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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, chokes and filters, and current sensors introduced over the past six months by nearly a dozen different vendors. Among the many inductor announcements, there are a variety of component styles using different materials (though mostly ferrite-based cores) and construction methods, and different shielding options such as a semi-shielded one offering cost savings.

Most of these new inductors are AEC compliant, reflecting the industry's ongoing focus on automotive applications. But consumer, industrial, telecom, computing are also cited among the targeted markets for these devices. In terms of circuit applications, these inductors are intended for use in dc-dc converters, power supplies, PFC stages, class D audio amps, solar inverters, and other power converter types. Among the recently introduced chokes and filters, there are also different component styles, which target some of the same circuits as the inductors as well as on-board chargers, fast chargers, UPSs, LED lighting equipment, and motor drives.

In addition, several new transformers are among the recent component introductions with gate-drive transformers supporting requirements of wide-bandgap power semiconductors (and silicon IGBTs) plus specific power supply topologies and controllers. New isolation transformers are also reported. Finally, this feature presents news of Rogowski coils for smart meters.

This article represents a follow-up to the Power Magnetics Component Roundup published in the June 2023 issue and earlier magnetics articles published in How2Power Today.

Power Inductors

- Semi-Shielded Inductors Offer High-Temperature Operation And Cost Savings (Bourns)
- Shielded Inductors Specify High Saturation Currents (Würth Elektronik)
- Toroidal PFC Inductors Use Flat-Wire Windings For Lower Losses (Würth Elektronik)
- Semi-Shielded Power Inductors Have Enhanced Mechanical Strength (Bourns)
- Automotive-Grade Two-In-One Inductor For Class D Amplifier (Sumida)
- Shielded Metal Inductors Offer Wide Inductance Range (Sumida)
- Coupled Inductors Enable High Efficiency (TDK)
- Metal Compound Molding Inductors Deliver Low DCR In Low Profile (Sumida)
- Shielded High-Power Inductor Has Pin-Type Structure (Sumida)
- Inductors Stand Just 0.55-mm Tall (TDK)
- Composite-Core Inductors Come in Additional Case Sizes (Pulse)
- Shielded Ferrite Inductors Offer Wide Inductance Range (Sumida)

Transformers

- 2-W LLC Transformer For SiC And GaN Drive Applications (Pulse)
- Automotive-Grade Drive Transformer For IGBT-Based Inverters (Pulse)
- Miniature, Automotive-Grade Push-Pull Transformer Offers Reinforced Insulation (Pulse)

- Transformers Lower Interwinding Capacitance For Driving SiC MOSFETs **(**Würth Elektronik)
- Three-Phase Isolation Transformers For Industrial And Medical Applications (Bel Fuse)

Chokes And Filters

- Unshielded Radial Drum Chokes Feature High Impedance And Inductance (Signal Transformer)
- Inductors And All-Mode Filters Now Operate Up To 5 GHz (SMP)
- CM Chokes Mitigate EMI In Robotics And Motor Drives (Schaffner)
- Multilayer Metal Power Inductors Shrink Size For Smart Phone Power Supplies (Taiyo Yuden)
- Sample Kit For Compact High-Current Chokes (TDK)

Current Sensors

- Rogowski Coils Bring Benefits Of Non-Ferromagnetic Core To Smart Metering (Pulse)

Power Inductors

Semi-Shielded Inductors Offer High-Temperature Operation And Cost Savings

Bourns' Model SRN8040HA series AEC-Q200 compliant, automotive-grade semi-shielded power inductors feature a high operating-temperature range from -40°C up to 150°C. These inductors are constructed using the company's advanced magnetic silicon-based coating technology that is said to offer superior magnetic shielding while also enabling higher operating temperatures. These high-temperature inductors are designed to release lower magnetic field radiation compared to non-shielded inductors, and are also a more cost-efficient alternative to fully shielded ferrite-based inductors.

The SRN8040HA series supports high current capacity with saturation current Isat ranging from 1.3 A to 15 A and provides a heating current Irms range of 1.0 to 10.0 A. The features and capabilities of these inductors make them especially well-suited for dc-dc converters and power supplies in automotive, consumer, industrial, and telecom electronics applications where greater inductor reliability is a frequent requirement. The Model SRN8040HA series is available now and is RoHS compliant and halogen free. For more detailed product information, see the SRN8040HA page.

Shielded Inductors Specify High Saturation Currents

Würth Elektronik's WE-HEPC inductor series offer the company's smallest NiZn-ferrite based self-shielded power inductors to date. Thanks to a new and completely automated manufacturing process, these inductors provide consistent very high quality and a higher saturation current than any previous product, according to the vendor. In all, there are 15 models available with different attributes including inductances from 3.3 to 100 µH, ISAT values from 1.3 to 3.3 A, and two package sizes—the 5030 (4.8 x 4.8 x 1.8 mm) and the 6030 (5.9 x 5.9 x 2.85 mm).

The WE-HEPC inductors are suitable for dc-dc converters, filter applications, embedded computers, and other compact design applications. Rated to AEC Q-200 Grade 1 and with an operating temperature range spanning -40°C to +125°C, members of this series can also be used for some automotive applications. In addition, the land pattern is compatible with older WE-SPC and WE-TPC inductors, giving customers a maximum amount of design flexibility.

The WE-HEPC series is immediately available from stock in any quantities. Developers are welcome to request free samples. For more information, see the WE-HEPC SMT Power Inductor page.

Toroidal PFC Inductors Use Flat-Wire Windings For Lower Losses

Würth Elektronik has expanded the WE-TORPFC inductor series, adding 17 parts. These toroidal inductors are suitable for continuous-conduction mode (CCM) boost converters and are capable of producing up to several kilowatts of power. Unlike traditional bobbin-wound power factor correction (PFC) inductors, this series uses flat-wire windings, resulting in lower winding losses and better cooling.

The series is designed for elevated temperatures, up to 155°C, and is capable of handling operating voltages up to 1000 Vdc. With multiple sizes available, inductances ranging from 118 to 720 µH, and rated currents up to 48 A, this series is a fit for active power factor correction, industrial ac-dc, solar inverters, and a variety of other applications. In addition, this series includes a robust mounting system that is evaluated through AEC-Q200 reliability testing.

All parts are in stock and free samples are available upon request.

Semi-Shielded Power Inductors Have Enhanced Mechanical Strength

Bourns has expanded its semi-shielded power inductor product line with the introduction of five automotive-grade, AEC-Q200 compliant model series—models SRN2010BTA, SRN2510BTA, SRN3010BTA, SRN3012BTA and SRN3015BTA. These series deliver enhanced reliability due to their bottom-soldered lead wire construction that provides increased mechanical strength and stability.

These benefits, along with the inductors' multiple available footprints, make them well suited as differential choke power conversion solutions for automotive systems, dc-dc converters and power supplies in consumer, industrial and telecom electronics where high reliability is frequently required.

Bourns' latest power inductor models' semi-shielded design combines the feature benefits of both non-shielded and shielded inductors. This structure provides lower magnetic field radiation compared to non-shielded inductors and is also a more cost-effective alternative to fully shielded ferrite-based inductors.

The inductors are available now and are RoHS compliant and halogen free. For more information, see the SRN2010BTA, SRN2510BTA, SRN3010BTA, SRN3012BTA and SRN3015BTA datasheets.

Automotive-Grade Two-In-One Inductor For Class D Amplifier

Sumida's D2EP21D15 is a pin-type two-in-one inductor designed for automotive digital amplifier applications (that is, class D audio amps.) This magnetically shielded inductor is offered in a 22-µH value ±20% with a DCR of 22.8 mΩ, a max saturation current of 7.2 A, and a max temperature rise current of 5.4 A for ΔT = 40°C

The inductor measures 21.0 × 15.0 × 16.5 mm max. For more information, see the D2EP21D15 product page.

Shielded Metal Inductors Offer Wide Inductance Range

Sumida's CDSM70D52/T150 and CDSM12D63/T150 are both AEC-Q200 qualified, magnetically shielded power inductors. They cover a wider inductance range (up to 100 µH) compared to the existing Sumida metal inductor CDMCxxDxx/T150 and /L150 series. To enhance the reliability, the company designed the wire/terminal connection point on the outside of the core, while the existing Sumida metal inductors have the ones inside the core instead.

These components operate over a temperature range of -55°C to 150°C and have a maximum voltage rating of 70 V. Units measure 7.5 × 8.0 × 5.4 mm max. Applications include high-power dc-dc converters and LED head lights. For more information, see the CDSM70D52/T150 and CDSM12D63/T150 pages.

Coupled Inductors Enable High Efficiency

TDK has expanded its family of flat-wire inductors with the high-performance B82559S EPCOS ERUC23 coupled inductor series. The series comprises six types covering a coupled inductance range from 1.4 µH to 4.1 µH and saturation currents from 50 A to 97 A.

The AEC-Q200-qualified and RoHS-compliant components, which can be picked and placed automatically, have dimensions of just 26.8 x 13.8 mm, with heights varying between 13.7 mm and 14.0 mm depending on the type. They are specified for a wide temperature range from -40°C to +150°C, and depending on the type, the dc resistance of a single winding ranges from 0.82 mΩ to 1.85 mΩ.

These devices are suitable for dual-phase buck and boost converters as well as for buck/boost converters—particularly also for hybrid voltage converters that convert 48 V to 12 V. Since the two windings are coupled, the ripple current is reduced which improves efficiency. Using coupled inductors instead of two individual chokes also saves significant space on the circuit board. For more information, see the ERUC23 Coupled Inductors page.

Metal Compound Molding Inductors Deliver Low DCR In Low Profile

Sumida's CDMT series of metal compound molding type inductors feature a magnetically shielded structure composed of metal core and compound, which allows a large current to flow with low DCR and high magnetic flux density. Applications include dc-dc converters and point of load converters (POLs) used in distributed power systems as well as tablet PCs, LCD displays, and servers; HDD and SSD modules, and battery-powered devices.

Members of this series include the CDMT40D20, which measures 4.3 x 4.3 x 2.2 mm max; the CDMT40D30, which measures 4.3 x 4.3 x 3.1 mm max; the CDMT40D40, which measures 4.3 x 4.3 x 4.1 mm max; the CDMT50D20, which measures 5.45 x 5.45 x 2.0 mm max; the CDMT50D30, which measures 5.45 x 5.45 x 3.1 mm max; the CDMT50D50, which measures 5.45 x 5.45 x 5.1 mm max; the CDMT60D20, which measures 6.55 x 6.55 x 2.1 mm max; and the CDMT60D30, which measures 6.55 x 6.55 x 3.1 mm max. Units operate over a temperature range of -40°C to 125°C.

For more information, see CDMT40D20, CDMT40D30, CDMT40D40, CDMT50D20, CDMT50D30, CDMT50D50, CDMT60D20, and CDMT60D30 product pages.

Shielded High-Power Inductor Has Pin-Type Structure

Sumida's DPQ5050/T150 is an AEC-Q200-qualified, flat-wire-wound, ferrite-core-based high-power inductor with pin-type structure. Applications for this magnetically shielded inductor include buck-boost converters, PFC chokes and filters for EV on-board chargers.

The device features an inductance of 10 µH ±20%, a DCR of 1.6 mΩ, and a max saturation current of 140 A at 20°C and a temperature rise current of 65 A at T = Δ40°C. For more information see the DPQ5050/T150 page.

Inductors Stand Just 0.55-mm Tall

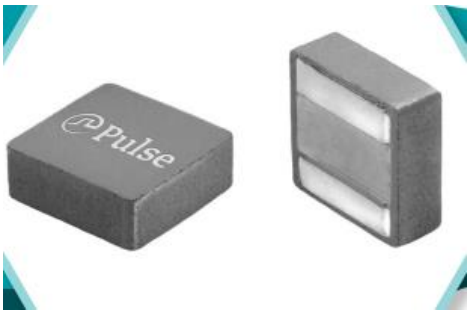
TDK's PLEA85 series high-efficiency power inductors were developed for battery-powered wearables and other devices to improve operating times. The series has the lowest profile in the industry, according to TDK, due to the use of the company's newly developed low-loss magnetic material and its thin-film processing techniques.

Mass production of the product series began in October 2023. Targeted applications include small-sized power supply modules and wearable devices such as true wireless stereo (TWS) earphones, hearing aids and smartwatches.

Measuring just 1.0 mm (L) x 0.8 mm (W) x 0.55 mm (H), the PLEA85 series inductors enable engineers to miniaturize their design and take full advantage of low-profile ICs such as CSPs. The bottom electrode and partly L-shaped form on the side makes them suitable for high-density surface mounting, helps suppress misplacement during mounting and improves terminal strength to create a more robust end-product. For more information, see the PLEA85D type datasheet.

Composite-Core Inductors Come In Additional Case Sizes

Pulse Electronics, a YAGEO company, continues the expansion of its composite-core power inductor product line, filling the 8080 and 10xx gaps in this family. Available in both commercial grade and automotive grade with the same -55°C to 155°C operating temperature range, the PA/PM2241 series adds the 8-mm x 8-mm x 8-mm size while heights of 3, 6 & 10 mm in the 10-mm x 10-mm size are available in the PA/PM2242/43/44 series. These products offer extremely high energy storage density (1300 uJ/cm^3) and are well suited for any high-performance applications in the communications, computing, industrial, and automotive market segments.



"Composite inductors are constructed by inserting a pre-wound coil over pre-press magnetic core and then pressing or molding a magnetic material around this assembly. The composite inductors are similar in appearance to pure molded inductors but typically offer lower DCR and lower overall losses. While some high-end molded inductor series claim to electrically match equivalent sized composite-core inductors, the termination style does not allow for a pin compatible replacement. This Pulse product line offers a true drop-in replacement to other composite-core inductor families on the market," said Gerard Healy, Specialized Power PBU, Pulse Electronics.

Composite-core inductors provide a fully shielded, high energy density, soft saturation solution for applications up to 120 Apk. The construction enables the highest energy density of any available SMT inductors and also minimizes acoustic noise. For more information, see the datasheet. To inquire about lead times, competitive pricing, samples and more, use the quote form.

Shielded Ferrite Inductors Offer Wide Inductance Range

Sumida's CDRH5D28RB/T125 is a family type of CDRH5D28RB/H125, but characterized by lower DCR and wider inductance range (1 to 330 uH) than the 'H125 series. The magnetically shielded SMD style inductors are AECQ200 qualified and operational over a temperature range of -40°C to 125°C (including self-heating).

Applications include dc-dc converters for various low-power automotive applications. Part numbers and key specs for members of this family are shown in the table. For more information, see the SMD Shielded Ferrite Inductor: CDRH5D28RB/T125 page.

Transformers

2-W LLC Transformer For SiC And GaN Drive Applications

Pulse's PMT6709NL is the company's first LLC transformer specifically designed for SiC and GaN device switching. The transformer delivers 2 W of power, which can be configured with LLC controllers such as the TI UCC25800-Q1 or the MPS MPQ18913 to provide positive and negative outputs for robust switch on and off. The extended creepage UI5 platform provides 3.75-kVrms hi-pot isolation in a compact (17.2-mm x 11-mm x 8.5-mm max) SMD platform. This IATF design is compatible with full winding automation to fulfil the requirements of high reliability in automotive applications.

Designed for applications such as inverter motor drives that are driven by high-voltage batteries, this platform satisfies the 9.1-mm min creepage requirement of IEC 61558-1 for basic insulation and a working voltage up to 850 Vrms, or up to 450-Vrms working voltage for applications that require reinforced insulation. A split bobbin is use to keep the interwinding capacitance to less the 2.5 pF.

"Flyback and push-pull topologies have traditionally been used for MOSFET drive circuits. Tight coupling is necessary to minimize transformer leakage inductance, which enhances the efficiency of the drive circuit. However a tightly coupled transformer design results in relatively high interwinding capacitance, limiting higher switching frequency and the full utilization of the benefits of using SiC/GaN Mosfets," said Gerard Healy, product marketing, Specialized Power PBU, Pulse Electronics.

Healy continued, "This is overcome with the two-section PMT6709 winding construction and the LLC topology, where its higher leakage inductance does not impact on efficiency as it can be used as part of the resonant circuit. It can even potentially eliminate the need for an external resonant inductor. The lower capacitance enables an order of magnitude reduction in the common-mode current injection through the bias transformer and the LLC soft-switching feature further reduces the EMI noise."

Additionally, the PMT6709NL is compliant with the requirements of IEC 60664, for basic insulation and a repetitive peak voltage up to 900 V pk, based on the partial discharge method.

For more information, see the PMT6709NL page or the datasheet. Or to inquire about lead times, competitive pricing, samples and more, use the quote form. For more on the partial discharge method, see the white paper "Partial Discharge Explained" to better understand how this test method is used to define the voltage rating of an insulation barrier.

Automotive-Grade Drive Transformer For IGBT-Based Inverters

Pulse's PMG3045NL automotive-grade forward gate-drive transformer is specifically designed for IGBT device switching. The 2-W forward transformer provides a +15 V for device switch-on as well as a -7.5 V for robust switch off. The encapsulation construction provides 3750-kV ac withstand voltage in a compact (15.8- × 12.5- × 10.2-mm) SMD platform.

This platform satisfies the 10-mm min creepage distance and complies with IEC62368-1 for reinforced insulation. Triple insulated wire is utilized to fulfill the requirements of high reliability in automotive applications.

One typical application is three-phase inverter driver systems in electric vehicles. The typical input voltage is 15 V with 100-kHz switching frequency, where winding (6-8) provides +15-V output with full-bridge rectifier for IGBT switch-on, and winding (5-7) provides -7.5 V with half-bridge rectifier for switch-off.

"We are excited with the market interest in the PMG3045NL series and the range of applications they are produced for. The encapsulation construction is designed for critical motor drive environment, 10-mm creepage distance and reinforced insulation provides isolated power solutions for IGBT inverter circuit. This AEC-Q200-qualified platform continues to be a trusted solution for the most demanding of applications," said Kevin Li, product marketing, Specialized Power PBU, Pulse Electronics

The winding of the round wire coil is fully automated, making this product well suited for high-performance, high-reliability applications in the data communications, industrial and automotive markets. Samples are available through the web portal here or via the Pulse distribution network.

For more information see the datasheet. To inquire about lead times, competitive pricing, samples and more, use the quote form.

Miniature, Automotive-Grade Push-Pull Transformer Offers Reinforced Insulation

Pulse's PMT9085 push-pull transformer series feature an innovative core and bobbin assembly, providing reinforced insulation with 6.4-mm creepage distance in a compact 10.4- × 9.0- × 6.4-mm max package size. This makes it suitable for applications requiring safety compliance with a working voltage up to 300 Vrms/reinforced (600 Vrms/basic insulation). Additionally, 3000-Vrms hi-pot isolation is achieved with the enhanced separation of the high-voltage-side pins from the core and low-voltage-side pins.

Designed to work with a wide range of push-pull drivers as parts of a cost-effective open-loop circuit for delivering up to 2 W of isolated power in many automotive applications, the PMT9085 series comes with a range of turns ratios, from 1:1 to 1:5, to deliver the required output voltage from a regulated voltage source. A negative voltage for robust SiC/GaN switch off can be generated from the single winding output using the bootstrap technique.

"Many automotive applications are using push-pull drivers such as the TI SN650x series as part of their isolated power delivery solution. While Pulse has already developed a number of automotive-grade solutions to provide a range of voltage isolation and safety insulation for such application, the smaller of these, such as the ever popular PM2180 series, is limited to functional insulation, due to the proximity of the core to the pins.

PMT9085 redesigns this toroidal core solution into a pin-compatible bobbin-based product with a construction that addresses this limitation, with an extended creepage distance between the core and the high-voltage side pins. The winding of this unique solution can be fully automated, ideal for the requirements of high reliability in automotive applications," said Gerard Healy, product marketing, Specialized Power PBU, Pulse Electronics.

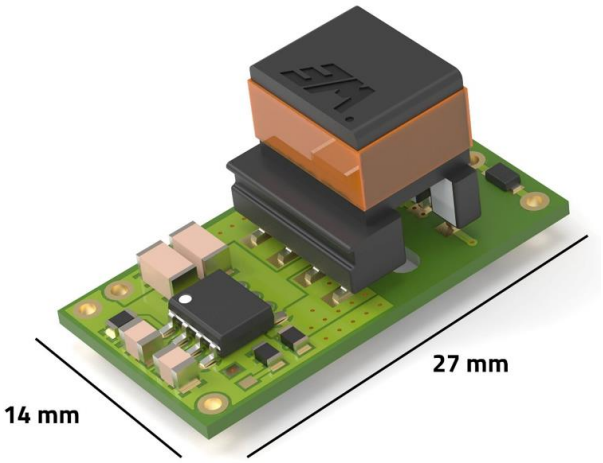
The PMT9085 is compliant with the requirements of IEC 60664, for basic insulation and a repetitive peak voltage up to 625 Vpk (up to 424 Vpk for reinforced insulation), based on the partial discharge method.

For more information, see the product finder and search PMT9085. To inquire about lead times, competitive pricing, samples and more, use the quote form.

Transformers Lower Interwinding Capacitance For Driving SiC MOSFETs

Würth Elektronik's WE-AGDT auxiliary gate-drive transformer series contains additions with interwinding capacitance lower than 1 pF, more topologies and higher output voltage options. All transformers use the same compact SMT EP7 package with 11.3-mm x 10.95-mm x 11.94-mm dimensions.

The WE-AGDT series is for isolated auxiliary supplies up to 6 W, particularly gate-drive systems for SiC-MOSFETs and IGBTs. In these designs, the most crucial aspect is the transformer interwinding capacitance due to the high dV/dt, which is common in designs utilizing wide-bandgap devices. The additions to this series feature interwinding capacitance is as low as 0.68 pF and output voltages as high as 30 V. Options now include LLC, half-bridge, or flyback topologies and one or two outputs which can be used in either unipolar or bipolar applications.



The WE-AGDT complies with the IEC62368-1/IEC61558-2-16 safety standard and is AEC-Q200 qualified. The transformers are suitable for use in industrial drives, ac motor inverters, HEV/EV charging stations, solar inverters, uninterruptible power supply devices and active power factor correction.

WE-AGDT samples are available ex-stock without minimum order quantities. Free samples are also provided. Reference designs are available together with PCB fabrication and layout design files including example flyback topology reference designs (RD001: 6-W bipolar isolated auxiliary supply for SiC-MOSFET and IGBT gate driver, RD002: 6-W unipolar isolated auxiliary supply for SiC-MOSFET and IGBT gate driver (PDF)); and Bias Supply Design for Isolated Gate Driver Using

UCC25800-Q1 Open-Loop LLC Transformer Driver. For more information on the transformers, see the WE-AGDT Auxiliary Gate Drive Transformer page.

Three-Phase Isolation Transformers For Industrial And Medical Applications

Bel Fuse's Signal Transformer division has expanded its 3PH series of three-phase dry type transformers targeted for use in medical, industrial, lighting, electric vehicle charging and green energy applications. Adaptable to multiple requirements, these rugged isolation transformers are designed and permanently configured for a three-phase DELTA input and a WYE output. A value-added electrostatic shield (ESS) between input/output windings attenuates line noise by preventing feed-through of undesirable signals and serves as a safety feature in the event of single fault conditions.

Built with a robust Class H (180°C), reinforced UL 1446 File E66312 insulation system, a 4-kV dielectric withstanding rating, a 130°C max self-heating temperature at 40°C max ambient, and low leakage current capability, the 3PH series is well suited to accommodate power conversion demands. Applications include MRI, radiation, and other medical equipment, machine tooling, welding machines, along with wind, solar, and lighting power conversion systems.

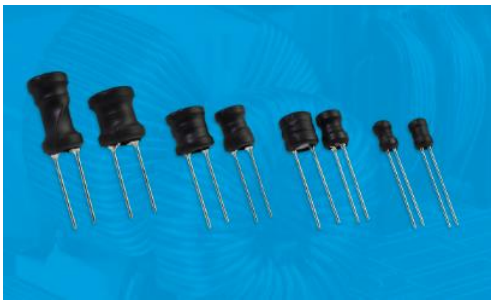
These rigid transformers operate at 50- or 60-Hz frequency, delivering a range of power from 2 kVA to 35 kVA with a max 500-Vac input voltage and 69-A rms max load current, featuring efficiencies of greater than 93%. All 3PH models are UL recognized to UL 60601-1 medical standard for construction under UL File E151299.

For more information, see the 3PH - Three Phase Transformers page. Also note that Signal can easily modify these transformers to create many variations for client needs in a relatively short time. Contact a Signal Transformer representative for full details.

Chokes And Filters

Unshielded Radial Drum Chokes Feature High Impedance And Inductance

From Signal Transformer, a Bel group company, the DRC line of unshielded radial drum chokes features four series including the 0406, 0608/0707/0807, 0810/1010, and 1018/1213. Utilizing cutting-edge coil winding technology, copper magnet wire windings, and higher-grade ferrite core materials, the DRC series chokes cater to the ever-increasing demands of contemporary electronic filtering, mitigating the effects of EMI and RFI. These devices are said to offer superior electrical noise suppression through a combination of high impedance, larger inductance, and enhanced current density.



These economical power inductors feature a wide inductance range with low DCR and are offered in tape packaging for auto-insertion. The potential uses for these components include switching power supplies as well as TV and audio equipment, telecommunication devices, personal computers and other noise filters. For more information see the DRC 0406, DRC 0608/0707/0807, DRC 0810/1010, and DRC 1018/1213 pages or belfuse.com/signal. Inventory will be available from Digi-Key and Mouser.

Inductors And All-Mode Filters Now Operate Up To 5 GHz

SMP Sintermetalle Prometheus has extended the frequency range for inductive components and filter systems. Filter damping in all-mode products now has an effective range of up to 5 GHz. SMP manufactures and develops EMC filter systems and inductive suppression components based on its All Mode Technology (AM), which enables simultaneous filtering of both common-mode and differential-mode disturbances.

Consequently, the number of filter components needed is reduced by about 50%, says the vendor. The components are used in power electronics applications in drive technology, robotics, automotive, aerospace, railway engineering, medical engineering, renewable energies and energy conversion.

The High Frequency Composite Materials (HFCM) developed and produced in-house by SMP enable frequency stabilities up to 5 GHz, very low losses, and saturation induction of up to 2 T. For noise-sensitive applications, SMP offers magnetostriction-free components.

The inductors and AM filters are maintenance-free, lightweight and compact. They have a minimum stray field and can be used for currents up to 3000 A. The components are available in sizes from 19 mm to 300 mm and weights from 0.05 kg to 130 kg. For harsh environmental conditions, they can be realized in temperature class H (180°C) according to DIN EN 60085 in combination with fire protection class HL3 according to DIN EN 45545.

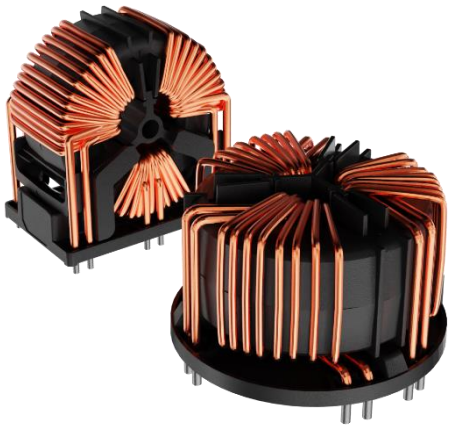
Protection classes range from IP00 to IP67 according to DIN EN 60529. This means that the inductors and filters can be used in PD4-level environmental conditions, both inside and outside a converter or electric system.

Cooling methods include air cooling, water cooling and free convection. All SMP products are RoHS and REACH compliant, as well as CE, EAC and UKCA certified and UL listed. For more information, contact the company.

CM Chokes Mitigate EMI In Robotics And Motor Drives

Schaffner has extended its range of filtering solutions for suppressing electromagnetic interference (EMI) with its RT common-mode choke series designed for use with mid-size power range drives frequently used in robotics and motor drives.

By fitting this new current-compensated choke—which is capable of operating at currents up to 63 A—it's now easier than ever to prevent EMI noise from going to power lines and disturbing the functioning of other systems, according to the vendor. Ensuring improved immunity against grid disturbances, the RT choke series suppresses EMI noise in PCB integrated filter designs.



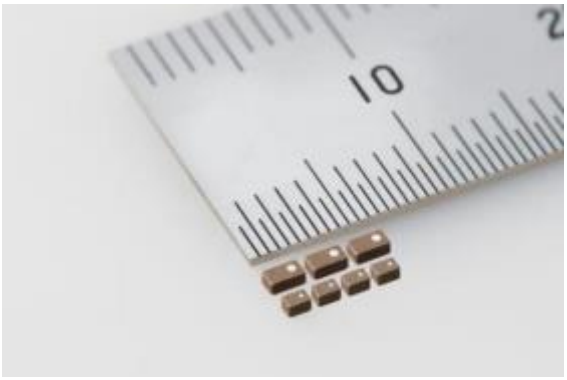
Schaffner developed the new choke series to meet the growing use of automation and electrification across a range of industries. Designed to help minimize costs, the addition of the RT choke series will also support design engineers working across a range of industrial segments.

The choke is also well suited for ac and dc filtering up to 600 V in fast chargers and charging stations, uninterruptible power supplies (UPSs), switch mode power supplies (SMPSs), photovoltaic inverters, industrial LED lighting, medical and laboratory equipment.

Offering a choice of horizontal or vertical PCB mounting options, the RT choke series is compact and lightweight. Available in two- or three-wire configurations, the choke series also provides a broad range of inductance ratings and features a UL-approved insulation system, excellent winding insulation and standardized footprint, enabling designers to swap chokes and alter specifications without having to make design changes. Custom-specific versions of the choke are available on request.

For more information, visit the company website.

Multilayer Metal Power Inductors Shrink Size For Smart Phone Power Supplies



TAIYO YUDEN has started mass production of three items in two sizes (see the table), including the LSCND1412HKTR24ME multilayer metal power inductor (1.4 x 1.2 x 0.8 mm), in the MCOIL LSCN series. These products are power inductors for choke coil applications for power supply circuits in smartphones and wearable devices.

The LSCND1412HKTR24ME is approximately 30% smaller in volume than the company's existing LSCNE2012HKTR24MD (2.0 x 1.25 x 0.8 mm), and delivers approximately 8% better dc saturation allowable current at 6.5 A (previously 6.0 A).

As smartphones and wearable devices become increasingly sophisticated and multifunctional, our new products will contribute to the miniaturization and higher performance of power supply circuits for these devices, says the vendor. Mass production of these products commenced in July 2023 at the company's subsidiary WAKAYAMATAIYO YUDEN with a sample price of 50 yen per unit.

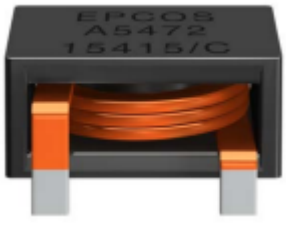
For more information, see the LSCND1412HKTR24ME page on Digi-Key or contact the company.

Part number	Size (LxW) [mm]	H [mm] max.	Nominal inductance [µH]	Inductance tolerance [%]	Rated current*3 [A] max.		DC resistance [Ω] max.
					Saturation current Idc1*1	Temperature rise current Idc2*2	
LSCND1412HKTR24ME	1.4x1.2	0.8	0.24	±20%	6.5	4.4	0.022
LSCND1412HKTR33MF			0.33	±20%	5.4	4.0	0.027
LSCND2012HKTR24MF	2.0x1.2	0.8	0.24	±20%	7.0	5.4	0.019

1. The saturation current value (Idc1) is the dc current value having inductance decrease down to 30% (at 20°C). 2. The temperature rise current value (Idc2) is the dc current value having temperature increase up to 40°C (at 20°C). 3. The rated current is the dc current value that satisfies both of current value saturation current value and temperature rise current value.

Sample Kit For Compact High-Current Chokes

TDK's sample kit for the B82559A*A033 series of shielded EPCOS ERU 33 high-current chokes (order number: B82559X033) contains two pieces of each of the six standard types of this series. In addition to the standard types in the sample kit, customized variants of the chokes with other inductance values can also be realized.

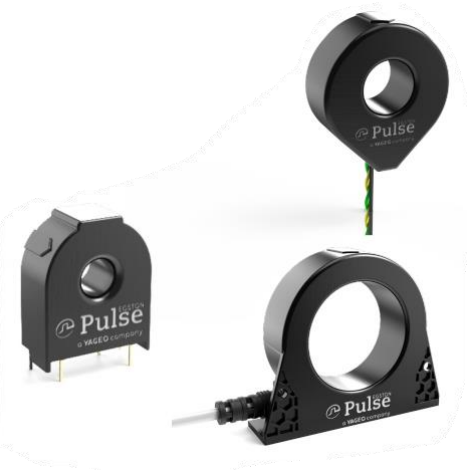


Designed for very high saturation currents from 32 A to 83 A at +100°C, these through-hole mountable components cover a range of inductance values from 3.2 µH to 10 µH. DC resistances are as low as 0.85 mΩ or 1.2 mΩ, depending on the type. Thanks to the flat-wire winding, the components have very compact dimensions of only 33 x 33 x 15 mm. By thermally connecting the flat coils to the electrically insulated core, the choke can be attached to a heat sink to effectively dissipate the heat.

The RoHS-compatible and AEC-Q200 REV D-qualified inductors are designed for operating temperatures from -40°C to +150°C. Typical automotive applications are buck-boost chokes for dc-dc converters (e.g., for 48-V on-board power supplies or for differential-mode chokes in the input filter of onboard chargers). In industrial electronics, they can be used as storage and output chokes in high-current supplies and point-of-load (PoL) converters. For more information, see the ERU Chokes: ERU 33 – B82559A*A033 page.

Current Sensors

Rogowski Coils Bring Benefits Of Non-Ferromagnetic Core To Smart Metering



Pulse's RC series is described as a cutting-edge solution for modern current measurement. With the utilization of Rogowski coils, this series introduces a new era in measurement and billing applications for smart grid and smart metering, according to the vendor.

By employing a non-ferromagnetic core, the RC series offers numerous advantages over traditional current transformers that use ferromagnetic cores. It avoids nonlinear effects caused by core saturation and the need for precise burden resistors. Other key features include robust design, wide dynamic range, high bandwidth, low dependency on temperature.

The RC Series is available in three different sizes, catering to various requirements. Custom solutions are also available.

Each size within the RC Series offers three different sensitivity levels, ranging from 100 mV/kA to 600 mV/kA at 50 Hz. To further enhance performance, all types come with an additional shield to eliminate capacitive coupling effects.

"Our commitment to precision goes beyond industry standards, ensuring full compliance with the demanding requirements of billing applications. Rest assured, our product not only meets but exceeds the accuracy expectations, meeting IEC 61869-10 Accuracy Class 1 and ANSI C12.20 Accuracy Class 1.0 standards. Your confidence in accurate measurements is our top priority," said Thomas Anglmayer, product marketing, Specialized Power PBU, Pulse Electronics.

For more information, see the datasheet. To inquire about lead times, competitive pricing, samples and more, use the quote form.