

SHT Group Product Catalog 2025





SHT, you’re amazing! You push the frontier!

Starting right from the material selection and planning stage, at SHT we make full use of our wealth of expertise accumulated since our founding in 1989, enabling us to ensure optimal processing.

In addition to our expertise in winding and other fundamental technologies that were breakthroughs in precision, we have developed our own production tools and machinery. This custom-made development and production system allows SHT to fully meet customer needs.

“SHT, you’re amazing! You push the frontier!” That is the highest praise we hope to receive from our customers, and it is a true reflection of the spirit that has enabled SHT to manufacture an array of products that boast the top share of the global market.

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1. Cores

Features

- Integrated production from winding/press lamination of the ribbon materials to annealing and product completion.
- In addition to core shape and dimensions, we also manage and confirm the required magnetic characteristics.
- We are able to propose suitable materials such as grain-oriented and non-oriented electrical steel sheets and amorphous steel.



2. Injection molding

Features

- We can do everything from core forming to injection molding (monolithic molding and casing) in-house for maximum structural efficiency and miniaturization.
- We propose the optimal structure for minimizing changes in magnetic properties due to molding.
- High dimensional accuracy is achieved for molded products by resin molding of the wound core.

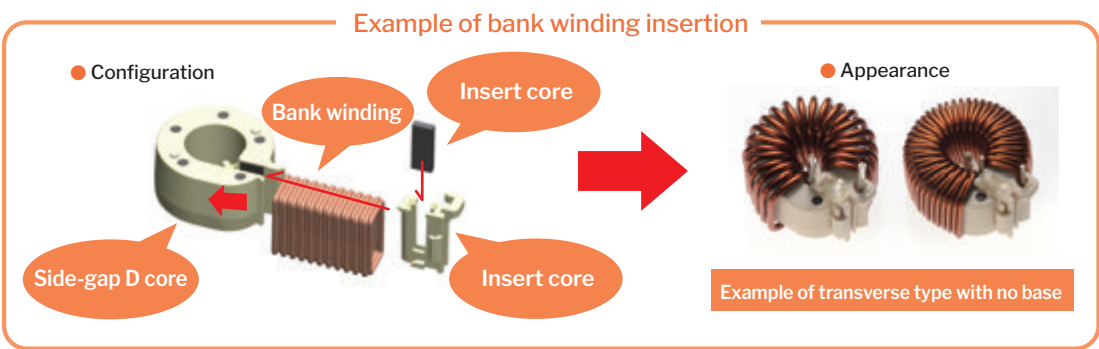
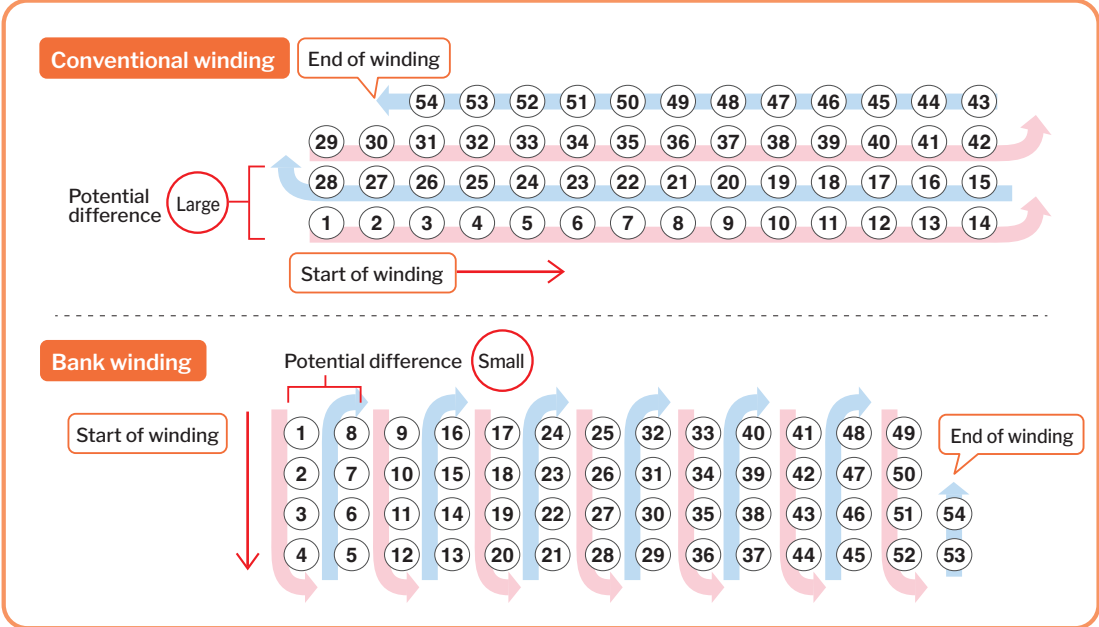
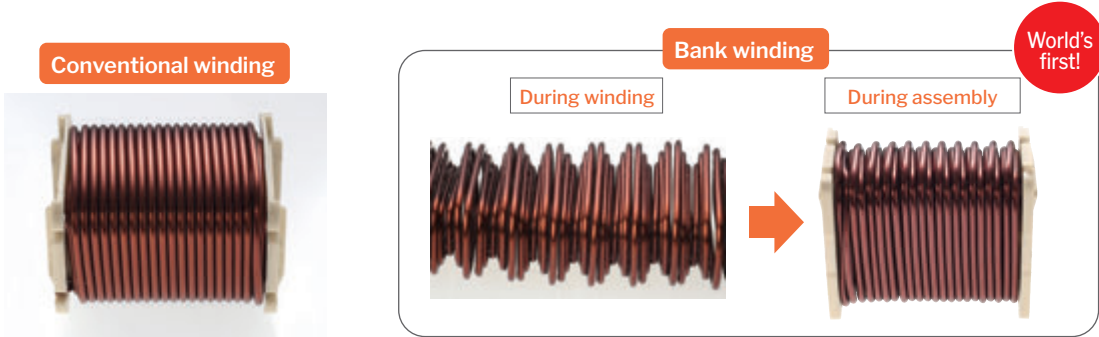


3. Bank winding (mechanization of winding)

Features

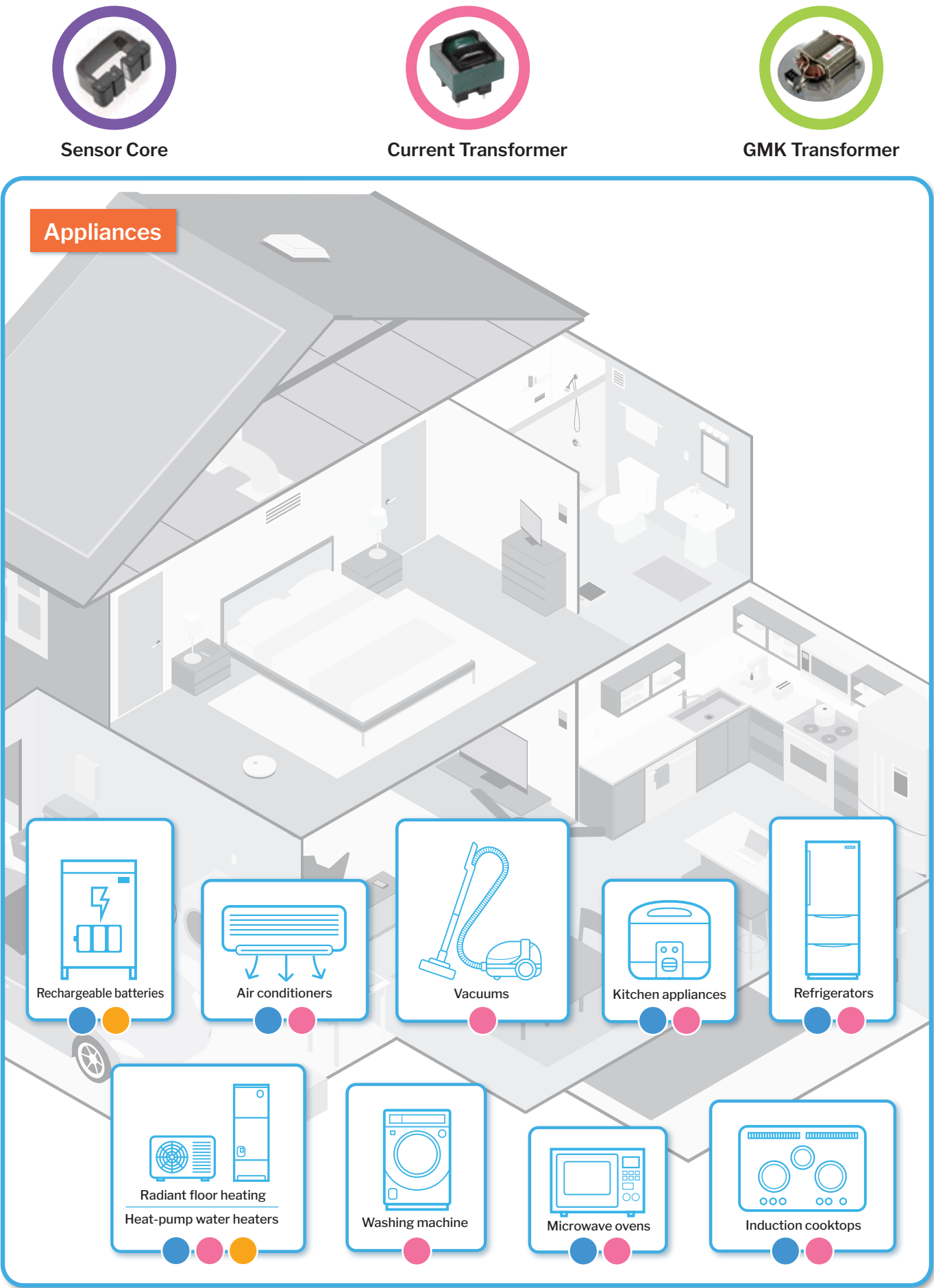
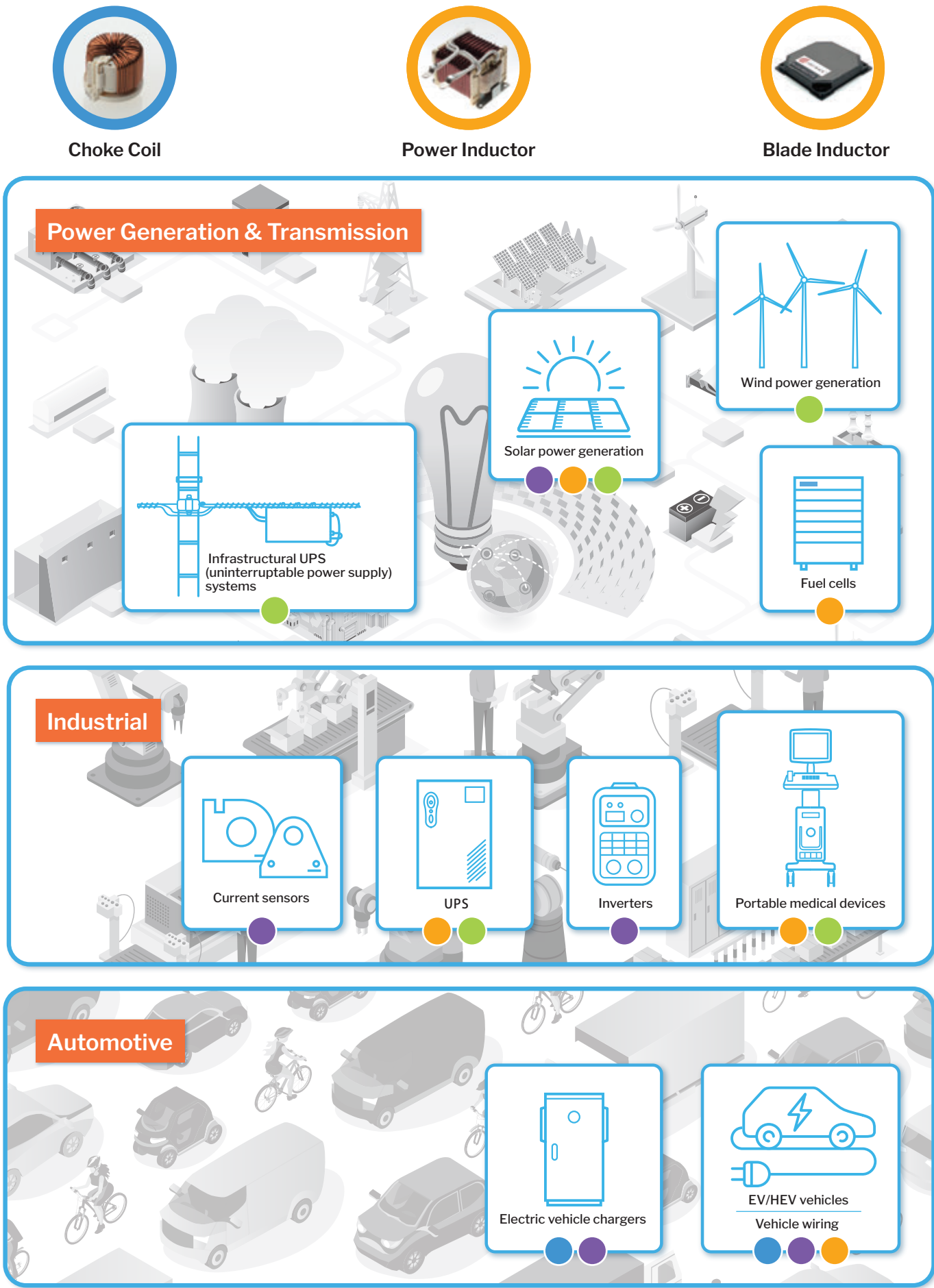
Patented manufacturing method

- Extremely small potential difference between windings greatly improves reliability and safety.
- Stray capacitance is reduced to one-tenth that of the conventional method, significantly improving noise characteristics.
- The appropriate wire diameter and number of windings can be achieved using standard copper wire.
- Patented proprietary winding method and winding machine developed in-house .



Examples of SHT Product Applications

Supporting a digital society through analog technologies.



TSM Series
Side-gap choke coils

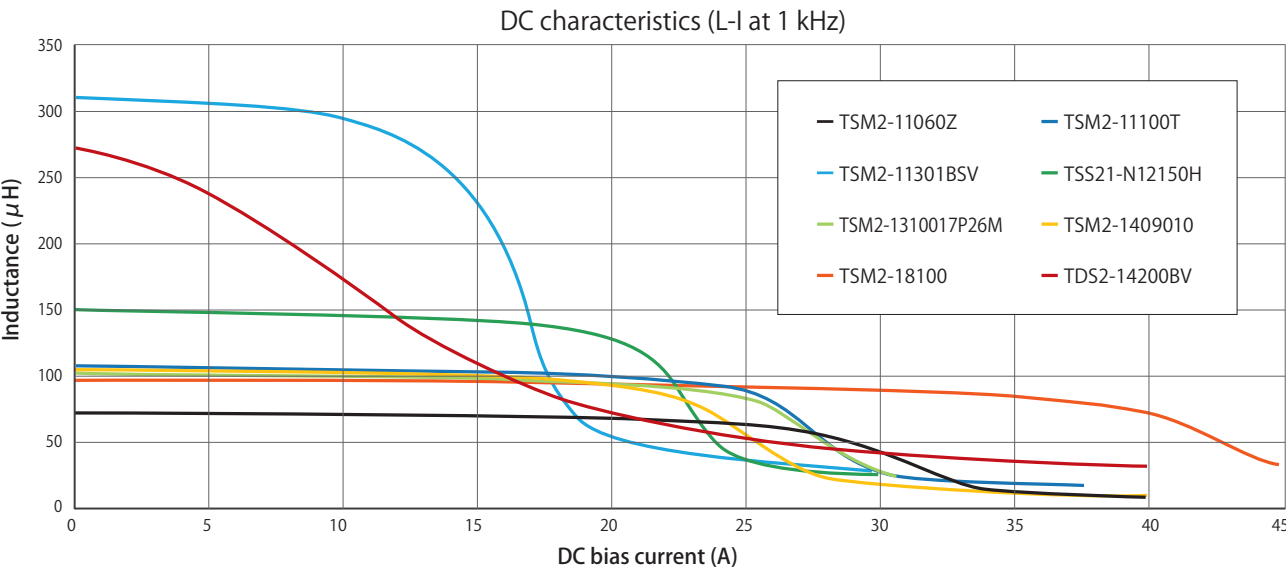


Features

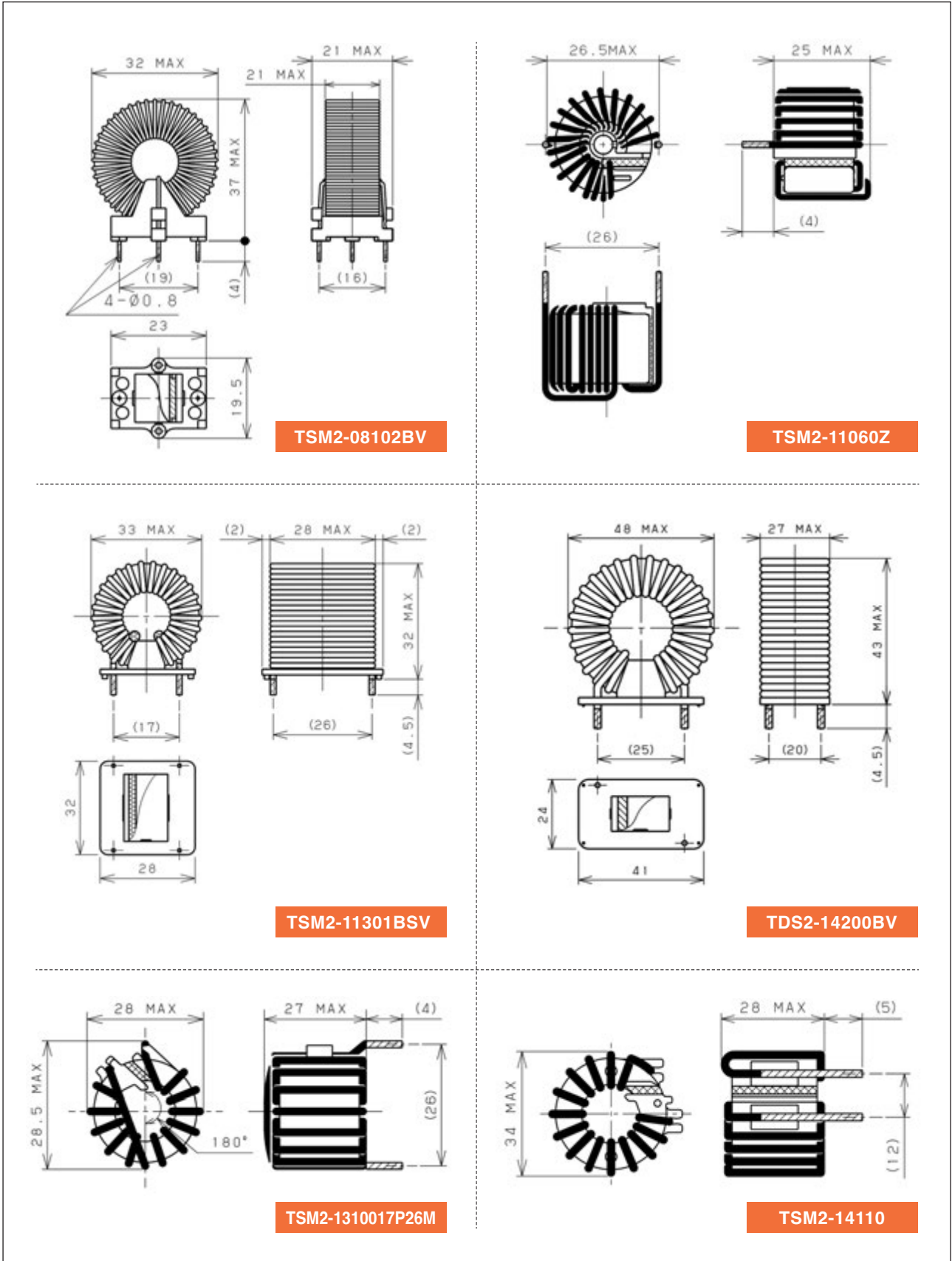
- High-quality choke coils inserted with mechanically wound bank coils
- Single-row, multi-layer bank coils for high voltage resistance and low stray capacitance
- Mechanical winding ensures stable supply
- Patented

Electrical characteristics and shape of mass-produced models

Core material	Model number	Current (A)	Inductance (μH) at 1 kHz (*20 kHz)		DC resistance (mΩ, max.)	Wire diameter (Φ, mm)	Shape	Dimensions (mm, max.)		
			Idc = 0	Idc = rated				W	D	H
Electrical steel sheet	TSM2-08102BV	4	2000 min	500 min	180	0.8	Upright mount with base	32.0	21.0	37.0
	TSM2-11060Z	12	*50 min	*45 min	12	1.1	Horizontal mount	26.5	26.5	25.0
	TSS21-N12150H	13	150±15%	145±15%	35	1.2	Horizontal mount	28.0	28.5	28.0
	TSM2-11301BSV	15	*300±20%	*180 min	80	1.1	Upright mount with base	33.0	28.0	32.0
	TSM2-1310017	15	100±20%	100±20%	30	1.3	Horizontal mount	28.0	28.5	27.0
	TSM2-1310017P26M	15	100±20%	100±20%	30	1.3	Horizontal mount	28.0	28.5	27.0
	TSM2-11100T	18	100±20%	65 min	40	1.1	Horizontal mount	28.0	28.0	25.0
	TSM2-1312517	18	125±20%	*70 min	18	1.3	Horizontal mount	28.0	28.5	29.0
	TSM2-1409010	18	125±20%	80 min	25	1.4	Horizontal mount	34.0	34.0	22.0
	TSM2-14110	18	125±20%	70 min	30	1.4	Horizontal mount	34.0	34.0	28.0
Dust core	TSM2-18100	30	60 min	50 min	13	1.8	Upright mount with base	48.0	34.5	43.0
	TDS2-14200BV	15	200 min	95 min	60	1.4	Upright mount with base	48.0	27.0	43.0



Appearance of side-gap choke coils



Please feel free to inquire about products not listed. Customization is available.

DTS Series
D-core choke coils



The next step in the evolution of side-gap choke coils!



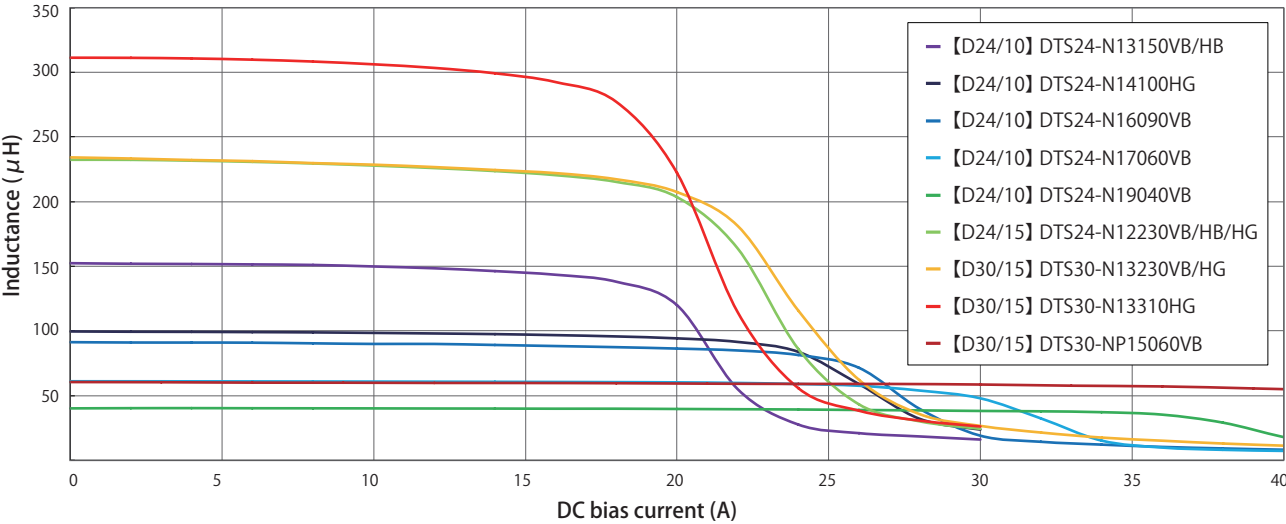
Features

- Successor to the mechanically wound bank coil
- Two-stage gap structure for low-leakage magnetic flux
- Compatible with a wide range of wire diameters and number of turns
- Wide lineup of upright and transverse configurations
- Patented

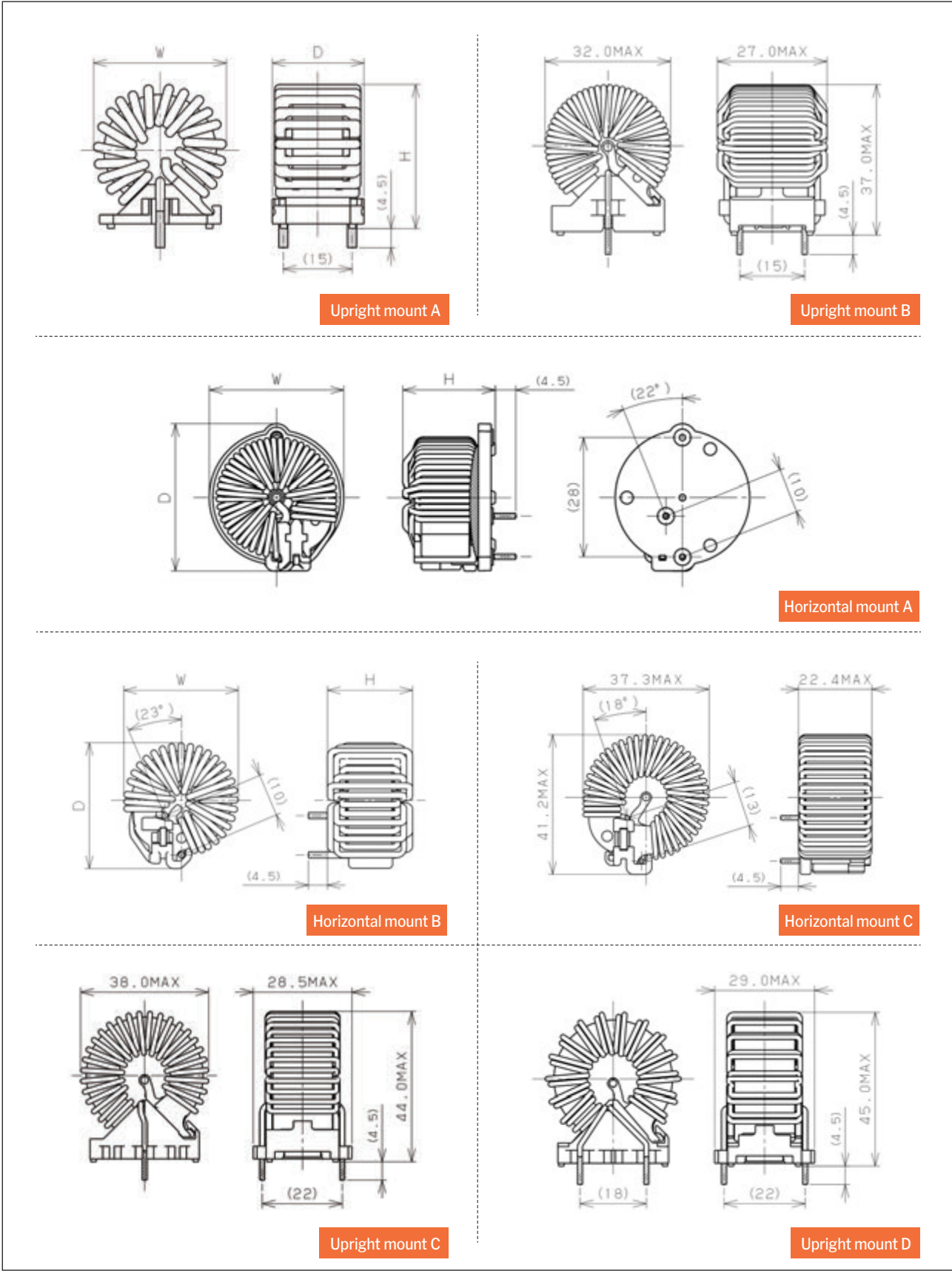
Electrical characteristics and shape of mass-produced models

Core material	Model number	Current (A)	Inductance (μH) at 1 kHz (*20 kHz)		DC resistance (mΩ, max.)	Wire diameter (Φ, mm)	Shape	Dimensions (mm, max.)		
			Idc = 0	Idc = rated				W	D	H
D24/10 Electrical steel sheet	DTS24-N13150VB	20	150±15%	80 min	25	1.3	Upright mount A	32.0	21.5	33.5
	DTS24-N16090VB	15	90±15%	90±15%	15	1.6	Upright mount A	33.5	24.0	35.5
	DTS24-N17060VB	20	60±15%	55 min	10	1.7	Upright mount A	33.3	23.0	34.3
	DTS24-N19040VB	20	39±15%	39±15%	6.5	1.9	Upright mount A	34.0	23.0	35.5
	DTS24-N13150HB	20	150±15%	80 min	25	1.3	Horizontal mount A	33.0	36.0	25.0
	DTS24-N14100HG	20	95±15%	90±15%	18	1.4	Horizontal mount B	35.0	40.0	20.0
D24/15 Electrical steel sheet	DTS24-N12230VB	20	230±15%	*170±15%	40	1.2	Upright mount B	32.0	27.0	37.0
	DTS24-N12230HB	20	230±15%	*170±15%	40	1.2	Horizontal mount A	33.0	36.0	28.0
	DTS24-N12230HG	20	230±15%	*170±15%	40	1.2	Horizontal mount B	32.0	35.0	25.5
D30/15 Electrical steel sheet	DTS30-N13230VB	18	230±15%	*180±15%	35	1.3	Upright mount C	38.0	28.5	44.0
	DTS30-N13230HG	18	230±15%	160 min	30	1.3	Horizontal mount C	37.3	41.2	22.4
	DTS30-N13310HG	18	310±15%	215±15%	35	1.3	Horizontal mount C	37.3	41.2	22.4
	DTS30-NP15060VB	30	60±15%	60±15%	7 x 2	1.5	Upright mount D	40.0	29.0	45.0

DC characteristics (L-I at 1 kHz)



Appearance of D-core choke coils



Please feel free to inquire about products not listed. Customization is available.

Three-phase, common-mode choke coils

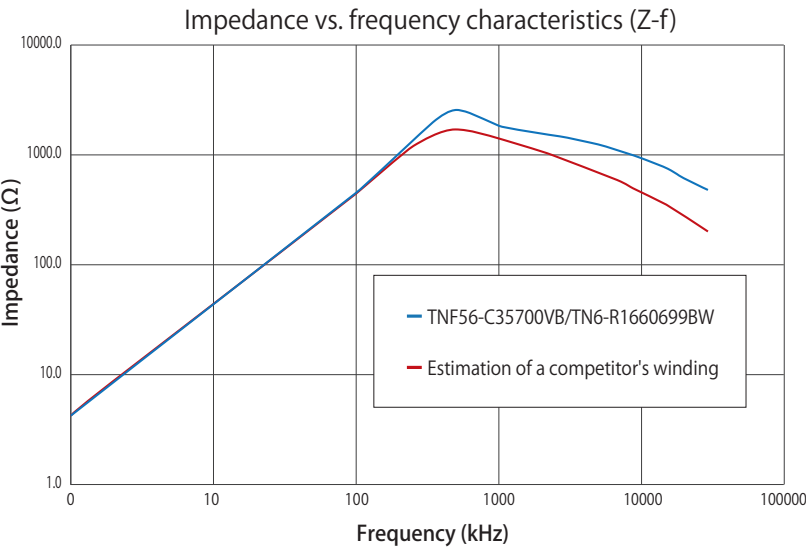
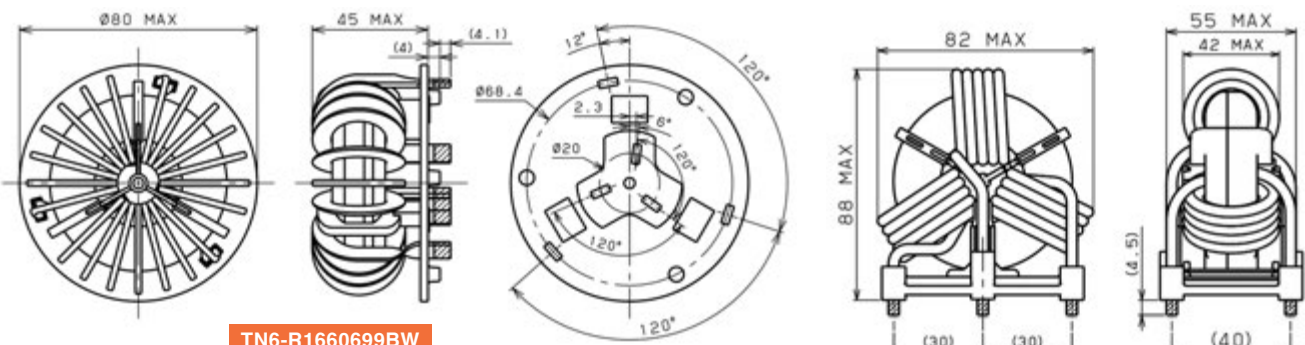


Features

- Single-wire mechanical winding capable of handling high currents
- Winding configuration provides superior frequency characteristics
- Mechanical winding ensures consistent quality
- Patented

Electrical characteristics and shape of mass-produced models

Model number	Current (A)	Inductance (μ H) at 1 kHz	DC resistance (m Ω , max.)	Wire diameter (Φ , mm)	Shape	Dimensions (mm, max.)		
		$I_{dc} = 0$				W	D	H
TN6-R1660699BW	55	700 $\pm$ 30%	2.0 $\times$ 3-phase	1.6 $\times$ 6.0	Horizontal mount with base	80	80	50
TNF56-C35700VB	55	700 $\pm$ 30%	2.0 $\times$ 3-phase	Φ 3.5	Upright mount with base	82	55	88



For reference only Under development

High-frequency, low-loss, compact choke coils

(Name: 180 Choke)

Features

Reduced high-frequency AC loss

Skin effect achieved by use of multi-stranded wiring reduces loss and heat (Stranded wiring and high space-factor winding achieved without twisting wires)

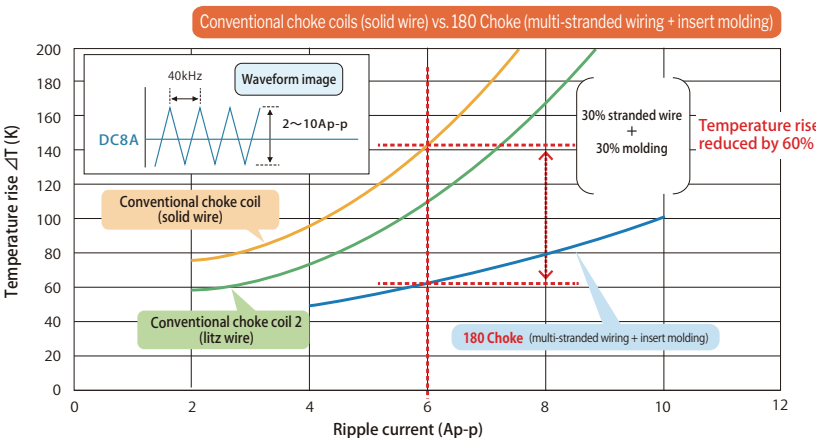
High heat dissipation

Uniform heating achieved by integrated core-coil insert molding using high thermal-conductivity resin suppresses maximum temperature, and a high heat-dissipation shape reduces temperature rise



Patented

Typical characteristics



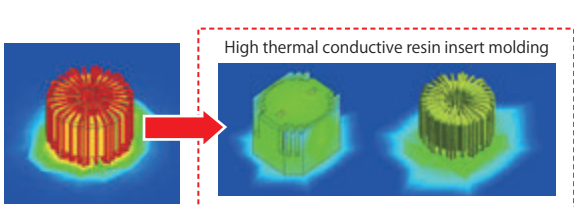
Conventional choke coil → 180 Choke

Stranded wiring + insert molding

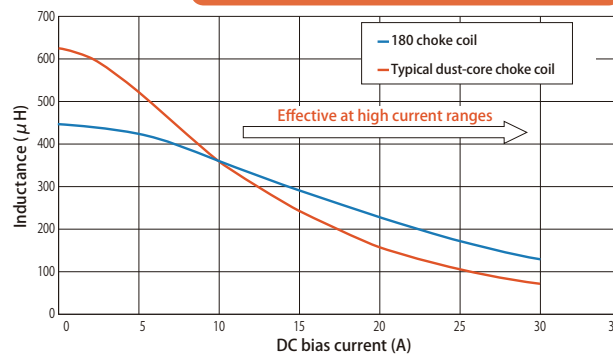
- Temperature rise reduced by approx. 60%
- Loss reduced by approx. 20%

The result

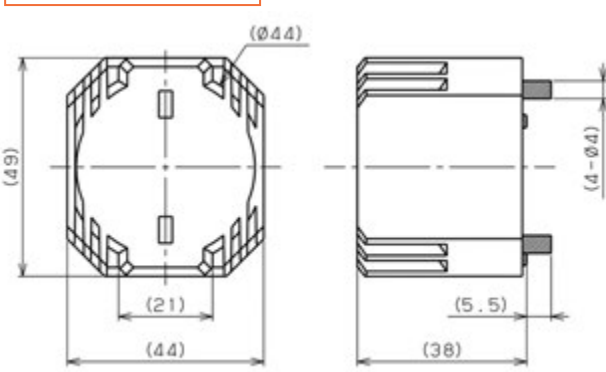
15% smaller size!



Typical DC bias characteristics (L-I at 100 kHz)



Shape diagram



Compact design

- Low-loss, high heat-dissipation specifications
- Core volume can be reduced by approx. 15% (Compared with typical single-wire, dust-core choke coils)

Recommended construction for PCB mounting

- Molding of the entire coil ensures heat uniformity, resulting in a compact, lightweight design and a construction that suppresses temperature rise
- ⇒ Suitable for PCB mounting
- Enables heat dissipation to chassis through its flat top.

Data matrix printing

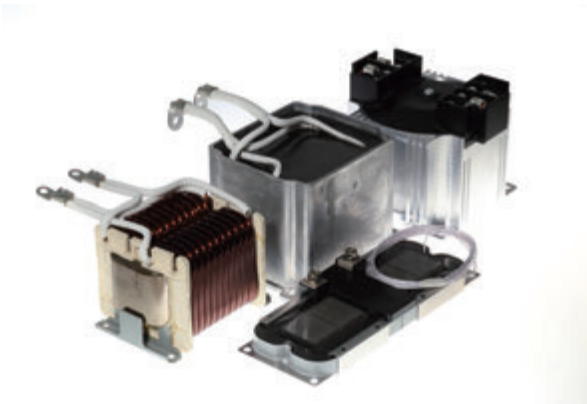
- Data matrix enables display of the lot number and characteristics onscreen; useful for unit control and easy traceability

Power Inductors



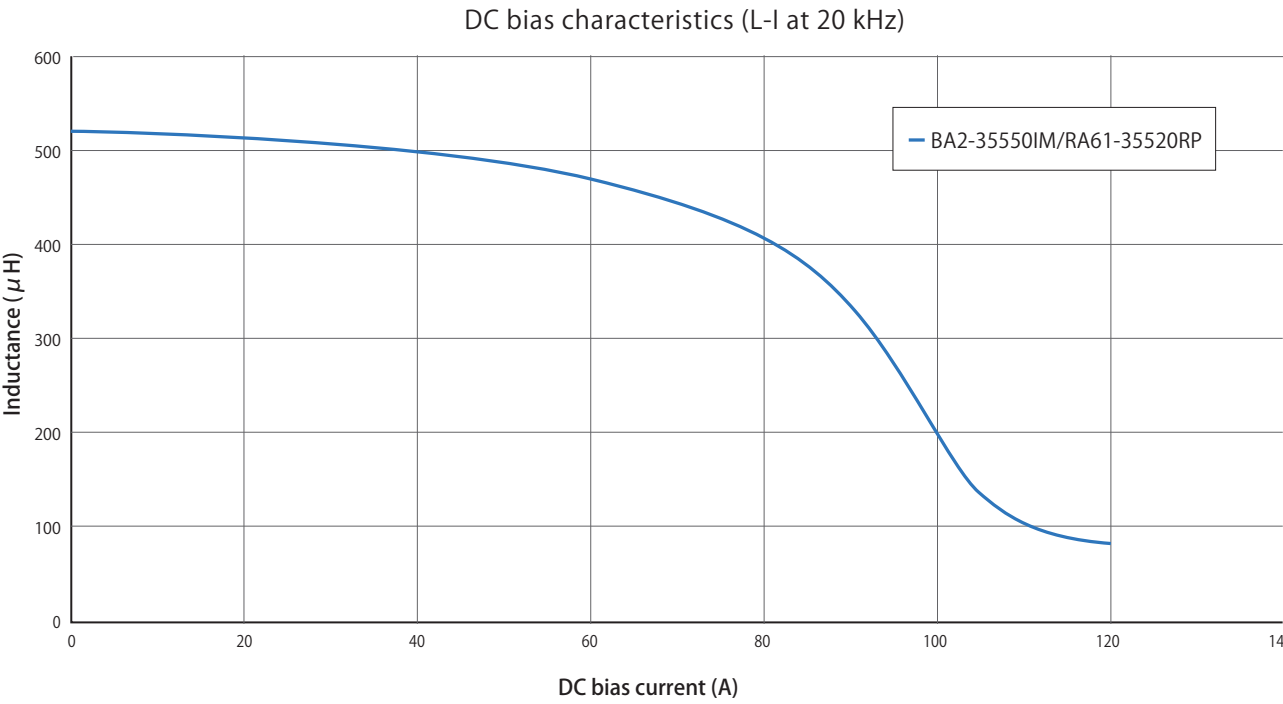
Features

- **High efficiency**
 - Thin-film core manufacturing technology reduces loss in the 10 to 20 kHz range
 - Flat DC bias characteristics for maintaining inductance at high current levels
- **Power supply noise suppression**
 - Bank winding (patented method) reduces stray capacitance between windings and significantly suppresses power supply noise
- **Customization**
 - Optimization of core materials and shapes



Electrical characteristics and shapes
(All developed models are target values and intended for mass production)

Product status	Core material	Model number	Current (A)	Inductance (μH) at 1 kHz (*20 kHz)		DC resistance (mΩ, max.)	Shape	Dimensions (mm, max.)		
				Idc = 0	Idc = rated			W	D	H
Mass-produced models	Amorphous + Electrical steel sheet	BA2-35550IM	55	520 +20%,-10%	430 MIN	11	Sheet metal base	120	97	97
		RA61-35520RP	55	520 +20%,-10%	430 MIN	11	Die-cast case	146	110	110
Development prototype	Electrical steel sheet	ZUCS45-NR16120CP2	90	120	120	9.5	Ultra-thin	213	81	30
	Dust core	ZRD90-P20102RP	40	*1000	460	48	Die-cast case	120	120	80



リアクトル外觀形状

BA2-35550IM

RA61-35520RP

Prototype model number
ZUCS45-NR16120CP2

Prototype model number
ZRD90-P20102RP

Please feel free to inquire about products not listed. Customization is available.

Sensor Cores

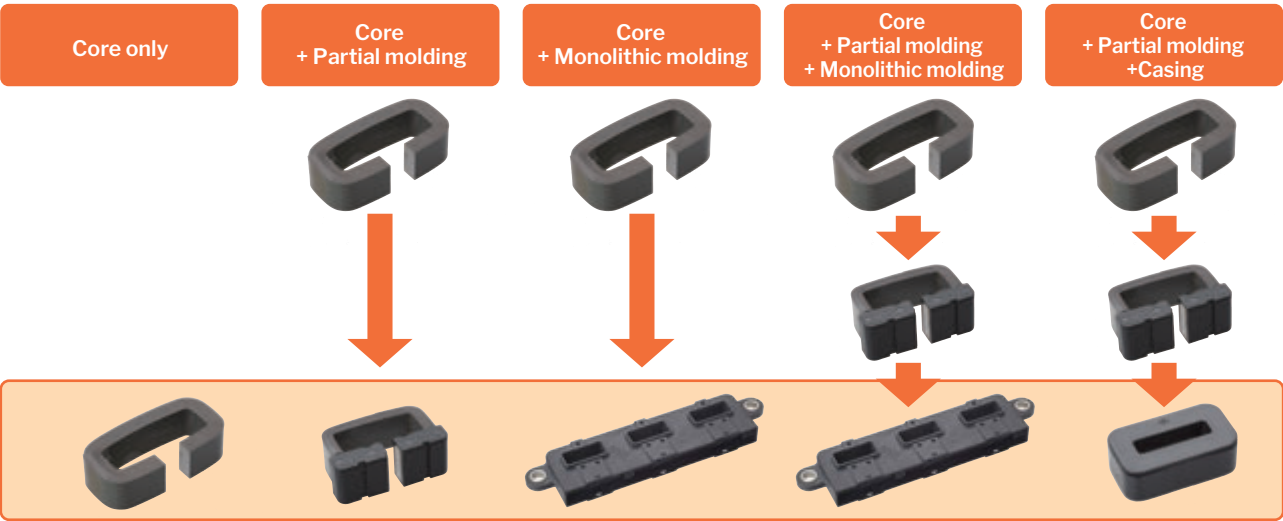
RoHS
RoHS 指令対応

A full lineup of sensor cores to meet a wide range of customer needs.

Lineup	Features
 Wound cores	- Proprietary automatic winding machine minimizes line overlap - Optimal-temperature profile annealing for high magnetic properties - Grain-oriented electrical steel sheet
 Laminated cores	- Unique temperature profile for optimal annealing - Press processing for high dimensional accuracy - Non-oriented electrical steel sheet
 Partially molded cores	- Partial molding eliminates conductive burrs at the gap cut - Optimal dimensional accuracy and other functions for supporting case assembly
 Monolithically molded cores	- Molding technique unique to a manufacturer with a complete understanding of core characteristics - High quality achieved by an integrated production system from core to monolithic molding
 Ultrasonically welded casing cores	- Ultrasonic welding eliminates degradation (of 20% or more) due to molding stress while achieving fundamental core properties - High quality achieved through integrated production from core to casing

Offering optimal solutions

We offer optimal solutions for customer requirements. With an integrated production system that can produce everything from cores to monolithic moldings and casings, we can offer a broad range of innovative proposals.



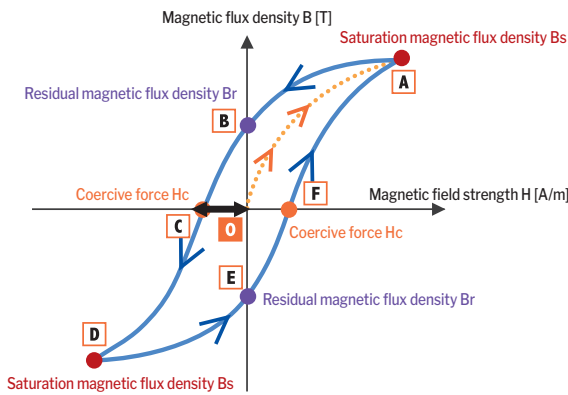
Features of SHT sensor cores

Magnetic properties assured during mass production

- Coercive force is standardized, so post-annealing magnetic properties are also assured for each lot
- Coercive force testing is also performed during shipping inspection

Comprehensive management of property variation factors

- Variations between material lots
- Effects of processing stress
- Variations in annealing temperature



Magnetic and electrical characteristics support

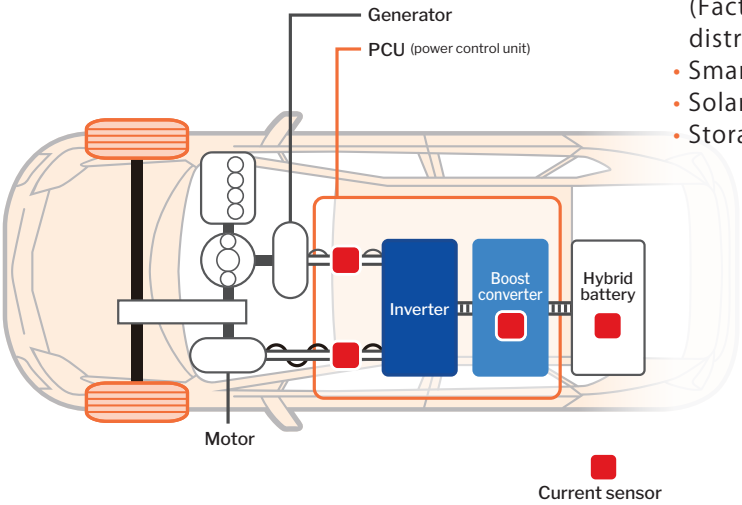
- SHT supports all required test measurements (0 – 1600 A) with a magnetic and electrical characteristics measurement environment

Magnetic properties Residual magnetic flux density (Br), saturation characteristics (B-H characteristics), linearity

Electrical properties Withstand voltage test of monolithic moldings

Automotive applications (main applications of SHT products)

- PCU 3-phase motors (for speed control)
- Batteries (for charge/discharge control)



Industrial applications

- Industrial motors (for speed control) (Robots, factory automation processing machines, large pumps, elevators, trains, etc.)
- Power monitoring (Factory power monitoring wattmeters, distribution panels, etc.)
- Smart meters
- Solar power inverters
- Storage batteries and UPS

Current Transformers



Features

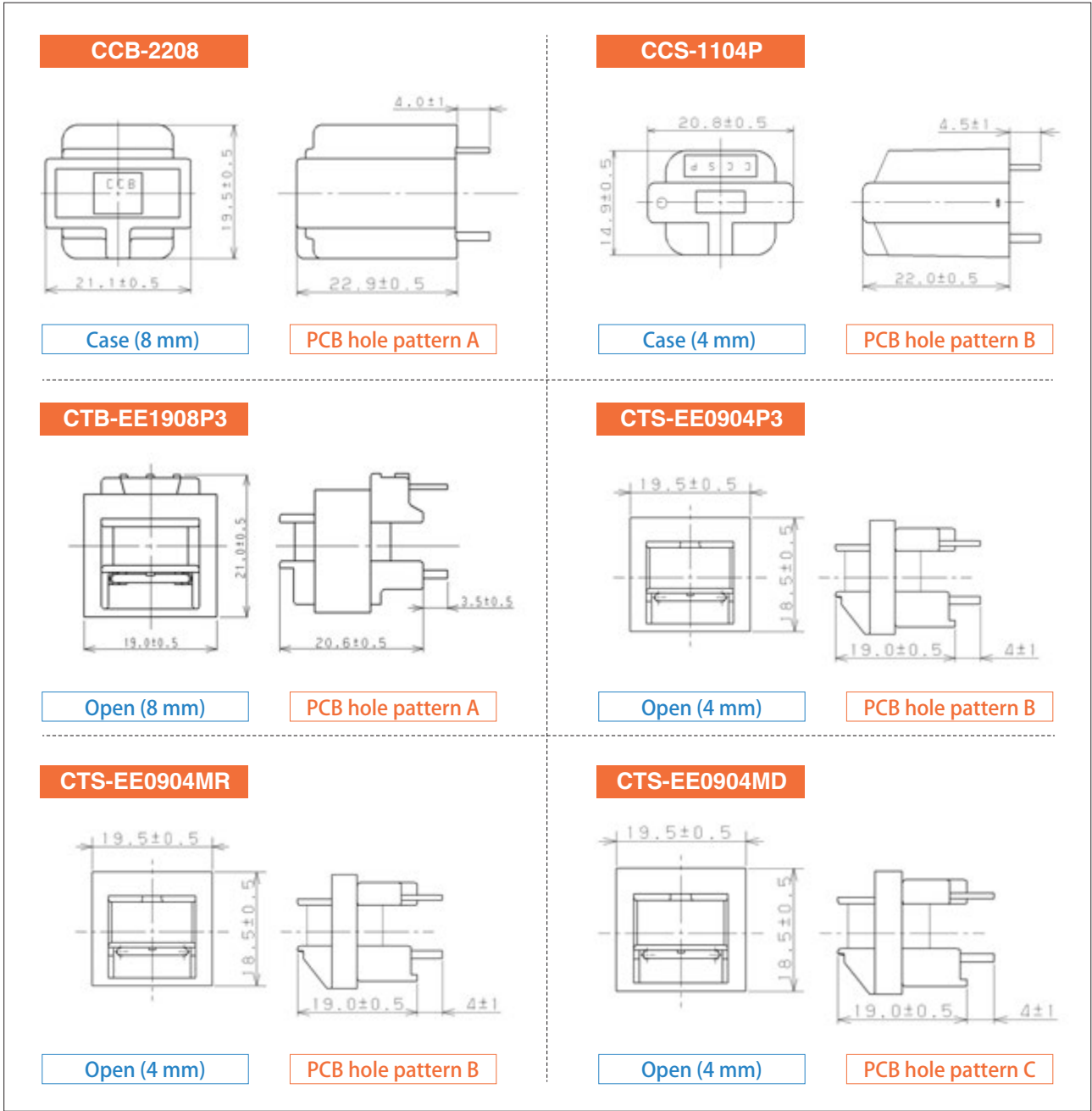
- For detecting and controlling 50/60 Hz AC current
- Compliance with Japan's Electrical Appliance and Material Safety Act, IEC standards (Class 1), other international safety standards
- Class E insulation compatible
- Output voltage tolerance: $\pm 3\%$
Unique iron core ensures temperature change of within $\pm 1\%$ (-25°C to 80°C)

Electrical characteristics and dimensions of mass-produced models

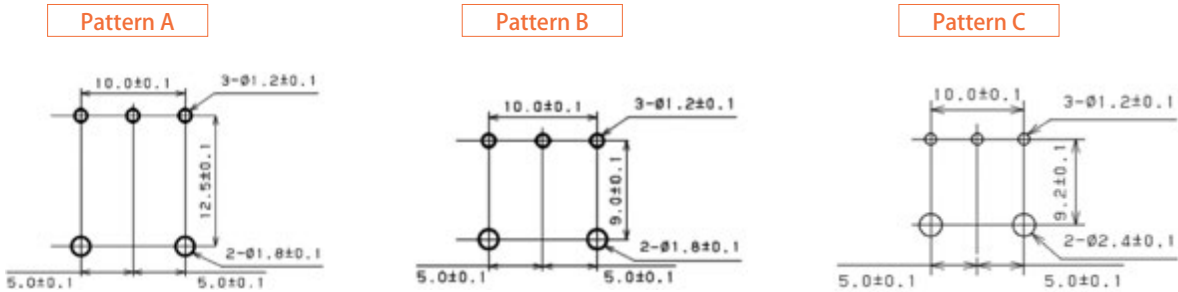
Type	Core material	Model number	Characteristics					Features	
			Input current	Max. recommended current (Reference)	Input frequency	Load resistance	Output voltage		
Case	8mm	CCB-2208	14.7A	~ 24A	50Hz	1kΩ	4.55V±3%	• Insulated from peripheral components • Dustproof • Disconnection prevention (Protection of winding tie-up) • Automatic mounting compatible	
					60Hz	1kΩ	4.59V±3%		
	4mm	CCS-1104P	14A	~ 14A	60Hz	5kΩ	16.50V±3%		
			11A		50Hz	5kΩ	14.08V±2%		
					60Hz	5kΩ	13.00V±2%		
Open	8mm	CTB-EE1908P3	14.7A	~ 24A	50Hz	1kΩ	4.55V±3%	• Low cost • Extensive lineup	
					60Hz	1kΩ	4.59V±3%		
	4mm	CTS-EE0904P3	15A	~ 18A	50Hz	1kΩ	4.55V±3%		
					60Hz	1kΩ	4.59V±3%		
		CTS-EE0904MR	16.5A	~ 17A	50Hz	1.5kΩ	7.51V±3%		
					60Hz	1.5kΩ	7.65V±3%		
		CTS-EE0904MD	16.5A	~ 28A ^{*1}	50Hz	1.5kΩ	7.51V±3%		
					60Hz	1.5kΩ	7.65V±3%		

^{*1} CTS-EE0904MD has a larger primary pin diameter, enabling a higher maximum current

Current Transformer Appearance



PCB hole dimensions



Please feel free to inquire about products not listed. Customization is available.

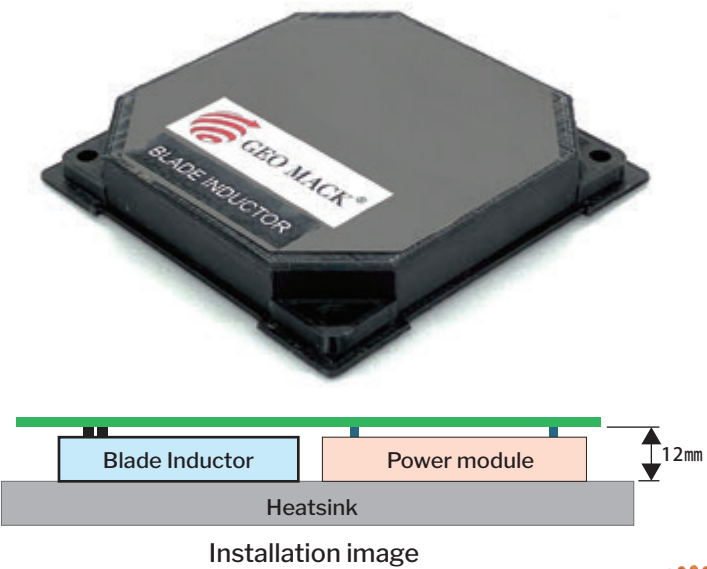
Blade Inductor

For reference only Under development



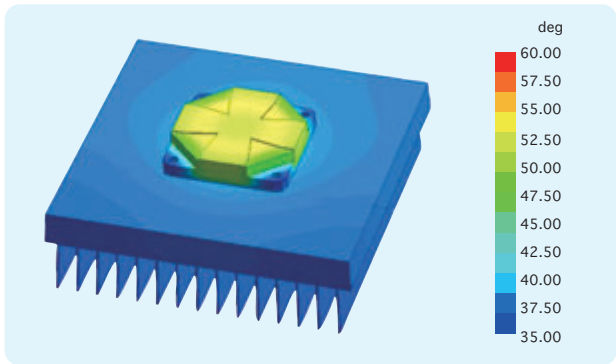
Features

- High heat dissipation**
New construction delivers high heat dissipation simply by mounting on a heatsink
- Low profile**
Low profile achieved by formation of a special magnetic circuit
- Optimized core material**
Compatible with low to high frequency range (below 100 kHz)

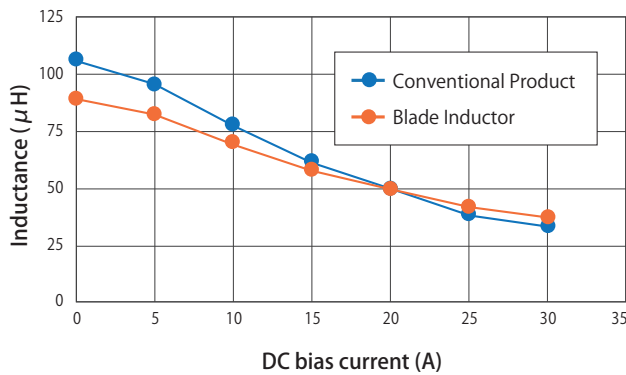


Comparison of specifications vs. Conventional Product

Conventional Specification	Conventional Product	Blade Inductor
Inductance	50uH	50uH
Rated current	20A	20A
DC resistance	11.2mΩ	23.5mΩ
Surface temperature (RT 25°C, DC 20 A, RC 10 Ap-p, 80 kHz)	Coil: 77.9°C Core: 90.2°C	Coil: 37.4°C Core: 29.1°C
Size	38.5mm x 25.0mm x 41.7mm	49.0mm x 49.0mm x 12.0mm
Weight	108.6 g	85 g



Temperature simulation



Single-phase, single-winding type and single-phase, Double-winding type

Compact, lightweight GMK transformers

New Product



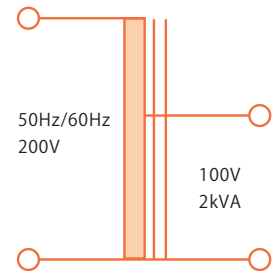
High coil space factor achieved using a bobbin-less construction
Compact size and light weight achieved using a combination of winding cores!

Features (Comparison with an SHT EI transformer using a single-phase, single-winding type as an example)

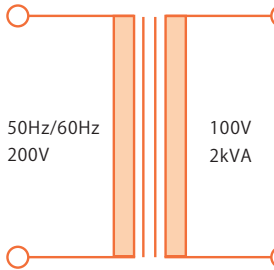
- 48% Lighter weight
- 37% Smaller size
- Standby power reduced 81%
- Acoustic noise level lower than 30dB



Wiring diagram: Single-phase, single-winding type (2 kVA example)



Wiring diagram: Single-phase, double-winding type (2 kVA example)



Approximate Weight by Capacity

(Not including weight of custom-designed bracket)

Catalog No.	Single-phase, single-winding		Single-phase, double-winding	
	Rated capacity	Approx. weight	Rated capacity	Approx. weight
GMK0200	200VA	1.7 kg	200VA	2.4kg
GMK0500	500VA	2.7 kg	500VA	4.7kg
GMK1000	1000VA	4.7 kg	1000VA	7.9kg
GMK1500	1500VA	6.1 kg	1500VA	10.8kg
GMK2000	2000VA	7.9 kg	2000VA	14.3 kg
GMK2500	2500VA	9.5 kg	2500VA	16.4kg

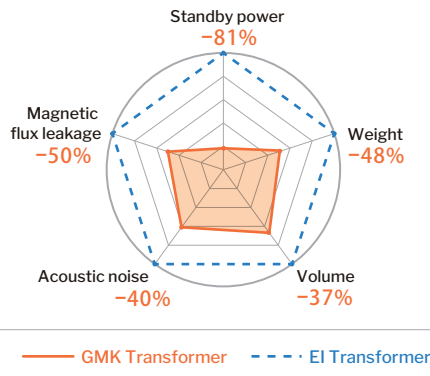
Compatible with a variety of mounting methods, including horizontal, transverse, and upright.

Range of application

- Electrical appliances: JEC 2200, IEC 61558-1
- Insulation: class B, class F
- Conversion: Isolated, non-isolated

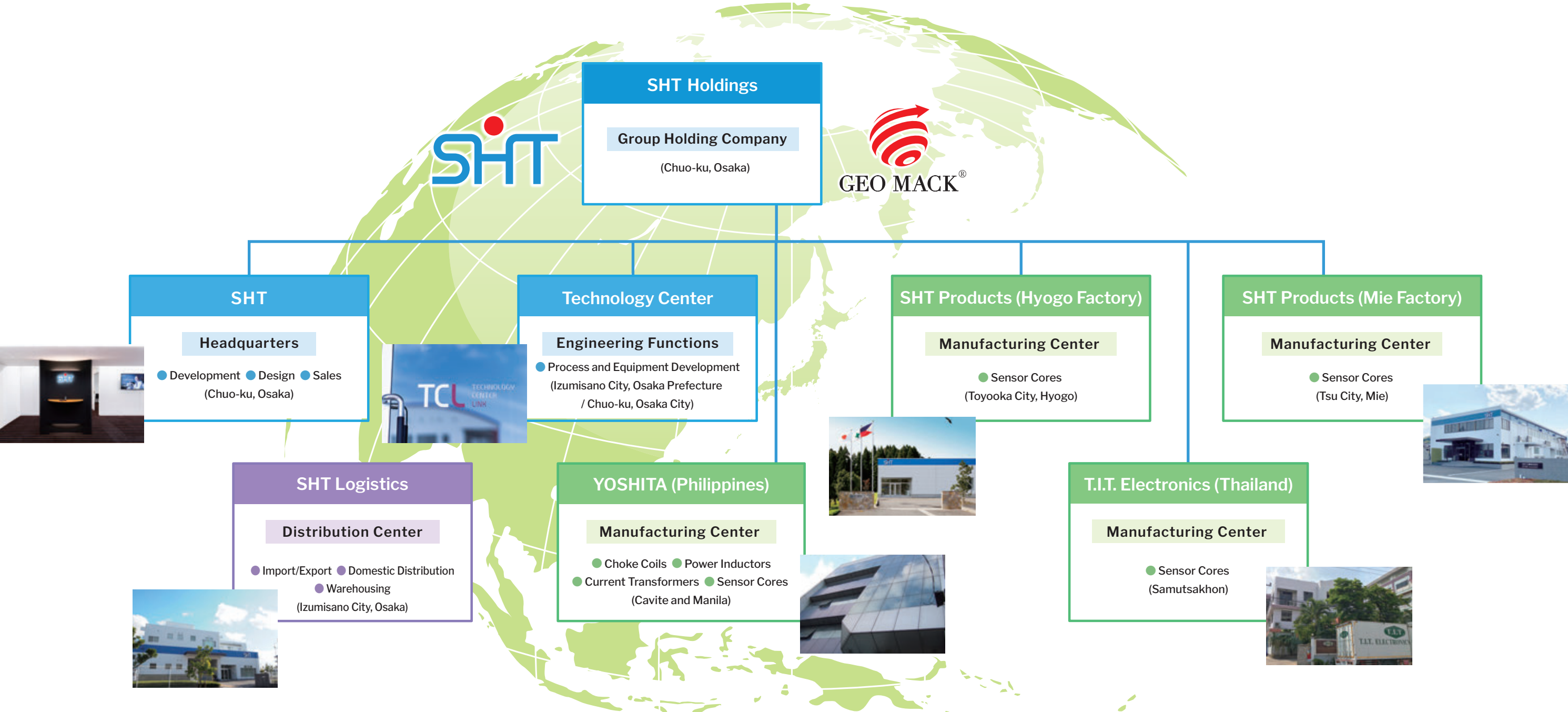
Comparison with EI transformer

(Comparison of 2 kVA transformers)



Note: Assuming a value of 100 for the EI transformer at the same output characteristics

The SHT Group continues to expand its functions and production capacity to reflect changing market demand and diverse customer needs for our products. Each SHT Group business unit is constantly refining its expertise, enabling us to propose the ideal solutions based on the cumulative strengths of the entire group.



GEO MACK is the SHT Group's cross-product technology brand. Developed by refining SHT's core expertise in windings and other technologies, GEO MACK supplies the global market with a wide lineup of unique products of unparalleled value.

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