 11	Development of metal powder cores for potable devices(Smart phone, Display, Tablet PC etc.) 开发的便携式的机器的磁粉芯（智能手机，显示器，平板电脑等）
2014. 09	Development of new material cores(customized cores available) 开发用于便携式机器的磁粉芯（可提供定制磁芯）
2015. 04	Launching of 'Dongbu Electronic Materials Co,. Ltd.' (take over the MPC business of Dongbu CNI) 成立东部电子材料有限公司。 （接管东部CNI的MPC业务）
2015. 05	Established Magnetic Material R&D Center in Ansan, Korea 在韩国京畿道安山市(Ansan City, Kyeonggi-province)设立磁材研发中心

MAJOR CUSTOMERS

DELTA

LG Life's Good

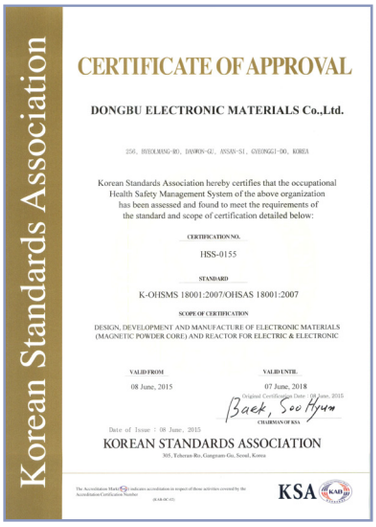
SAMSUNG

ARTESYN EMBEDDED TECHNOLOGIES

LITEON®

ABB

CERTIFICATE AND TECHNOLOGY


Korean Standards Association

CERTIFICATE OF APPROVAL

DONGBU ELECTRONIC MATERIALS Co.,Ltd.

256, HYEOKMANG-RO, DAWON-GU, ANSAN-SI, GYEONGGI-DO, KOREA

Korean Standards Association hereby certifies that the occupational Health Safety Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of certification detailed below:

CERTIFICATION NO.
HSS-0155

STANDARD
K-OHSMS 18001:2007/OHSAS 18001:2007

SCOPE OF CERTIFICATION
DESIGN, DEVELOPMENT AND MANUFACTURE OF ELECTRONIC MATERIALS (MAGNETIC POWDER CORE) AND REACTOR FOR ELECTRIC & ELECTRONIC

VALID FROM
08 June, 2015

VALID UNTIL
07 June, 2018

Original Certification Date : 08 June, 2015

CHAIRMAN OF KSA

Date of Issue : 08 June, 2015

KOREAN STANDARDS ASSOCIATION
305, Teheran-Ro, Gangnam-Gu, Seoul, Korea

KSA


Korean Standards Association

CERTIFICATE OF APPROVAL

DONGBU ELECTRONIC MATERIALS Co., Ltd.

256, HYEOKMANG-RO, DAWON-GU, ANSAN-SI, GYEONGGI-DO, KOREA

Korean Standards Association hereby certifies that the Environmental Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of certification detailed below:

CERTIFICATION No
EMS-1330

STANDARD
KS I ISO 14001:2009/ISO 14001:2004

SCOPE OF CERTIFICATION
DESIGN, DEVELOPMENT AND MANUFACTURE OF ELECTRONIC MATERIALS (MAGNETIC POWDER CORE) AND REACTOR FOR ELECTRIC & ELECTRONIC

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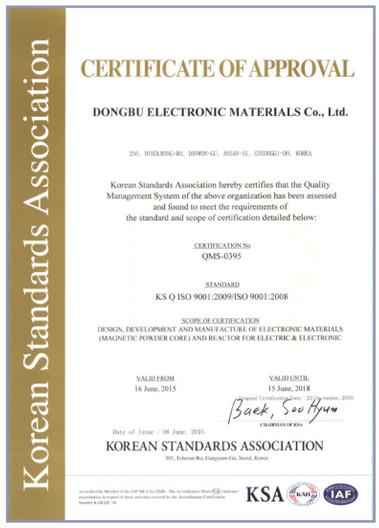
KOREAN STANDARDS ASSOCIATION
305, Teheran-Ro, Gangnam-Gu, Seoul, Korea

KSA IAF


Korean Standards Association

CERTIFICATE OF APPROVAL

DONGBU ELECTRONIC MATERIALS Co., Ltd.

256, HYEOKMANG-RO, DAWON-GU, ANSAN-SI, GYEONGGI-DO, KOREA

Korean Standards Association hereby certifies that the Quality Management System of the above organization has been assessed and found to meet the requirements of the standard and scope of certification detailed below:

CERTIFICATION No
QMS-0395

STANDARD
KS Q ISO 9001:2009/ISO 9001:2008

SCOPE OF CERTIFICATION
DESIGN, DEVELOPMENT AND MANUFACTURE OF ELECTRONIC MATERIALS (MAGNETIC POWDER CORE) AND REACTOR FOR ELECTRIC & ELECTRONIC

VALID FROM
16 June, 2015

VALID UNTIL
15 June, 2018

Original Certification Date : 17 December, 2000

CHAIRMAN OF KSA

Date of Issue : 08 June, 2015

KOREAN STANDARDS ASSOCIATION
305, Teheran-Ro, Gangnam-Gu, Seoul, Korea

KSA IAF

Ultra Flux / High Flux Quality No.1 product manufacturing technology and product reserves

Alloy design and process technology new composition and impurity control
- Alloyed metal alloy design and technology
- Shaped core molding technology products
- Powder Metallurgy Technology held

Magnetic materials and magnetic circuit design technology

Powder microstructure control and analysis technologies

Atomizing / fine powder / particle size control / high yield

Powder coating and insulation process technology including insulating materials and processes

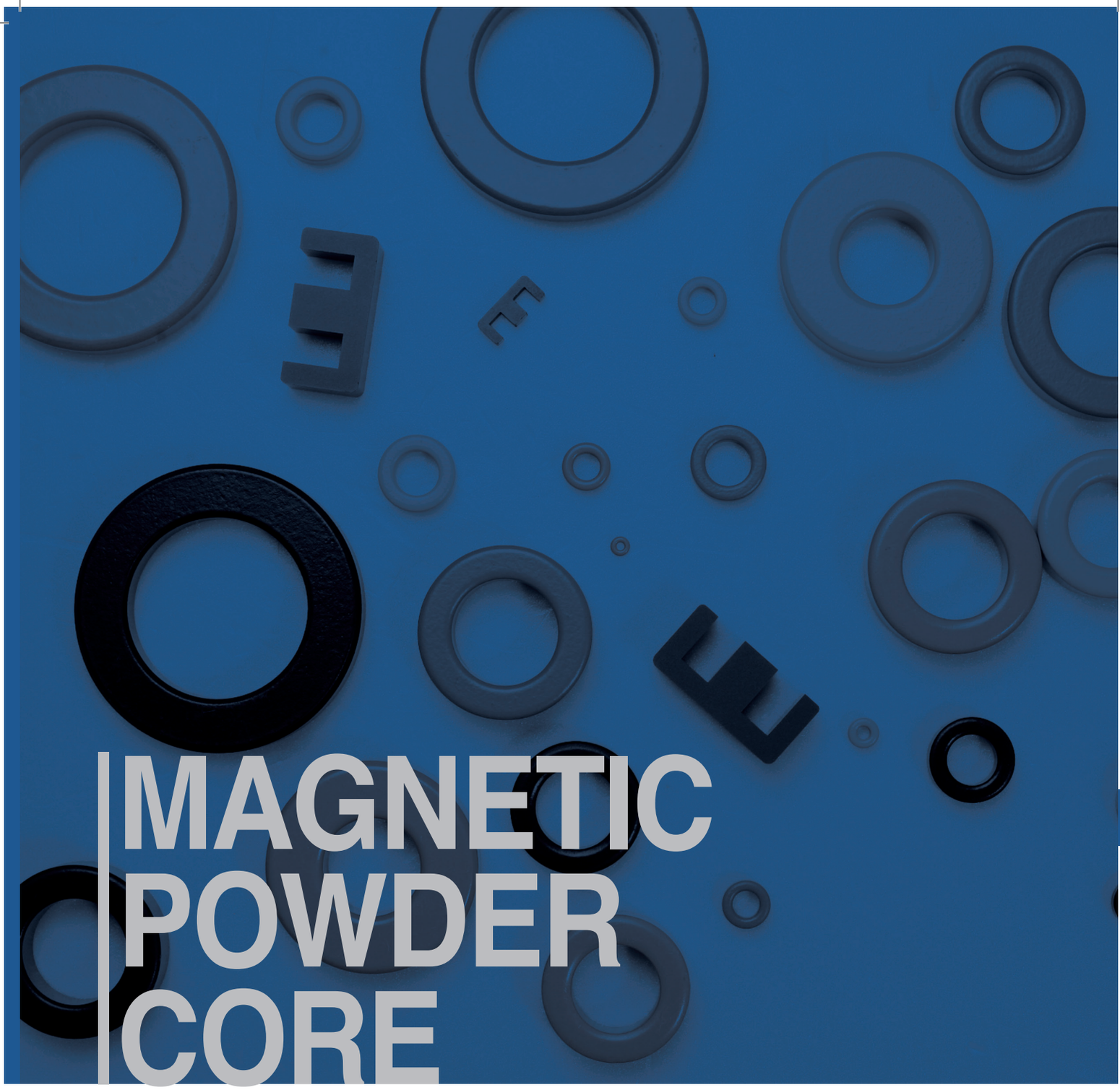
Customized powder and Manufacturing Technology

High-strength core-impregnated technology(World class)

Alloys / products and the unique shape of the reactor design
- Heat control / core selection / coil winding design

CPI assembly and high magnetic permeability powder manufacturing technology

Flake powdered magnetic sheet and using the same manufacturing technology



MAGNETIC POWDER CORE

Powder Manufacture

- ▶Design Metal Alloy for Customer Needs
- ▶Support Mixed Powder to Meet Specialized Needs
- ▶Develop New Material with the Different Composition and Application

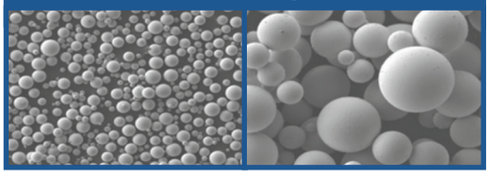
Core Manufacture

- ▶Provide Core with Various Shape(Block, ER etc.) and High Quality
- ▶Support Solution for Core and Application
  (to reduce total power Loss & total cost down)
- ▶Provide Core with Specialized Properties such as Core loss & DC Bias

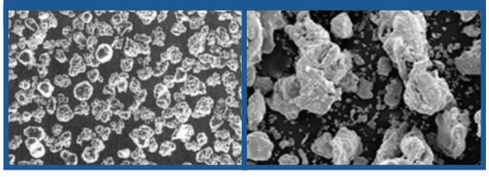
Magnetic Metal Powder Manfacturing Process

Raw Material → Gas Atomizing → Sieving → Powder Heat Treating → Mixing → Insulating

Gas atomized powder



Ingot-Pulverized powder



Core Manfacturing Process

Pressing → Heat Treating → Impreg-nation → Inductance Grading → Inspection → Coating

Magnetic Materials & Basic Properties

Materials	Composition	Flux Density Bs(G)	DC Bias	Core Loss	Freq.	Curie Temp.	Thermal Stability
MPP	Fe-Mo-Ni (Powder Core)	7,000	Better	Lowest	1MHz	450°C	Better
High Flux	Fe-Ni (Powder Core)	15,000	Best	Low	1MHz	500°C	Best
Sendust	Fe-Si-Al (Powder Core)	10,000	Good	Low	2MHz	500°C	Good
Ultra Flux	Fe-Ni-Si-Al (Powder Core)	14,000	Best	Low	1MHz	500°C	Best
Power Flux	Fe-Si (Powder Core)	16,000	Best	Medium	1MHz	700°C	Best

Magnetic Material Characteristic

Strip Type
(Si-steel, Amorphous, Nano-crystalline core)

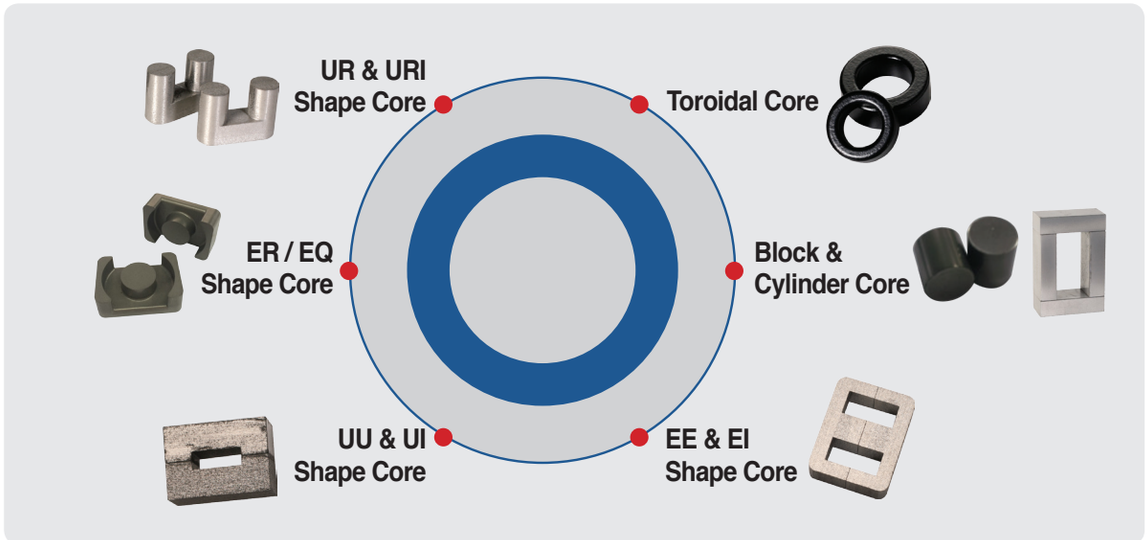
- High Permeability available
- Drop Saturation
- Using gap to control Permeability
- Low Frequency (bad core loss at high frequency)
- Limited Shape (2D, in-plane flux)
- Light weight relatively

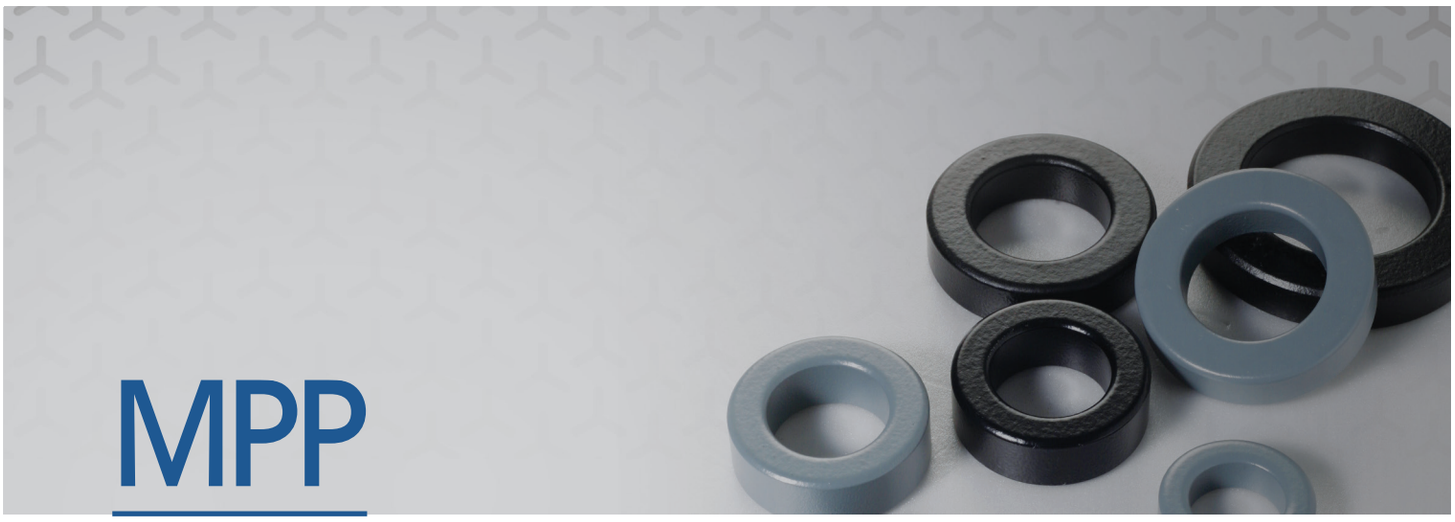
Powder Type

- Low Permeability relatively
- **Soft Saturation(stable saturation)**
- Insulation layer(gap) between Powders
- High Frequency available (good core loss at high frequency)
- **Various Material and Shape available(3D) (ER, EQ, EE, Block, Cylinder etc.)**
- Advantage of High Current

Shape of Magnetic Powder Core

Power Cores are able to be produced in various shape. (see blow)





MPP

Dongbu MPP Powder Cores are made of Ni-Mo-Fe alloy powder and offers excellent temperature stability and low core losses of any other powder cores.
Dongbu MPP Powder Cores are ideal material where high Q and excellent inductance stability under high DC-Bias conditions are needed.
Based on good features, We are extending Dongbu MPP application to the high advanced fields such as power choke for military & industries.

东部MPP磁粉铁芯是由镍相铁合金粉末制成,并提供良好的温度稳定性和任何其他磁粉芯低磁芯损耗。
东部MPP磁粉铁芯是理想的材料,其中高Q值和优良的电感稳定性 在DC-BIAS需要的条件。
基于良好的功能,我们正在扩展东部MPP应用高前沿领域，用于军事和工业的扼流器 。

FEATURES

- Excellent Temperature Stability
- High Resistivity
- Low Hysteresis and Eddy Current Losses
- Excellent Inductance Stability under High
- DC-Bias condition
- 100% lead (Pb)-free and RoHs compliant

APPLICATIONS

- High Q Filters
- Low Loss Filter Circuits
- Loading Coils
- EMI / RFI Filters
- Power inductor for military & industries
- Power inductor for energy storage

GENERAL INFORMATION

Brand Name	MPP
Permeability	26, 60, 125 μ
Material Code	M
Core Color	Grey
Material	Ni-Mo-Fe alloy powder
Bmax	7,000Gauss
Curie Temp.	450°C
Operating Temp.	-40°C ~ 200°C
Core Size (Outer Diameter)	0.14″ ~ 5.20″ 4.19nm ~ 132.54nm

HIGH FLUX

Dongbu High Flux Powder Cores are made of Ni-Fe alloy powder and offers excellent DC-BIAS characteristics and high Bmax of 15,000Guass compared to other powder cores.
Dongbu High Flux Powder Cores are ideal material where Power Factor Correction(PFC) circuits under high power conditions are needed.
Based on good features, We are extending Dongbu High Flux application to the advanced fields such as SMPS for Hybrid car, HID lamp and so on.

东部HF磁粉铁芯采用镍铁合金粉末,比其他磁性铁芯提供更优良的DC-BIAS特性和15000 Gauss的高Bmax。
东部HF磁粉铁芯是需要高功率条件下的功率因数校正(PFC)电路的理想材料。
基于良好的功能,我们正在朝先进的领域扩建东部的高通量应用,如用于混合动力汽车的 SMPS, HID灯等

FEATURES

- Excellent DC-Bias Characteristics
- High Bmax of 15,000 Gauss Compared to MPP & Ferrite
- Core Losses Significantly Lower than Iron Powder Cores
- 100% lead (Pb)-free and RoHs compliant

APPLICATIONS

- Power factor correction (PFC) circuits
- Switching Regulator Inductor for Computer(Lap Top , Server) high power conditions are needed
- In-line Noise Filter
- Pulse and Flyback Transformers

GENERAL INFORMATION

Brand Name	HF
Permeability	26, 60, 125 μ
Material Code	H
Core Color	KHAKI
Material	Ni-Fe alloy powder
Bmax	15,000Gauss
Curie Temp.	500°C
Operating Temp.	-40°C ~ 200°C
Core Size (Outer Diameter)	0.14″ ~ 5.20″ 4.19nm ~ 132.5nm

Advanced

HIGH FLUX PRIME

The core loss and DC-BIAS of Dongbu High Flux Prime are much improved than current High Flux which are widely using in the field.
Dongbu High Flux Prime Powder Cores have better performance with PFC (Power Factor Correction) circuits for high efficiency under small size and high power conditions
Based on good features, We are extending the application of Dongbu High Flux Prime to the advanced fields such as DC-DC converter for HEV/EV, mobile phone and so on.

东部'HF Prime'的磁芯损耗和DC-BIAS和市场广泛采用的'HF'系列比起，加强了颇多。
东部HF Prime 磁粉铁芯与PFC(功率因数校正)在小尺寸和高功率条件下实现高效率的电路性能更好
基于良好的功能，我们正在扩展东部HF Prime到先进的领域，如DC-DC转换器，用于HEV/ EV，手机等应用。

FEATURES

- Improved Core Loss than Current HF and MPP
- Excellent DC-Bias Characteristics
- High Bmax of 15,000 Gauss
- Power factor correction (PFC) circuits for high efficiency

APPLICATIONS

- Power factor correction (PFC) circuits for high efficiency
- Power choke for high current (over 50A)
- Switching Regulator Inductor
- Pulse and Flyback Transformers

GENERAL INFORMATION

Brand Name	HF Prime
Permeability	26, 60, 125 μ
Material Code	H P
Core Color	KHAKI
Material	Ni-Fe alloy powder
Bmax	15,000Gauss
Curie Temp.	500°C
Operating Temp.	-40°C ~ 200°C
Core Size (Outer Diameter)	0.14″ ~ 5.20″ 4.19nm ~ 132.54nm

ULTRA FLUX

Dongbu, one of major manufacturers of "Magnetic Powder Core", has developed new material, especially for the applications designed for high currents and frequencies. This brand new core, titled as "Ultra Flux", is made of New material system alloy powder and offers good energy storage ability with the best DC-Bias property similar to High Flux, good temperature stability similar to MPP, good core losses better than Power Flux and much cheaper price than High Flux.

东部是"磁粉铁芯"的主要厂商之一, 已开发了新材料, 特别是适用于高电流高频率的应用程式。
这个全新的 磁粉铁芯, 标题为"UF 磁粉铁芯", 是由新材料体系合金粉末, 并提供最好的DC-BIAS性能良好的储能能力, 类似于HF, 类似于MPP良好的温度稳定性, 良好的磁芯损耗优于PF和性价比HF便宜得多。

FEATURES

- Excellent Core Loss & DC-Bias characteristics
- High Bmax of 14,000Gauss
- Excellent temperature stability
- Large energy storage capacity
- Frequency range up to 1.0MHz
- 100% lead (Pb)-free and RoHS compliant

APPLICATIONS

- Power choke for high current (over 50A)
- Power inductor for energy storage (solar cell, wind energy.. etc)
- Power inductor for military & industries
- Power output stage inductor for switch mode power supply

GENERAL INFORMATION

Brand Name	Ultra Flux
Permeability	26, 60, 90, 125 μ
Material Code	U
Core Color	Sky Blue
Material	Ni-Fe-Si-Al powder
Bmax	14,000Gauss
Curie Temp.	500°C
Operating Temp.	-40°C ~ 200°C
Core Size (Outer Diameter)	0.14" ~ 5.20" 4.19nm ~ 132.54nm

POWER FLUX

Dongbu, one of major manufacturers of ″Magnetic Powder Core″, has developed new material, especially for the applications designed for high currents and frequencies. This brand new core, titled as ″Power Flux″, is made of Fe-Si (Iron-Silicon) alloy powder and offers good energy storage ability with the best DC-Bias property similar to High Flux, good temperature stability similar to MPP, good core losses better than Iron Powder and much cheaper price than High Flux.

东部是"磁粉铁芯"的主要厂商之一, 已开发了新材料, 特别是适用于高电流高频率的应用程式。
这个全新的磁芯, 材名为"PF 磁粉铁芯", 是由铁硅(铁硅)合金粉末, 并提供最好的DC-BIAS性能良好的储能能力,
类似于HF, 良好的温度稳定性类似MPP, 良好的磁芯损耗比铁粉好, 性价比高通量便宜得多。

FEATURES

- Excellent DC-Bias characteristics
- High Bmax of 16,000Gauss
- Excellent temperature stability
- Large energy storage capacity
- Frequency range up to 1.0MHz
- 100% lead (Pb)-free and RoHS compliant

APPLICATIONS

- Power choke for high current (over 50A)
- Power inductor for energy storage (solar cell, wind energy.. etc)
- Power inductor for military & industries
- Power output stage inductor for switch mode power supply

GENERAL INFORMATION

Brand Name	Power Flux
Permeability	26, 40, 50, 60, 90 μ
Material Code	W
Core Color	Bluish Green
Material	Fe-Si alloy powder
Bmax	16,000Gauss
Curie Temp.	700°C
Operating Temp.	-40°C ~ 200°C
Core Size (Outer Diameter)	0.14″ ~ 5.20″ 4.19nm ~ 132.54nm

SENDUST

Dongbu Sendust Powder Cores are distributed air-gap toroidal cores that possess many outstanding characteristics such as high resistivity, low power losses and excellent inductance stability under DC & AC conditions.
The 10,000 gauss saturation level of Dongbu Sendust provides a higher energy storage capability and competitively priced against other materials.
Based on good features, We are extending Dongbu Sendust application to the high advanced fields such as UPS, Reactor for Solar inverter and wind generating system

东部SDT 磁粉铁芯具有许多气隙环形突出的特点,如高电阻率,低功率损耗和直流和交流条件下表示出色的电感稳定性。东部SDT的10000 Gauss饱和度能提供比其他材料更高端的
储存能力而且能提供更有竞争力的价格。
基于良好的功能,我们正在把东部SDT推到更高段的领域,列如UPS,电抗器的太阳能逆变器和风力发电系统

FEATURES

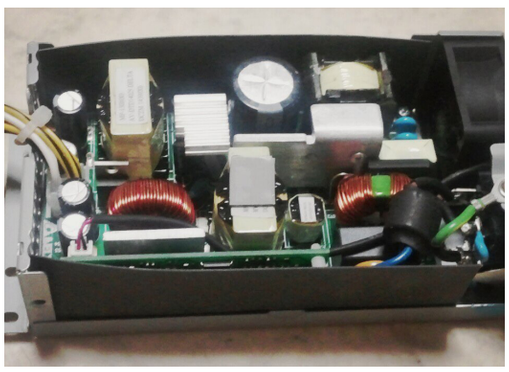
- Good DC-Bias characteristics
- Good Temperature Stability
- Core Losses significantly lower than iron powder cores
- Cost between iron powder cores and MPP / HF /Power Flux
- 100% lead (Pb)-free and RoHs compliant

APPLICATIONS

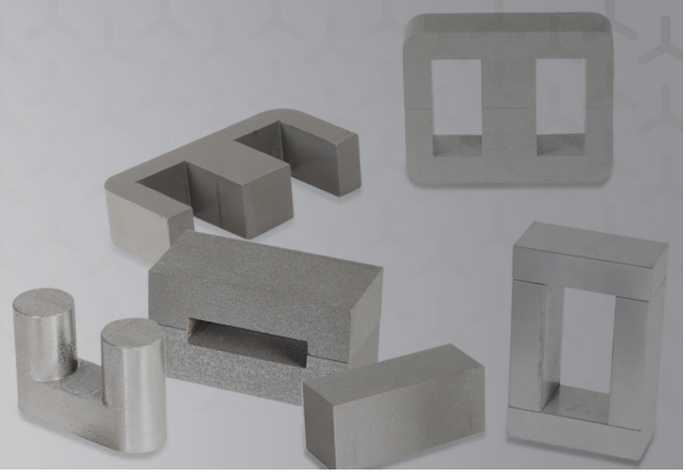
- Switching Regulator Inductor for Computer
  (Desk top , Lap Top , Server)
- Power Choke for Display
  (PDP, LCD TV, LapTop PC, PDA, Mobile Phone)
- Power factor correction (PFC) circuits In-Line Noise Filters
- Pulse Transformers, Fly-back Transformers
- Choke coil for Telecommunications

GENERAL INFORMATION

Brand Name	SENDUST
Permeability	26, 40, 60, 75, 90, 125 μ
Material Code	S
Core Color	Black
Material	Fe-Si-Al alloy powder
Bmax	10,000Gauss
Curie Temp.	500°C
Operating Temp.	-40°C ~ 200°C
Core Size (Outer Diameter)	0.14″ ~ 5.20″ 4.19nm ~ 132.54nm



SPECIAL SHAPE CORE



Dongbu developed special shape core like EE, UU, ER… etc for auto winding. So we started to make it as mass-production. We have supplied special shape core to so many customers with the best quality , cost and delivery. Also we can serve customers with various materials not only Sendust but also PF, HF according to customer is request. Special shape cores are made by advanced compacting technology with special ferrous alloy powder which has low losses at elevated temperature

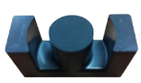
东部开发了特殊形状的磁芯,如EE、UU、ER等自动绕线，而且已经开始量产的阶段。
本公司供应特殊形状磁芯,将最好的品质、成本和交货期能够给客户保证。
此外,本公司能为客户提供各种材料,不仅SDT,还可以根据客户需求提供PF、HF。
特殊合金粉末来加工的特殊形状铁芯用先进的成型技术实现了高温使用条件下低损耗的优点。

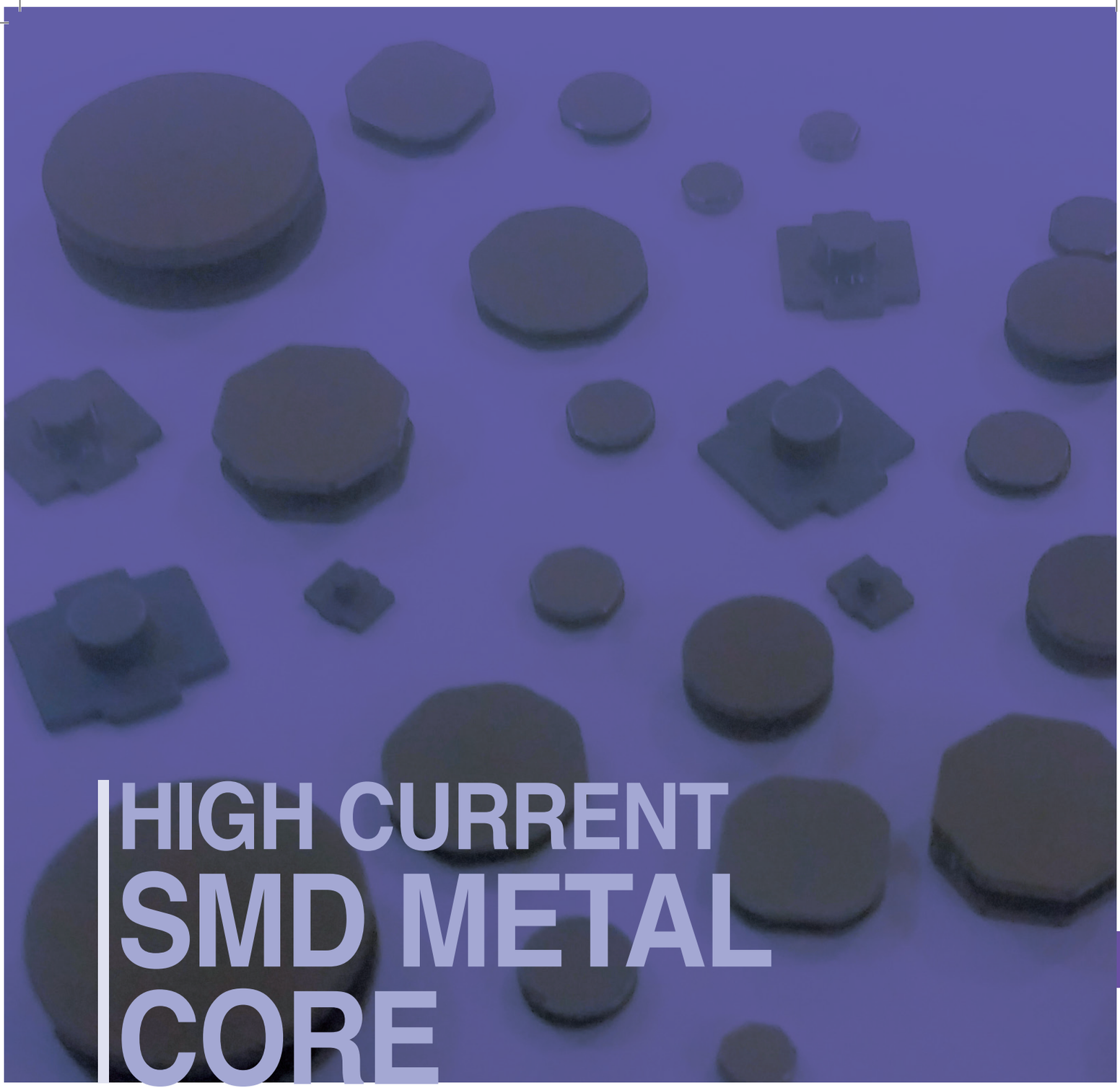
FEATURES

- Large energy storage capacity
- Low core losses at elevated frequency
- Exellent DC-Biased inductance features
- Good temperature stability

APPLICATIONS

- Choke coils for large current
- Flyback transfomers
- PFC reactors
- High inductance choke coils

Classification	Toroidal	EE	EER	EQ	Block	UU
						
Core Cost	very low	low	medium	medium	medium	medium
Winding Cost	high	low	low	low	low	low
Bobbin Cost	-	low	low	-	low	low
Assembly	-	simple	medium	simple	high	medium
Heat Release	poor	good	good	fair	fair	fair
Winding Flexiblillity	fair	excellent	excellent	good	good	good
Mouting Flexibillity	poor	good	good	fair	poor	poor
Shielding	good	poor	poor	fair	poor	poor



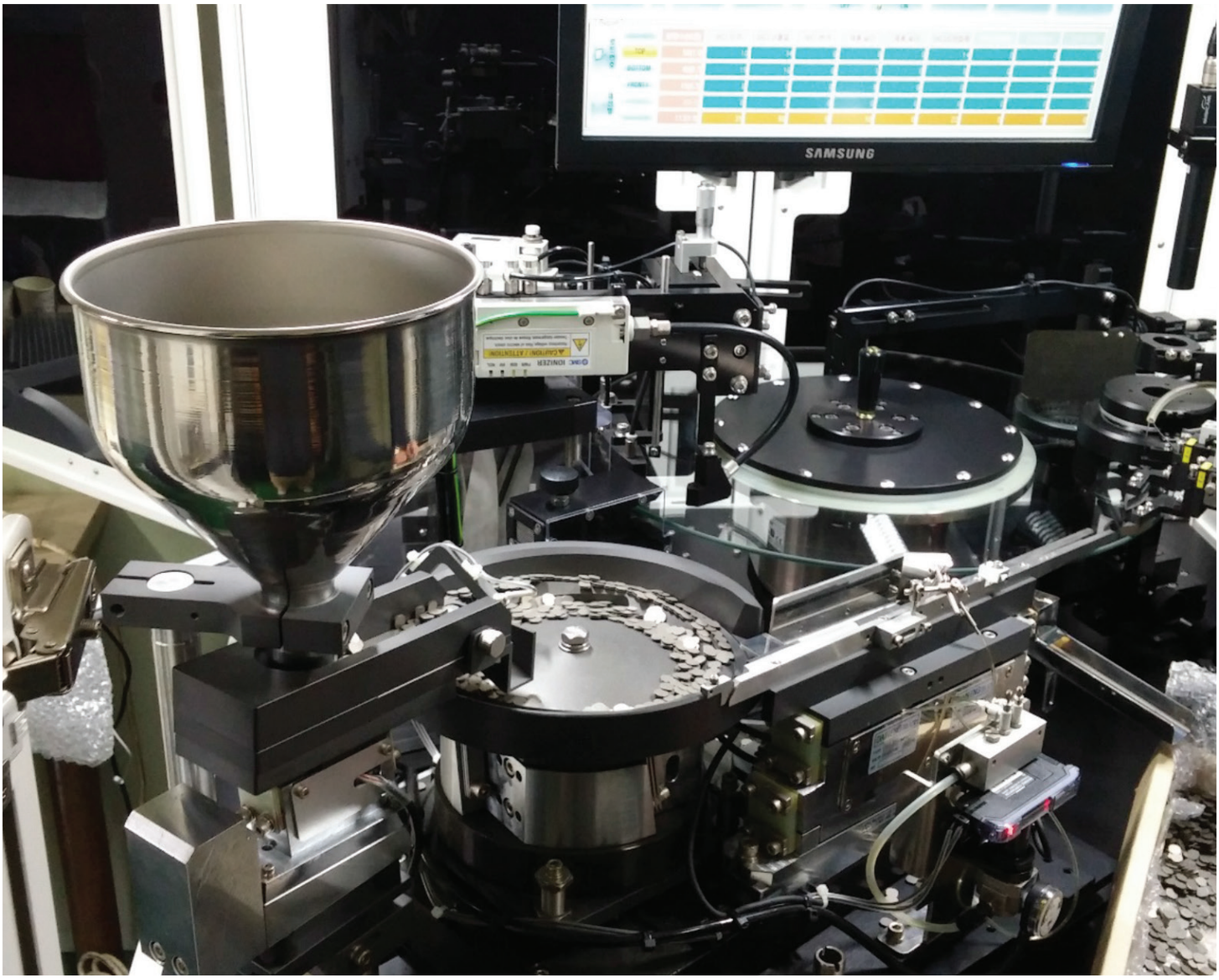
HIGH CURRENT SMD METAL CORE

Powder Manufacture

▶Design Metal Alloy for Customer Needs
▶Support Mixed Powder to Meet Specialized Needs
▶Develop New Material with the Different Composition and Application

Core Manufacture

▶Provide Core with Various Shape(Block, ER etc.) and High Quality
▶Support Solution for Core and Application
(to reduce total power Loss & total cost down)
▶Provide Core with Specialized Properties such as Core loss & DC Bias



Magnetic Metal Powder Manfacturing Process

Gas Atomizing → Sieving → Insulating → Granulating → Sieving → Mixing

SMD Metal Core Manufacturing Process

Pressing → Half-curing → Grinding → Curing → Impreg-nation → Inspection

SMD Metal Core

Our SMD Metal Core brand name is CPI Core.
It made of the soft-magnetic metal alloy powder.
Their heights and diameters can be individually adjusted according to your requirements.

SMD Metal Core Advantage

Excellent DC bias characteristic

Ferrite Contrast 250% High

High heat resistance

Ferrite Contrast High

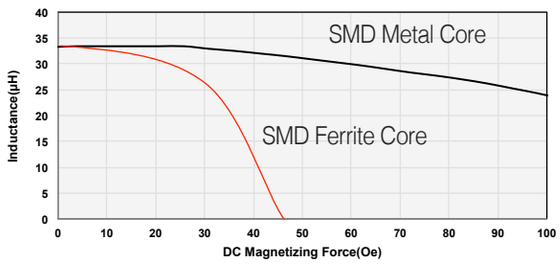
Low profile enhancements

Component Size : Ferrite 8040 ▶ Metal 656515

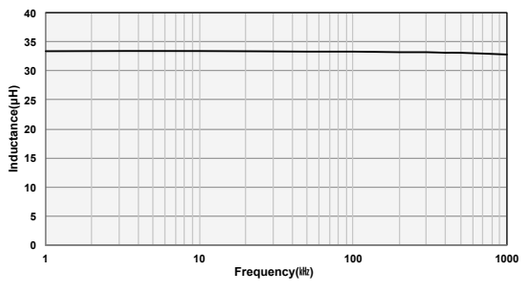
Provide a differentiated quality

- High performance
- Free inductance (after winding)
- High efficiency
- Customized
- Available in high current
- Ultra slim(>0.8mm)

Inductance vs. DC Bias Curves

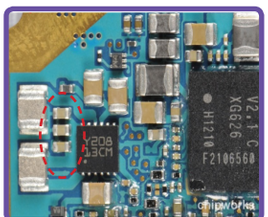


Inductance vs. Frequency

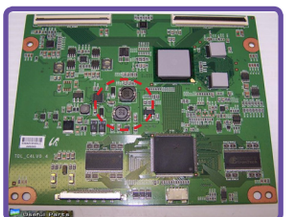


Application

Mobile, Tablet, Display, OLED, Etc Portable Devices



Smart phone



LCD TV

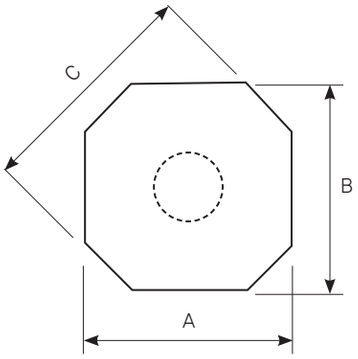
Tablet

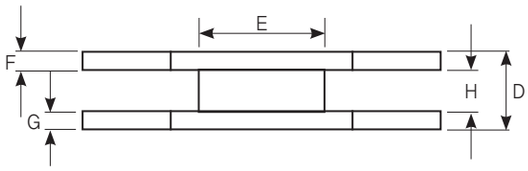
Octagon

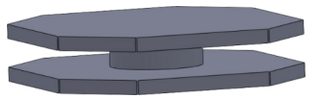
Appearance Specification

Ex) CDR656515

Item	A	B	C	D	E	F	G	H
STD.	6.50	6.50	7.07	1.40	2.30	0.35	0.35	0.70
TOL.	±0.1	±0.1	±0.1	±0.05	±0.1	±0.05	±0.05	±0.05







SMD Core Line Up

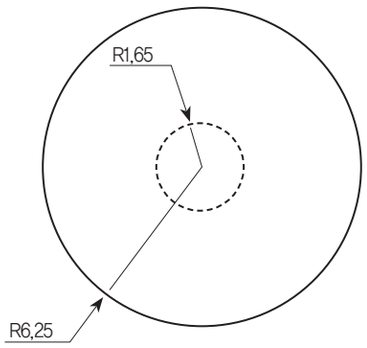
Type	Model	Size (mm)			Inductance	Permeability (ui)	Application
		Outside Diameter(A)	Inside Diameter(E)	Height (D)	(L)		
Octagon	CDR303009	2.9(±0.1)	2.9(±0.1)	0.9(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	CDR303010	2.9(±0.1)	2.9(±0.1)	1.0(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	CDR404009	3.9(±0.1)	3.9(±0.1)	0.9(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	CDR104010	3.9(±0.1)	3.9(±0.1)	1.0(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	CDR404015	3.9(±0.1)	3.9(±0.1)	1.5(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	CDR656510	6.5(±0.1)	6.5(±0.1)	1.05(±0.05)	0.22 ~ 10.0	50	OLED, UHD TV, Tablet
	CDR656515	6.5(±0.1)	6.5(±0.1)	1.40(±0.05)	1.5 ~ 33.0	50	OLED, UHD TV, Tablet
	CDR656518	6.5(±0.1)	6.5(±0.1)	1.65(±0.05)	1.5 ~ 33.0	50	OLED, UHD TV, Tablet
	CDR656530	6.5(±0.1)	6.5(±0.1)	2.85(±0.05)	1.5 ~ 47.0	50	FHD, UHD TV, Tablet
	CDR808030	8.0(±0.1)	8.0(±0.1)	2.80(±0.05)	2.2 ~ 68.0	50	FHD, UHD TV, Tablet
	CDR808040	8.0(±0.1)	8.0(±0.1)	3.80(±0.05)	2.2 ~ 100	50	FHD, UHD TV, Tablet

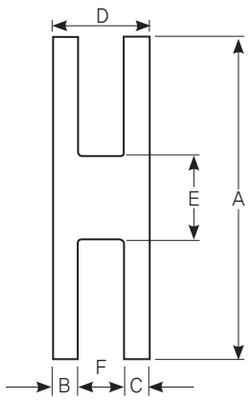
Drum

Appearance Specification

Ex) DR1240

Item	A	B	C	D	E	F
STD.	12.50	0.95	0.95	3.70	3.00	1.80
TOL.	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1





SMD Core Line Up

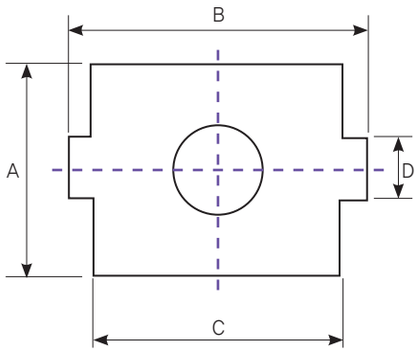
Type	Model	Size (mm)			Inductance	Permeability (ui)	Application
		Outside Diameter(A)	Inside Diameter(E)	Height (D)	(L)		
Drum	DR4010	4.0(±0.1)	4.0(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	DR5010	4.8(±0.1)	4.8(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	Mobile, Tablet
	DR6010	6.2(±0.1)	6.2(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	OLED, UHD TV, Tablet
	DR6012	6.2(±0.1)	6.2(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	OLED, UHD TV, Tablet
	DR6015	6.2(±0.1)	6.2(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	OLED, UHD TV, Tablet
	DR8040	8.0(±0.1)	8.0(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	FHD, UHD TV, Tablet
	DR1040	10.0(±0.1)	10.0(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	FHD, UHD TV, Tablet
	DR1240	12.5(±0.1)	12.5(±0.1)	4.0(±0.05)	0.22 ~ 10.0	50	FHD, UHD TV, Tablet

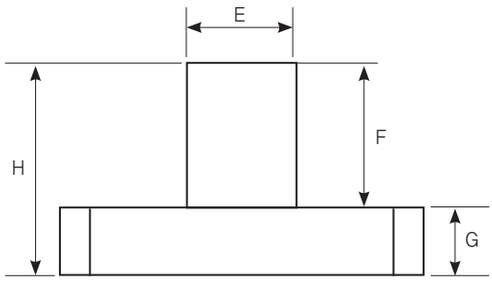
T-type

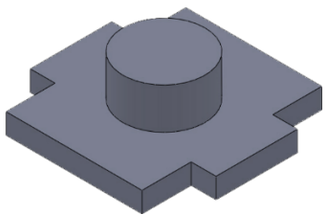
Appearance Specification

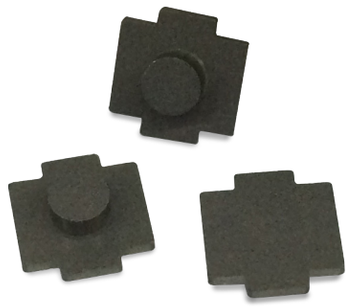
Ex) T6020

Item	A	B	C	D	E	F	G	H
STD.	6.50	6.50	7.07	1.40	2.30	0.35	0.35	0.70
TOL.	±0.1	±0.1	±0.1	±0.05	±0.1	±0.05	±0.05	±0.05









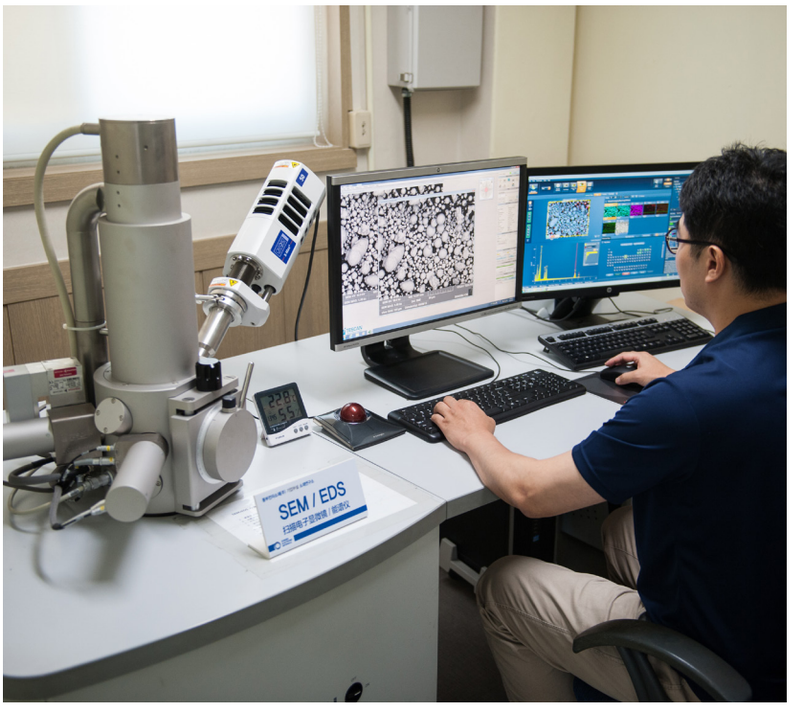
SMD Core Line Up

Type	Model	Size (mm)			Inductance	Permeability (ui)	Application
		Outside Diameter(A)	Inside Diameter(E)	Height (D)	(L)		
T-type	T3015	4.0(±0.1)	4.0(±0.1)	4.0(±0.05)	0.12 ~ 10.0	50	Mobile, Tablet
	T6020	4.8(±0.1)	4.8(±0.1)	4.0(±0.05)	0.12 ~ 10.0	50	Server, Portable Device
	T6526	6.2(±0.1)	6.2(±0.1)	4.0(±0.05)	0.12 ~ 10.0	50	Server, Portable Device
	T7525	6.2(±0.1)	6.2(±0.1)	4.0(±0.05)	0.12 ~ 10.0	50	Server, Portable Device

ELECTRONIC MATERIALS R&D CENTER

Dongbu Electronic Materials Co., Ltd. performs state-of-the-art materials research with its advanced facilities and excellent researchers on soft magnetic powder cores and on new materials for the magnetic powder manufacturing technology, a unique technology. We also hold a variety of magnetic alloy powder manufacturing technologies and designs. Dongbu Electronic Materials shapes technology to achieve world-class products. We continue to focus our research on soft magnetic powder core products for large currents with high efficiency that are applied to electric vehicles and the energy industry. Dongbu Electronics Materials achieved advancements in soft magnetic powder, electromagnetic shielding, and developed new manufacturing technologies to compact SMD inductor core. We continue to research in the improvement of the metal alloy powder manufacturing processes and also seek to improve the material properties of the magnetic powder core characteristics for application in high-current cores. Future business areas with the application of metal alloy materials are being explored such as tiny metal inductor cores and the development of new materials for the energy material field.

The R&D Center is actively involved in high value-added businesses through technology partnerships and collaboration with external experts. We will continue to pursue new business areas including metal alloys, nano crystalline powdered materials, and molded articles. We are actively researching various amorphous magnetic materials for magnetic powder applications and functional studies. We will evolve into a first-class laboratory through the process. The Materials Lab will try to do its best with thorough analysis of the challenges by designing differentiated custom parts. Our products are derived with great pride and with the care of the customer in mind for customer cost savings and customer satisfaction.



Patent Status

MATERIAL RESEARCH INSTITUTE

- HIGH-EFFICIENCY/LOW LOSS SOFT MAGNETIC CORE RESEARCH
- METAL MAGNETIC POWDER MATERIALS RESEARCH
- FUNCTIONAL METAL ALLOYS
- PART / MATERIAL RESEARCH SOLUTIONS
- MATERIALS / COMMERCIALIZATION OF RESEARCH

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