

Power Transformers

- ✓ Key trends
- ✓ Industry outlook
- ✓ Supplier profiles
- ✓ Top products

global  sources

Electronic Components

Electronic Components

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Buyer's Guide to sourcing power transformers

An exclusive and in-depth report on power transformers, including key trends, industry outlook, suppliers and top products

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Power transformer R&D focuses on planar types

Conventional wirewound units, however, still form the bulk of production.



The High-frequency Transformer 01 model from Shenzhen Belta suits switching power supplies and electronic equipment.

China suppliers of power transformers continue to pursue miniaturization, adopting planar technology to broaden the line dominated by wirewound configurations. The advanced kind is usually up to a fifth of the size of the latter, and boasts 98 percent typical efficiency, and reduced leakage

inductance and EMI. Such low-profile components are mainly used in the telecom, industrial control, automotive and heavy equipment sectors.

At present, planar variants account for less than 10 percent of local output and only a few makers can produce them.

They include Ferrics Technology Co. Ltd, Hefei Shirui Electronic Technology Co. Ltd and Shenzhen Belta Electronic Co. Ltd. Releases come mostly in 5W to 20kW and 20kHz to 2MHz.

Chip and thin-film types have also attracted the attention of manufacturers in China, but are still at the development stage. Chip transformers have one primary winding and multiple magnetic cores. Compared with planar counterparts, they feature lower temperature rise and can be mounted on PCBs with elevated rated temperature rise. Thin-film units have the magnetic core fabricated using IC technology, resulting in less than 1mm profile. The second type's operating frequency exceeds 1MHz, with some versions reaching 10MHz to 20GHz.

In addition, companies persist in enhancing product performance. They improve power density by increasing the frequency with the use of soft magnetic materials. MnZn ferrites are the current choice. Typical high-frequency models in the local selection support more than 20kHz.

Fueling initiatives to strengthen the line is healthy demand, which will ensure annual sales growth surpassing 10 percent in coming years. Jiangsu Chenyang Electron Co. Ltd is counting on 20 percent higher revenue by end-2015, while XP Power Electronics Co. Ltd is looking to achieve 16 percent. The former can churn out 2 million units per month. Ferrics has a 40 to 50 percent target.

Power transformers own nearly 9 percent of the global electronic components market, with scale hitting about \$40 billion.

This is because of a wide application base, mainly covering the communications, computer, consumer and car electronics, industrial, LED, medical equipment and household appliances fields.

In the automotive industry, China makers hope to benefit from greater opportunities in the growing electric vehicle segment. This market is projected to log about 9 percent CAGR from 2014 to 2019, climbing to \$109.8 billion from more than \$73 billion, according to BCC Research.

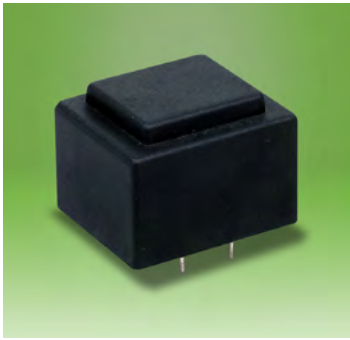
Power transformers from China makers come in 0.1W to 100kW, with low-power kinds below 100W representing over 50 percent of turnout.

Vehicle-use power transformers account for less than 10 percent of domestic manufacturers' yield for the line. The share is about 10 percent in Chipsen Electronics Technology Co. Ltd, XP and Ferrics, and 20 percent in Jiangsu Chenyang.

China is the largest production base for the component, with output exceeding 5 billion units every year or nearly 30 percent of the worldwide total. Of this, about 65 percent is exported.

More than 3,000 suppliers make up the line. They are mainly found in the Pearl River and Yangtze River Delta regions and the Bohai Bay Rim Economic Region. The key locations are the provinces of Guangdong, Zhejiang, Jiangsu and Anhui, and Beijing and Shanghai.

The first plays host to about half of the companies, whose yield forms 60 percent of China's total volume for the category.



Ferrics' model BDBEI301520 power transformer has 115 or 230V, 50/60Hz input. It meets EN 61558 and 60950.

High-frequency versions above 20kHz dominate supply. The latter constitutes the bulk of Chipsen's production, and has about 80 percent portion at XP.

By core and housing, the typical range includes traditional E, C, R and toroidal units. The first, which is classified into EI, EE, EC, ER and ETD, leads production. Such units are easy to manufacture, besides being low-cost. They are employed in switching power supplies, driver transformers, AC/DC adapters, UPS, TVs and computers.

C varieties boasting high magnetic flux density,

Units in 0.1W to 100kW

Power transformers from China makers come in 0.1W to 100kW, with low-power kinds below 100W representing over 50 percent of turnout.

Based on frequency, there are low types in 50/60Hz and used mostly in home appliances and video equipment.

and toroidal kinds are mainly adopted in electronic equipment and home appliances. For their reduced magnetic leakage and noise, and improved efficiency, R types find broad application in communication and medical equipment.

Companies improve power density by increasing the frequency with the use of soft magnetic materials.

Combined, E, C, R and toroidal models represent more than 90 percent of China's power transformers output.

Bobbin, winding, magnetic core, copper foil, insulating tap, margin tape, tube, and chemical materials such as solder bars, varnish, epoxy glue, thinner, scaling power and ink are used in manufacture. All come from domestic providers.

Bobbins are usually made of phenolic, PBT, PET or nylon 66, while enameled copper wire is the common option for the winding. As for the magnetic core, variants with silicon steel lamination and those based on ferrite are utilized. Low- and medium-frequency power transformers adopt the former, and high-frequency units the second.

Despite rising labor cost, makers are keeping product prices unchanged as competition heats up. □

A selection of power transformers from China



ER-type power transformer for home appliances

Chipsen Electronics Technology Co. Ltd

★★★★☆

This model ER28/34 ER-type power transformer for home appliances from Chipsen has a ferrite core, copper wire winding and plastic bobbin. It boasts high frequency and efficiency. The unit is 30x35x35mm and 35g. It meets CQC, RoHS and UL. The price is \$1. The minimum order is 5,000 units for delivery within 18 days.

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Power transformer runs on 50/60Hz

Ferrics Technology Co. Ltd

★★★★☆

Ferrics' model BDBEI301520 split-bobbin power transformer operates on 50/60Hz and has 115 or 230V input voltage. The vacuum-filled unit with a UL94V-0-rated plastic housing complies with EN 61558 and 60950. It is priced at \$0.63. The maker requires a minimum order of 5,000 units. Delivery takes 14 days.

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Power transformer in SMD configuration

Goldenbamboo Electronics (ZH) Co. Ltd

The IGBT Drive Transformer series from Goldenbamboo has high power output and saturation magnetic flux density, and low leakage inductance and loss. It comes in ER 9.5 and 14.5 versions. The RoHS-compliant SMD components have a ferrite core.

The minimum order is 5,000 units, and the delivery lead time is 15 days.

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50W to 1 kW power transformers operate on 100kHz

Haining Ferriwo Electronics Co. Ltd

★★★★☆

Ferriwo offers the FWPTPQ Series of low-leakage ferrite power transformers for drive and mains transformers, switching power supplies, and AC-DC and DC-DC converters. The 50W to 1kW units run on 100kHz. Each is quoted at \$0.50 to \$1. Delivery is within 14 days.

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High-frequency power transformer has TDK ferrite core

Hang Tung Electronic Ltd

★★★★☆☆

Hang Tung's model HT-ER35 power transformer adopts TDK's PC44 or 95 ferrite core. It has a plastic bobbin. The target applications are AC-DC and DC-DC converters, TVs, monitors, UPS, lighting, telecom products, medical equipment and home appliances. The 80 to 100g unit conforms to RoHS and UL. It is \$1.10 to \$1.50. The minimum order is 1,000 units.

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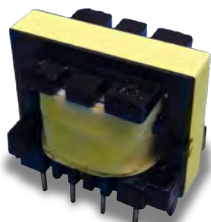
Power transformer in various configurations

Hefei Shirui Electronic Technology Co. Ltd

★★★★☆☆

This power transformer, model SRT0247E015, from Hefei Shirui comes in CI, EE, EFD, EP, EPC, ER, POT, PQ, RM and UI versions. It supports a wide frequency range, and exhibits improved efficiency and heat dissipation. Custom orders are accepted. The price is \$0.50 for a minimum order of 1,000 units. Delivery takes 20 days.

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Power transformer meets UL

Jiangsu Chenyang Electron Co. Ltd

★★★★☆☆

Jiangsu Chenyang's model EE25 power transformer adopts a ferrite core, copper wire winding and a Bakelite bobbin. It has high power output, and low loss and temperature rise.

The UL-listed unit is \$0.39. The minimum order is 5,000 units for delivery within 15 days. Custom orders are accommodated.

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Wirewound power transformer complies with RoHS

Shaanxi Shinhom Enterprise Co. Ltd

★★★★★★

The model Shinhom-3501118 power transformer from Shaanxi Shinhom has copper wire winding and a plastic bobbin. It comes in a range of configurations to meet various requirements. The RoHS-compliant product measures 12x5.72x9.8mm. It is priced \$0.80 to \$1.20. The minimum order is 6,000 units, and the delivery lead time is 28 days.

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High-frequency power transformer

Shenzhen Belta Electronic Co. Ltd

★★★★★

Shenzhen Belta's High-frequency Transformer 01 model is designed for switching power supplies and electronic equipment. It can be customized to meet buyers' requirements.

The minimum order is 100 units. Delivery takes 10 days.

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Power transformer for LED lighting

Shenzhen GUCF Technology Co. Ltd

★★★★☆

The F1919-LR6 model from Shenzhen GUCF has 1,300 μ H \pm 5 percent inductance at 100kHz, 1V, and 500VDC insulation resistance. It has 20 to 80 C temperature property. The unit for LED lighting complies with RoHS requirements.

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Amorphous-core toroidal power transformer

Shenzhen Yamaxi Electronics Co. Ltd

★★★★☆

Shenzhen Yamaxi's model YMX0351 amorphous-core toroidal power transformer operates in 50 to 120 C. It targets power supplies used in communication, X-ray and laser equipment, inverter welders and UPS. The product goes for \$8. The minimum order is 1 unit for delivery within 14 to 21 days.

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1 to 5.2kVA power transformer

XP Power Electronics Co. Ltd

★★★★☆

The XP-TR-1201 model from XP is a power transformer with 1 to 5.2kVA. It comes in single- and 3-phase versions. The unit has UL class B, F, H or N insulation. It undergoes 4kV hipot isolation testing. Customization is welcomed. The product is quoted at \$17 for a minimum order of 100 units. Delivery is within 7 days.

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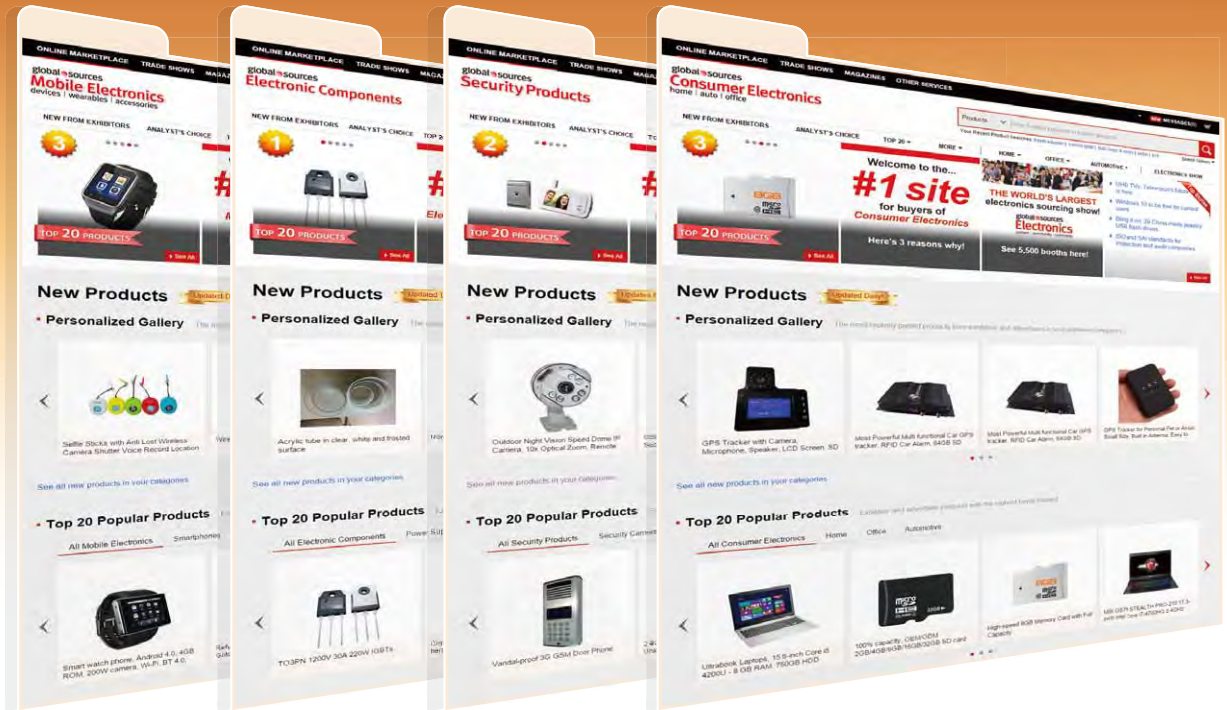
Supplier comparison table

Company	Year established	Main product lines	Total annual sales (\$mn)	Total annual exports (\$mn)	Top export markets
Chipsen Electronics Technology Co. Ltd	2000	High-frequency power transformers; fixed, PK, SMD, toroidal inductors; choke coils	40	12	Europe (30%), US (20%), Middle East (20%), other (30%)
Ferrics Technology Co. Ltd	1995	Transformers, ferrite cores	8	7	Asia, Europe
Goldenbamboo Electronics (ZH) Co. Ltd	1994	High-frequency, power transformers; air coils; high-current, power inductors	461	•	Asia (50%), North America (30%), Western Europe (10%), South America (10%)
Haining Ferriwo Electronics Co. Ltd	1998	Transformers, inductors; bobbins, ferrites	13	8	Europe (50%), US (30%), South Asia (20%)
Hang Tung Electronic Ltd	1987	High-frequency, pulse, current, step-up/down, encapsulated transformers; inductors; EMI filters	405	155	Switzerland (40%), Malaysia (30%), Germany (30%)
Hefei Shirui Electronic Technology Co. Ltd	2006	Transformers, inductors	6	6	Europe (50%), US (30%), Middle East (20%)
Jiangsu Chenyang Electron Co. Ltd	1988	High-, low-frequency transformers; LED drivers, linear power supplies, switching power adapters, chargers	160	90	US (50%), Europe (20%), Asia (20%), other (10%)
Shaanxi Shinhom Enterprise Co. Ltd	1989	High-frequency power, flyback, pulse, audio, LAN, telecom transformers; inductors; coils; cores, chokes; sensors	12	11	US (40%), Europe (40%), Asia and the Middle East (20%)
Shenzhen Belta Electronic Co. Ltd	2000	Transformers, inductors	26	20	Europe (50%), US (20%), Middle East (10%), other (20%)
Shenzhen GUCF Technology Co. Ltd	2006	Power transformers; AC/DC adapters, LED drivers; cables	400	300	Japan (50%), US (20%), Europe (10%), Taiwan (10%), other (10%)
Shenzhen Yamaxi Electronics Co. Ltd	1998	Transformers, inductors, reactors	60	5	US (40%), Europe (30%), Middle East (30%)
XP Power Electronics Co. Ltd	1992	Power, high-frequency transformers; choke coils	100	80	US (60%), Europe (20%), Middle East (20%)

Buyer's Guide

Number of staff	MOQ (units)	Top target applications	OEM (%)	ODM (%)	OBM (%)	
260	1,000	Home appliances, LED power supplies, wireless chargers, computers, cameras	5	15	80	CONTACT SUPPLIER
300	5,000	LED drivers, telecom products, computers	85	15		CONTACT SUPPLIER
300	1,000 for transformers, 5,000 for inductors	Automotive, home appliances				CONTACT SUPPLIER
550	10	Home appliances, LED lighting, power supplies	45	25		CONTACT SUPPLIER
80 to 100	1,000	Smart home appliances, automotive, automated meter reading, communication, lighting	40	50	10	CONTACT SUPPLIER
200	1	Telecom products, computers, consumer electronics	60	40		CONTACT SUPPLIER
2,000	3,000	Consumer electronics, LEDs, automotive electronics	80	20		CONTACT SUPPLIER
52	5,000	Automotive, industrial equipment, home appliances	25	35	40	CONTACT SUPPLIER
420	1,000	Telecom, industrial, medical equipment	20	80		CONTACT SUPPLIER
320	5,000	Automotive, LED lighting, power supplies	80	15	5	CONTACT SUPPLIER
2,000	1	Automotive, home appliances	85	15		CONTACT SUPPLIER
430	1	Home appliances, automotive, telecom and medical equipment	85	15		CONTACT SUPPLIER

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