Power Magnetics Component Roundup

by David G. Morrison, Editor, How2Power.com

This article highlights the latest introductions of power magnetic components, presenting news about power inductors, transformers, wireless charging coils, chokes, ferrite beads and cores introduced over the past six months. As has been the trend in recent years, the most popular application area for the new power inductors is automotive, with new devices being developed for use in ADAS and AD systems, automotive LED lighting, hybrid engine controls, powertrain control modules, class D audio amplifiers and other automotive functions. Some of these inductors have been developed for use in multiphase buck converters.

Beyond automotive, some new inductors are also targeting high-current point-of-load converters in servers and desktop PCs and in mobile devices. Among the new transformers, power over Ethernet (PoE) applications are notable, while the latest chokes and ferrite beads address EMI filtering requirements in a range of power supply and other applications. This article represents a follow-up to the Power Magnetics Component Roundup published in the June 2020 issue and other magnetics articles published in How2Power Today.

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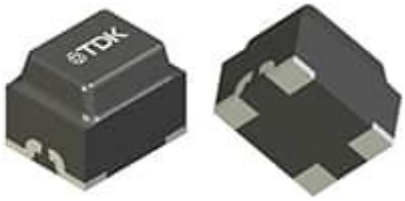
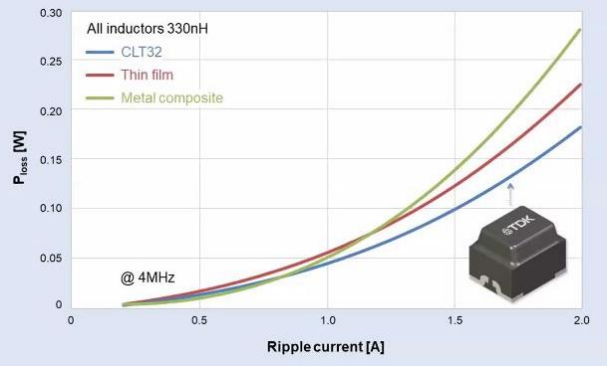
Power Inductors

Power Inductor Design Benefits Power Management In ADAS And AD Systems

Designed for use in multiphase buck converters in automotive applications, TDK's CLT32 series power inductors employ an innovative design involving a solid copper coil overmolded with a special ferromagnetic plastic compound. This technology is said to be hugely beneficial because the coil core and the housing are created simultaneously, improving reliability and achieving very low DCR values.

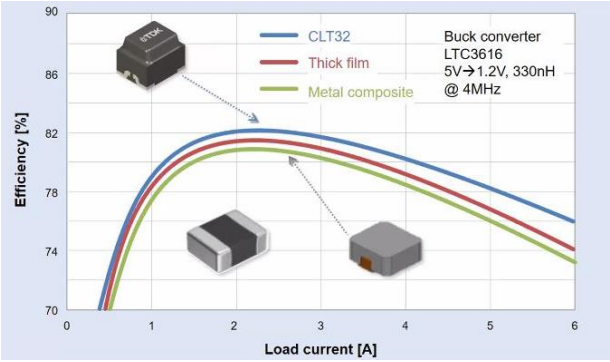


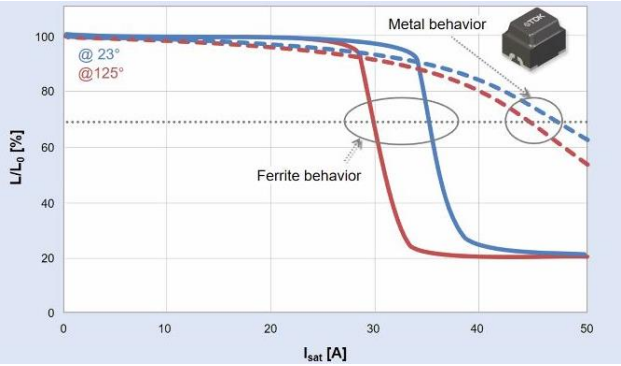
The inductors of the CLT32 series require a footprint of just 3.2 mm x 2.5 mm with an insertion height of 2.5 mm. According to the company, their space requirements are up to nearly four times less than that of competing products with comparable electrical performance, allowing several of these power inductors to be used in PMIC topologies, ultimately leading to significant reductions in terms of the size of the PCB.



This series is also said to feature much better electrical performance compared to rival technologies. For example, the alternating current losses at high frequencies are significantly lower compared to thin-film or metal-composite technologies.

According to the vendor, the CLT32 inductors are also far superior to other technologies regarding the efficiency and the drift of the saturation current at different temperatures. Concerning inductance values, this series includes six models with values ranging from 17 nH to 440 nH. These power inductors are designed for rated currents of 10 A to 45 A, with high saturation currents of up to 60 A.





Another key benefit of the CLT32 series is its highly reliable operating temperature of +165°C, making it extremely well-suited for automotive applications. Thanks to their wide frequency range up to 10 MHz, the robust inductors are also suitable for GaN semiconductor applications.

In the CLT32 design there is none of the usual internal contacting, as the ends of the coil are already designed as connections as shown below in the cross-sectional cutaway. The ferromagnetic plastic compound forms the coil core and the housing simultaneously. This design principle offers two significant benefits for automotive applications in particular: it significantly increases the reliability and it helps to achieve extremely low RDC values, according to the vendor.

Helmut Philipowski, manager marketing communications, corporate communications at TDK Electronics explains how the CLT32's core material differs from that of existing cores.

"The CLT32 core material is a newly developed ferromagnetic compound with different base materials in particle size and ratio compared to conventional metal core materials. In addition, the CLT32 material is processed with a much lower pressure and temperature which avoids unwanted stress on the copper coil in production," says Philipowski.

Naturally, there are tradeoffs with all designs and in the case of the CLT32, this affects the maximum inductance. "The CLT32 design allows only inductance values below 1 µH, however, this is sufficient for the target applications ADAS and AD with continuously increasing frequencies and hence a decreasing inductance value requirement," explains Philipowski.

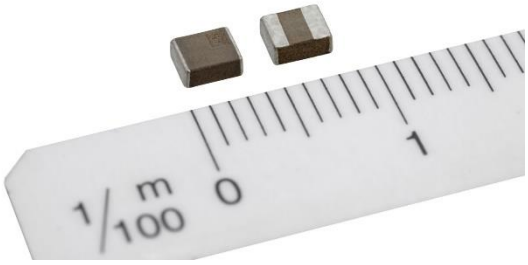
In advanced driver-assistance system (ADAS) and autonomous driving (AD) applications, high-performance processors are used to evaluate the data from the different sensors at a very high speed and with high processing power. These processors are supplied with voltages in the range of 1 V but require currents in the double-digit ampere range. Power management ICs (PMICs) are used as power supplies that work with multiphase outputs to provide the necessary high currents. Key components for the stabilization of these currents are power inductors at the outputs. A typical topology of an eight-phase PMIC unit could use eight CLT32 power inductors for supplying power to a processor.

Inductors for PMIC controllers in the automotive sectors are subject to challenging electrical and mechanical requirements. These include compact dimensions, high reliability, high saturation current, extremely low DCR, high frequency operation and high ambient temperature operation. The CLT32 power inductors were designed with these requirements in mind.

Samples of the CLT32 power inductors will be available in 2021. For more information see the Digi-Key website.

Automotive Power Inductors Deliver 47 µH In Small Package

TDK's BCL322515RT AEC-Q200-qualified power inductors for automotive electronics are intended for insertion into the power line of an automobile electronic control circuit. Using TDK's proprietary material technologies and structure design, the inductors achieve high inductance (47 µH) in a small size (3.2 x 2.5 x 1.5 mm) with a saturation current of 0.72 A. In addition, by using metallic magnetic material as a core material, they were downsized by approximately 35% compared to products that used conventional ferrite material with similar attributes, according to the company.



The rated voltage is 40 V, and they can be used in a primary power supply circuit, which takes input directly from a vehicle's 12-V battery. The operating temperature range is from -55°C to +155°C (including self-temperature rise), which supports severe temperature environments. In addition, the connection structure between the winding wire and the external electrode is designed to reduce open risks, ensuring high reliability.

Currently, automobiles are increasingly likely to have an electronic control unit for information communication and self-driving, resulting in an increased number of inductors for power supply circuits used in the units. TDK will expand its lineup in the BCL series to meet a variety of customer needs for power inductors to be used in automotive electronics, such as downsizing.

Mass production will launch in October 2020. For more information, see the datasheet.

Ultra-low DCR Power Bead Inductors For Computing And Storage Applications

Pulse Electronics has expanded its range of power bead inductors with the introduction of six new platform sizes designed for the latest multi-phase and PoL architectures for server, graphics and high-power FPGAs. According to the company, the latest platforms have ultra-low DCR, low loss ferrite cores and an optimized structure to ensure that they offer the highest efficiency and enable maximum power density.

The platforms range in size from 5.7 mm x 5.5 mm to 10.8 mm x 8.2 mm and come in inductances from 50 nH to 1 µH with peak current capability exceeding 120 A and DCR as low as 120 µΩ.

Table. Key specifications for Pulse's new power bead inductors.

Part number series	Footprint (mm max)	Height (mm max)	DCR (mΩ)	Inductance range	Peak current
PA4059	5.7 x 5.5	4.6	0.200	50 to 70 nH	50 Apk
PA5041	7.2 x 6.7	11.2	0.290	120 to 330 nH	89 Apk
PA4990	10.0 x 6.0	12.0	0.120	80 to 330 nH	178 Apk
PG1712	9.6 x 6.4	9.3	0.170	150 to 300 nH	75 Apk
PA4987	10.0 x 7.0	12.0	0.810	470 to 1000 nH	32 Apk
PA5187	10.8 x 8.2	8.2	0.120	100 to 200 nH	100 Apk

Although power beads can be used in a wide range of applications, including input filters and single-phase point of load (PoL) regulators, the most common implementation is as the energy storage element in a high-current multi-phase buck regulator. The operational benefits of a multiphase circuit come at the expense of putting increased stress on the inductor. Although the output ripple current is drastically reduced, the ripple current in each phase, due to the low inductance, is very high. If the inductor is not optimized the high ripple current will lead to excessive ac core loss and ac winding loss.

In addition, the relatively low ratio of output voltage to input voltage (10%) means that the inductor effectively sees a much higher operating frequency which also contributes to high ac losses. According to Pulse, the company leverages its three-dimensional finite element analysis modelling skills, in depth material knowledge and vast design experience to optimize the design to minimize the ac and dc losses.

To see Pulse's complete line of Power Bead Inductors see the product overview or see the Product Finder page.

SMD Power Inductors Handle High Temperatures And High Currents

Sumida continues the expansion of its AEC-Q200 qualified SMD inductors with the introduction of the CDEP13D**/T150 line. Consisting of ten standard types and ten high-power types, these devices are said to offer a combination of four key benefits, when compared to many other inductors—high temperature, high current, high-insulation voltage, and magnetic shielding.

Inductance values range from 0.8 to 22 µH, with saturation current up to 32 A. Measuring 13.5 x 13.5 x 10 mm, the inductors are an outgrowth of the CDEP15D**/T150 line, which measures 2 mm larger and offers saturation current of up to 50.4 A. For durability, core and windings can withstand a voltage of up to 120 Vdc.

Full operating temperature range is -40°C to 150°C (including the coil's self-temperature rise) and both product families are qualified to the automotive AEC-Q200 reliability test requirements. The 150°C temperature satisfies most underhood

automotive requirements, while the Mn-Zn (manganese-zinc) ferrite core has high-magnetic permeability and low power losses at the higher switching frequencies now found in automotive power circuits.

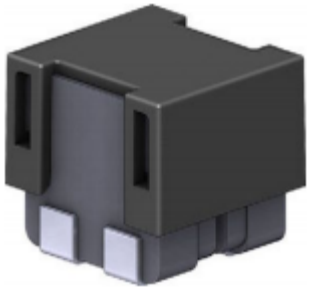
High-frequency performance is further enhanced by the application of flat coil windings, which counteract skin effect, and lower dc resistance. Flat-coil windings are also much more space-efficient than round-wire coils, helping to significantly reduce device size.

The part geometry provides very effective magnetic shielding, which is of growing importance because of the push towards smaller, more densely-packed automotive circuits. Unchecked, radiated EMI/RFI can also affect the operation of other circuits nearby.

Popular automotive applications for these inductors include LED headlight driver modules, adaptive driving beam, adaptive LED boards, daylight running light systems, pulse width dimming circuits, adaptive front-lighting systems, hybrid engine controls, powertrain control modules or any high-reliability application that must tolerate a wide temperature range.

The CDEP13D**/T150 series and CDEP15D**/T150 power inductors are in-stock at Digi-Key. For more information see the Power Inductors CDEP13D76/T150 page.

Automotive-Grade Dual Inductor Reduces Space Requirements In Class D Amplifiers



Designed to replace the two inductors required in an automotive class D audio amplifier with a single device, Vishay Intertechnology's Vishay Dale IHLD-2525GG-5A dual inductor reduces board space requirements and component counts while providing improved THD performance over other inductor types. The new AEC-Q200 qualified device consists of two IHLP inductors with operating temperatures up to +155°C in one compact package.

According to the vendor, the IHLD-2525GG-5A, which provides noise filtering in class D amplifiers, features an optimized design that realizes higher quality sound and lower distortion than other solutions while offering low coupling for minimal cross-talk between its integrated inductors.

Designed to operate at higher carrier frequencies up to 2.1 MHz, the IHLD-2525GG-5A delivers high efficiency with typical DCR from 7.06 mΩ to 154 mΩ and a wide range of inductance values from 1.0 µH to 22 µH. The device provides rated current to 13.0 A and handles high transient current spikes without saturation. Packaged in a 100% lead (Pb)-free shielded, composite construction that reduces buzz to very low levels, the dual inductor offers high resistance to thermal shock, moisture, and mechanical shock.

Samples and production quantities of the dual inductor are available now. Pricing in 2,000-piece quantities begins at $0.99 per piece. For more information see the IHLD-2525GG-5A page.

High Current Inductor In 4024 Case Delivers Improved Saturation And Temperature Stability

Vishay Intertechnology's Vishay Dale IHVR-4024KE-51 high-current inductor provides 50% lower DCR than typical power inductors for improved efficiency in high-frequency dc-dc converters. Using materials and construction similar to the IHLP, the Vishay Dale IHVR-4024KE-51 also boasts excellent saturation and temperature stability. Available in the compact 10-mm by 6-mm by 10-mm 4024 case size, the device enables high current density, while its vertical-mount design saves on board space (see the table).

Featuring high temperature operation to +155°C, the inductor is optimized for energy storage in dc-dc converters up to 5 MHz and provides excellent attenuation of noise in high-current filtering applications up to the SRF of the inductor. Applications for the IHVR-4024KE-51 will include servers and desktop PCs; high current POL converters; multi-phase, high-current power supplies; battery-powered devices; distributed power systems; and FPGAs.

Packaged in a 100% lead (Pb)-free shielded, composite construction that reduces buzz to very low levels, the RoHS-compliant inductor

offers high resistance to thermal shock, moisture, and mechanical shock, and handles high transient current spikes without saturation.

Table. Key specifications for the IHVR-4024KE-51.

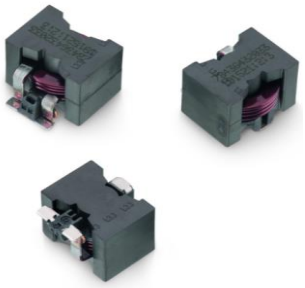
Case size	4024
Inductance at 100 kHz (µH)	0.12
DCR at 25°C (mΩ)	0.24
Saturation current typ. (A)	91[1]; 130[2]
SRF typ. (MHz)	112

[1]DC current (A) that will cause L0 to drop approximately 20%.

[2]DC current (A) that will cause L0 to drop approximately 30%.

Samples and production quantities of the IHVR-4024KE-51 are available now Pricing starts at $0.40 per piece in 10,000-piece quantities. For more information, see IHVR-4024KE-51 page.

Shielded Flat-Wire Coil Delivers High Rated Current And High Saturation Performance



Würth Elektronik's WE-HCFA high-current inductor for automotive electronic systems is designed for high-efficiency dc-dc converters in automotive applications. The characteristic features of this flat-wire coil with its MnZn core are its high rated current (IR 38-47 A) and a high saturation performance. At a DCR value of 0.6 to 1.1 mΩ, its resistance is said to be lower than that of comparable coils on the market. The magnetically shielded component is specified for operating temperatures ranging from -40°C to +150°C (AEC-Q200 Grade 1).

Fully suited for SMT pick-and-place assembly systems, the case of the WE-HCFA inductor has an excellent planarity. The coil in the 2818 construction size (27.5 × 27.5 × 17 mm) is particularly suited for single and polyphase buck and boost converters. The inductor is also especially suited for use as a filter in infotainment and audio applications. The component is available from stock in six configurations with inductances ranging from 1 to 10 µH. Free-of-charge samples are also available on request. For more information see the WE-HCFA High Current Flat Wire Inductor page.

Rugged High-Current Inductors With Soft Saturation Behavior

Würth Elektronik's WE-HCIT inductors are robust THT inductors particularly suited for use in vibration-sensitive applications. They are characterized by a high current capability of up to 28 A and a very low DCR of 0.44 to 0.88 mΩ and feature a very soft saturation behavior.

The AEC-Q200 qualified inductors are intended for use in a variety of applications including dc-dc converters for infotainment and communication systems, EMI solutions for motors (car seats, mirrors, windshield wipers etc.) all the way to power applications and battery-management systems. The component is designed for a broad range of operating temperatures from -40°C to +150°C (AEC-Q200 Grade 1).

The inductors are available in the 1010 and 1008 case sizes. In addition, they are available from stock, and free-of-charge samples can be supplied on request. For more information, see the WE-HCIT THT High Current Inductor page.

Power Inductors Feature Low AC Winding Losses And Other Benefits

Würth Elektronik has expanded its WE-MAPI line of coiled metal-alloy power inductors to include models in 5020 and 5030 sizes and a 4020HT version with wide temperature range and low winding losses. The inductors in this line are characterized by small size, high saturation current, high permeability, and low resistance, targeting high-performance dc-dc converters with high efficiency for switching frequencies of up to 20 MHz.

The WE-MAPI 4020HT features a wide operating temperature range of -55°C to +150°C with ac winding losses that are 55% lower than those of comparable products on the market, according to the company. The other sizes of the AEC-Q 200-qualified power inductors are well suited for use in mobile devices, offering an operating temperature -40°C to +125°C.

All WE-MAPI versions are said to feature a saturation current four times higher than that of similarly dimensioned components. The recipe for the success of the WE-MAPI series is the innovative and high-quality finishing of the modules. The coil, made of enameled copper wire, is firmly embedded in a metal-powder alloy, the hybrid bonding system of which reduces the thermal ageing of the component.

WE-MAPI components are manufactured entirely without welding or soldering spots and hence do not have any potential weak points. Ni/Sn contact surfaces in the place of clips give the SMT pick-and-placeable power inductor perfect coplanarity and substantially reduce the space requirement. The self-screening construction ensures the best possible EMC performance.

The WE-MAPI components are well suited for use in high-efficiency power-supply systems and space-critical applications, for example power-supply units for operating panels and other mobile devices, dc-dc converters for high-current power supplies, dc-dc converters for FPGAs, or point-of-load (POL) converters. The coils are also well suited for use on mainboards and graphics cards, for CPU/RAM power supplies, or in wireless communication devices.

All 15 WE-MAPI module sizes are now available from stock, with no minimum order requirements. Würth Elektronik also offers free-of-charge samples and design kits with our restocking service. For more information, see the WE-MAPI SMT Power Inductor page.

Transformers

DC-DC Transformers Double The Power Density

Leveraging the research presented in its 2019 APEC paper "Power Transformer Core Optimization Enables Dramatically Increased Power Density," Pulse Electronics has released an improved dc-dc transformer series that maintains the industry standard footprint but doubles the component power density to over 11 W/cm^3, according to the vendor. The EP7+ series (PA5099.XXXNL and PA5100.XXXNL) and EP10+ series (PA5130.XXXNL and PA5131.XXXNL) achieve this performance enhancement by using three-dimensional finite element analysis to balance the flux utilization in the core, thereby minimizing ac losses and increasing saturation currents.

The series is comprised of twenty-four part numbers designed for continuous-mode flybacks and active clamp forwards ranging in output power from 17 W to 35 W. With multiple input voltage ranges (9 to 57 V and 33 to 57 V) and output voltage combinations from 3.3 V to 24 V they are suitable for a variety of end-applications.

"Pulse is able to use our sophisticated design skills, knowledge of proximity loss minimization and understanding of our customers technical roadmaps to anticipate the market needs and continually improve magnetic component performance," said John Gallagher, product marketing, Power PBU, Pulse Electronics.

Pulse has verified the simulated component performance by designing two test board power supplies and comparing the actual efficiency and thermal performance between the standard platform (EP7 and EP10) and the optimized version (EP7+ and EP10+). The lab tested results matched the simulation very well showing reduced temperature rise and increased efficiency.

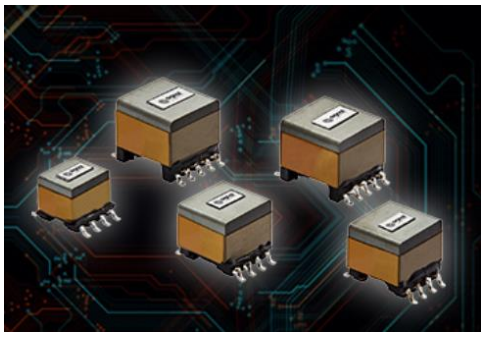
Although primarily designed for PoE and PoE+ applications, including IP phones, security cameras, instrumentation and automation test equipment, they are also suitable for most low voltage (<75-V) switch-mode power supply designs including 5G network and datacom implementations

Table. Key specifications for the EP7+ and EP10+ series of dc-dc transformers.

Pulse Series	PA5099.XXXNLT	PA5100.XXXNLT	PA5130.XXXNLT	PA5131.XXXNLT
Platform size	EP7+ 13.6 X 11.0 X 15.5 mm Max		EP10+ 15.1 X 13.0 X 15.0 mm Max	
Power	17 W	27 W	25 W	35 W
Topology	CM flyback	Active clamp forward	CM flyback	Active clamp forward
Input voltage	9 to 57 V or 33 to 57 V			
Output voltages	2 x 3.3 V 2 x 5.0 V 2 x 12.0 V	2 x 3.3 V 2 x 5.0 V 2 x 12.0 V	2 x 3.3 V 2 x 5.0 V 2 x 12.0 V	2 x 3.3 V 2 x 5.0 V 2 x 12.0 V

To see Pulse's complete line of optimized dc-dc power transformers see the EP7+, EP10+ and EP13+ datasheets. To learn more about the company's 2019 APEC paper, see the white papers.

Transformers Offer Wide Array of Power And Platform Designs For PoE Applications



Targeting power over Ethernet (PoE) applications, Signal Transformer's SPoE series surface-mount transformers are used for isolation and splitting two power/digital signals. Featuring a flyback circuit topology, these transformers are well suited for design engineers seeking a solution optimized for high-density boards, as well as being competitively priced for end products.

Other key specifications include a 250-kHz switching frequency, a 9-V to 57-V input voltage range, 1500-Vrms primary-to-secondary isolation, low leakage inductance and 8-V and 12-V, 20-mA auxiliary windings. There are five power levels (3, 7, 10, 13, and 27 W) in three SMD platforms (EP7, EP10, and EP13) to choose from.

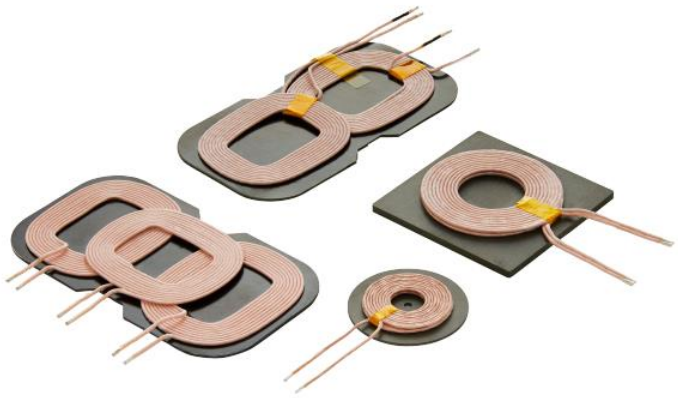
The SPoE series is available from the company's distribution network, including Digi-Key and Mouser. For more detailed information, visit belfuse.com/signal.

Wireless Charging Coils

Wireless Charging Coils Come In Single And Multiple Windings

Signal Transformer has announced their new wireless charging transmission coils (WCC) in both single and multiple windings for smart car applications, consumer products, controllers, wearable devices, robotic cleaners and drones. Signal's WCCs feature pin-cooling technology and tight pin tolerance control within ±1.0 mm after the tin immersion process.

They come in two core shapes, square/rectangular (Q) or circular (c), and feature Qi standard compliance and customizable size and shape characteristics, with a low profile and high mechanical intensity. Inductance tolerance is ± 5% for (J) and ± 10% for (K) with inductance of 6R3 for 6.3 µH, and an operating temperature of -20°C to 85°C for general applications and -40°C to 125°C for automotive. Signal's WCCs comply with all environmental requirements, including RoHS, REACH, Prop 65 and Conflict Minerals.



The WCC series coils use inductive coupling to transfer signals, data and power from one source to another. Of their many applications, the most common are base chargers for cell phones, tablets, toothbrushes, remotes and similar devices. The fixed-in position inductive coils are non-moving, resistant to vibration and corrosion and are designed for reliability and longevity.

The Wireless Charging Coils will be available in prototype and production quantities through the company's distribution network via Digi-Key and Mouser. For more detailed information, download the datasheets, Single Windings or Multiple Windings.

Chokes And Ferrite Beads

Dual-Choke Filter Inductors Deliver Superior Suppression In Signal And Power Line Applications

Bourns' Model DR334A line filter series offers current-compensated dual-choke filter inductors featuring higher current capability than typical standard signal-line common-mode chokes, as well as high stray inductance and differential-mode noise rejection. These capabilities make the Model DR334A series well suited as line filter solutions for consumer, industrial and other market power line applications, or in applications where power is transferred over signal lines.

The Model DR334A series is available in a bifilar-wound configuration to reach higher common-mode impedance, and a sector-wound configuration to reach higher differential-mode impedance at high frequencies. Offered in a compact, low-profile (3.6-mm) size and in a broad range of inductance ratings from 11 µH up to 4700 µH, these devices allow designers to set the filter curve best suited to their application. Additionally, these filter inductors have an impedance range of 300 Ω to 6000 Ω and a current range of 0.2 to 0.5 A rms typ.

The filters are AEC-Q200 compliant with an extended operating temperature range of -40°C to +135°C and are rated up to 80 Vdc. In addition, the closed and ferrite toroid core construction of Bourns' latest line filter series delivers a more efficient and robust mechanical design.

The Model DR334A line filter series is available now, is RoHS compliant and halogen free. For more information see the Common Mode Chokes-AEC-Q200 Compliant page.

Low-Profile Chokes Deliver CM And DM Filtering For DC Power Line Applications

Bourns' SRF1206A and SRF9045A series low-profile, high-current common-mode chokes also provide differential-mode filtering in a single-choke configuration. These highly robust surface-mount products offer high current capacity to answer the need for components that meet board space constraints in an increasing number of dc voltage domain applications with voltages up to 80 Vdc and currents up to 8 A. Target applications include dc-dc converters, switch-mode power supplies, battery management and power line noise suppression in consumer, industrial and other electronics applications.

The SRF1206A and SRF9045A series are AEC-Q200 compliant with

operating temperature ranges from -40°C to +125°C, and provide high impedance over a broad frequency range to suppress electromagnetic interference (EMI) either coming into or out of systems. Both series of common-mode chokes use separate sector-wound winding configurations, and feature U-shaped terminals clamped to core for superior strength to handle various mechanical stresses.

These series also feature a protective plastic shield that protects the part's surface and wires and enables hi-pot capability of 500 Vac at 3 mA, 1 second. In addition to the normal common-mode impedance that these components are designed to achieve, this construction also features increased differential-mode impedance at a high frequency range. The table below shows key specs for the SRF1206A and SRF9045A series along with the related Model DR334A series described above.

Series	Data Sheet	Photo	Size	inductance_range	Impedance Range	Current Range	Related Documents
DR334A			9 x 5.8 x 3.6 mm	11 µH - 4700 µH	300 Ω - 6000 Ω	0.2 - 0.5 A	DR334A
SRF1206A			12 x 11 x 6 mm	9 & 12.5 µH	700 & 1000 Ω	6 & 8 A	SRF1206A
SRF9045A			9 x 7 x 4.5 mm	7.5 µH	700 Ω	5 A	SRF9045A

The SRF1206A and SRF9045A series are available now, and are RoHS compliant and halogen free. For more information see the Common Mode Chokes-AEC-Q200 Compliant page.

High-Current Toroidal Choke Design Kit Features 15 Popular Part Numbers

Signal Transformer's high-current toroidal choke (HCTC) design kit, features 15 of the company's most popular HCTC part numbers in a single, compact package, enabling engineers flexibility during their design selection process, with multiple options to choose from. The HCTC series chokes feature a solid carrier base for stable vertical PCB mounting and fixed-pin spacing for easy PCB insertion, high current capacity and excellent EMI suppression.

Utilization of the largest possible conductor size for reduced heat rise and selection of low-loss core material ensures high efficiency in a small package, while maintaining a competitive cost for the industrial, electronic, telecommunications, power and electric vehicle (EV) industries. The design kit features a wide range of inductances and currents, with parts ranging from 1 mH, 4.8 A up to 50 mH, 2.3 A and 14 different dc rated currents. To learn more, visit the product page or download the HCTC series datasheet.

EMI Suppression Ferrite Beads Come In More Case Sizes

Würth Elektronik's WE-CBA SMT EMI Suppression Ferrite Bead product families now include 0402, 0603, 0805, 1206, 1806 and 1812 packages. The SMDs are AEC-Q200 qualified as part of the company's automotive electronics portfolio. WE-CBA features high-quality Ni-Sn electrodes, a very high-current carrying capacity up to 6 A, and operating temperatures from -55°C to +125°C. The ferrites, which are available in various specifications, are ideally suited as data line filters and for decoupling the supply voltage.

The miniature SMT ferrites in multilayer technology are soldered directly onto the PCB. They have very good filter characteristics and low DCR. Placed close to the source of interference, maximum impedances around 1000 Ω can be achieved even with the smallest package (0402).

The SMT ferrites referred to as "High Speed" have significantly lower impedances in the lower frequency range and therefore only low attenuation for fast signals. Applications include USB 2.0, IEEE1394 and LVDS. The ferrites of the WE-CBA family referred to as "Wide Band" already have high impedances in the lower frequency range and thus have a broadband effect over the entire spectrum. Applications include control signals, RS232, RS422 and dc-dc converters.

All WE-CBA ferrites are available from stock as well as in small quantities for prototyping. Free samples can be requested. In addition, Würth Elektronik offers design kits for developers with a lifelong replenishment service,

so that they always have ferrites with the appropriate values on hand. For more information, see the WE-CBA SMT EMI Suppression Ferrite Bead page.

Cores

LP And EER Shape Cores Come In New Sizes

Magnetics now offers its LP shape powder cores in size 36 x 24 mm, adding to existing OD sizes 23 mm, 25 mm, and 42 mm. The planar design of LP cores helps to maximize inductor efficiency.

These cores are currently available in 26 and 40 permeabilities. Custom heights and matching I cores may be available upon request.

The company now also offers new EER shape powder cores in 25.5 mm and 40 mm in Kool Mu, XFlux, and High Flux materials. The EER geometry provides excellent space utilization which improves component efficiency, energy storage capacity, and power by volume. When compared with toroidal cores, EER cores allow for easier helical winding, thus reducing overall cost, and easier mounting. Custom heights are available on request. See the EER Shape Cores and LP Shape Cores pages for more information.

Nanocrystalline Cores Shrink Common-Mode Chokes

Magnetics' new nanocrystalline cores are well suited for applications such as common-mode chokes (CMC), and are currently available in toroids or split cores from 5 mm to 145 mm. Due to the high permeability of nanocrystalline cores, CMCs can be smaller in size and handle higher current. When compared to ferrite cores, nanocrystalline cores provide a wider operational temperature range and significantly higher impedance at high frequencies.

Magnetics is expanding its nanocrystalline product line for ac current transformers, zero-phase current transformers, dc immunity current transformers, and hall effect sensors with cut current transformer cores. For assistance in selecting a nanocrystalline core for any of these applications, contact Magnetics.